

RE-CAMINE CRAMINE

With the UK in the grip of one of the deepest and longest recessions of the past century, research by ESRC-funded centres is at its most valuable to help policymakers and business put the UK economy back on the pathway to steady growth, to help reduce the budget deficit and to boost consumer confidence. At the same time, though, it is essential to make the UK a fairer country that looks after those who most need the state's help. *Re-igniting Growth* includes a series of interviews with key academics funded by the ESRC. They reflect on a range of initiatives or changes to policy that they believe could help end the recession and kickstart growth.

As well as giving the recession historical context, many of the interviews take unconventional approaches to a range of issues and provide objective — and sometimes controversial — responses to the economic problems the UK is experiencing. I hope you find the report interesting and thought provoking and that you are encouraged to explore the underlying body of research findings in greater detail.

Professor Paul Boyle

Chief Executive, Economic and Social Research Council (ESRC)

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CHARTING A COURSE TO ECONOMIC RECOVERY

Ask the average person on any British high street or workplace about re-igniting growth and he or she will most likely talk about the need for an immediate stimulus to get the economy moving after the long months of double-dip recession.

This is certainly important and the best way of achieving that is at the heart of the current political debate. But any short-run spurt in economic growth will eventually run out and activity will soon return to its depressed level.

Policymakers need to take a long-term approach to fuel the long-term sustainable economic growth that will deliver increases in the level of national income and thus wellbeing over a generation or more.

Economists call these supply-side reforms — measures that ensure that the economic system operates more efficiently which is what determines the long-run income of any nation.

Measures that can deliver a permanent increase to the rate of economic growth are especially valuable, because the benefits get bigger and bigger over time.

As the Mirrlees Review of the UK tax system said, the gains can be 'truly staggering'. If real income in the UK grows at one per cent a year, it will double in 70 years; if it grows at three per cent, it will double in only 24 years. It is this that led Nobel laureate Robert Lucas to declare: "Once one starts to think about [growth], it is hard to think about anything else."

But the 64,000-dollar question is how to achieve that miracle. This report discusses policy areas that, according to ESRC-funded research, could help put the UK economy on a more solid footing in an increasingly competitive global market.

The breadth and depth of the ESRC-funded research is enormous and the exciting findings of academics make a major contribution to our understanding.

POLICYMAKERS NEED TO TAKE A LONG-TERM APPROACH TO FUEL THE LONG-TERM SUSTAINABLE ECONOMIC GROWTH THAT WILL DELIVER INCREASES IN THE LEVEL OF NATIONAL INCOME AND THUS WELLBEING OVER A GENERATION OR MORE

This report includes a huge swath of macroeconomics such as the effects of tax reform, a new industrial policy and understanding how to deal with the uncertainty inherent in global financial markets.

But it also covers key areas of microeconomic policies such as boosting the UK's laggardly rates of productivity, getting management skills to the levels enjoyed by our rivals and ensuring that the UK embraces the idea of the knowledge-based economy.

And it looks at the routes by which we can get to long-term growth such as boosting our export performance and taking advantage of the potential offered by a switch to a 'green' economy.

Issues such as tackling the UK's housing shortage and dealing with the problem of high unemployment, especially among school leavers, will also be critical elements of the growth re-ignition.

This report is innovative in that it has sought to draw out policy lessons by interviewing the senior academics whose careers have been based on researching these particular issues. This has enabled the articles to draw out more of the nuances and thinking behind the academic findings that should be useful for policymakers trying to chart a path through to economic recovery.

While the range of subjects is huge, there are some clear lessons that emerge from the individual interviews.

One overarching theme is the benefits that will accrue over the long term from a decision to make investments now. This is clear in infrastructure, where the UK is suffering from decades of under-investment, as well as in the jobs market where a failure to tackle long-term unemployment will lead to much larger social costs than simply benefit payments. The plan announced in the Chancellor's Autumn statement to divert £5bn of current spending into capital spending on transport,

education and science aims to help address some of these issues.

It is also clear that the depth of the recession – it has lasted even longer than the 1930s Great Depression – offers a rare opportunity for politicians to embark on reforms that might be difficult in normal times.

Whether it is planning policies that have led to high house prices, a tax system with its myriad complex distorting measures, or a financial system that is not providing much-needed funds for the business champions of the future, now is the time for radical reform.

While homeowners do not want lower house prices and few people want to pay more tax it is clear that the way the system is run now is holding back, rather than supporting growth.

It is clear that economic research has a major role to play. By carrying out robust analysis academics can build an evidence base and show examples and causal relationships that policymakers can use to justify their decisions.

Finally it is important to acknowledge that it has not been possible to cover all areas of economic policy, whether it is the impact of long-term demographics, the future of the high street, or the role of immigration.

Policymakers needed to draw on the advice of economists and the lessons of history to ensure the financial crisis did not turn into a depression. Let us hope they can take support from economic research for the steps they need to take to re-ignite growth now.

Many of the themes in this report are being taken forward by the LSE Growth Commission co-chaired by Professor Tim Besley and Professor John Van Reenen, Director of the ESRC's Centre for Economic Performance. The Commission's Report, *Investing for Prosperity*, is launched on 31 January.

Phil Thornton Editor, Re-igniting Growth Lead consultant, Clarity Economics

GOVERNMENT MUST HEED LESSONS FROM PAST RECESSIONS

Very few people alive today will remember the Great Depression – the last time the UK went through a financial downturn similar to the one we have experienced over the last five years. Memories of the 1980s recession may be stronger but most of the people employed then will be in their fifties now.

But according to Professor Nicholas Crafts, the director the ESRC Centre for Competitive Advantage in the Global Economy, both experiences hold lessons for finding the path back to the growth, which has so far been elusive. There are important lessons for now from the 1930s and 1980s, he says, as all three periods share the experience of the sort of fiscal consolidation – public spending cuts and tax increases – that is seen currently.

However, neither previous downturn came with a banking crisis. "That might mean we have a steeper uphill struggle than they did," he says. "In both previous periods there was a strong recovery that took place four years after the recession began. The recovery now is pretty weak and perhaps that's to do with the credit boom and bust."

He says policymakers have three options to restart growth: fiscal stimulus, monetary stimulus and supply-side reform. Fiscal stimulus is largely ruled out by the coalition Government's Plan A, while with interest rates close to zero there is little room for conventional monetary policy.

The Government could publicly commit to higher future inflation to push down real interest rates, as happened in the 1930s, but that would require abandoning its inflation-targeting regime, which is unlikely to be an option now. "Supply-side reform might be quite useful if you think that the first two are out of reach or relatively weak in their possibilities," he says. "We certainly need something at the present time that has short-term effects as well as long-term effects."

Both the 1930s and the 1980s saw major and long-lasting – but very contrasting – changes to supply-side policies that affected medium-term growth performance. While the 1980s saw an intensification of competition, the retreat from competition in

the 1930s, which turned out to be hard to reverse, was damaging for growth performance. "I think the hallmark is the move from industrial to competition policy," says Professor Crafts. "That makes a big difference over the medium term and that's a lesson we forget at our peril."

He points to an array of policies such as the 'Big Bang' financial liberalisation, the strengthening of competition in product markets, restructuring of taxation, and a retreat from the failed 1970s policy of picking winners in favour of policies that underpin private sector investment. He says that while the UK is pursuing those policies it "could do better and try harder".

He says there are four areas where improvements are needed. Top of the list is infrastructure where successive governments have failed to invest by as much as one per cent of GDP every year. He says the Eddington report on transport, to which he contributed, shows that governments have done a "terrible job" in selecting projects that will deliver the most benefits. "That bias continues," he says.

In education, the Government needs to introduce greater competitive entry into schools and more externally provided exams to lift the UK's poor performance on cognitive skills. The third element is reform of the tax system, which he says is not well designed and where reforms will help stimulate growth. The final area is planning policy. "Few people seem to realise how draconian our planning system is," he says. "It constrains British cities and stops them growing."

This leads on to another lesson from previous recoveries, which was the focus on housebuilding. In the peak year in 1930s the private sector alone built 293,000 homes — triple today's level. "This is a policy change that will have a short-term effect as well as a long-term effect," he says, adding that the stock of houses is three million below and real prices are 35 per cent above where they would be in a more free market.

"This could not be done in one bound," he says, indicating that even building 200,000 extra houses per year may employ 800,000





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more people. "But even some movement in that direction would provide significant short-term stimulus while providing supply-side reforms that will deliver welfare gains in the medium to long term."

He says that the most effective policies the Government should implement are overall improvements in industrial policy with a focus on competition. "If you want more industrial policy, do not be careless about what it does to competition."

Professor Crafts says that there is plenty of hard evidence that points to the reforms that the Government could undertake. "We should take the lesson from history that radical supply-side reform delivered growth in the past and that a similar, if not the same, recipe might do so today — even in the short-term.

"The obstacles to that are not the lack of evidence and not the lack of good economics but the political difficulties of implementing any such policies."

RESTORING CERTAINTY TO GLOBAL POLICY WILL AID THE UK

One of the many features of the work of economist John Maynard Keynes that has received renewed interest is the role that uncertainty plays. Since the financial crisis began in 2007, the dramatic failures of banks, the European debt crisis and geopolitical concerns have left people more uncertain about what the future holds.

According to Nick Bloom, an economics professor at Stanford University in the US, uncertainty about policy is a major factor in the current stagnation of growth in the UK. "Uncertainty reduces demand so if policy is uncertain then it is easy to see why demand is postponed," he says. "Firms and consumer pause, they are cautious, don't want to invest or hire and consumers may put off buying that new car. If everyone does that then recovery stalls."

Building on ESRC-funded research, Professor Bloom, together with Scott Baker at Stanford and Steve Davis of the University of Chicago, has built an index that seeks to measure policy uncertainty. The index (www.policyuncertainty.com) is based on newspaper coverage of policy-related economic uncertainty, disagreement among economic forecasters and, in the US, the number of federal tax code provisions set to expire in future years.

While economists since Keynes have worried about the impact of uncertainty on the real economy, this is the first objective measure through the construction of an index based on a variety of policy-related uncertainty indicators. "Current levels of economic policy uncertainty are at extremely elevated levels right now compared to recent history," Professor Bloom says.

His research shows that the impacts are immense: "Whenever uncertainty rises, GDP tends to fall," he says. "Uncertainty between 2006 and 2011 foreshadowed peak declines of 3.2 per cent in real US GDP, 16 per cent in private investment and 2.3 million in employment. In the US uncertainty is responsible for at least half of the lack of recovery and my guess is that it would be a similar figure for the UK," he says.

Uncertainty also has negative impacts on share prices. Since 2008, an increasingly large share of large daily movements of at least

2.5 per cent in the S&P 500 index have been caused by policy-related events. The UK index, based on news articles in the *Financial Times* and the *Times* mentioning uncertainty, and forecasters' disagreements over budget balances and inflation, is very high (see graph).

But the issue for Britain is not domestic policy uncertainty. "The UK has been more definitive to the extent that the coalition is stable and its policies have been pretty clear," Professor Bloom says. "You may not like the fiscal consolidation plan but at least it is sustainable so my sense is that in the UK policy uncertainty is being imported. The UK is being buffeted by uncertainty in Europe and the US."

He ascribes the uncertainty to the fears that countries such as Spain and Greece may leave the euro and that the eurozone may disintegrate, and over the confusion in the US over whether politicians will take action to avert the so-called 'fiscal cliff' when tax increases and spending cuts take effect in 2013. "European and US policy are clearly very uncertain right now and that affects European and US demand, which clearly affects the UK through exports and trade."

There is clearly growing interest in policymaking and financial services circles about the need to understand the role that policy uncertainty plays. Professor Bloom and his co-authors have taken their findings to the Bank of England, the US Federal Reserve and the Norwegian central bank. International banks such as Morgan Stanley, Goldman Sachs and Nomura have also used the findings in their economic outlooks. "It has become very topical."

The issue for policymakers in the UK is how they should react to the extremely high levels of uncertainty that are driven by events out of their control. Professor Bloom says that against that backdrop the first priority for British politicians and policymakers should be to keep policy as stable as possible.

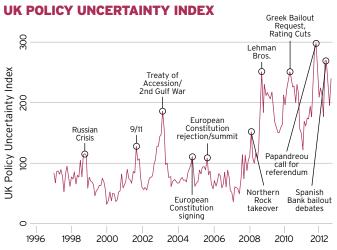
"This primarily refers to fiscal and monetary policy but there is also regulation in areas such as healthcare and finance. So on those three angles, try to make policy as stable as possible," he says.



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PROFESSOR NICK BLOOM





But he says that a second lesson is that where policymakers do intervene it should be to help offset the impacts of the imported uncertainty. "UK fiscal and monetary policy should be as supportive as possible of UK firms given the negative headwinds from abroad."

Professor Bloom acknowledges that policy uncertainty is a major short-run issue for re-igniting growth rather than a long-term issue. "If one cares about growth ten or 20 years out, things like management, R&D and education are more important," he says. "But right now it is policy uncertainty that is killing the recovery."

DEALING WITH THE TOXIC LEGACY OF YOUTH UNEMPLOYMENT

This recession has seen the curse of unemployment to be far more focused on young people than in previous downturns with 40 per cent of all the unemployed aged under 25.

Nearly 1.5 million 16 to 24-year olds are not in education, employment or training (NEET) — more than one in five of all young people. A quarter of a million have been unemployed for over a year.

Research a decade ago by Professor Paul Gregg, Director of the ESRC-funded Centre for Analysis and Social Policy at the University of Bath, showed the dramatic and costly impact of scarring on those hit by the 1980s recession.

It found that those exposed to lengthy unemployment when young faced an unstable employment outlook and much lower wages well into their 30s.

"With this recession, unemployment is back but this time it is more focused on young people and our research would say this imposes large costs – both for those individuals who experience unemployment, and for society through higher benefits, lost wages, lower taxes and other costs," he says.

Professor Gregg says that getting the unemployed back into work and ensuring that those leaving school do not join the legions of the jobless will require co-ordination between government, employers, schools and other agencies.

He says the evidence base that he has built up through his research indicates that three key interventions are needed. The first focuses on preventing school leavers moving straight into unemployment. "There should be an effective programme to make sure no one leaves school at 16 or 17 without a positive destination – continuing education or work with high-quality training attached," he says.

"There are a lot of ingredients behind that in terms of engaging with kids who are at risk of dropping out and have become disillusioned by education. Part of it is prevention and part is

keeping in constant touch with those who fail to secure positive destinations until you can re-engage them."

The second group are post-teen young people who can 'drift' for long periods of time without work or being picked up by work programmes. "There needs to be a re-engagement programme, sometimes referred to as 'sweeping the streets' that picks up the kids who are drifting," he says. "The primary focus is on getting work experience and to connect them with work."

The third is a strategy for long-term benefit claimants to ease them into the workforce. This requires more intensive work experience and job search support as durations lengthen. Starting with a short work trial at around four months followed by a longer period of work experience for those who have not had a job for a year.

This final group is those who have been unemployed for two years or more. "We are talking about small numbers here, so it's not a great cost – where a company is paid to take claimants on and give them genuine work as a transition job to support them while they find a permanent employer.

"This amounts to a programme of escalating the work experience programme to put the brakes on near-permanent, long-term unemployment setting in," he says.

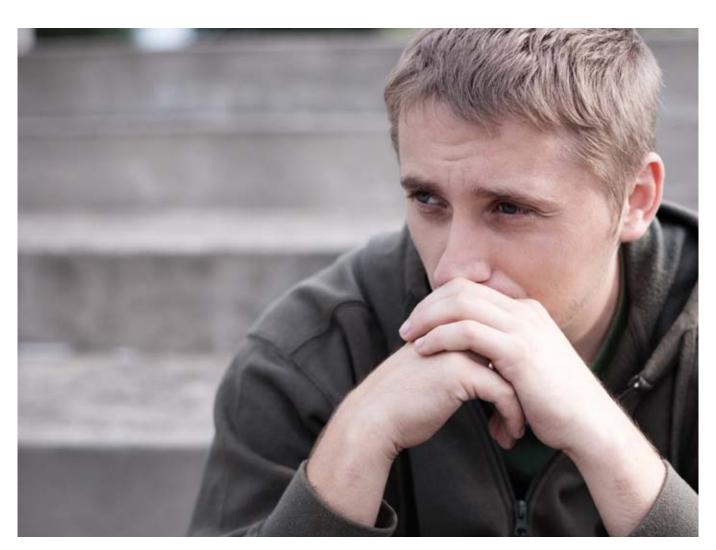
The key is that the experience has to be positive. "It has to offer a good message to employers," he says. "A work placement that's picking up litter or digging holes and filling them in again has been shown to fail because it is not offering real work experience. To say you were forced to pick up litter will not help your CV. We need real placements in real businesses doing real jobs with real skills that you can talk about to future employers."

Professor Gregg says some providers of the Government's current strategy, the Work Programme, are struggling to place claimants into jobs because of the tough labour market and growth recession.



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PROFESSOR PAUL GREGG



"There is a danger that a work experience programme gets in the way of looking for the next job so there needs to be a strong focus by the provider and the claimant to make sure they are working towards a proper destination."

Professor Gregg's research is being translated into policy action on the ground. He was part of a commission on youth unemployment for the Association of Chief Executives of Voluntary Organisations (ACEVO) that came up with policy recommendations. He is also talking to a number of local authorities in Wales, Birmingham, the North East and London about the design of programmes that deal with and prevent youth unemployment.

Reducing long-term youth unemployment is obviously a key goal of social policy. But getting people off the dole and into work will also be a central part of any strategy to re-ignite economic growth.

Professor Gregg says that the costs of youth unemployment to the Treasury over the next decade in current prices come to £28bn and to £40bn if the wider social costs are included.

"That sense that youth unemployment damages people not just during their period of unemployment is a big motivation for agencies to engage in this kind of thinking," he says. "The idea that it does long-term damage to the economy takes it to another level of urgency. It's a toxic legacy."

ECONOMICS LESSONS FOR EDUCATION REFORM

Education has been a core element of public policy in the UK for the last 15 years, first with Tony Blair's slogan of 'education, education, education', and now the coalition Government's reform of both schools and exams. But despite major investment, the UK lags behind its major rivals, according to Sandra McNally, director of the education and skills programme at the ESRC-funded Centre for Economic Performance at the London School of Economics, and Professor of Economics at the University of Surrey.

Recent international education surveys suggest the UK is not doing as well as might be expected compared to its main rivals and performance has deteriorated recently. The Programme for the International Student Assessment (PISA) found the UK came just below the OECD average in 2009 and had declined since 2006.

She says the issue with educational output is not that the UK fails to produce graduates, but that it fails to produce sufficient numbers of people with good intermediate qualifications. "A particular long-standing problem is that there are too many school leavers with inadequate skills and qualifications," she says, pointing to the high number of NEETs – young people not in employment, education or training. "All of those things are worrying."

Given the clear evidence of a link between education and economic growth, Professor McNally says investing in schools must be a key plank of any growth strategy. "There are some things that are not resource-intensive but most things do require investment so I don't think you can afford not to do it if you see education as an engine of growth," she says. This investment needs to start with early years education as that can affect results a decade later. "High quality childcare is what benefits people."

But research shows inequalities cannot all be blamed on education, as differences in cognitive ability are evident even before children start school due to gender, ethnicity and family background. Therefore, Professor McNally says improving



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PROFESSOR SANDRA MCNALLY

educational outcomes involves looking at social policy such as housing, employment, benefits and childcare provision as well as education policy itself.

But it is the operation of schools where she believes much of the attention should be focused. "You want to incentivise schools to focus on bringing up the less able and those from disadvantaged backgrounds," she says.

Also, schools need to be able to use their funding to employ high-quality teachers who are very important for improving student outcomes. "It is crucial that we recruit and retain high-quality teachers in order to improve the educational system," she says, pointing to the greater flexibility over pay given to the new Academy schools.

Head teachers should be given more freedom in terms of rewarding good performance rather than having to adhere to very rigid systems of remuneration. While competition between



schools can improve performance, head teachers need to be able to respond effectively. "I think resources, autonomy and the right incentive structure combined will deliver – and you probably want all those elements together," she says.

However, Professor McNally thinks that an appropriate regulatory structure is also very important. "The way in which school autonomy has been implemented should be more carefully scrutinised – particularly how schools are being monitored and how to deal with failing management." She says it is significant that in the US, poorly performing charter schools – a similar model to academies – can have their autonomy removed.

Increasing school expenditure has been shown to have a positive impact on learning, says Professor McNally, which bodes well for the 'pupil premium' policy. Recent CEP research found an additional £1,000 per pupil paid to schools in urban areas raised pupil test scores at key stage 2 'significantly'.

Another area where improved standards could help fuel long-term economic growth is in vocational education. CEP research has shown that apprenticeships in the UK have fundamental problems in terms of quality and quantity and are much weaker than European counterparts.

Professor McNally says the vocational system has too many qualifications with little labour market value and the vocational options on offer need to be overhauled and improved. "They need to create a system which is not perceived as being mainly for people who are not clever enough to go to university but something that is attractive to people of all levels of ability," she says.

"We need to raise standards within vocational education to a pretty high level and make sure that this includes some general education as well. Vocational education should not be too narrowly defined and it should leave open the possibility of entering higher education at a later stage. It is important that people's options are not limited too young."

While Professor McNally believes education is a key ingredient for economic growth it is more likely to be a case of a slow burn rather than instant re-ignition. "I think there are things that could improve standards in the short term but I don't know how dramatic the scale of improvement would be," she says.

"I think it is a long project but our work has suggested the investment in schools over a long period of time has done some good and has improved results."

THE KNOWLEDGE ECONOMY: A NEW WORLD OF WORK

Ask people what the knowledge economy means, and many will point to research and development and sectors such as pharmaceuticals, law and financial services. Equally, people working in the knowledge economy are expected to have university degrees. While the UK is strong in these areas, they alone are not sufficient to drive an economic recovery.

According to academics at the ESRC Learning and Life Chances in Knowledge Economies and Societies (LLAKES) centre, the knowledge economy must be seen as a central element across all areas of activity. "The idea there are jobs and even sectors where there is no knowledge is clearly nonsensical but also problematic if you are trying to regenerate the economy," says Professor Lorna Unwin, deputy director of LLAKES.

Pharmaceuticals is as much based on the marketing as the design of drugs, while sectors such as retailing and hotels would not function well without knowledge and skills. The challenge for employers and policymakers is to establish what forms of knowledge are needed in today's economy and how to develop those.

"In modern workplaces people need not just to draw on the knowledge they gained through education but to think about contextualised knowledge in terms of the work that they do," says Professor Unwin. "That will include using and developing knowledge that is a world away from the knowledge they acquired from their education. Many jobs now require us to develop our knowledge through work."

Employers must recognise that while some employees will have begun their career with a certain level of education and skill, this is not fixed. "What we know about human beings is that everyone carries on developing," she says. "But in some workplaces you come across people who are working at a level below their capabilities. "It is a reflection of a poor understanding on behalf of management of how to organise work so you bring out the best in people."

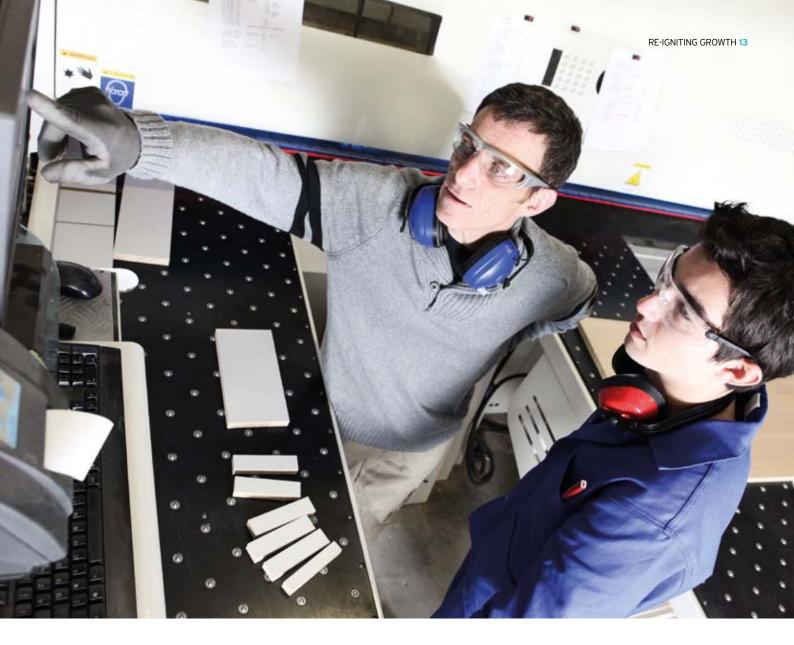
Professor Unwin's research into workplace learning has highlighted how any workplace can be organised to become a learning environment. "If you involve your workers in decision-making, in understanding what the goal is, in taking pride in the product or service, and if you organise work in a way that enables them to share ideas, you will create a platform for employees to increase their skill levels."

She highlights a software engineering firm where all workers had a responsibility to pass on and share their knowledge with that constant feedback linked to performance rewards and profit-sharing. "They did not treat training and skills development as a bolt-on but as central to the organisation and a great deal of that also involved clients," she says.

Professor Unwin's colleague Professor David Guile says that policymakers need to look beyond regions or industries as this knowledge transfer will take place globally and through clients as well as suppliers. "The knowledge element is how you work with your clients more broadly," he says, pointing to the UK's strength in consultancy where the skills needed go beyond the technical areas but into issues such as positioning the company, web development and opening new markets.

"It is a brilliant example of the knowledge economy and collaborative learning with clients that may make them more profitable and lead to more inward investment," he says. "That's a version of the knowledge economy that I don't think policymakers understand when they focus on a region," he says. "Instead the business often comes from the informal associations."

Many of the companies LLAKES works with highlight a shortage of soft skills: the personal qualities, habits, attitudes and social skills that do not derive from formal education. This emphasises the importance of ensuring people have a high-quality work experience that imparts those skills. "They become the glue that makes the growth occur and that is the missed bit in the picture," he says.





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Professor Unwin says it is important that policy prescriptions are not dictated from Whitehall and that funding is not linked to hitting specific targets. They should recognise that partnerships emerge 'organically' between employers, local authorities and local education providers when there is a real need for them to work together. "Policymakers need to work with the grain of that organic development and be a supportive structure," she says.

Professor Unwin says Whitehall should look to build a framework from seeing which examples of collaboration worked best in different circumstances. "This can't happen by magic. The state does have to exert some pressure."

One avenue could be a better use of further and higher education given that all towns have an FE college and cities have universities. "We have institutions that could be working much more closely together to act both as a resource for training but also as a centre where you bring these actors together.

"You are only going to get growth by understanding the way in which companies on the ground work and by trying to align your post-compulsory education and training system with that."

SOLVING THE UK'S PRODUCTIVITY PUZZLE

Productivity may not be everything but as the Nobel laureate economist Paul Krugman famously said, in the long run it is almost everything.

Certainly, boosting the amount of output produced by each worker is essential to generating the economic wealth and boosting standards of living.

"If you make the pie bigger, you can use it to fund public services, to give people higher wages or to cut taxes," says John Van Reenen, economics professor at the London School of Economics.

The problem for the UK is that the economy has suffered a big 'productivity gap' with other nations like the US for many years, and a shockingly bad performance since the financial crisis hit five years ago.

According to official figures, GDP per worker in the UK has fallen since 2008 and is about 13 per cent below where its pre-crisis trend would have taken it.

Given that employment has risen despite the fall in economic output, this implies a sharp fall in the amount of work each employee is doing.

This trend has baffled economists and is bad news, not just because it reduces the size of the economic pie, but also because it means there is less room for fiscal stimulus without fuelling inflation.

Not only that but on an international basis UK labour productivity, measured as output per hour, was 12 per cent less than in the US and below the levels of France and Germany in 2009.

Professor Van Reenen, who has studied productivity in his role as director of the ESRC-funded Centre for Economic Performance (CEP), says there are a number of reasons for the deficit.

One reason is that the UK's record on innovation is poor. The proportion of our national income spent on research and development was falling since the early 1980s whereas it was rising in other countries. The number of patents per head is also lower than our major competitors.

"The puzzle is that elite science in the UK is very good if you look at well-cited academic papers and Nobel prizes, but the classic problem is that we don't seem very good at turning those into commercialisable products," he says.

Professor Van Reenen suggests this was caused by low levels of skills in the economy and a history of poor links between universities and businesses.

Another reason is likely to be financial constraints faced by businesses. "The way that the banking system has worked in the UK has encouraged a short-term perspective," Professor Van Reenen says.

"So things like innovation that require very patient capital investment have not been given as much support as they have in other countries."

Another contributor may be the UK's failure to exploit the benefits of technological innovation at the same pace as the US in particular, for example because of weaker management.

Policy needs to addresses these problems. On the financial side, he believes that the banking sector needs to be made more competitive.

He says the Government needed to go further than the recommendations for ring-fencing retail banks put forward by the Independent Commission on Banking. "We need to have more structural separation between the investment and retail banking arms," he says.

An alternative response is to create a British investment bank, a state-owned institution designed to lend, and facilitate the lending from other banks, to small business and infrastructure projects.

R&D is an area where the Government can intervene directly with grants and tax credits, Professor Van Reenen says.



ELITE SCIENCE IN THE UK IS VERY GOOD IF YOU LOOK AT WELL-CITED ACADEMIC PAPERS AND NOBEL PRIZES, BUT THE PROBLEM IS THAT WE DON'T SEEM VERY GOOD AT TURNING THOSE INTO COMMERCIALISABLE PRODUCTS

PROFESSOR JOHN VAN REENEN



Often under-investment is a result of a market failure where firms are reluctant to invest because of the risk that the product will not be a commercial success.

Ensuring that private companies invest enough in R&D is a challenge because its public benefits are likely to be higher than the profits that go to the innovators.

One piece of CEP research found that the public benefits of R&D were roughly double the private benefits. Another that looked at R&D tax credits in nine advanced economies between 1979 and 1997, found that a ten per cent fall in R&D costs produced a long-run ten per cent increase in R&D spending.

Professor Van Reenen says while these supply-side measures may take time they are important for long-term UK growth. "It doesn't change overnight as these things take a long time to feed through the system," he says. On this view, the introduction of tax credits in the 2000s played a part in helping to arrest the decline of R&D.

On the other hand it is a battle that looks winnable, according to the statistics over the period before the financial crisis hit and the UK fell into recession.

In the decade up to 2007 the UK managed to narrow the productivity gap with France and turn the deficit with Germany into a surplus in terms of output per worker.

CEP research found that the growth of GDP per capita -1.42% a year between 1997 and 2010 - was better than in any of the other 'G6' countries: Germany (1.26%), the US (1.22%), France (1.04%), Japan (0.52%) and Italy (0.22%). And this was a combination of a better labour market performance than the US and a better productivity growth performance than Europe.

"Going into the recession UK productivity growth was actually not far off what American productivity growth was," Professor Van Reenen says. "That helped us catch up although the level is still worse."

REAPING THE REWARDS OF INNOVATION

One of the clearest lessons from the financial crisis is that an economic model based around financial services and consumer debt is not sustainable.

But as the UK moves slowly towards recovery, what mix of sectors should policymakers seek to encourage to lay the foundations for sustainable long-term growth?

One keenly argued debate is over whether the UK needs an economic policy aimed at boosting manufacturing and shrinking finance.

According to Mariana Mazzucato, Professor of Economics and RM Phillips Chair in Science and Technology Policy at the University of Sussex, this is too simplistic. A much more radical approach is needed.

"The reason why industrial policy is back on the agenda is that finance is viewed as having become too large and so policymakers want to rebalance the economy towards 'real' areas like manufacturing," she says.

"But we must also make sure we transform the indicators of economic performance in *all* sectors as they have become too financialised."

At the heart of her critique is the idea that the current system rewards 'profit extractors' at the expense of 'value creators'.

"We need to fine tune how we better reward those companies in all sectors that are investing for the long run – in areas like human capital and R&D, rather than those that just suck out money through practices like share-buybacks which are prevalent in both high-tech and low-tech sectors."

Her thinking is based on research carried out while she was economics director of the ESRC Centre for Social and Economic Research on Innovation in Genomics (INNOGEN) and director of the EC-funded FP7 FINNOV research project.

Professor Mazzucato says there is a need for more sophisticated

measures of firms' ability to add value, rather than a single measure such as a credit score or stock price.

But perhaps an even more important element of her long-term growth vision is a more pro-active role for the government to become an 'entrepreneurial state'.

In her view economists and policymakers have been blinded by the notion that all government does is solve 'market failures'.

She says the state has not only fixed markets but also shaped and created them. She points to the origin of biotech, nanotech and to specific products like the Apple iPhone: all its key technologies such as GPS, touch-screen display, communication technologies, and the internet trace their funding to the state.

Indeed, venture capital often waits for the state to bear the highest risk in the funding of new technologies and early stage firm financing, before having the guts to enter itself, she says.

One worry for many policymakers is to be seen as trying to pick winners with the echo of the failed interventions of the 1970s.

Professor Mazzucato says investments in innovation are risky – for both the private and public sector – so of course there will be some losers for every winner.

She says the problem is more about how to reform the financial eco system so that the collective system of innovation fits with a more collective distribution of the rewards to those that have contributed to the process.

"More thinking is needed about how to make sure the profits generated from innovation-led growth do not get siphoned off by a small share of the actors who have contributed to the process," she says.

While some believe the state can earn back a return via tax, firms' use of tax avoidance and the low level of corporate taxes make that an inappropriate mechanism to ensure there are future funds for innovation.





THE KEY TECHNOLOGIES
OF THE APPLE IPHONE
- GPS, TOUCH-SCREEN
DISPLAY, COMMUNICATION
TECHNOLOGIES AND THE
INTERNET - TRACE THEIR
FUNDING TO THE STATE

PROFESSOR MARIANA MAZZUCATO

A more direct method might be an innovation fund that companies pay into when they benefit directly from state investments – such as Google's algorithm which was funded by the state.

She says: "If the US had earned back even just one per cent from the investments it made in the internet, there would be much more today to invest in green technology."

She points to income contingent loans, used for students, as another mechanism. Alternatively the state can retain some equity, as is common in countries like Finland where SITRA (a public funding agency) funded early stage Nokia and made profits from the retained equity which were then used to re-invest in other companies.

BNDES, the Brazilian state development bank, provides long-term 'patient' finance to industry and makes a 20 per cent return on equity which is reinvested in innovation, as well as redistributed via the treasury into the economy – helping 'smart' growth also be inclusive.

"Innovation is a big topic but what government has to do - at every point in the business cycle, not just the recession – is to do what the private sector isn't doing," she says.

"Because we have not given the state credit for what it does, we have not found a way for it to reap the rewards – more important than ever in the era of budget cuts."

Professor Mazzucato's current research projects on finance and innovation are funded by the Ford Foundation, and the Institute for New Economic Thinking.

WORKING TOGETHER TO EXPLOIT THE UK'S SCIENCE POTENTIAL

There is a common perception that the UK is very good at scientific research but poor when it comes to turning it into commercially successful innovations. According to Professor David Wield, Director of INNOGEN, the ESRC Centre for Social and Economic Research on Innovation in Genomics, this is less likely recently.

But he says that there are still many areas where scientists, companies and policymakers can take steps to ensure that the wealth of knowledge in UK universities can be translated into economic growth and wellbeing.

One area is investment as the UK scores poorly in international comparisons of spending on R&D and innovation by both public and private sectors. More investment would be beneficial but Professor Wield points out R&D spending is only one element in the 'innovation tangle'. "It requires lots of things to work together – and not just in the laboratory."

The old image of multinationals coming to universities in pursuit of new ideas is not borne out by INNOGEN research that showed that firms rarely found that type of interaction useful. Instead, collaboration and partnerships between commerce and academia must be at the heart of successful innovation, says Professor Joanna Chataway, a co-director of INNOGEN.

A good example of this new type of collaboration is the Structural Genomics Consortium of companies and universities that have agreed to share research. "It is an innovative way that companies are trying to interact with academics early on in the process so they can have a say in shaping the research and signal the areas they would like research carried out in," she says. "But there is relatively little attention paid to these new forms of private-public collaboration and not much understanding of what sorts of organisational and institutional collaborations work in different contexts and what do not. There is a clear need for more social science of science," she says.

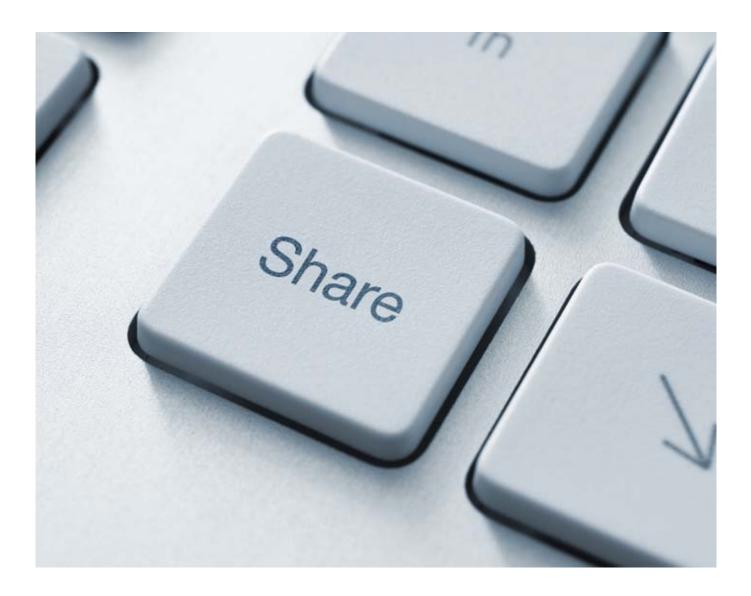
In fact the limited research that has been undertaken seems to indicate that private-public collaborations are often more effective, as measured by patents and published papers, than either on their own. Academic Health Science Centres (AHSCs), partnerships between a healthcare provider and a university, are a good innovation. "They have started to make much better links between researchers and the health service," says Professor Wield. He says the creation of the AHSCs has led to "creative tension" between the people who dealt with patients and the senior academics from the universities. "There is something good happening there."

Professor Chataway points to the Technology Strategy Board's Catapult centres aimed at boosting UK innovation in seven areas: high-value manufacturing, cell therapy, offshore renewable energy, satellite applications, connected digital economy, future cities and transport systems. "They are designed to bridge the gap between more basic research and product development," she says.

Professor Wield says that the focus of future effort should be on these types of collaboration rather than simply injecting money into new projects. "These do take a long time and as the years go by it is very hard to get a new innovation within the life of one parliament."

One way of resolving that paradox would be to take a more 'adaptive' approach to new initiatives that will allow innovators to draw early conclusions on what works. "Using novel real-time evaluation techniques, you can see what is working at an earlier stage and adapt policy and approaches on the basis of that early evidence," Chataway says.

The real policy challenge is to work with government to see regulation as having a dual role: continuing to ensure safety, but at the same time being smarter at enabling innovation to happen. INNOGEN has carried out work on envisioning how 'smarter' approaches to regulation in life sciences could be more supportive of innovation, particularly by small companies. Professor Joyce Tait, scientific adviser at INNOGEN, says it is important, for example, that the regulatory systems for medical devices, now being improved to ensure greater safety, do not drive smaller, more innovative companies out of business.







OUR ABILITY TO COMPETE IN THE 21ST CENTURY WILL DEPEND ON CHANNELLING OUR SCIENTIFIC RESEARCH AND KNOW-HOW INTO NEW PRODUCTS AND SERVICES

PROFESSOR JOANNA CHATAWAY & PROFESSOR DAVID WIELD

Likewise, if the regulatory system for cell therapies were to be modelled on that for surgical procedures or devices, rather than the pharmaceutical regulatory system with its large-scale double blind clinical trials, we would see faster development of a wider range of innovative treatments than is currently the case. One positive example that INNOGEN has highlighted is orphan drugs where a radical revision of regulatory systems freed up innovation and gave a kick-start to efforts to find treatments for rare diseases.

Professor Chataway, who is also a director of innovation and technology policy at RAND Europe, says the UK has looked to replicate overseas initiatives such as Fraunhofer Institutes in Germany to establish centres that would take technologies from university laboratories up to the stage where they can be taken to market by an investor.

"Innovation is absolutely key to the UK economy and to the European economy more generally," says Professor Chataway. "Our ability to compete in the 21st century will depend on channelling our scientific research and know-how into new products and services."

UNLOCKING SMALL FIRMS' POTENTIAL

Companies need access to bank finance to fund the investment in innovation and expansion that can contribute to faster growth and new job creation. This is particularly important for small- and medium-sized enterprises (SMEs) that do not have the access to capital markets available to larger businesses.

But research by the Centre for Business Research (CBR) at the University of Cambridge shows that the availability of bank finance for SMEs is still constrained and in some ways is tighter than it was in the wake of the collapse of Lehman Brothers in 2008.

"Overall it is quite a depressed state," says Dr Andy Cosh, acting director of the CBR, which is partially funded by the ESRC. While a lot of that is due to a lack of demand, he says there is a "real sense that they are still not getting what they want from the banks."

The CBR has surveyed a panel of 800 SMEs in 2004, 2008 and again last year and has been able to contrast this with a survey of firms in 1991, the last time the UK was in recession. The latest findings, which will be published shortly, found that the size of arrangement fees and the amount of collateral required had risen since 2008, offsetting the fall in interest rates.

There was a drop in the use of overdrafts or loans, and evidence that there was a rise in the number of people who wanted to access that type of funding but could not. Dr Cosh says that he thinks the lower take-up of bank finance was more the result of "discouragement" rather than direct refusal although he said there were many cases of "good companies" being turned down. "There is a high proportion saying there's a significant finance constraint, but a historically low proportion actually applying for finance," he says.

SMEs look likely to continue to find their access to finance restricted. While banks are under pressure from the Government to lend to SMEs, they are also being forced to act with greater prudence. "These twin requirements are to some extent incompatible," he says. "You can't have it both ways asking them

to avoid the risks of the past and insist they meet quantitative targets (Project Merlin) for lending."

Banks are unwilling to make what could be seen as risky loans during a double-dip recession and this has pushed up the risk premium on SME finance.

Dr Cosh says policymakers have two policy choices to bring down the risk premium. "You either have a government institution that can override risk requirements or you have to support the banks in their pricing of risk." The various government schemes tackling the latter (Enterprise Finance Guarantee schemes, National Loan Guarantee scheme, Funding for Lending) appear to have had only limited success so far.

He says he is potentially encouraged by the plans for a British investment bank announced by the Business Secretary at the 2012 Liberal Democrat party conference. "The focus on banks for SMEs very much chimes with our view that you need a special intent and purpose for your lending institution in this sector," he says.

Dr Cosh believes that a key ingredient to restoring access to finance is a return to more traditional banking where business owner and bank manager knew each other. "Banks retreated to a more model-based approach that is defective because it does not take into account the individual characteristics of the business, which is why companies that are profitable and growing are being turned down," he says. "In other words you either fix the risk-pricing model, or you go back to a more personally-based assessment.

"When it comes to the finance of innovation we have argued that the government's approach in the past has been too piecemeal and too short-term. In particular the funding streams for the highly innovative firms that might be the giants of the future tend to be too short-lived," he says. "Our argument is that the government has to consistently invest in innovative SMEs and do it over a long period of time."





A KEY INGREDIENT TO RESTORING ACCESS TO FINANCE IS A RETURN TO MORE TRADITIONAL BANKING WHERE BUSINESS OWNER AND BANK MANAGER KNEW EACH OTHER

DR ANDY COSH

While the Government has taken a number of steps (eg, the Enterprise Capital Funds) in that direction they are not joined up and rely too much on bringing in outside funds as well as public money, he argues. The benefits from external scrutiny that private money brings may be offset by the shorter time horizon it must inevitably have.

However Dr Cosh is keen to demolish the myth that all SMEs are potential job creators: "The vast bulk of SMEs are neither innovative nor fast-growing. But it is from among the SME population as a whole that we will get this innovation and growth. You could be more selective and choose the sectors where it is most likely you are going to get growth and innovation and future giants."

Dr Cosh says there is some positive news. Innovative firms are not especially disadvantaged as they were in 2008. SMEs also appear to be more resilient than in the last recession. "SMEs are better run than they were 20 years ago," he says.

SERVITISATION: UGLY TERM FOR A CLEVER MANUFACTURING PLAN

A strong manufacturing sector is an essential part of any strategy to put the UK back on the path to sustainable growth. But globalisation has seen traditional manufacturing decline as a share of the UK economy in the face of low-cost competition from the Far East.

According to Professor Andy Neely, Deputy Director of the ESRC-funded Advanced Institute for Management Research, future growth lies in a radical change in the way firms offer their products.

At the heart of this is a process known as 'servitisation'.

"Companies are recognising that firms don't necessarily want a product, they want the capability that the product brings," he says.

"They want the outcome – they don't want a quarter-inch drill but the quarter-inch hole it makes."

Rolls-Royce no longer simply sells aero engines. It now offers a total care package, where customers buy the capability the engines deliver – or 'power by the hour'. BAe Systems, with which Professor Neely works, offers similar types of solutions to the Ministry of Defence. Manufacturers are therefore now offering contracts that include care and support throughout the life of the product.

Research by Professor Neely, who is also Director of the Cambridge Service Alliance at the University of Cambridge, finds that almost four out of ten UK manufacturers follow this path. This is fewer than the 60 per cent of US firms but ahead of the 20 per cent of Chinese manufacturers. However it is significant that China has risen from just one per cent only six years ago.

"The idea that firms in the UK can do the high-value bit and emerging economies can do the low-cost manufacturing is a fallacy," he says. "The reality is that everyone is chasing the same part of the value chain because they recognise that the value lies in offering the services around the product as much as in the product itself."

Professor Neely says businesses and policymakers need to focus on ensuring that the UK stays ahead of the game to ensure that UK manufacturing continues to capture a good share of that high-value market. "What is crucial is investing in technological infrastructure that allows these services to be delivered," he says, pointing to devices such as sensor equipment that allows companies to track how their products are used and so identify repair requirements.

Firms are increasingly developing long-term relationships that are based on a closer alignment of the incentives of the producer and customer. "If you change the business model so that your customers pay for the outcome, both sides have a joint interest in making the product last for life," he says.

This does require companies helping customers to also change their mindset. A good example is the shift from car ownership to leasing a vehicle. "For manufacturing to servitise successfully, customers have to accept that it is not always necessary for them to take ownership of the physical product," he says.

The third element is a focus on the innovation needed to improve the quality of products. "What customers are interested in is the end-to-end process," he says. "Increasingly you see companies thinking about how they can innovate the way they are delivering their products and associated services to take a system-wide view and improve the overall experience."

Professor Neely says this is not a straightforward shift, and that firms with unique products or those that simply want to stay as pure manufacturers will choose not to make that leap. Those that do wish to change need to take a "cultural and organisational shift". For those that succeed, the rewards are clear, as long they do not underestimate the challenge that is involved.

"For those firms that have made it, services can be very profitable part of the business," he says. "The cost of an aeroplane might be X but the cost of the though-life support of that plane is three





INCREASINGLY COMPANIES ARE THINKING ABOUT HOW THEY CAN INNOVATE THE WAY THEY ARE DELIVERING THEIR PRODUCTS AND ASSOCIATED SERVICES TO TAKE A SYSTEM-WIDE VIEW AND IMPROVE THE OVERALL EXPERIENCE

PROFESSOR ANDY NEELY

times the original purchase value. "So if you are locked in the mindset of 'we sell aeroplanes' rather than the mindset of 'we sell the capability that the product offers', you are only capturing 25 per cent of the value."

Professor Neely's research has not found that any particular sector does better at reaping the financial rewards than others. The fact the some firms do well and others badly suggests that good execution – building the right organisational capabilities and culture – is essential to successful delivery of a servitisation strategy.

He says that pharmaceuticals is a good example of a sector where firms realise they should no longer only be making medicines but should offer ways of achieving a better lifestyle. "If you redesign your business as a health solutions provider it opens up new opportunities for the pharma businesses because consumers don't want to consume tablets – they don't want to be ill in the first place."

ENDING THE UK'S REPUTATION FOR POOR MANAGEMENT

From Basil Fawlty in the 1970s to David Brent this century, the UK has developed a popular reputation for poor levels of management. While this may be a successful source for humour, it is becoming increasingly clear that bad management practices hurt the economy and that delivering major improvements would be a key ingredient to restarting growth.

One of the major pieces of research into this area has grown out of an ESRC-funded project to look at how the UK compares with other major developed economies in terms of management. The Centre for Economic Performance (CEP) at the London School of Economics, together with McKinsey & Co, used an innovative new approach to survey management practices in more than 700 manufacturing firms in France, Germany, the UK and the US.

US firms are on average the best managed, with the Germans second, the French third and the UK worst. The differences in management practices between the UK and the US could explain 10-15 per cent of the productivity gap between the two countries.

The research, which is based on surveys of managers on a range of issues such as their policies on pay, recruitment and retention, and staff monitoring, has now been extended to over 10,000 organisations, including schools and hospitals in 20 countries. "These types of skills are closely related to company performance," says John Van Reenen, director of the CEP and economics professor at the LSE. "Where Britain stands is not a completely depressing story but we are in the middle of the pack."

This puts Britain behind not just the US but other rivals such as Japan, Germany and Sweden although ahead of the fast-growing BRIC nations and southern European nations. "We should not throw our hands up in despair but it shows that if we want to pull ourselves up from where we are now into the premier league, there is quite a way to go," he says. "It is now much more accepted within economics that management quality is very

important for national economic performance."

To see where policymakers can take action, it is important to understand the factors that are behind the poor performance and the areas where the UK does well. Professor Van Reenen highlights three areas where the UK lags behind its rivals. The first is that family-run firms are on average poorly managed and these make up a large proportion of the UK's 'low tail' of underperforming companies.

"It is not being owned by the family that is the problem but it is when the CEO is pulled from members of the family, especially when it is the eldest son who is put in charge of the firm," he says. This contrasted with Germany, which is well known for its large layer of family-owned SMEs known as the Mittelstand, but where firms often bring in professional managers.

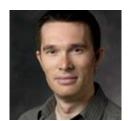
The second area of concern for the UK is the low level of skills. The education of managers and workers is strongly correlated with high management scores. "In the UK we are very good at educating the elite, but are much poorer in the bottom third of the distribution," says Professor Van Reenen.

The third issue is a relative failure to make effective use of information technology (IT). The CEP found that US multinationals operating in the UK had higher productivity than non-US multinationals in the UK.

The positive news is that the UK scores well on the other factors that underpin good management. The UK has high levels of competition and more competitive markets are associated with much better management practices. The UK is also relatively open to foreign multinationals, which tend to bring and share better management techniques.

If the UK is to close the gap with the US, Japan and Germany, Professor Van Reenen says policymakers need to focus on the three weaknesses that undermine management. He says the findings on family firms send a clear message to businesses to think about succession planning.





IN THE UK WE ARE VERY GOOD AT EDUCATING THE ELITE, BUT ARE MUCH POORER IN THE BOTTOM THIRD OF THE DISTRIBUTION

PROFESSOR JOHN VAN REENEN

The government should review the current estate tax exemption for inherited business assets. "I would rather have a non-distortive tax system," he says. But the main area for policy reform is in the area of skills, which are needed to both design better management practices and implement them on the shopfloor.

Professor Van Reenen says management improvement is an area that could benefit from policy 'nudges' – the economic concept originated by US economist Richard Thaler that has been taken up by the Cabinet Office.

"The Government has had a lot of policies around trying to spread best practice," he says. One area is benchmarking. "A good use of scarce resources is to push them towards helping small companies in particular benchmark themselves better." He says that it is vital that the Government took a more proactive role in evaluating which interventions to support businesses produced positive results. "It's all about figuring out what works — we seem very resistant to that."

TAPPING INTO THE EXPORT DIVIDEND

The collapse in consumer spending and the cuts in public sector expenditure have highlighted the role that exports must play as a driver of future growth. While the UK has a long history as an adventurous trading nation, the £49.3bn annual trade deficit notched up in 2010 highlights the scale of the challenge.

Currently the UK sells about half of its exports to the rest of the European Union but only four per cent are destined for the fast-growing BRIC nations — Brazil, Russia, India and China. Exploiting that immense opportunity will mean firms must understand better how to enter these markets, according to Dr Emanuel Ornelas, Director of the globalisation programme at the ESRC-funded Centre for Economic Performance (CEP).

His recent research sheds light on the behaviour of companies when they become exporters. "Firms experiment as exporters before really committing – or not – to exporting," he says. "The key reason is that firms generally are uncertain about how good they are as exporters." His research shows that while many domestic firms enter foreign markets every year, they often start selling small quantities to a single neighbouring country. Almost half of them stop exporting within a year.

Dr Omelas says firms face substantial costs to enter enough markets to give them the global scope that is required to become an exporting success story. This means that many test the water in one market to see if they have the potential to expand. Those that survive the first year will expand exports in their initial market and move to other markets, a trend that Dr Omelas calls "sequential exporting".

The key reason for this behaviour is that firms generally are uncertain about how good they are as exporters. "Information about export opportunities can be critical to induce firms to start exporting," says Dr Omelas. "Although they often start small, testing the ground, those that are successful grow fast, often expanding to other destinations."

A key issue is to identify the countries that can act as a bridge to further markets, as a firm's choice of its first foreign destination



THE REDUCTION OF TRADE
BARRIERS IN A DISTANT
COUNTRY, BY RAISING THE
VALUE OF PROFITABLY
EXPORTING THERE, ENHANCES
THE VALUE OF EXPORT
EXPERIMENTATION IN
NEARBY MARKETS

DR EMANUEL ORNELAS

plays a crucial role in explaining future patterns of foreign entry. Omelas says that there is greater potential where those new markets share some key characteristics with the 'bridge' nation. The most powerful of these are a similarity of income per capita and the existence of a border.

Interestingly, having a shared language is not so important when it comes to identifying potential 'bridge' countries. An implication of that may be that not having a shared language will not be a barrier. "Hypothetically, if a UK firm starts to export to Cameroon, this is unlikely to have much effect on the probability of future expansion to Quebec, despite both speaking French," Dr Omelas says. "On the other hand, selling to Germany, which has a similar income per capita, or to the US with a similar income per capita and a shared border will make an expansion to Canada more likely."



These findings have important implications for the government and export agencies that are trying to promote export growth. "Wannabe exporters face significant uncertainty about their profitability in foreign markets," Dr Ornelas says. "The provision of information about the specific costs of exporting and the characteristics of foreign demand seem to be central areas where government support could be effective in promoting exporting efforts by firms."

Another obstacle that UK exporters may face when trying to break into emerging economies is that they will encounter higher trade barriers and more complex bureaucracy than they are used to at home. When embarking on an export drive to countries where the rule of law is weak, firms will often start with small volumes and give up quickly, the CEP research found.

This adds weight to calls for trade ministers to finalise negotiations for a new global deal on trade barriers that began more than a decade ago in the Qatari capital, Doha. The UK has been a strong

supporter of a new deal. Dr Ornelas says his research shows that the imperative for a successful end to the Doha trade round deal is greater than previously thought.

When a country lowers its trade barriers, it not only encourages previous non-exporters to enter that country, but over time it encourages firms to try other markets. "The reduction of trade barriers in a distant country, by raising the value of profitably exporting there, also enhances the value of export experimentation in nearby markets," he says.

The idea that the lowering of trade barriers in one country will lead to greater exports to a nearby country that has kept its tariffs high shows that the gains from a global trade deal may be higher than previously thought. "Conclusions of trade agreements may boost international trade by much more than traditional estimates suggest, and therefore can be more positive for economic activity than is usually recognised," Dr Omelas says.

WHY REBUILDING ECONOMIC GROWTH BEGINS WITH HOMES

One of the biggest economic changes brought about by the financial crisis in 2007 has been in the housing market. Soaring house prices and heavy volumes of mortgage lending have been replaced by flat or falling prices and a sharp drop in new loans and sales. The volume of new homes being built has also fallen sharply but according to Professor Stephen Nickell, the supply of new housing was an issue before the crash and is an even more pressing concern now.

Professor Nickell, who is Professor of Economics at the University of Oxford, believes reviving housebuilding will boost growth and address social issues. He says around 100,000 homes are being built a year compared with the 200,000 before the crash.

A programme aimed at making up that lost 100,000 new homes spread over the next four years might add 0.3 percentage points to economic growth. Assuming that each new property is valued at £200,000, these extra 25,000 homes a year over the next four years will be worth an additional £5bn a year.

"We are not talking a lot, but right now every little helps," he says. At the same time enabling more people to buy their first home will tackle a pressing social need. "If we are to be properly housed, we need more housing – not just social housing but housing," he says. "Without this, housing shortages will get worse." He is confident that given the weak state of the construction industry and high unemployment this money would go back into UK economic growth rather than into imports or inflation.

The £5bn question is how to get the diggers moving and buyers moving in. Professor Nickell, who is a former member of the Bank of England's Monetary Policy Committee, says that — as with all economics — the issues are demand and supply.

On the demand side credit constraints mean that potential buyers cannot obtain finance on affordable terms to fund that first purchase. "People who are looking for mortgages are having to produce large deposits which was not the case before," he says. "There has to be more credit and we know that credit is very tight."

He says the Government's Funding for Lending scheme is a good step in that direction. The scheme is making £80bn available to banks and building societies on the condition they increase the number of loans to individuals and businesses. "Schemes like Funding for Lending are the only way that governments can intervene to make things better," he says.

Meanwhile Professor Nickell says that there must be radical reform of the way that the planning system works in order to make sure these new homes are built.

Professor Nickell says the local authorities that decide on planning consents have little incentive to grant permission. "They do not directly get much money out of it while their constituents do not want the development at all," he says. This is particularly true in the areas of the country where the need is greatest which tend to be southern England.

One option is to take greater advantage of the changes to the Community Infrastructure Levy. Since the Coalition came to power councils and communities have more control over how new infrastructure in towns and cities is funded. Councils must spend income from the levy on infrastructure to support the development of the area but they can decide what infrastructure to spend it on. "In certain areas the planning gain can be enormous."

He points to a more radical idea pioneered by Tim Leunig, formerly of the London School of Economics and now chief economist at the thinktank CentreForum, that would extract a much higher proportion of the planning gain than is currently the case.

Under this plan, landowners would state the price at which they would be happy to sell their land in a sealed bid.



THE UK CRASH WAS NOTHING TO DO WITH RECKLESS LENDING IN THE HOUSING MARKET

PROFESSOR STEPHEN NICKELL



The local authority would choose which land they would like to see developed, buy it at the offered price, grant planning permission and then auction this land to developers. "They would keep all or a high percentage of the money which they can use to fund projects to improve infrastructure more widely," he says.

Taken together, these measures aimed at improving housing finance and the supply of land would help resolve the constraints on new housing.

He dismisses as "baloney" claims that a reinvigorated housing market would lead to a repeat of the boom and bust in housing.

He says mortgage lending was prudent, as loan-to-value ratios were lower in the decade after 1998 than in the previous ten years. "The UK crash was nothing to do with reckless lending in the housing market."

Rather than fuel a consumer-led boom, a housebuilding programme would come at a time when consumption was weak. "Building more homes would have an impact on growth."

STRONGER CITIES, FASTER GROWTH

Efficient use of land on this small island is vital for long-term economic growth but competing interests between businesses, homeowners and environmentalists mean land use planning policy is fraught with difficulty. The Coalition Government has set out its local economic policy, abolishing the Regional Development Agencies and replacing them with 39 local enterprise partnerships (LEPs) focused on smaller areas.

Professor Henry Overman, director of the ESRC-funded Spatial Economics Research Centre (SERC), says the decision to axe the RDAs was correct: "The coalition got it broadly right when it said the regional structure was not the right way to think about it," he says. "We really need to be thinking about urban policy."

Cities and major towns are centres of economic activity because the geographic concentration of firms and households fuels collaboration in business activity and ideas, which boosts productivity and innovation. The question is how to foster that virtuous circle. "Getting good urban policies in place is the way to improve the performance of our cities," he says. "The first step is getting the nuts and bolts right rather than grandiose industrial policy."

Central government needs to set frameworks and incentives that will help cities drive future economic growth in the UK. Professor Overman points to the deals struck by Whitehall with England's eight largest cities: Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield. These cover a range of policy areas including finance and investment, skills and employment, transport and housing. "British government is very centralised and more localisation is, on balance, a good thing," he says.

The Government has indicated it wishes to go further and Professor Overman warns against the "mistake" of choosing the next biggest cities in terms of population size. "This would be a mistake if it excluded smaller cities that have, arguably, the biggest growth potential such as Cambridge and Milton Keynes," he says.

"In the current economic climate, striking deals with some of these cities must be a top priority."

Professor Overman says that while it is good to allow cities and other urban travel-to-work areas to deal with local issues such as housing and schools, there is still a need for regional co-ordination in cross-cutting areas such as transport. While he says the LEPs should be better funded, he criticises the Coalition for setting up the £1.4bn Regional Growth Fund (RGF) in April 2011 to spur growth in England's regions.

He believes that the answer lies in dissolving the RGF, which was heavily criticised in September by the Public Accounts Committee for only getting £60m to frontline projects in 18 months. Professor Overman says its resources should be split three ways between the LEPs, a limited number of major cities (eg, Bristol, Birmingham, Leeds, Manchester and Newcastle), and a fund for regional projects such as transport links overseen by central government.

He urges policymakers to abandon their focus on resolving disparities between rural areas and cities by seeking to attract businesses and jobs to those areas. He says rural policy should focus on effective provision of public goods and services in those areas while cities should be the target for job creation. "I am remarkably relaxed about the countryside as a place where we don't do much," he says.

But this focus on cities as the engine of regional growth means that rising populations will put pressure on land for new houses and better schools. "We need more realism about provision of housing and commercial premises. There needs to be more use of price signals to determine land use across all areas," he says.

This has clear implications for the Green Belt policy, as expansion of cities will put pressure on available land. Professor Overman says the policy is stifling the development of towns and villages into cities and this means that our current urban system cannot develop. "It makes the planning system about redevelopment





RURAL POLICY SHOULD FOCUS ON EFFECTIVE PROVISION OF PUBLIC GOODS AND SERVICES IN THOSE AREAS WHILE CITIES SHOULD BE THE TARGET FOR JOB CREATION

PROFESSOR HENRY OVERMAN

more than new development. These restrictions come at the cost of economic growth."

SERC has carried out a lot of research in this area, finding that Green Belts restrict housing supply and increase the level and volatility of house prices, and also lower retail productivity and the employment of small independent retailers. They also increase office rents with one piece of research documenting how planning restrictions in England impose a 'tax' on office developments that varies from around 250 per cent of development costs in Birmingham, to 400-800 per cent in London.

Professor Overman says defenders of the policy "overstate the social benefits of the countryside and ignore the large social costs that come from restricting development". Strong greenbelts do not deliver the kind of development people want in the places where they want to live, he says.

"These costs need to be offset against the benefits of preserving undeveloped land. Undeveloped land does deliver benefits, but research suggests that – particularly for high intensity agricultural land at the edges of our towns and cities – these benefits are often not as large as claimed."

PUBLIC INVESTMENT IN THE RIGHT AREAS WILL FUEL GROWTH

Adequate infrastructure is critical to the performance of any economy. Investing in the right projects will have the short-term impact of giving work to domestic private companies who will create jobs. It will also have the long-term benefit of relieving bottlenecks that may impede private sector activity that will in turn underpin long-term economic growth.

Professor David Newbery of the University of Cambridge says the issue is how to identify the projects and how to finance them given the current constraints of fiscal austerity. "The projects which seem most likely to stimulate private sector activity are those that have a high labour content, and are domestic resource-intensive," he says.

In the current recessionary environment the public sector should ensure it maintains or increases investment in projects that have a high benefit-cost ratio (BCR), he says. "That means there is more need to commit to investments even if they have a delay before expenditure can be fully committed, while still concentrating on more 'shovel-ready' projects that have already been appraised and passed the BCR test."

On that basis projects that are capital-intensive and dependent on imports, such as offshore wind farms, will do little to stimulate the economy while road improvements that reduce congestion score highly on all counts. "In general, transport projects generate additional spill-over benefits to private productivity, and have remarkably high benefit-cost ratios," he says. "Infrastructure projects such as transport links require positive public action, if only to release the funds to commission the private sector to undertake them."

Professor Newbery points out that only the public sector can commission such projects, so a failure to undertake them is "doubly damaging" and it gives the UK's economic rivals an opportunity to lure business away. He warns politicians not to embrace what he calls "vanity projects" such as the 'Boris Island' third London airport or the High Speed 2 (HS2) train line. "The main thing is to switch the money away from politicians'

favourite schemes such as railways that can carry them back to their constituencies at high speed."

Both HS2 and the third airport are unlikely to deliver economic benefits until 2030, which will do little to aid recovery from the current downtum. "A third runway at Heathrow – clearly one of the better placed London airports for accessing the heartland of productive activity in the M4 corridor – should be a high priority."

He says the Government must move beyond a one-year fiscal planning horizon and instead make long-term commitments to companies that would allow them to invest in skills and build up the scale needed to operate efficiently. "We need to start investing but we also need to say that we will do it better in future by having longer time horizons over which we will plan publicly financed infrastructure," he says. "That would be nice to achieve in the long run but the beginning of a long journey is the first step."

Professor Newbery says the debate over austerity is important because it gives an opportunity to establish a new framework to distinguish between economic stimuli that increase consumption and debt liabilities, and those that increase productive investment that adds assets to balance the liabilities issued.

"We have an unbalanced fiscal structure in the sense that we are spending too much on consumption relative to taxes," he says. "The austerity has to fall on consumption but the whole budget ought to be reallocated towards investment and that aspect seems to be missing from the political debate and the public attention."

He argues that changes to the way that projects are accounted for could help identify areas of under-investment. For instance, the road network remains an under-funded, under-supplied public monopoly even though transport taxes collect about nine times annual road expenditure — of which hardly any is used in expanding the network.





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Professor Newbery regrets that insufficient investment is going into some more intangible investments. "What do we have a comparative advantage in? Higher education? What are we cutting like crazy? Higher education," he says. "What should we be doing? Research and development, because the UK scores low by OECD standards. What are we cutting? Research."

On the other hand infrastructure such as broadband internet is something that can be best provided by the private sector other than in specific areas such as provision of access for schools. Similarly intrinsically profitable networks such as gas, electricity and water can deliver efficient investment under private ownership with well-designed incentive regulation.

"If we are asking what the Government should do, the answer is the things that only the Government can do and can finance," he says. "That means R&D and higher education in considerable parts, and the road infrastructure which is not provided by the private sector except at complicated expense."

COMPETITION IS THE BEST REMEDY FOR PUBLIC SERVICES

Fiscal austerity means that public services must do more with less to cope with cuts in public spending while still meeting the standards that users and taxpayers expect. The issue facing providers of key services such as health and education is identifying the best way in which to organise and deliver them.

While this might not initially seem to be a contributor to longterm growth, clearly using less public money while delivering better outcomes will leave resources free for other goals.

Professor Carol Propper, of the ESRC-funded Centre for Market and Public Organisation (CMPO) at the University of Bristol, says that pouring large amounts of public money into state services is no longer an option and leads to lower levels of productivity.

"Given that public services are a large part of the economy then you do have to think about ways of trying to increase productivity in public services particularly when you have hard financial times and when you don't have the luxury of easy money to spend on them. So you have to think hard about designing incentives and trying to motivate people to be more productive by introducing competition."

While competition in the provision of leisure services, rubbish collection and even social housing has become the norm, it is much less a feature of health and education. Professor Propper says that years of research by academics at CMPO have shown that opening up services to competition between providers and choice for users can improve the outcomes.

There are two main tools for achieving what she calls "pseudo-competition" within public services. One is setting goals for providers, backed by a naming and shaming regime, which Professor Propper calls "targets and terror". The alternative is introducing competition.

A lot of her work has been in the National Health Service. The best example of the value of targets was where the NHS in England set targets for hospital waiting times while Scotland did not. Waiting times fell in England but rose in Scotland. A similar

study of the impact of the decision by the Welsh administration to abolish school league tables found performance fell compared with English schools.

"League tables and targets can work, particularly when the issue is seen as important by providers, taxpayers and the government, such as waiting lists for over a year for hip replacements," she says. "Where you have targets and terror, and penalise people who do badly, those who do badly do improve."

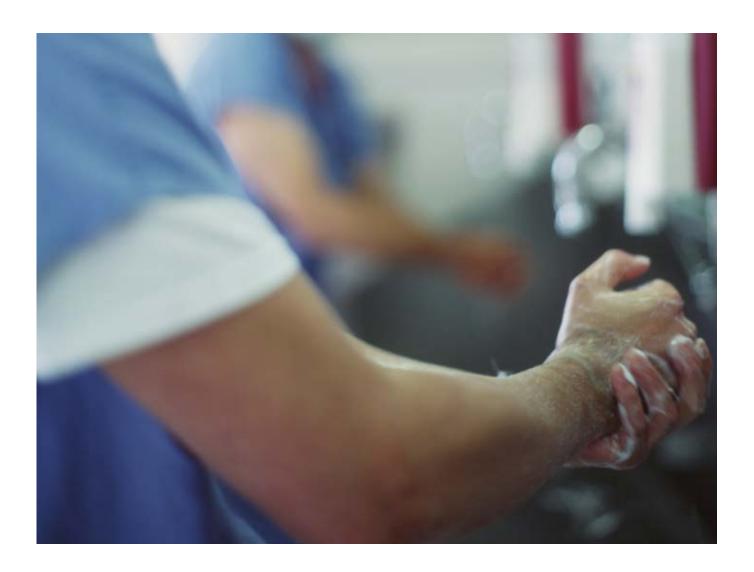
Professor Propper, who was recently awarded an ESRC Professorial Fellowship, says the problem with performance management is that it cannot be applied effectively to all aspects of a service simultaneously without the overall impact being diluted.

In terms of competition, since patient choice over hospitals was introduced in 2006 the evidence is that those rated as good attracted more patients and more patients from further away. Interestingly sicker patients went to hospitals rated for higher quality, while poorer patients were more responsive to waiting times.

The real issue in terms of economic debate is whether those improvements lead to the quality and cost of care. "What emerges is that post-choice, quality rose at hospitals where there was choice," she says. "Hospitals were being more efficient." The length of in-patient stays fell and some quality indicators rose without any higher costs.

Separate CMPO research found that mergers between hospitals led to a ten per cent drop in activity after four years, no rise in measures of clinical quality, an increase in waiting times and an average rise in deficits. "That does not seem to be to be a good way of taking capacity out of the sector," she says. "It's better to have competition than mergers."

Meanwhile, a joint study with the ESRC Centre for Economic Policy and Stanford University in the US found that higher levels





WE THINK THAT ONE OF THE REASONS THAT COMPETITION DOES LEAD TO GOOD OUTCOMES IS THAT COMPETITION LEADS TO IMPROVEMENTS IN MANAGEMENT

PROFESSOR CAROL PROPPER

of management were linked with better hospital performance. Hospitals that were better managed had shorter waiting lists, less deficits, lower death rates following common procedures, happier staff and higher quality ratings. "We think that one of the reasons that competition does lead to good outcomes is that competition leads to improvements in management," she says.

Looking forward, Professor Propper says that the building blocks are in place for increasing competition. The key prerequisites are good available information on quality and an active procompetition policy to prevent mergers. "I think those lessons have been learned in health," she says.

Choice in education has so far led to places in better schools going to richer parents who are able to move homes to secure places, mainly thanks to the catchment area system. Professor Propper says competition could work in education but only if schools were able to compete for applications from parents using a voucher system and if better schools were able to expand.

"Incentives that mimic market incentives and actual competition do appear to have a place, at least in health care policy in Britain," she says. "They are an important component when you don't have masses of money to throw at things."

A TAX REFORM THAT CAN STIMULATE GROWTH

Nearly 40 pence in every pound of income generated by the UK economy is taken in tax. Given the amount of money involved, ensuring the system is well designed is vital for both for social welfare and economic growth.

The Institute for Fiscal Studies (IFS) set up the Mirrlees Review, chaired by Nobel laureate economist Sir James Mirrlees and partfunded by the ESRC, to examine all aspects of the tax system.

It has made wide-ranging recommendations that would take several years to implement but would have far-reaching implications. "The tax system is some distance from where it should be," says Stuart Adam, a senior research economist at the IFS and the ESRC Centre for the Microeconomic Analysis of Public Policy, and co-author of the report.

He says it is important to understand that reform of the tax system will primarily increase people's welfare and wellbeing. "There are lots of things you could do that would be good for growth but bad for welfare and that applies to tax as much as anything else," he says.

The review has three guiding principles. Tax should be seen as a system, with the most suitable instrument used to pursue each objective and the different parts fitting together. It should also be neutral so that similar activities are treated in a similar way. Lastly the progressive nature of the tax system – redistributing from rich to poor – should be achieved as efficiently as possible.

On a general level, building a more efficient and neutral tax system will lead to growth by doing less to distort economic activity and involve lower administration costs.

But there are also specific areas where the Mirrlees Review has proposed reforms in line with those principles that may lead to higher growth in the long term. One of these is the recommendation to strengthen work incentives for those whose youngest child is of school age, and for 55- to 70-year olds, relative to others.

Stuart Adam says it makes sense to strengthen the incentives

to work for people around retirement age and mothers with children in school as they respond more than other groups. "You can achieve the same amount of redistribution overall but ensure that incentives are strongest where they matter most," he says.

"Because those groups are at a particular stage in life, you can design the system so that the redistribution is mostly across someone's life cycle rather than between people."

Although it is hard to put monetary estimates on the gains, the IFS estimates the changes for mothers could bring 52,000 more people into the workforce, leading to an increase in aggregate annual earnings of around £800m. For the older group the figures are 157,000 workers and a gain of almost £2bn.

In the area of business taxation the review takes a similar approach, targeting investments that are most responsive to incentives. In this case an 'allowance for corporate equity' would mean that ventures that earned a normal rate of return would go untaxed. Only profits in excess of the normal rate would be taxed.

"Investments that are highly profitable you can tax reasonably heavily as they will be still worthwhile," says Stuart Adam. "This measure provides the strongest incentives for the investments that are most responsive." This would encourage investment in borderline profitable ventures, which in turn should lead to more jobs and economic activity.

He points out that in an internationally open economy such as the UK, it may not be possible to 'recoup' the lost revenue by raising headline corporation tax rates, as that would simply encourage companies to shift profitable investments overseas. "If you think of the system as a whole it does not have to be a choice between an allowance and a lower headline rate," he says.

One estimate puts the long-term gains from a revenue-neutral reform package at 6.1% in investment, 1.7% in wages, 0.2% in employment and 1.4% in GDP.

Another growth-inducing measure would be to replace business





REPLACING MOST OF FUEL DUTY AND VEHICLE EXCISE DUTY WITH A NATIONAL ROAD PRICING SCHEME WOULD BE MORE EFFECTIVE IN CUTTING CONGESTION, WHICH IMPOSES HUGE COSTS ON THE ECONOMY

STUART ADAM

rates with a land value tax that would not penalise businesses for investing in premises and so would encourage more investment. "Buildings used for business are an input to production and one of the basic tenets of the economics of taxation is that you don't tax inputs."

One of the most interesting proposals is for reform of environmental taxes, which Adam says may seem an odd place to look for pro-growth measures. At its heart is replacing most of fuel duty and vehicle excise duty with a national road pricing scheme, as that would be more effective in cutting congestion, which imposes huge costs on the economy.

One study suggests a national road pricing scheme with charges varying by time and place could boost welfare by around one

per cent of national income by 2025, around half of which would show up in the form of higher GDP – the other half being mainly the value of the extra leisure time enjoyed by passengers if journeys are quicker, which adds to welfare if not to economic growth.

"You can think of congestion in terms of lost output and also in terms of stress and misery for people sitting in traffic jams," he says. "Growth is not the whole story but there is clearly a growth angle to that."

While none of these measures will deliver an immediate stimulus – the issue at the heart of the current political debate – the package of measures would put the UK economy on a higher long-term level.

REDISCOVERING PROSPERITY-THE SUSTAINABLE WAY

One of the silver linings around the dark clouds of the financial crisis is the opportunity it gives to put the economy on a more environmentally sustainable basis. With scientific evidence pointing to the economic and social threats from climate change, any strategy for future prosperity must be based on less environmental damage.

The ESRC Centre for Business Relationships, Accountability, Sustainability and Society (BRASS) has spent the last decade researching a range of issues that offer an opportunity to reconfigure the economy. Its Director, Professor Ken Peattie, says the first step is greater economic efficiency – producing the same output with fewer resources. "Doing things better and more efficiently has been a major strand of BRASS's work," he says.

Creating more localised food consumption and production systems, building homes that are designed and run for energy efficiency, and treating 'waste' as a valuable resource rather than burying it in the ground are all business opportunities with a sustainability focus.

Another key area is the car industry. "It is interesting because it includes both alternative vehicle technologies and alternative mobility systems to get away from a car-dependent culture," he says. "If you want to create a more sustainable Britain, you want people travelling less by private car to and from where they work, where they shop and where their children go to school."

But one of the most groundbreaking pieces of research looked at how the car industry could be reconfigured to move away from mass-production of steel-bodied, petrol/diesel-fuelled cars that are shipped worldwide. Instead BRASS's Micro-Factory Retailing concept showed it would be possible, and economically competitive, to build smaller plastic-bodied, alternatively fuelled cars sold into a more localised market.

"Eleven years ago it was treated as a curiosity by the industry but now we are seeing car factories setting up using that very model," he says. Moving to this next stage of economic development will involve contributions from all the main actors – government, companies, investors and consumers.

Government can play a role in nurturing new technologies that can become the basis for the competitive businesses of the future, Professor Peattie says, pointing to the challenges currently facing renewable energy. "Solar and wind power are often expected to compete against long-established competition that received some degree of subsidy and protection during their development, and are not obliged to cover the full costs of their environmental impacts now."

For companies, Professor Peattie says that at the most basic level it is in their interests to embrace the green agenda. "Any company that manages to cut their energy bill is making a very direct improvement to the bottom line," he says. "There is no conflict of interest between environmental improvement and the profit agenda. The challenges come once you are past the easy win-win situations and you have to start making tougher and more ambitious decisions."

He says companies such as Marks and Spencer, with its Plan A, and Unilever's Sustainable Living Plan, are "deceptively radical". "It's thinking about the business in a much more holistic way," he says. "It's not just a corporate strategy. It is also about changing the way people are treated all the way down their supply chain and influencing their customers to lead healthier and more sustainable lives."

BRASS surveys show consumers do not react in a purely self-interested way but wish to be part of a move towards a more sustainable economy – as long as businesses and the government does too. "It is not just the hardware of the economy that will need to change, but the software of the economy in terms of everything from investor expectations down to consumer notions of their rights and responsibilities, through to how managers think about what they are in business for."

He seeks to counter the argument that positive steps towards the use of fewer resources will hinder economic growth and leave people with lower standards of living. "It depends how you measure it. If you just focus on economic growth and earnings



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PROFESSOR KEN PEATTIE



per capita then in purely quantitative terms you might get 'poorer', yet still find ways to live better," he says.

"A society with fewer commuting journeys, less lighting of empty buildings and less over-consumption of food might be economically poorer but more broadly better off. We are driven by this idea that GDP represents what society is pursuing yet it is a completely blunt instrument that measures everything good and bad equally."

These ideas are gaining currency, as evidenced by the Government's moves to measure wellbeing. "With a move

to a greener economy, there will be some losers inevitably but if we let things run the course they are on, you will simply have an energy crunch, an environmental resources crunch, and a climate crunch to follow the credit crunch we have already had," Professor Peattie says. "We need an economy able to make steady and sustainable progress, not one that keeps crashing against its limits.

"It was J.K. Galbraith who said that politics is the art of choosing between the unpalatable and the disastrous, and if what seem like unpalatable policies are not taken up you will end with a disaster."



Advanced Institute of Management (AIM) Research www.aimresearch.org

Centre for the Analysis of Social Policy

www.bath.ac.uk/casp

Centre for Business Relationships, Accountability, Sustainability and Society (BRASS)

www.brass.cf.ac.uk

Centre for Business Research at the University of Cambridge www.cbr.cam.ac.uk

Centre for Competitive Advantage in the Global Economy (CAGE)

www2.warwick.ac.uk/fac/soc/economics/research/centres/cage/

Centre for Economic Performance (CEP)

cep.lse.ac.uk

Centre for Learning and Life Chances in Knowledge Economies and Societies (LLAKES)

www.llakes.org

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