ESRC Grant reference number*: ES/H02123X/1
Name of Centre or Group: Centre for Economic Performance
Centre or Group Director (PI): Prof John Van Reenen
Host research organisation: Centre for Economic Performance
Grant start and end dates: October 1st 2010 – September 30th 2015
Grant cash limit(s)*: £6,342,291

* Include all core ESRC grants received during the centre or group’s funding

This is the ESRC Centre/Group Final Report Form, please enter the full grant details as requested above. The form should be completed and sent electronically to the ESRC Reports Officer at reportsofficer@esrc.ac.uk. Please note that the report can only be accepted if all sections have been completed in full.
Declaration

To be completed by Grant Holder

Please read the following statements, under statement 3 please delete the two statements which are not relevant leaving the one remaining. The submission of your report confirms your acceptance of these statements.

1: The Project

This report is an accurate overview of the project, its findings and impacts. All co-investigators named in the proposal to ESRC or appointed subsequently have seen and approved the report.

2: Submissions to Researchfish

Outcomes information has been submitted to Researchfish. Details of any future outputs and impacts will be submitted as soon as they become available.

3: Submission of Datasets (delete two statements as appropriate)

Datasets arising from this grant have been offered for deposit with the UK Data Service.
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PART ONE: EXECUTIVE SUMMARY

The Centre for Economic Performance (CEP) was established in 1990 and this report covers the 5-year grant period October 2010 to September 2015. The Centre studies the determinants of economic performance at the level of the company, the nation and the global economy. To do this it focuses on the links between globalisation, technology and institutions (in particular those in the education and the labour market) and their impact on productivity, inequality and wellbeing. Our report covers how we have achieved the objectives we set for ourselves in completing over 45 projects in 6 programmes of work to answer the larger scale questions we set ourselves. It goes on to show how this work has been successfully pushed out to a wide variety of audiences to achieve both scientific and policy impact.

Work in the Globalisation programme investigated the vast heterogeneity in economic performance that the analysis of detailed microeconomic datasets reveals across people and firms even within the very same country and sector. While workers vastly differ in skills, firms vastly differ in their ability to exploit those skills. Due to fixed export costs, only firms that are productive enough, and thus profitable, are able to engage with international customers and suppliers and to reap the gains from globalisation and spread those gains among their stakeholders. The asymmetry between winners and losers does not follow the line of sectors or countries closely: winners and losers coexist also within the same sector in the same country, sometimes even within the very same firm. This explains the widespread backlash against globalisation, and casts a shadow on the social and political sustainability of further international economic integration in the absence of enhanced mechanisms of redistribution of the corresponding gains.

We have shown that OECD labour markets have become increasingly “polarised”, with employment in the middle of the skill distribution falling relative to the top and also the bottom of the skill distribution. This is primarily due to new technologies factors - we have found that information and communication technologies (ICT) are key drivers of this polarisation. It is also due to the international fragmentation of production and the associated flight of jobs to developing economies, especially but not exclusively in manufacturing. This is because “offshored” jobs tend to be those of workers in the middle of the skill distribution.

Our Productivity Programme has addressed how management and new technologies account for huge productivity differences both within sectors and between countries using evidence from its World Management Survey (WMS) of over 20,000 organisations in 34 countries. We found that about half of the efficiency (total factor productivity) gap between the US and UK is due to weaker management practices in the UK (on average across the world about 30% is explained by management). We showed that the arrow of causality runs from management to productivity through running a series of randomised control trials (field experiments), where we injected improved management practices into randomised treatment groups of firms and compared them with randomised control firms. Our work has expanded into examining productivity and management in hospitals, retail stores and schools. In all these sectors we demonstrate that the key factors causing poor management are: (i) low levels of competition; (ii) poor general skills; and (iii) weak governance (e.g. a preponderance of family-run firms).

The major contributor to productivity growth is technological innovation. We have developed and tested of models looking at how to influence the level and direction of technical change (e.g. green R&D). We demonstrated that the social return to R&D investments are two to three times higher than the private returns, which is why the private sector left to itself will invest too little in innovation. This is important because levels of UK business R&D spending began falling in the early 1980s whereas they have been rising in most other OECD countries. The development of a more supportive tax regime for R&D from the early 2000s onwards helped arrest this decline. We showed
how higher carbon taxes not only help mitigate climate change by reducing consumption of, but also stimulate investment in, green technologies such as electric vehicles which help shift the economy away from greenhouse gas emitting vehicles.

Our Labour programme has studied stubbornly persistent gender gaps in wages and employment; union decline; and the hollowing out of jobs from the middle part of the skill distribution, driven by computerisation and automation replacing jobs previously carried out by workers engaged in routine tasks. Its work on the startling fall in real wages since 2008 even after unemployment came down since 2012, and the widest levels of wage inequality since the 1970s, have become important features of the public debate. The programme has shown how depressed wages help explain the resilience of the UK jobs market over the last seven years and the decline in labour productivity.

Our Education programme has studied the ‘long tail of underachievement’ which hinders growth and social mobility. We have tackled questions concerning how educational quality can be improved in schools; the extent to which school quality is valued by parents (by looking at their housing choices); and how much the ability to access higher education influences labour market outcomes and social mobility. Our work has found that increased school autonomy, specifically the conversion of community schools to autonomous state funded schools run outside the control of local authorities, is important for pupil performance in disadvantaged areas as are changes in leadership and management structure and performance.

Our Community Programme has investigated how communities’ cohesion and wellbeing are impacted by the force of globalisation in the face of changing attitudes, faster migration, weak community ties and crime. We have found that attitudes are remarkable resilient over time - people admire quite similar people now as they did 60 years ago. A focus has been on the dynamics of immigration where we have empirically refuted the commonly held misconception that mass immigration has led to worse jobs and wages for the British born, community dissolution, stress on public services and crime.

To pursue the above questions in sufficient depth and to run an additional programme in Wellbeing, the Centre raised £7.04 million in funding outside its core ESRC grant of £6.45 million. The Wellbeing Programme kick-started the systematic study of happiness in the UK, promoted the inclusion of wellbeing indicators in national statistics by the ONS and the OECD. It established an annual World Happiness Report reviewing the scientific understanding of the subjective well-being and was read by 1.5 million people in 2013 alone.

The Centre brought its work together in producing major books, special journal issues, “Big Ideas” articles in Centrepiece (our Economist-style magazine), and policy and election briefings summarising evidence and evaluating actual and proposed policies. One example of this was the establishment of the LSE Growth Commission and the ensuing Report and Book produced. This involved a huge dissemination effort with press conferences and public hearing which contributed to the take up of many of the Commission’s recommendations such as the government’s Infrastructure Commission set up under Lord Adonis in 2015. A large swathe of CEP’s other findings have also been disseminated, using new social networking media, videos, a CEP YouTube channel and blogs alongside more traditional public lectures, debates, conferences and press. Our Centrepiece magazine experienced a 75% increase in downloads since 2010 (to 899,000 in 2015).

We have achieved a high public profile for many parts of our work. Particular highlights include: the determinants of productivity in the private and public sector; hospital competition; youth unemployment, the persistence of local joblessness, falling real wages, the decoupling of pay from productivity growth; immigration, CEO and bankers’ remuneration; the economics of austerity;
intergenerational mobility, the effects of industrial policy; climate change innovation; housing shortages, improved access to psychological therapies and the survival of the Eurozone.

Our impact on thinking and policy of almost every government department and the Bank of England is evidenced by several cited examples of CEP work and 23 participating memberships of government advisory committees. CEP has developed, often through continued involvement of past staff, strong international networks of research collaboration which have enabled it to extend this influence to major organisations such as the OECD, the European Commission, EBRD, ECB, IMF and US Council of Economic Advisers. Other aspects of CEP’s work have so entered into popular discourse that for better or worse, they are no longer identified with the Centre. Examples of this would be the benign economic effects of the Minimum Wage; falling social mobility and the polarisation of labour market (the “shrinking middle”).

The quality of our work is evidenced by the publication of 275 articles in top journals (this number excludes fractions for co-authors of papers who are non-CEP members), including 37 articles in the Top 5 economic journals in the world; by the 27 prizes and fellowships awarded to Centre staff; by the REPEC estimation of our discussion papers series as the 8th highest cited rate in the world amongst similar size departments (CEP produced 385 DP’s in 5 years).

Our work does not gather electronic dust on the e-shelf. In 2015 the media referred to our work almost 5 times a day and our papers were downloaded from the CEP website 4.78 million times (compared with 1.56 million times in 2011). Our Management survey tools are being implemented by national statistical offices in the US Census Bureau, the UK ONS and their equivalents in Pakistan, Germany and Mexico.

The Centre’s legacy is secured through the 6 PhD’s we produced annually; the 28 staff who moved into influential academic and policy posts and continue to work with us as associates the publicly available data from its worldwide firm survey of management productivity; the incubation of three separately funded new centres (the Centre for Vocational Education Research, the What Works Centre for Wellbeing and the What Works Centre for Local Economic Growth); the burgeoning of its spatial economic geography work into a new Urban Programme; and finally the continuity of its work as a result of success in the ESRC Research Centres Competition in a new 5-year CEP programme which builds on but significantly extends the work described in this report.

PART TWO: INTRODUCTION

The Centre for Economic Performance (CEP) was established in 1990 and this report covers the 5-year grant period October 2010 to September 2015. The Centre’s ESRC contract comprised six programmes of work tackling the issues below but the Centre also found funding outside ESRC for a seventh, the Wellbeing Programme and ESRC supplemented this in Year 4 with £200,000 to help it leverage other funds.

Staffing
The Centre director is John Van Reenen and its Research Director is Steve Machin. They are assisted by the five programme directors below.

<table>
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<th>Programme</th>
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<td>Education and Skills</td>
<td>Prof. Sandra McNally</td>
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<tr>
<td>Productivity and Innovation</td>
<td>Prof. John Van Reenen</td>
</tr>
<tr>
<td>Community</td>
<td>Prof. Alan Manning</td>
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Globalisation
director Prof. Gianmarco Ottaviano
Macro Programme
director Prof. Francesco Caselli
Wellbeing
director Prof. Richard Layard

The programmes have undertaken a total of 43 projects which are supported by (on average) 19 researchers on full- and part-time contracts, 27 on hourly paid contracts of whom two thirds are working towards the PhD, and one third are post-doctoral. In total this amounts to 21 full time equivalent research staff, 44% of them funded by our ESRC core grant, 56% by funds we raised from other sources. In addition the Productivity Programme has over the five years run a very large Management Practices Survey, staffed by over 80 (4.8 FTE p.a.) analysts from around the world working intense 3 month periods from a survey hub set up within the Centre.

The programme directors are assisted in managing the 43 projects in their programmes by CEP’s 11 co-investigators (1.3 FTE p.a.). A major contribution to the work and to our network is made by our 64 associates who are unpaid faculty staff from LSE departments of Economics, Finance, Geography and Management (22); other UK Universities (20), including Essex, Imperial, Oxford, Queen Mary, Royal Holloway, Surrey, Sussex, UCL, Warwick, and NIESR; Europe (9), including Athens, Geneva, Harvard, Maastricht, Madrid, Munich, OECD, Paris and Canada; and the US (13), including British Columbia, Dartmouth, Princeton, Stanford, Yale. The Centre is particularly fortunate that currently 28 research staff who have left the Centre to become academics in the UK and all over the world continue to work on projects with Centre staff in London and visit, often for many years after they have left.

PART THREE: CENTRE OBJECTIVES

3.1 The Big Questions
The Centre studies the determinants of economic performance at the level of the company, the nation and the global economy. To do this it focuses on the links between globalisation, technology and institutions (in particular those in education and the labour market) and their impact on productivity, inequality and wellbeing. There have been five major issues addressed in the Centre’s work.

First, as globalisation and information communication technologies have exposed goods and services that were previously un-traded to the forces of international competition through offshoring of jobs, we have tried to understand how to harness the opportunities and mitigate the threats of this change and to analyse the effects of globalisation on inequality. The globalisation programme, which undertakes this work, also seeks to understand the political economy of maintaining a coalition for continued economic integration (e.g. through expansion of the EU and regional trade agreements). The globalisation programme was led by Prof. Gianmarco Ottaviano.

Second, as productivity growth is critical to national wellbeing, but GDP per hour in Britain at the start of our programme remained 20% below that of the US and France and 10% below that of Germany, we needed to focus on technological, managerial and organisational innovation. These are especially important in an era where we seek to move towards a low carbon economy where pressures are felt keenly by business, as more policies to reduce greenhouse gases are introduced. Major empirical investigations of policy effectiveness in these areas have been undertaken. The director of the programme to address these issues was Prof. John Van Reenen.

Thirdly, given the importance of long-run equilibrium effects for evaluating productivity policies and the need to rigorously combine micro and macro analyses, we also developed a new Macro-economic Growth Programme led by Prof. Francesco Caselli. This sought to evaluate the role of
business and industrial policies in supporting growth; to incorporate uncertainty and volatility shocks into macro models of business cycles; to uncover whether moral hazard and pay incentive structures could cause systemic financial crises and whether improvements could be made to financial regulation to reduce the risk of future financial crises. The macro programme fed into some of the other programmes in its attempt to develop workable macro GE models that could be calibrated with behavioural parameters estimated from the experimental and non-experimental data in programme projects (e.g. P2C). The Macro Programme was so successful it has now been spun-out into the stand-alone ESRC Centre for Macro-Economics under former CEP Programme Director Nobel Laureate Chris Pissarides.

Fourthly, we wanted to know how we could sustain communities in the face of these global changes. Changing attitudes, faster migration, weak community ties and crime, pose challenges for social cohesion and inward investment which helps sustain economic growth. Understanding these tensions was the focus of our new Community Programme which was led by Prof. Alan Manning.

Fifthly, we wanted to understand how, despite lower unemployment rates, the rapid increase in inequality had not been reversed - employment rates were poor for many groups such as the low skilled and youth and gender pay gaps remained stubbornly high. Our Labour Programme to tackle these issues was led by Prof. Steve Machin. Crucial to understanding drivers of growth and inequality was our Education Programme led by Prof. Sandra McNally. This addressed the question of whether it was the long tail of adults with poor basic skills (the “hard to reach”) that was a cause of inequality, dampened productivity and a brake on growth and how this could be changed through educational reform, improving the school-work transition and basic skill policies.

### 3.2 Outcomes

We have produced over the period 2010 to 2015 a huge number of publications, 385 CEP discussion papers, 275 refereed articles, 14 books, 143 CentrePiece articles, 28 CEP policy and election analyses, 31 CEP reports and special papers, and have completed more than the 43 objectives we set ourselves in 2010. Detailed accounts of each project and the outputs and individuals associated with them are to be found at Annex A. Changes made to the objectives because of data availability, staffing, changes in government policies are dealt with in Section 3.3.a. Before this, we give an overview of the main findings to the questions each programme proposed above.

#### 3.2.1 Globalisation Programme

Globalisation and ICTs have exposed goods and services that were previously un-traded to the forces of international competition through offshoring of jobs. In the period since the global financial crisis political support for international trade liberalisation and economic integration have been eroded. Even in the EU, the world’s leading integrated area, “Euroscepticism” has gained ground in many of its member countries. This has happened most prominently in the UK where a referendum of EU membership will be called soon.

The aim of the CEP’s Globalisation Programme was to understand how to harness the opportunities and mitigate the threats of globalisation with special emphasis on its effects on inequality. The Programme also aimed at understanding the implications for the political economy of maintaining a coalition for continued economic integration.

What are the reasons why international economic integration may be sowing the seeds of its discontent? What can be done about that?

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1 Project P2C and other project designations: all the projects are listed in the Annex. The first letter of P2C for example refers to the Productivity Programme, the Number 2 in P2C to the Strand and the Final Letter C of P2C to the Project number within that strand.
Key findings: Diverging destinies
Our work found that the main reason why people and politicians may worry about globalisation lies in the vast heterogeneity of economic outcomes that the analysis of detailed microeconomic datasets reveals across people and firms even within the very same country and sector. While workers vastly differ in skills, firms vastly differ in their ability to exploit those skills. It is this ability that determines whether firms internationalise or not, and thus whether they succeed or not in reaping the gains from globalisation and in spreading those gains among their stakeholders. In turn, it is workers’ skills that determine whether they are employable or not by successful firms. Thanks to the joint efforts of world leading researchers in the field, CEP has been at the cutting edge of theoretical and empirical studies aimed at understanding the implications of this heterogeneity.

Trade and “superstars”
First, CEP researchers have carefully documented how trade volumes, employment, turnover and value added are highly concentrated among a small group of firms trading with many countries and/or in many products. Such a highly selected group of “superstar” firms drive the aggregate trade performance of countries. This is true both in manufacturing and services, a crucial sector of the UK economy that the CEP has also zoomed on. Selectivity is even more marked when it comes to foreign direct investment (FDI).

Trade liberalisation and selection
Second, trade liberalisation can have very different effects on firms of different size and productivity. Due to fixed export costs, only firms that are productive enough (and thus profitable enough) are able to engage with international customers and suppliers. To these firms trade liberalisation opens up new foreign markets and this improved market access more than compensates them for additional import competition suffered in their domestic markets. Less productive firms are, instead, unable to overcome the fixed export costs. Only suffering from import competition in their domestic markets without compensating access to foreign markets, less productive firms shrink or are forced to shut down altogether. On the one side, we have shown that, by reallocating market shares and productive resources to more productive firms (and products within firms), churning benefits the national economy as a whole. On the other hand, it also causes the destinies of different firms and workers to diverge even within narrowly defined sectors. We have studied the growth of China as a canonical example of this. Chinese imports have caused job and wage losses in many areas, but it has also stimulated innovation and productivity growth both through competition and as a rapidly growing market for exports and investment.

Firm and worker inequality
Third, this divergence has important implications in terms of inequality both between firms and between workers. Firm inequality may explain why support for economic integration is much weaker among small and medium enterprises than among bigger ones. The case of the EU is paramount. A plethora of regulations is imposed on firms of all sizes in order to obtain access to the Common Market, no matter whether firms are indeed capable of accessing that market. Several small and medium enterprises, which expect to never make it to the export market, tend to perceive those regulations as additional artificial costs with no attached benefits. As for workers, the effects of trade liberalisation can be very different on different types of workers with different levels of human capital. In particular, we have uncovered new channels through which the opening of international trade is likely to enhance wage inequality and raise unemployment when more productive firms are also better able to screen workers with heterogeneous abilities.

Labour market polarisation
Fourth, focusing on workers, we have shown that OECD labour markets have become increasingly “polarised”, with employment in the middle of the skill distribution falling relative to the top and also
the bottom of the skill distribution. This is due to technological factors as we have found that information and communication technologies are key drivers of this polarisation. It is also due to the international fragmentation of production and the associated flight of jobs to developing economies, especially but not exclusively in manufacturing. This is because “offshored” jobs tend to be those of workers in the middle of the skill distribution. Also sectoral specialisation plays a role as long as the rankings of sectors by input productivity and workforce skill differ across countries. In particular, we have shown that when this is the case, trade integration can cause the relative wage of high skill workers and wage inequality even within the high skill sectors to increase in all countries.

Punchline and policy impact
The picture that emerges is a situation in which overall aggregate gains mask a complex pattern of asymmetric individual gains and losses. This asymmetry between winners and losers does not follow the line of sectors or countries closely. Winners and losers coexist also within the same sector in the same country, sometimes even within the very same firm. This explains the widespread backlash against globalisation and casts a shadow on the social and political sustainability of further international economic integration in the absence of enhanced mechanisms of redistribution of the corresponding gains.

Research work at the CEP in this area has been very influential, especially in the European policy debate. In particular, the idea that understanding aggregate economic performance and current political stances requires first of all understanding the underlying microeconomic heterogeneity has caught the attention of the European Central Bank (through its COMPNET programme), the European Commission (especially on the issue of the “misallocation” of productive resources across firms), the Inter-American Development Bank (through its ELSNIT network the CEP has been invited to join) as well as the BIS and the HMT through meetings and consultations especially with respect to the referendum on the EU membership of the UK.

3.2.2 Productivity and Innovation Programme
The aim of the CEP’s Productivity and Innovation Program was to understand the fundamental forces causing some firms and countries to be more prosperous than others. This, we argued, was critical in order to address the reason why the UK productivity position was disappointing and what we could do to improve it.

The period since the global financial crisis has been deeply disappointing for GDP per hour growth with the UK now 14% below the productivity levels we would have expected on pre-crisis trends. What can be done to change this?

Management Practices
Our work found that two broad factors mattered a lot for productivity: management and new technologies. Weak management practices have long been suspected to be a cause of low productivity, but it is very difficult to measure these in a convincing way. CEP has pioneered new ways to quantify management quality through in-depth interviews with managers that we now have implemented in over 20,000 organisations in 34 countries around the world. We began with manufacturing firms, but have now expanded to other sectors such as hospitals, retail stores and schools. Our measurement tools have been expanded into national statistical offices working with the US Census Bureau, the UK ONS and their Pakistan and German equivalents.

Using this new tool, we have shown convincingly that management is closely correlated with organisational performance, helping explain around a third of the productivity dispersion between UK firms, for example. Furthermore, we have run some “clinical trials” injecting our management practices into a treatment group of firms and then observing how they performed over the next two
years compared to a control group who were randomised out of the trial. The experiments imply that most of the correlation between productivity and our management measures is causal.

Not only does management help explain firm-level productivity differences, it also helps explain country-level differences. For example, we calculate that about half of the efficiency (total factor productivity) gap between the US and UK is due to management. Across the world about 30% of these productivity gaps are due to management.

But what factors cause poor management in Britain and elsewhere? We show that the key factors are: (i) low levels of competition; (ii) poor skills; (iii) weak governance (i.e. a preponderance of family-run firms). The UK does much worse than world leaders like the US, Germany, Japan and Sweden in this respect.

**New Technologies**

Technical change is at the heart of our theories of growth. We developed a new theoretical framework that allows research and development (R&D) to have effects on productivity directly (the firm's own efforts) and indirectly (by piggy-backing off the R&D efforts of others). Implementation of this model shows that the social return to R&D investments is two to three times higher than the private returns, which is why the private sector left to itself will invest “too little” in innovation. This is important because levels of UK business R&D spending have been falling since the early 1980s whereas they have been rising in most other OECD countries.

It isn’t just the level of R&D which matters, but what areas it is directed towards. Take climate change – an area the Productivity programme has worked a lot in. Resolving climate change will require much investment in green technologies. We showed that an effective policy to do this is through petrol prices– when these rise, car firms re-direct their R&D efforts to clean technologies such as electric cars and away from “gas guzzlers” like SUVs. So a carbon tax not only reduces climate emissions through lowering demand, it can stimulate the supply of less greenhouse gas emitting cars.

Finally, we also use our framework to look at information and communication technologies (ICT). The quality-adjusted prices of ICT have been falling dramatically over the last four decades. We show that the adoption of ICT makes a big difference for productivity, but that its impact depends a lot on the management practices we discussed earlier. Some organisations (like the NHS) spent billions on ICT with little effect on productivity.

There was a doubling of productivity growth in the US in the decade from 1995 as the quality improvements in ICTs accelerated. Despite access to the same technologies, this did not happen in the EU. We show that if the EU could make its people management practices as flexible as those in the US, it would have prevented about half of this divergence in productivity growth rates.

**Pulling things together: The LSE Growth Commission**

The Programme has been extensively involved with policy discussions over the severe austerity following the Great Recession. But we felt that the debates over demand had marginalised the arguably more important question of what could be done to improve the long-run supply side of the economy.

To address this John Van Reenen and Tim Besley co-chaired the LSE Growth Commission which reported in 2013. We drew on the extensive analysis of CEP on productivity and the Institute for Government’s expertise in the plumbing of UK policy making. This acted as a way of pulling together our research and focusing it on policy recommendations.

We argued that the UK had enjoyed some success in the three decades leading to 2007 in bridging some of the prosperity gap between ourselves and leading nations. But it also had some major
problems, especially around the areas of failing to invest in the long-run in human capital, infrastructure and private investment/innovation.

We made a series of concrete policy proposals to address this. First, we argued for a new institutional architecture over infrastructure policy. This suggestion was put into policy in 2015 in the government’s Infrastructure Commission. Third, we called for greater competition in the banking sectors. Some of this has been adopted in terms of improving switching and Challenger Banks.

Although many of our recommendations have not (yet) been followed - such as the call for an Infrastructure Bank - the impact that our major report (and book) have had and the way in which they condense the analytic findings of the Centre with a policy oriented focus have been a great success for the Programme

3.2.3 Macro Programme
Consequences of Natural-Resource Wealth
One focus of the programme has been the consequences of natural-resource wealth – particularly mineral resource wealth. For many years economists and political scientists have entertained the possibility that countries experiencing resource windfalls, such as discoveries of mineral deposits or persistent increases in the prices of the commodities they export, generate adverse political dynamics that end up negating the potential economic benefits - a conjecture often dubbed “the natural resource curse.” Over the last few years there has been much progress in rigorously testing this conjecture and it is fair to say that as a result of this work the conjecture has been upgraded to an accepted fact. Some of the most significant work in establishing this consensus has been done at CEP.

In particular, Caselli and Michaels (American Economic Journal: Applied Economics) have looked at the impact of royalties from oil extraction accruing to Brazilian municipalities which have significant oilfields. They found that the local population experiences no improvements in living standards whatsoever as a result of these fiscal windfalls. The explanation appears to be that the revenues from oil extraction are diverted by local politicians for private gains. Caselli and Tesei (Review of Economics and Statistics) have examined the impact of increases in the price of a country’s principal export commodity on its political regime. Fiscal windfalls from commodity-price run-ups tend to make autocratic regimes even more autocratic. Lei and Michaels (Journal of Development Economics) have showed that the probability of civil war increases after a country discovers a giant oil field. Caselli, Morelli, and Rohner (Quarterly Journal of Economics) found that the presence of oil near an international border is an important trigger for international war.

The programme also helped make progress on the theoretical mechanisms linking natural resource abundance with adverse socio-political and economic outcomes. In particular, Caselli and Coleman (Journal of the European Economic Association) clarify the role of natural resources in triggering ethnic conflict.

Trade and Volatility
The macroeconomics programme has also been active in the area of international macroeconomics, particularly on whether macroeconomic interdependence across countries (globalisation) has increased volatility – or the susceptibility of economies to experience booms and busts cycles. A frequently-voiced concern is that when countries lower their trade barriers, and engage in more international trade, they will be pushed to specialise in only a few industrial sectors (the ones where they have been most productive). In turn, this increased specialisation means that productivity fluctuations on demand in particular sectors will have a magnified impact on the overall economy. Indeed, in policy circles this alleged increased volatility is often cited to argue that the gains from
opening up to trade may not be as large as simple theories of comparative advantage suggest they should be.

Caselli, Koren, Lisicki, and Tenreyro (revise and resubmit, *Quarterly Journal of Economics*) have upended this conventional wisdom. They pointed out that international trade can also reduce a country’s exposure to domestic economic shocks. The simplest example is when a country experiences a decline in domestic aggregate demand (for example, because the government has to engage in austerity). If the domestic economy is open to external trade, domestic producers can soften the blow by trying to export more. More generally, if macroeconomic shocks that invest the entire economy are more significant sources of volatility than shocks specific to individual sectors, international trade is a source of diversification that lowers overall volatility – contrary to conventional wisdom. This novel, contrarian view is precisely what the data seems to buttress: Caselli et al find that, for most countries in the world, income volatility since 1970 has been less than it would have been if trade barriers across countries had not come down to the extent that they have.

**Eurozone Sovereign Debt Crisis**

While the focus of the macro programme has been mainly on academic work (albeit with policy relevance), it has also sought to contribute to current policy debates more directly. One example is a paper on the political economy of the Greek debt crisis by Ardagna and Caselli (*American Economic Journal: Macroeconomics*). The main contribution of this work is to highlight aspects of the policy-making process in the Euro area (and, by extension, in the EU) that have contributed to policy decisions that are now widely seen as suboptimal. These institutional features concern the frequency and format of meetings among heads of government/finance ministers; as well as the timing and format of communication between meeting participants and the press. One implication of this work is that procedural changes in these areas might lead to better policy-making in the European arena.

**3.2.4 Community Programme**

Research from the Wellbeing programme and elsewhere shows that it is the quality of people’s interactions with others that is an important determinant of their wellbeing. An important source of wellbeing must therefore be the quality of interactions within communities. However, since communities are not static, and are affected by economic and social changes that are beyond the power of community members – or maybe any agents - to control, changes to them can be a major source of stress and concern for them. The Communities programme has investigated a number of aspects of the ways in which communities might be changing and how this affects people and the way they live their lives.

**Changing Values**

One of the motivations behind behaviour is that people care what others think of them and there are norms of ‘good’ behaviour. These norms may encourage pro-social behaviour but can also sustain harmful norms. Therefore people may behave in a way that attracts the admiration of others. From this it follows that changes in the types of behaviour that is admired should be associated with changes in behaviour. Manning and Shanghavi explored whether there have been changes in the type of people who are admired over 65 years using a question asked by Gallup almost every year since the late 1940s on ‘which living person do you most admire’. Perhaps surprisingly they find that the type of responses today are very similar to what they were then – politicians are the most likely to be admired, followed by ‘no-one’ and ‘friends and family’ though there have been quite large changes in the intervening period. In these dimensions, people’s values have not changed as much as is sometimes claimed.
Economic Shocks and Population Growth
Local areas specialise in different industries so that even global shocks to those sectors have local consequences. One of the consequences for communities is the changes to population caused through outward and inward migration. Using 60 years of US data, Amior and Manning showed that there is a strong population response to local economic shocks. These migration movements may act to eliminate local differences in unemployment rates as they reduce the competition for jobs in the depressed region and increase it in the booming regions to which people move. But their research shows that unemployment rate differentials across areas are very stable and argue this is because the shocks themselves are very persistent. As fast as population adjusts to one bad shock, another one follows behind it so the unemployment rates are never equalised.

Bell, Bindler and Machin also explore the long-run impacts of entering the labour market in good or bad economic times on crime. They show, using UK and US data, that those who leave school in a recession are more likely to be offenders throughout their lifetime. A typical recession increases lifetime offending by about 6% for males.

Immigration
Immigrants have to live somewhere and this inevitably causes changes in the communities where they come to live. One impact they might have is to compete for access to scarce local resources which in turn can lead to a souring of community relations as arguments over prioritisation ensue. Battiston, Dickens, Manning and Wadsworth explore this for the case of social housing. In recent years immigrant households are slightly more likely than natives to be in social housing but once one controls for relevant household characteristics, immigrants are significantly less likely to be in social housing than natives –what the authors’ call the “immigrant penalty” (i.e. their lower access to housing) However, there has been change over time – the immigrant penalty has fallen over time probably because of changes in the rules governing the allocation of social housing, changes that were designed to reduce the discrimination against ethnic minorities that had come to light in the 1980s. We conclude therefore that unfair prioritisation of social housing to immigrants has not happened.

One other aspect of concern to many communities is the impact of immigration on crime. Bell and Machin and Jaitman and Machin have explored this and conclude that the ‘asylum wave’ of the late 1990s led to a small but significant increase in property crime, but the immigration of Eastern Europeans after 2004 had no effect. They also found that neither wave had any effect on violent crime. They argue this is consistent with the demographic profile of the two waves as asylum seekers were much less likely than the Eastern Europeans to have high levels of education and to be in employment. Any effect of immigration on crime can be explained by the characteristics of individual immigrants rather than the fact that they are immigrants per se; the same is true for their attachment to the labour market.

Integration
How well communities, made up of people from different backgrounds, function depends in part on the degree of mixing between them. One indication of such mixing is marriage between groups. Manacorda and Manning have explored the effect of the proportion of an ethnic group on the inter-marriage rate using data on African Americans in the US. They find that if an ethnic group forms a minority of an area’s population the fraction of the minority marrying a partner from the majority group rises very fast. The implication is that the greater dispersal of migrants is likely to foster more mixing between ethnic groups than happens if they are living in enclaves.

Crime
The research on crime in the Community programme has also studied wider economics of crime research questions. The causal impact of police on crime was identified through the large surge of police that were mobilised to the streets of London following the July 2005 terror attacks that hit the
capital. Crime fell because of this, and also rose once the police numbers were reduced again six weeks following the attacks. The impact of education on crime has been studied in a series of empirical papers that uncover a crime reducing effect of education. Part of this is due to an incapacitation effect of keeping individuals in school and part emerges as a causal long run crime reducing effect due to individuals having higher levels of education.

The crime research of the Community programme was showcased in a conference that CEP ran jointly with the Inter-American Development Bank when they hosted the 7th Transatlantic Crime Workshop. This attracted leading specialists in criminology and in the economics of crime who participated in the two day conference held at CEP.

3.2.5 Labour Programme
Study of the labour market has been a key element of the CEP's work programme. Rising wage inequality over the last thirty five years, stubbornly persistent gender gaps in wages and employment, union decline and the hollowing out of jobs from the middle part of the skill distribution all make today’s labour market different from the past. Coupled with these changes, the programme’s research is one that has taken on a high research and public policy profile since the start of the financial crisis as real wages have significantly fallen for UK workers.

The aim of the CEP’s Labour programme was to generate a better understanding of the way that the labour market and its institutions function, and to connect findings from this empirical research agenda to labour market policy. The programme has published research on falling real wages, on job polarisation and on what shapes gender differences in labour market rewards.

Falling Real Wages
Our work has shown that recent years have seen very poor real wage performance for most UK workers since the financial crisis. Since 2008 the median worker’s real wage has fallen by 10 percent and, even as unemployment has come down since 2012, there is little sign of any recovery back towards their pre-crisis levels. For some workers – notably young workers – real wage falls have been very severe. Real wage levels for workers under 25 have fallen back to the same level they were at in 1997. Even though employment (and unemployment) have proven resilient compared to previous economic downturns, and this is at least in part due to a cheaper price for labour, lack of real wage growth has dovetailed with relatively poor productivity growth as recovery from the economic downturn has proven to be a slow and drawn out affair where workers have not done well at all.

These falls in real wages mean the labour market today is not offering the real wage gains that workers had become used to in the 1980s and 1990s when median real wages grew, on average, at 2 percent a year. Moreover, levels of wage inequality are at their highest levels since the late 1970s, having risen significantly since then, and show no signs of reversal despite stalling in the economic downturn because workers throughout the wage distribution almost all suffered real wage falls. This research shows this to be a key feature of the labour market that is unprecedented in historical terms as real wage growth has stalled in previous economic downturns, but not fallen over as long a time horizon.

Job Polarisation
A further cause of falling living standards of many UK workers empirically studied by the programme has been the hollowing out of middle skill jobs, driven by technological changes where computerisation and automation have replaced jobs done by workers that feature routine tasks. These negative shifts in labour demand for workers doing routine task jobs have been a feature of most advanced countries in the last two to three decades.
Empirical study of the economic impact of industrial robots, based on cross-country evidence, has probed the role of technology in shaping job polarisation in more detail. It uncovers evidence that industrial robots increased both labour productivity and value added, and that their introduction has gone hand-in-hand with a reduced hours share of low- and skilled and middle-skilled workers.

**Gender Gaps**
Although women have made great strides in the labour market and have narrowed the pay gap with men, the average gap is still over 20 percent and becomes larger as women progress in their careers, even for those employed in highly skilled occupations. Studying rich data on lawyers, our research has shown clear evidence of a gender gap in performance. The differential impact of the presence of young children and the differences in aspirations to become a law-firm partner account for a large part of these observed performance differences. Gender gaps across skills and countries have also been studied, with the finding that women’s comparative advantage in producing services rather than manufacturing goods has raised relative demand for female labour and, as a consequence, female relative wages. Other work in the programme has synthesised findings from experimental studies to conclude they offer new insights into gender differences in preferences. In particular, women appear to have less preference than men for risk and competition and may be more sensitive to social cues, and these are factors underpinning gender gaps in the labour market.

These research findings on gender gaps matter for the position of women in the labour market since they imply that it is not just a “matter of time” before women fully catch up with men. The fact that persistent wage gaps and inequalities grow as women progress further in their careers indicate they are unlikely to disappear until the state or market provision of family childcare changes.

**Policy Impacts**
Research findings have been disseminated to policy debates and directly influenced policy in a range of ways. The programme has hosted and run conferences on real wage stagnation and problems of low pay. Members of the programme have held positions on the Low Pay Commission to set minimum wages, on various Pay Review Bodies and on the Migration Advisory Committee. Presentations have been given at HM Treasury and at the Bank of England on real wages and the productivity puzzle, and on the proximate causes on long run increases in wage inequality. Papers have been presented at the economic profession’s leading conferences and together with members of the programme organising a number of themed sessions at these conferences.

**3.2.6 Education Programme**
The Education and Skills Programme
The UK has long suffered from a ‘long tail of underachievement’ which is hindering productivity, growth and social mobility. Over the last 5 years, the Education and Skills Programme has tackled questions about how educational quality can be improved in schools; the extent to which school quality is valued; and whether the ability to access higher education influences labour market returns and social mobility.

**Quality of Education**
Our work has found that school autonomy is important for pupil performance in the context of radical changes to school structure in disadvantaged areas. School reforms have taken place in many countries in the recent past: free schools in Sweden, charter schools in the US and academy schools in England. Our findings are based on the original academy policy in England, which involved the conversion of traditional (community) schools to autonomous, state-funded schools that are managed and run outside the control of local authorities. These findings cannot be naively extrapolated to the vast expansion of this policy since 2010, where the nature of change has been very different (ongoing work will investigate this). However, our work shows that school autonomy is one aspect of
improving the quality of education. The mechanisms behind this relate to a change in leadership and management structure.

These findings complement cross-country evidence in our programme showing that autonomous government schools have higher management scores than regular government or private schools. The better performance is not linked with autonomy per se but with how autonomy is used. Having strong accountability of principals to an external governing body and exercising strong leadership through a coherent long-term strategy for the school appear to be key features that account for a large fraction of the superior management performance of such schools.

Our research also sheds light on the mechanisms that enable management to improve school quality. For example, how teachers are treated is very important – with a more flexible promotion and pay system being one aspect of this. However, in addition to getting incentives right, ‘teaching to teach’ can be important. For example, we see this in our research about the diffusion of teaching strategies directed at how young children are taught to read. We find evidence that strategies like ‘synthetic phonics’ (which was progressively taught to teachers across England from the mid-2000s) matters for helping children to read early.

Our research programme has also addressed how parents value school quality in terms of revealed preferences: in their school application decisions for their children and in where they choose to live. Following the theme of school academisation discussed above, one line of enquiry is how parents perceive this new school status. This suggests that in general parents do not value ‘academisation’ as such, although there is some variation by family background. For example, it is the parents of children with high prior attainment appear who give more weight to school autonomy when making school application decisions.

However, in general parents do value school quality and pay for this in terms of higher house prices. Using variation in house prices across district boundaries, our research shows that parents value both raw measures of school performance and the value added of schools. A one-standard deviation change in either measure raises house prices by about 3 percentage points on average.

Experimental research in the programme has shown the value of good information to students when they come to make decisions about post-compulsory educational choices. We designed an information package about the costs and benefits of pursuing post-compulsory education. We evaluated it in the context of a Randomised Control Trial where it is delivered to some schools in London but not others. We find that it has a strong positive impact on knowledge on attitudes and
intentions – concentrated amongst those most likely to drop out (i.e. boys and those from lower socio-economic groups).

Higher Education: access, returns and social mobility
Accessing higher education is a gateway to success in the labour market, in view of the persistent wage returns to having a university degree. Our research has shown that there have been increasing wage returns to postgraduate qualifications compared to undergraduate degrees. Part of the reason is that postgraduates and ‘college only’ workers have different skill sets, do different jobs and are therefore imperfect substitutes in production. Postgraduates have skills and job tasks which complement computers more and have benefited more from their spread than have college only workers. Thus relative demand has shifted over time in favour of postgraduates and this has been an important factor in explaining rising wage inequality and declining social mobility since those from low socio-economic backgrounds are less likely to access post-graduate education.

Our research has also shown that although students from private schools are much more likely to access higher education than those educated in state schools, university entrants from state schools tend to do better in terms of class of degree. Notwithstanding this, our research also shows that the private/state school wage differential has risen significantly over time, and an important factor has been faster rising educational attainment for privately-educated individuals.

One trend that has not led to increasing inequality is the rising number of overseas students attending British universities. Our research shows that this has not ‘crowded out’ domestic students but has benefited them as it has led to higher average funding per student than would otherwise have been the case.

Our research and interest in ‘The Economics of HE’ has prompted two of our researchers to create a new virtual research network by this name. This is an online resource dedicated to empirical quantitative research into higher education (http://economicsofhe.org/). The goal is to provide an online platform for new findings so that academics, policy makers and the general public can learn about the workings of higher education systems in the UK and elsewhere in the world.

3.3 Revised Objectives (detailed)
We achieved most of our five-year objectives and several in addition, and report in detail on our outputs and progress with these in Annex A. We report in this section on those objectives which had to be altered or dropped because of data problems, staff moving on, a conflict of interest and the government deciding to drop one of the policies we wished to evaluate.

3.3.1 Changes to Objectives
Community Projects
For Project C2C², there was a conflict of interest since the investigator designated to research the efficacy of the Immigrant Points System became a member of the Migration Advisory Committee; he therefore added a new objective on Immigration and Health investigating the claim that an increase in immigration puts additional or differential pressure on welfare services and as such might affect the net fiscal contribution of immigrants.

C2A To what extent are migrants from Eastern Europe integrating? was dropped because of an absence of data on east European migrants but was replaced by additional objectives on immigration

² Project C2C and other project designations: all the projects are listed in the Annex. the first letter of C2C for example refers to the Community Programme, the Number in C2C to the Strand and the Final Letter of C2C to the Project number within that strand.
and crime (see C2A(i)). In investigating the components of healthy communities we also added a further project on the impact of local economic shocks on population (project C2Aii).

Project C3B on organised crime was dropped because the level of geographical variation in the data that we managed to obtain was too coarse to generate precise and fully credible estimates. A complementary project on the role of economic incentives in criminal activity was undertaken by Iyengar who researched the impact of incentives from paid employment on reductions in insurgency activity in Iraq.

Education Projects
For the part of the Project E2b focusing on the relative achievement of children from low income families, we found that local authorities were very resistant to giving us schools admission data until year 5 when a metropolitan authority agreed to do so. However, this was too late for work in this grant period, but we intend to work with the data from 2016 onwards and to produce a paper.

Labour Markets Projects
L2C “What is the structure of the market for child services (such as day care) and does it hold back the ability of women to progress in the labour market?” The project was started but dropped because McNally the investigator moved from LSE to take up a Chair at Surrey and needed to complete an added project (E2Bi) on the impact of an information campaign of career and further education qualification advice for schoolchildren (see above).

L3B “Can the massive planned expansion of apprenticeships be made to work” was dropped because the guaranteed apprenticeship policy plans of the then Labour Government were dropped by the Coalition Government. Although we continued to contribute advice on committees such as UK Government’s Expert Panel Review of Apprenticeship and Steedman produced reports (see page 46) our biggest success was to win a BIS competition for the first research centre devoted to research on vocational education which started in June 2015. (http://cver.lse.ac.uk/about/default.asp).

For project L3C identifying how basic numeracy and literacy skills affect economic performance and what policies improve them, the required PIAAC data only became available from OECD in 2013/14. We worked on the data for 12 months, but encountered difficulties resolving the earlier IALS data which was needed to carry out the cross-time study we had planned to do. We concluded we were not able to carry out a sufficiently rigorous study and instead started two new projects both based in the Education Programme. The first, teaming up with the Education Endowment Foundation, was to carry out a randomised control trial on 51 schools to evaluate the impact of different teaching methods for literacy. The second led by Blanden has been to look at the effect of free pre-school education on child outcomes in primary school. We exploit the staggered implementation of free part-time pre-school for three-year-olds across Local Education Authorities in England in the early 2000s. http://cep.lse.ac.uk/pubs/download/dp1352.pdf.

Macro Projects
M2c on central banks using experiences of other countries to improve economic models and monetary policy decisions was dropped because it required more time and effort than was justified by the expected findings. However it was replaced with two additional projects: the first on the Greek Debt Crisis -Project M2b(ii) and the second on the relationship between trade and macroeconomic volatility Project M2a(i).

3.3.2 Additional Objectives
As well as replacing objectives, we raised money to pursue additional ones. Sometimes this happens in response to critical events. An example, is the LSE Growth Commission, reported above (and under P2D in Annex A) which was set up in response to the UK’s slowest recovery from any
recession since the war. Sometimes we raise extra resources to fulfil the programme of work we had planned for 2010 but were unable to achieve with the ESRC funding awarded. An example of this is the Wellbeing Programme. Whilst much of our work considers how to improve and share economic growth, Layard argued that if it was the case that increasing GDP alone does not increase wellbeing above a certain level of income (the Easterlin Paradox), policy makers needed evidence of what does. For them to take subjective wellbeing seriously, we have to be able to show, in a quantitative way, what causes wellbeing and how wellbeing affects other things that policy-makers care about, like education and physical health. Researchers at the CEP are currently working on estimating an integrated life-course model, which treats wellbeing both as an outcome of interest and as a causal determinant of other things, in addition to carrying out extensive empirical work investigating different causes of happiness and how well-being affects important outcomes.

Generally we added projects which enabled us to deepen our approach to the questions set by exploring comparative evidence from other countries. Our work evaluating the increase in patient choice in the NHS in the mid-200s found compelling evidence that competition increased healthcare efficiency and quality. This was influential in future government reforms, such as the ruling out of price competition in the 2012 Health and Social Care Act. Building on this work we initiated with Yale University and Carnegie Mellon University a huge study of variation in hospital prices in the 306 US cities. These price differences are the primary driver of variation in healthcare spending in the private sector.

3.3.3 Contribution to ESRC Strategic Priorities

The Centre’s work on productivity, skills, innovation and trade have been devoted to understanding the determinants of economic performance and sustainable growth, and stand at the core of ESRC’s strategic priority “Economic Performance and Sustainable Growth” 1a, 1c,1d, 1e, 1f. The LSE Growth Commission’s report and book which was led by the Centre drew on several streams of work from these programmes. They were discussed with and disseminated to a very wide range of public, policy, business and practitioner audiences in England, Scotland, Wales and overseas (e.g. the Council of Economic Advisors in Washington DC, the OECD in Paris and the Bank of Rome). Our work has been widely cited by government and led to the establishment of an independent Infrastructure Commission (October 2015) to be led by Lord Adonis, more competition in retail banking and changes in published data on school progression.

Project M2Ai) addressed directly the strategic priority “Stability of Economic Performance and growth”, (b) Effects of perception of risk c) Relationship of macro-economic and micro-economic behaviour). Bloom’s paper “Does uncertainty reduce growth? Using disasters as natural experiments” analysed the impact of uncertainty in driving business cycles using natural disasters as a causal instrument. To help evaluate the impact of uncertainty on investment, employment and growth he developed a huge database on economic policy uncertainty and made this publicly available at www.policyuncertainty.com – and evaluated the impact of this on investment, employment and growth. The data is also public access and has been included as well by on-line data providers like Bloomberg, Reuters and FRED. Project M2B identified the threat of CEO pay incentive structures to financial crises.

Work by Martin in project P2c on climate change related innovation, addressed directly ESRC’s second priority, Sustainability of Economic Performance and Growth: a Transition to a low carbon economy. Layard’s work on Wellbeing, although only receiving pump priming funding from ESRC from 2013, engaged with the sustainability of wellbeing and economic growth but also met ESRC’s strategic priority looking at connections between economic activity and wider human welfare and wellbeing. Work in the programme covered strategic priority 8 “Early Years tracking through the life course” with its construction of a model of wellbeing of the life course with a number of state
variables of interest measured at different points in an individual's life cycle (including wellbeing, income, employment, conduct/criminality, health and cognitive skills). The model was estimated using cohort data that tracks individuals over time (e.g. the British Cohort Study and the Avon Longitudinal Study of Children and Parents). The work considers policy interventions aimed at improving wellbeing and assessing their cost effectiveness. The community conflict strategic priority from “Influencing behaviour and informing interventions” was covered by our Community programme’s work on how values form and are passed on to other generations and on immigration, integration of migrants and on crime.

Finally issues of inequality (Strategic Priority “Vibrant and Fair Society”) were dealt with by 3 of our programmes: Education, Labour and Productivity, with examples referred to above.

PART FOUR: IMPACTS, PUBLICATIONS, DISSEMINATION, ENGAGEMENT, CAPACITY BUILDING, LEGACY

4.1 Major Scientific Impacts

Clean Innovation in the Automotive Industry (CEP Productivity Programme Ralf Martin, John Van Reenen, Antoine Dechezlepretre with Philippe Aghion and David Hemous): There is little controversy that reducing climate-changing emissions will require new technologies as well as improvements in existing technologies. Which policy framework can bring about such technological change is rather more contentious. Using a newly available dataset with information on all patenting activities in the world, we study what determines whether technological innovation in automobiles is of the “clean” variety such as electric and hydrogen cars, or the “dirty” variety (the internal combustion engine). The internal combustion engine has been the dominant propulsion technology for more than 100 years for cars. As a consequence the knowledge stock for producing “dirty” cars is globally much more advanced than for the production of “clean” cars implying that “dirty” cars are cheaper and more convenient to use. Our study reveals two feedback loops that imply that unabated market forces will further widen this gap. Firstly, firms are more likely to continue doing research in an area where they have been active in the past. Secondly, they are more likely to conduct more research in areas where they can benefit from insight gained by other firms. Hence, because most incumbent firms have been active in dirty technologies and are surrounded by other such firms, there is a clear persistence and direction towards “dirty” in technological change. Not all is lost, however. We also find evidence that policy can successfully overcome this bias and re-direct technological change towards clean innovation. Exploiting that different firms tend to be focused on different markets geographically we show that firms that are more exposed to countries with higher fuel taxes tend to conduct more research in “clean” technologies. What is more the feedback loops in the direction of technical change will accelerate this effect. Hence, we find that for instance a carbon tax that increases petrol prices world-wide by 40% could be sufficient to close the gap between the clean and dirty knowledge stocks within a 10 to 15 year period. The paper “Carbon Taxes, Path Dependency and Directed Technical Change: Evidence from the Auto Industry” by Martin, Van Reenen, Aghion and others was presented at a conference following the 2012 Nobel Symposium in Stockholm which brought together leading researchers in the field of the economics of climate change and will appear in a special issue of the Journal of Political Economy dedicated to the topic and is currently listed as one of the mostly downloaded articles from that journal.

Spatial Variation in Economic Activity – A New Model (CEP Globalisation Programme, Daniel Sturm, Gabriel Ahlfeldt): One of the key challenges in understanding cities are what the agglomeration and dispersion forces are that shape modern cities with their high concentrations of employment in a few central locations which are surrounded by much larger residential and mixed use areas. Ahlfeldt et al. 2015 revisit this question and estimate the strength and spatial decay of
agglomeration forces in cities. To guide the empirical analysis, the paper develops an empirically
tractable model of a city, which consists of a large number of locations that are linked by a transport
network and in which residents and firms compete over space. The model can capture the rich
heterogeneity of cities and does not rely on unattractive simplifications used in previous research, such
as assuming that cities are perfectly circular around a single central business district.

Ahlfeldt et al. 2015 combine this model with unique data from Berlin which covers the pre-war,
division and reunification period. The dataset has a very fine geographical disaggregation with data for
nearly 16,000 city blocks that cover all of Berlin. The building of the Berlin Wall is a massive shock to
the relative attractiveness of different locations in West Berlin, which is reversed in 1989. Ahlfeldt et
al. 2015 use the large spatial variation in land prices, population and employment induced by this
shock to estimate the importance and spatial decay of both productivity and consumption spillovers
in Berlin.

They find, for example, that doubling the density of workers in an area of the city, increases the
productivity of firms in this area of the city by about 7 percent. This illustrates that productivity of
different locations of a city cannot be treated as a fixed parameter as often assumed in planning
exercises, but actually depends on the level of economic activity in a location. They also find that the
benefits of proximity to other workers decline with distance between workers. The estimated
spillovers between workers in different locations are already close to zero after about 500 meters.

The theoretical model developed in this paper and the estimated strength of agglomeration forces will
be the basis for much future work in urban economics. Even though the paper has only appeared in
print in November 2015 it has already attracted over 100 citations on Google Scholar. Follow up
work will use the model to provide new foundations to estimate the costs and benefits of transport
infrastructure improvements. In particular, the model will make it possible to quantify the large
relocation effects of both workers and residents in cities in response to new transport infrastructure.
These relocations change spillovers and hence productivity and amenities in different parts of the city.

Management Practices in the Public Sector (Productivity Programme: John Van Reenen, Nick Bloom,
Raffaella Sadun): Our work on management practices has changed the way economists think about
productivity and influenced the design of business policies. Van Reenen featured this in his 2014
keynotes at the American Economic Association, Marcus Wallenberg Foundation Conference,
young researcher on Entrepreneurship) cited this work when he achieved his prize. It was also cited
when Bloom and Van Reenen were awarded the European Investment Bank Prize in 2014 for
outstanding achievements in social sciences. Whereas the first wave of this work focused on
manufacturing where productivity is relatively easy to measure, more recently we have launched new
waves of surveys in the public sector, particularly hospitals and schools. We have been interviewing
nurses, doctors, head teachers and managers in the UK and eight other countries: Brazil, Canada,
France, Germany, India, Italy, Sweden and the US.

We find that our measures of management quality are strongly associated with better outcomes as
measured by survival rates, length of stay and infection rates in hospitals; and pupil achievement and
value added in schools. This suggests that the survey questions on monitoring, targets and people
management – most of which are common to the private and public sectors – are key factors
influencing organisation outcomes.

In healthcare we find that competition is an important driver of improved management and
performance. In England (Review of Economic Studies, 2015), for example, we use exogenous variation
from the political marginality of constituencies around neighbouring hospitals to generate increases in
competition (hospitals are rarely closed in politically marginal constituencies) combined with the mid-
2000’s reforms to the NHS. This is consistent with Cooper and Gibbons’ findings on competition fostered by the introduction of patient choice (Economic Journal, 2011) which led to improvements in quality of patient care as measured by increases in heart attack survival rates and reductions in pre-operation average length of stay. In schools it appears that autonomy combined with strong governance and accountability is a key factor in success (Economic Journal, 2015). This chimes with Machin and Eyles’ influential paper on City Academies, (http://cep.lse.ac.uk/pubs/download/dp1368.pdf) but generalises the results to more countries.

Real Wages and the Productivity Puzzle (CEP Labour Programme: Steve Machin, Alan Manning) A striking feature of the recent economic downturn that was triggered by the financial crisis of 2008 has been the very poor productivity and real wage performance of the UK economy. Unlike previous downturns, real wages have significantly fallen and productivity has fallen to much lower levels than in the past and has not recovered as it did then. The LSE Growth Commission highlighted that, despite progress in bridging the UK productivity gap with the US, France and Germany over the 1980-2007 period, a significant gap remained. This has been exacerbated by the crisis which has hurt British productivity a lot more than in the US (with continental Europe in between). Understanding whether this is a temporary result of the downturn or a permanent feature of the UK economic landscape is obviously a huge and important issue for incomes, jobs and inequality. We have studied several aspects of this ‘productivity puzzle’.

A special session organised at the 2013 Royal Economic Society conference in a collaborative venture with the Institute for Fiscal Studies featured three papers: on productivity (Pessoa and Van Reenen); real wages and unemployment (Gregg, Machin and Fernandez-Salgado); and on effects on wages of the changing composition of employment (the IFS paper). These papers were published alongside one another in the Economic Journal May 14. Our involvement in debates about falling real wages and living standards has also featured in our work with the Resolution Foundation. Machin and Van Reenen were members of their Commission on Living Standards. Manning produced work on minimum wages and was a member of their review of minimum wages (‘More Than a Minimum’: Resolution Foundation Final Report). Pessoa has also collaborated, with research on recent patterns of job polarisation where the pronounced job loss in the middle of the skill distribution has contributed to falling living standards of many workers in the UK in the recent past.

The analyses revealed that a significant part of the productivity puzzle has come about because low and falling real wages have meant that firms have invested more in labour and less in capital, so that employment performance has been relatively good, and investment performance has been poor, and so productivity has remained low.

CEP Methodology using the Experimental Approach (Pischke and all programmes): The natural experiment (or ‘quasi’ experiment) approach to establishing a coherent identification strategy in empirical economics is now well established. However, quite a lot of work using such natural experiments is very narrow, and often of too small a scale for its results to be generalised. Ambitious and innovative CEP research has looked at large scale natural experiments to generate causal effects, and it is expected that this work will have a significant impact on the academic economics profession in due course.

The methodology underlying the experimental approach adopted by CEP projects has been pioneered by CEP researcher Steve Pischke in his influential textbook “Mostly Harmless Econometrics”, which is being used as a core econometric textbook in economics departments all over the world. Prof. Pischke has now brought out a students’ manual that can be used in conjunction with the textbook to help students learn the techniques.
Examples of the methodology in action are to be found in all CEP’s programmes. For example, we have already referred to Sturm and Ahlfeldt’s work on agglomeration and dispersion forces using the division and reunification of Berlin Wall as a natural experiment.

The methods of rigorously establishing causal relationships using non-experimental data are also apparent in the re-emergence of quantitative economic history as a rapidly growing field in economics. This has been facilitated by innovative data collection methods, the application of modern modelling techniques and the ability to digitalise data possible with improvements in computer processing power in recent years. Dittmar for example has studied (in his Quarterly Journal of Economics paper) the impact of innovation and patterns of diffusion of new technologies by looking at the introduction of printing presses in 15th century publishing houses in Germany. Work by two of our students, Claudia Steinwender’s work on the transatlantic telegraph and Reka Juhasz’s work on the impact on infant industries of the trade on France during the Napoleonic Wars, also exploited historical natural experiment episodes to enhance our understanding of information frictions, and to assess whether temporary protection from trade with an industrial leader can foster the adoption of new technology. In particular, by exploiting the fact that the post-war location of the cotton industry was determined to a large extent by the historical accident of the wars, Juhasz showed that the location of cotton spinning within France was persistent, and firms located in regions with higher post-war spinning capacity were more productive 30 years later. For this work both students won the 2015 inaugural John Hicks Prize for an Outstanding Doctoral Dissertation and Steinwender the 2014 WTO Essay Award for Young Economists, and her work has been cited in The Economist and Der Standard.

In addition to projects involving natural or quasi experiments the Centre has made outstanding use of randomised control trials of real experiments and interventions. Our productivity programme ran randomised control trials (RCTs) in Indian textile firms introducing consultants to improve management practices with results cutting quality defects in the treatment group by 50% and increasing overall productivity by 10% (http://cep.lse.ac.uk/pubs/download/dp1042.pdf). Similarly, we have also run an RCT on the introduction of work life balance management practices (the option to work from home) in the largest travel agency in China. Both these papers were published in the Quarterly Journal of Economics. Our Wellbeing and Education programmes concluded data collection in 22 secondary schools on the impact of the Resiliency Programme. This was a positive psychology programme that we implemented to build resilience, adaptive coping skills and social problem-solving to help children respond to daily challenges. In the Education programme McNally and colleagues ran field experiments in 60 London schools to see how an information campaign about economically relevant aspects of career choices affected education decisions - staying on, changing course choices etc.

## 4.2 Major Policy Impacts

The LSE Growth Commission: The political and media debate over growth has focused on the issue of the speed of fiscal consolidation over the short-run (e.g. the next 5 years). But in some ways this "austerity" debate is a distraction from the real issue of how to improve longer-run growth rates. To tackle this issue, John Van Reenen and Tim Besley set up the LSE Growth Commission (http://cep.lse.ac.uk/LSEGrowthCommission/). Throughout the year a panel of distinguished Commissioners took public evidence from leading decision-makers in business, governments, international financial institutions and academia. Supported by a secretariat of CEP researchers, the Commissioners drew on the best available evidence (a lot of it emanating from CEP research) to bring out a report which was launched on January 31st 2013 to much media attention. All this evidence - including videos of public hearings held at the CEP - is posted on http://cep.lse.ac.uk/LSEGrowthCommission/. The report was launched at a public meeting attended by 400 policy-makers, academics, business leaders and journalists and received positive
coverage in lead articles in 19 newspapers including the Economist, Financial Times, and all the broadsheets. A short film outlining its recommendations was made. [http://www.youtube.com/watch?v=VSh9bContNs](http://www.youtube.com/watch?v=VSh9bContNs).

The report has been widely disseminated amongst civil servants and politicians in key government departments (e.g. HM Treasury, Department for Business, Innovation & Skills, and Department for Education), all of which have expressed interest in discussing further the detail of the report’s proposals. Key figures in the political scene have made reference to the work of the Commission – including Mervyn King, Governor of the Bank of England, and Gus O’Donnell, former Cabinet Secretary. Vince Cable wrote in the New Statesman (6/03/13) "I share the view, set out well by the LSE Growth Commission, that long-term growth involves a major and sustained commitment to skills, innovation and infrastructure investment." International organisations such as the IMF and the OECD have also expressed interest in discussing the Commission’s findings.

The writing and launch of the report were only the first stage - our attempt to get the recipe for future growth on the table. In the preparation of the report we interviewed many in government, think-tanks, quangos and have established strong on-going links with the OECD, the IMF, in Scotland (jointly with the Scottish Council for Development and Industry), and in Manchester (jointly with the New Economy Manchester). These links, and our partnership with the Institute for Government, experienced in taking research ideas to those who can embed them in policy, were a vital precursor to getting the recommendations of the report known about and acted on. We consider the work of the Commission to have been an important contributing source of evidence and analysis towards the establishment by the current government of the Infrastructure Commission under Lord Adonis.

**Policy Impact: The Wellbeing Programme**: The Wellbeing programme has won a major coup in promoting to the UK Government, the UN and the OECD, the need to measure subjective wellbeing as an essential part of measuring quality of life alongside other social and economic dimensions. Following a resolution by the UN General Assembly recognising the pursuit of happiness as a universal goal and calling on member states to elaborate measurements of happiness and economic wellbeing, Layard has co-written with John Helliwell and Jeff Sachs a World Happiness Report to provide a balanced survey of all the different causes of wellbeing for presentation at the UN in April 2012, 2013 and 2015, with further planned in 2016 and 2017. The reports have been downloaded a million times each. In 2010 David Cameron made an announcement recognising that GDP was an incomplete way of measuring a country’s progress and that plans to introduce a wellbeing index in addition to tracking economic growth were to be introduced from 2011. A CEP team surveyed the evidence on possible measures and wrote a proposal for the four questions that should be asked. The UK’s Office for National Statistics (ONS) adopted these proposals for the regular national survey that began in 2011. Layard and his colleague Paul Dolan sit on the relevant ONS committees: the Measuring National Well-being Advisory Forum and the Measuring National Well-being Technical Advisory Group.

Layard also worked with OECD to recommend including measures of wellbeing in international measures of GDP. Following three large conferences on ‘What is Progress?’, each of which featured presentations by CEP researchers, the OECD has now recommended international measures of wellbeing that are heavily influenced by the CEP proposals adopted by the ONS. The OECD Guidelines on Measuring Subjective Wellbeing (2013) begin with the questions that CEP persuaded the ONS to use in the UK.

As well as working at the national policymaking level, Layard worked at grass roots level to benefit the general public by launching with Seldon and Mulgan ‘Action For Happiness’ [www.actionforhappiness.org](http://www.actionforhappiness.org) in April 2011 which provides information and courses and sets up
groups and local actions to help develop happiness in homes, workplaces, schools and communities and to reduce suffering from mental health problems. In December 2015 it had signed up 59,330 members in 170 countries.

The Wellbeing Programme has had another major impact on mental health policy. Layard demonstrated in two reports\(^3\) that mental health is a major determinant of wellbeing – more important than income. Having persuaded the UK government to expand psychological therapy services – the Improving Access to Psychological Therapies (IAPT) programme – by means of a cost-benefit analysis which showed that wider provision of cognitive behavioural therapy (CBT) would have zero net cost to the UK Treasury and by providing evidence of success from two successful CBT pilot programmes, Layard has become an official adviser to the programme and has been a central figure in securing and implementing it and extending it to patients with long-term conditions even during the NHS reorganisation. By the summer of 2014, it was seeing an annual rate of 13% of the six million people in need – with self-referral allowed. Of those treated, 45% were recovering during treatment. The target for access is 15% by 2015 and it is likely to be hit. It has been acclaimed by Nature as ‘world-beating’. Between 2010 and 2015 Layard has successfully pushed for the IAPT to be rolled out for children as well and redoubled efforts in the face of Department of Health cutbacks with the result that the programme will expand from covering 15% of need to 25% of need by 2020 at the same cost as the CEP calculated was needed.

Both the CEP Education and Wellbeing programme have taken these concerns with mental wellbeing of children further with a project on building Life skills in schools. CEP piloted a field trial of the 18-hour Penn Resilience Programme in 22 South Tyneside, Manchester and Hertfordshire schools which showed some success on school performance and good short term results on emotional health. (DFE Research Report 097, April 2011). Because these faded over time, CEP in 2013 instituted with the Education Endowment Foundation and How To Thrive a trial of a much longer 140-hour programme based on a worldwide search for effective programmes and carried out on 60 schools in 10 LEA’s. The results of this longitudinal evaluation will, if positive, provide by 2018 the first evidence based research arguments for the wider introduction of such a programme and the associated training required into the UK Schools Personal, Social and Health Educational curriculum for 10-15 year olds.

**Education Programme: What Works Best for Teacher Evaluation and Appraisal?** How does one identify and attract good teachers? Richard Murphy, a young research officer at CEP, partnered with the Sutton Trust to produce a high profile report that attracted large media and policy attention. His work, which won an ESRC Impact Prize, also draws on previous research of the CEP’s education programme and has helped put performance pay for teachers firmly on the policy agenda. In 2011, on the basis of a review of the literature on teachers, his first report recommended ‘a more flexible promotion and pay system’ that is ‘based on improvement in classroom results, reviews by head teachers and external appraisals’. It was presented to the Deputy Prime Ministers Research and Analysis Unit, to the Education Select Committee in 2012 and was quoted in the School Teacher Review Body’s 21st report that came out in December 2012. This report was accepted by the Secretary of State for Education and featured in the Autumn Budget Statement recommending a change in government policy, to make teacher pay more reflective of ability.

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EU Emissions Trading System and Climate Change Levy: Our work on the impacts of large-scale regulation aimed at pricing pollution to control carbon emissions has helped influence EU policymaking. The European Emissions Trading System (ETS) is the single largest policy effort to mitigate greenhouse gas emissions. First implemented in 2005 it has been operating for 10 years. Despite this there is very little solid evidence about its causal impact. Ralf Martin and others in the Productivity Programme have carried out a first evaluation of the ETS using firm level data typically restricted and controlled by the respective governments which collected it. They gained access to such datasets in France, the UK and Germany. They found a significant causal impact of the ETS on energy consumption and thus emissions and their estimates suggest that the ETS has reduced manufacturing emissions by up to 15%. The negative effects on employment are small, although this effect is less robust.

The team has also drawn attention to weaknesses in the implementation of the ETS policy. The EU’s initial plan was to phase in auctioning of permits (rather than handing them out free) from 2013. Emitters can trade permits so as to lower their total abatement cost and hence the total cost of complying with the cap on CO2. However, the European Commission (EC) decided in 2009 that free permit allocation would be continued for industries deemed at a “heightened risk of carbon leakage”. The CEP research based on new firm-level data gathered in telephone interviews with managers of 761 manufacturing firms in six European countries revealed that the practice whereby regulated firms are offered compensation to prevent them from relocating results in substantial over-compensation for their given carbon leakage risk. This inefficiency could be dangerous in inciting a political backlash against emissions training in times of broad public spending.

In response to this finding, the team have formalised a method of efficient permit allocation which reduces aggregate risk of job loss by more than half without increasing aggregate compensation. The first recommendation is to exempt trade exposed industries only if they are more carbon intensive. The second is to consider exposure to trade only with less developed countries. By modifying the carbon leakage criteria along these lines, we estimate that EU governments could raise additional revenue from permit auctions of up to €3 billion per year.

The evidence presented in this paper (American Economic Review, 2013) and this paper (http://www.sciencedirect.com/science/article/pii/S092180091400161X) has been presented to staff at DG Climate, the European Parliament’s Environment Committee, DECC in the UK and the UN Climate Conference sponsored by the European Commission. We anticipate that they will inform ongoing reform efforts of the EUETS beyond 2020. However, its relevance transcends the European policy context.

We have also completed work (Martin, Wagner and De Preux, published in the Journal of Public Economics http://www.sciencedirect.com/science/article/pii/S0047272714001078) on the Climate Change Levy (CCL) in the UK. We estimate the impacts of the CCL on manufacturing plants using panel data from the UK production census. Our identification strategy builds on the comparison of outcomes between plants subject to the CCL and plants that were granted an 80% discount on the levy after joining a Climate Change Agreement (CCA). Exploiting exogenous variation in eligibility for CCA participation, we find that the CCL had a strong negative impact on energy intensity and electricity use (we cannot reject the hypothesis that the tax had no detrimental effects on economic performance and on plant exit). Our research also questions the economic rationale for granting large numbers of firms an exemption from the levy and is recently being used by civil servants at HM Treasury trying to reduce the number of exemptions granted. In addition the work received excellent coverage in Handelsblatt, La Libre, New York Times, Platts, Vox, ZEIT and Science (2014, Editor’s choice) among others.
4.3 Main Publications and Outputs
Our main project questions and the outputs that addressed them are documented in detail in Annex A. Here we refer to numbers, citations and quality of published output.

4.3.1. Scientific Papers
Whilst the role of a Centre is to ensure that its research findings have impact beyond the academy and on the real world, it has to first persuade the academic community of the rigour and quality of its findings if these are to be taken seriously by policymakers. The Centre has met this requirement by producing an enormous output of world quality scientific publications, giving keynotes and papers at the world’s top conferences and organising special sessions around its work at such events. The Centre’s publication record in top refereed journals has been impressive: staff have published on average 55 articles a year (80 if one includes joint authors from outside CEP), seven a year of which have been in the world’s top 5 economic journals

Before papers are submitted to journals they enter the CEP Discussion Paper series having been discussed and critiqued in one of CEP’s six weekly seminars, conferences or workshops. On average we have produced 77 of these a year. The papers are well cited and read by our academic peers. Using as a quality impact measure, the citation rate of our discussion papers from REPEC, the largest bibliographic database of economics papers in the world (http://ideas.repec.org/top/top.series.simple.html), ranks the citation rate of the CEP series 8th in the world from the 168 institutions registering over 500 papers since 1998. Papers have been cited on average 20 times each, just over 3 times the average citation level of papers in the series.

SELECTED JOURNALS PUBLISHING
CEP PAPERS 2010-2015

Top 5
American Economic Review 17
Econometrica 3
Journal of Political Economy 1
Quarterly Journal of Economics 8
Review of Economic studies 8

Other General Journals
American Economic Journal: Macro 3
American Economic Journal: Micro 3
American Economic Journal: Policy 1
American Economic Journal: Applied 4
Economic Journal 24
Economica 12
Journal of Economic Perspectives 4
Journal of European Economic Association 9
Review of Economics & Statistics 9

Field Journal Examples
British Journal of Industrial Relations 5
Development Economics 6
Journal of Economic Behaviour & Organization 5
Economics of Education Review 6
Health Economics 5
4.3.2. Books and Survey Publications

The output of a Research Centre must amount to more than the sum of its projects and papers. As well as writing shorter articles summarising the work of the programmes in the Ten Big CEP Ideas series in *CentrePiece* [http://cep.lse.ac.uk/_new/publications/BigIdeas.asp](http://cep.lse.ac.uk/_new/publications/BigIdeas.asp), each programme has been tasked with writing major books drawing together work from several projects covering a wide range of topics and aimed at wider audiences. For example, the Labour Markets Programme added to its series of volumes *The State of Working Britain* providing assessments of labour market developments and the policy issues surrounding it, its 2011 volume focusing on recession and its aftermath and giving assessments of the effects on many policies introduced over the previous 10 years in employment, education and welfare.

The Education Programme wrote *Making a Difference: What Works in Education – and What Doesn’t* summarising the Centre’s research on ways of improving young people's outcomes in pre-school, primary and secondary education. It asks what makes an effective school? What makes a good teacher? What works best for disadvantaged pupils? How does the UK evidence compare with experience in the US, and in the countries with the best educational records - Finland, Switzerland, Sweden, Japan, South Korea? We published two volumes of *The Handbook of the Economics of Education* (North Holland), jointly edited by the CEP’s Stephen Machin with Ludger Woessman and Eric Hanushek, bringing together much of the work which has been carried out in CEP in recent years.

Van Reenen and Besley wrote their LSE Growth Commission Report and subsequent book, *Investing for Prosperity: A manifesto for growth*, which distils huge amounts of evidence and policy recommendations to promote long term prosperity by addressing the inadequate institutional structures that have deterred long-term investment, based on evidence sessions and research from all the Centre’s programme and elsewhere.

A survey of all the Productivity Programme’s work on HR management was published in the *Handbook of Labor Economics* Volume 4 edited by Card and Ashenfelter, and “Productivity and Management Practices”, was published in *Advances in Econometrics: Proceedings of the World Congress of the Econometric Society*, one of the most prestigious scientific publications in economics which only comes out every 5 years. Schankerman, also from the Productivity Programme edited a Special Issue of the Journal of Industrial Economics: symposium on patents, entrepreneurship and innovation.

Layard brought out a second edition of *Happiness: Lessons from a New Science* which has become the key book in happiness studies and wrote *Thrive*, published by Penguin, which showed...
how mental ill-health causes more of the suffering in our society than physical illness, poverty or unemployment and how greater spending on helping people to recover from mental health problems - and stay well - would generate massive savings to national economies. Layard and Nickell brought together their work on unemployment in, Combatting Unemployment (OUP).


The final example is Pischke’s now influential textbook Mostly Harmless Econometrics which draws on and lays out the methodological approach adopted by many of the Centre’s projects, and the use of the natural experiment (or 'quasi' experiment) approach to establishing a coherent identification strategy in empirical economics.

4.4 Dissemination

Our target audiences are academics, policy-makers in central (civil servants, MPs) and local government (e.g. Local Education Authorities, devolved nations of the UK), businesses, practitioners (e.g. teachers and health service professionals), think tanks, NGOs (like unions), the UK and international media and the general public, banks, statistical offices, international economic organisation. We give examples here of the ways we have reached and in some cases collaborated with these. Before we do so, have our multiple methods of dissemination worked? Are more people finding out about our work? According to the numbers of mentions of CEP work in the media and downloads of our papers, they are. We first started collecting data systematically on mentions of our work in the national and international media in 2003, when we were cited 178 times. In the year leading to October 2011 we were mentioned 928 times and we doubled this amount to 2,019 in the year to October 2015. This indicates that in the past year we have been appearing in the media around five times a day. Downloads (not just hits) of all the 4,000 papers, reports, analyses, articles on our website have trebled from 1.56 million in 2011 to 4.78 million in 2015.

Academic Dissemination: Whilst the role of a Centre is to ensure that its research findings have impact beyond the academy and on the real world, it has first to persuade the academic community of the rigour and quality of its findings if these are to be taken seriously by policymakers and we start with academic dissemination first. Aside from the dissemination via publications, discussed above, the Centre has run events to showcase these. As well as standard dissemination to the academic community through presenting 160 papers at top conferences each year, one of the changes of our Centre’s strategy for disseminating to academic audiences in the past five years has been to run less CEP standalone events for academics and to run CEP sessions at other larger events and to join with other ESRC investments in giving joint conferences to increase audiences and participation. For example, it ran a joint CAGE/CEP conference in Venice for July 2012 showcasing each centre’s work on trade policy; one on Urban and Regional Economics (with SERC) October 2013 (organiser Sturm); with the Low Pay Commission in September 2013 (organiser Machin); and jointly with IFS on Wages and Low Pay in the Labour Market (March 2015); and the UK’s Productivity and Employment Mystery, real wages and unemployment (Gregg, Machin and Fernandez-Salgado).

We organised standalone sessions every year around our work at the largest academic economist gatherings in the UK and the US. At the Royal Economic Society (RES) we ran the Macro sessions in 2012 and showcased work on Growth (a plenary) and on the “Great Employment and Productivity Mystery.” In 2013 we had special sessions on Access to and Quality of Education and a plenary on our Investing in Prosperity report. In 2015 we had special sessions on top income taxes and on innovation (the keynote was by CEP's Philippe Aghion).
CEP boosted its international presence by organising sessions at the annual American Economic Association Meetings (e.g. sessions on extreme wage inequality and on Climate Change and Innovation in 2013); in every year 2012-2015 we have organised a session on trade on growth and on management. We have sessions at the World Bank on Making Growth Happen (April 2013), and on City Productivity in Developing Countries; we held a conference on Innovation and Entrepreneurship at the US Patent and Trademarks Office (June 2012); at the NBER Summer Institute on Entrepreneurship (July 2014) and CEO pay, and Hate Crimes in the Wake of Terror Attacks (July 2012). We have run conferences at Harvard (funded by Harvard Business School) 10 Years of the World Management Survey: Lessons and Next Steps, in 2014 bringing together WMS data users and researchers from all over the world and ran a similar event in Stanford in 2015.

Non-Academic Dissemination: The bulk of our effort in disseminating our work has been devoted to reaching non-academic policy audiences the public and other stakeholders. CEP’s flagship non-technical publication is CentrePiece, our tri-annual research magazine, a collection of our research findings from our discussion paper series, written in the style of The Economist, which is distributed in hard copy to 3,000 policymakers, MP’s, think-tanks, schools, unions, businesses and members of the public. It is extremely well read judging by the number of times articles were downloaded in 2015, 899,000 (compared to 513,990 in 2011). Each issue is press released, some pushed to particular journalists with a known interest in the area.

New Social Media: A new development in the past five years has been the Centre’s exploitation of the new social media to maximise the reach of its work; the Director and Vaitilingam tweeting Centre publication URL’s and events daily, especially those relevant to current news items. All staff in the Centre ensures that wherever possible work appears on blogs such as LSE British Politics and Policy, Harvard Business Review, VoxEU and Theconversation.com. The Director now has 8,500 followers, the Centre 3,200.

Public Lectures & Events: In addition we have run a series of Public Lectures and Public debates for general audiences which have also been put up on YouTube. Some of these were centred round a celebration of the Centre’s 21st Birthday; some around current crises such as the presentation by Luis Garicano on the way out of the Euro crisis and the debate that followed it; or arguments made against austerity policies with the launch of the Manifesto for Economic Sense by Layard and Krugman at the House of Commons http://www.voxeu.org/article/manifesto-economic-sense: some around book launches, some were part of the LSE Works Series (Manning on the Minimum Wage, Gibbons on Neighbours, Peers and Educational Achievement, Overman on urban policy and the economic future of British cities, Van Reenen on growth and others around current hot topics). These attracted audiences regularly of around 400 people. Outside of LSE, CEP hosted the only economics session in the British Science 2013 and 2014 Festivals (http://www.britishscienceassociation.org/british-science-festival/birmingham-2014). In 2014, for example, papers were presented by John Van Reenen on the 99%; Brian Bell on Top Pay of the 1% and Barbara Petrongolo on Gender.

Non-technical Policy Reports: We have produced other non-technical publications based around policy debates including during elections, producing Election Analyses for the US in 2012 and UK in 2010 and 2015, Policy Analyses, (http://cep.lse.ac.uk/_new/publications/analyses.asp), Special Reports and more major pieces of work such as the enormous LSE Growth Commission Report and Book featured above. These have been written to inform the public about what CEP and other research and evidence can tell us about the issues and policies under debate – their tone is objective not polemical, nor expressing a point of view. Again we have adopted new methods in launching such material, including short videos of authors discussing their piece posted on CEP and other sites, http://cep.lse.ac.uk/_new/interviews/ and videos using simple graphics to illustrate research findings.
such as “Should we care about inequality? Exploring differences between rich and poor in the UK and how this has changed over the past 50 years,” https://www.youtube.com/watch?v=tvN8zvovDrY. Exposure to public and government scrutiny of such analyses requires enormous time and effort in preparation, fact and objectivity checking. Nevertheless it has been worth it in terms of our readership results – whereas our 2010 election analyses were downloaded 29,600 times in the first twelve months after uploading, our 2015 election analyses have been downloaded 298,497 times in the first 9 months alone (up to December 2015). It is interesting to note however that downloads of such non-technical articles occur years after the election they covered: for example the election analyses for 2010 have been downloaded on average 14,130 times a year after the Election for which they were published.

4.5. Working with Stakeholders

4.5.1. Thinktanks, Foundations

In order to enhance its reach, the Centre has collaborated with other organisations, government departments, think-tanks, centres and foundations to exploit the access they have to a wider range of users and audiences than would have been possible for the Centre alone. For example, CEP has worked with the Education Endowment Foundation whom we advise on how to set up interventions and evaluations and have carried out some of these (see How to Thrive above). By engaging in such a partnership the Centre has access both to experimental data to develop its research into what works in education and to working with LEA’s, school teachers and parents groups in a two-way exchange of information. Such close “on the ground” collaboration and experiment evaluation then enhances the legitimacy of the Centre’s policy recommendations at a later stage.

We have worked closely over many years with the Sutton Trust, a partnership which has ensured that our work on intergenerational mobility has become the dominant way social science and society now analyses the topic. During the past years, we have brought out joint publications and events with the Trust such as Murphy and Machin’s report for submission to the House of Commons Education Committee inquiry into attracting, training and retaining the best teachers for the White Paper on Teaching and Lindley and Machin’s The Postgraduate Premium: Revisiting Trends in Social Mobility and Educational Inequalities in Britain and America. Wyness has advised the Sutton Trust and a range of universities participating in the Widening Participation Network on Advancing Access and Admissions to HE. She has worked closely with academic registrars, Widening Participation teams, and student wellbeing services, providing universities with reports on impacts of their bursaries on subsequent performance and allowing them to benchmark this against other universities.

Manning, Machin, Van Reenen and Pessoa contributed significantly to the Resolution Foundation’s Commission on Living Standards which in turn helped promote our work; we wrote a report on options for the National Minimum Wage, and a report on the question on whether the growth of workers’ wages has fallen behind the growth of labour productivity in the UK. Layard was a commissioner on the Legatum Institutes Wellbeing Commission and wrote their Wellbeing and Policy report on the measurement of wellbeing and how wellbeing analysis can usefully be applied to policy. In setting up the Growth Commission, its evidence sessions, research analysis and data from the Centre and its subsequent Report and Book, we worked closely with the Institute for Government whose expertise in working with Whitehall we needed in order to embed the research findings and recommendations in policy.

4 These collaborations have been detailed in previous Annual Reports between 2010 and 2014.
4.5.2. Government

In addition to launching our three year organisation-wide effort to propose growth policies for the future (the LSE Growth Commission discussed above), Centre staff have energetically approached and been approached by government departments and organisations involved in policymaking. Firstly, they have served as invited members of government agencies advisory and select committees, pay review bodies:

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<td>Migration Advisory Committee</td>
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<tr>
<td>Machin</td>
<td>Commissioner</td>
<td>Low Pay Commission</td>
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<td></td>
<td>Special Advisor</td>
<td>Education Select Committee on Academies and Free Schools</td>
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<tr>
<td>Van Reenen</td>
<td>Academic Advisor</td>
<td>H.M. Treasury</td>
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<td>Department of Business, Innovation &amp; Skills</td>
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<td>Strategy Board on Productivity, ONS</td>
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<td>DG Competition Chief Economist European Commission</td>
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<td>Layard</td>
<td>Advisor</td>
<td>DWP Working Group meeting on mental health and employment</td>
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<td>Department of Health on the IAPT implementation for young people</td>
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<td>ONS Measuring National Wellbeing Technical Advisory Group</td>
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<td>Children and Young People IAPT Expert Reference Group</td>
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<td>Economic Affairs Select Committee (House of Lords)</td>
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<tr>
<td>Azmat</td>
<td>Specialist Advisor</td>
<td>Women and Equalities Select Committee</td>
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<tr>
<td>Tenreyro</td>
<td>Member</td>
<td>Monetary Policy Committee of the Bank of Mauritius</td>
</tr>
<tr>
<td>Garicano</td>
<td>Advisor</td>
<td>Spanish Prime Minister’s top economic advisor, Álvaro Nadal, on structural reform and responses to the euro crisis</td>
</tr>
<tr>
<td>Steedman</td>
<td>Member</td>
<td>UK Government’s Expert Panel Review of Apprenticeship 2012</td>
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<td>Expert Reviewer for French Government Review of Education in France</td>
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<td>Bell</td>
<td>Member</td>
<td>National Crime Agency Remuneration Review Body (NCARRB)</td>
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<td>Novy</td>
<td>Specialist Advisor</td>
<td>House of Lords, European Union Committee, on the Transatlantic Trade and Investment Partnership</td>
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<tr>
<td>Schankerman</td>
<td>Member</td>
<td>Member Independent Review of Intellectual Property and Growth</td>
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<td>Homkes</td>
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<td>BIS (Office Science and Technology) Foresight Project Future of Manufacturing (Vince Cable)</td>
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<td>Dolton</td>
<td>Member</td>
<td>Armed Services Pay Review Body</td>
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<td>Yueh</td>
<td>Informal Advisor</td>
<td>EU Trade Commissioner on China</td>
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<td></td>
<td>Expert Advisor</td>
<td>Hans Timmer, Head of Development Research Group at the World Bank</td>
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</tbody>
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**TABLE 1**
Secondly, others have been called on for advice by ministers and civil servants in most departments of government, providing research evidence to assist in their policymaking and evaluating outcomes of existing and planned policies. These interactions have been documented in previous Centre Annual Reviews, but examples from our Labour and Globalisation programmes illustrate that in many cases our research was discussed at the highest level of government. For example, Overman, Machin, Van Reenen and Dolton met with the Chancellor of the Exchequer and Chief Secretary of the Treasury, Danny Alexander, to discuss local pay in the public sector. Drawing on work carried out in the Centre (DP843 and Journal of Political Economy 2010), they demonstrated how setting public pay to be almost the same level in different areas of the country can have harmful consequences, leading to labour supply problems in the public sector in areas with strong labour markets such as London and the South East. High turnover rates, low labour force quality and long vacancies leads to falls in the quality of public service in these areas. The Chancellor highlighted this problem in his Autumn Statement in 2011 and March 2012 Budget.

Petrongolo’s work on youth unemployment and incentives in the Public Employment Service, featured in the policy debate on the causes and consequences of youth unemployment before and during the Great Recession. This work was presented at HM Treasury (September 2012) and to a summit at 10 Downing Street on youth unemployment (March 2011). Prof. Petrongolo presented CEP’s work directly to the Prime Minister and discussed with him, the DWP Secretary of State, Ian Duncan Smith and other senior policy makers the causes of problems in the youth labour market and what policies could be implemented to combat the problems. Petrongolo’s work on youth unemployment has been quoted in the UK Department of Enterprise Trade and Investment (2011) “Economic commentary”, at the Trades Union Congress, Low Pay Commission, 2011 and in the OECD’s “Off to a good start? Jobs for youths”.

Members of our Globalisation Programme have worked extensively with BIS, the EU and OECD throughout the five years and its experience here places it in a good position for planned dissemination of our BREXIT work. Mion used findings from the globalisation programme for his report presented to BIS and Vince Cable in June 2012 on “How can the UK focus on steps in the value chain that really add value?” With, Breinlich and Criscuolo (Globalisation Programme) he advised UK Trade & Investment UKTI (FCO) as to what kind of support is most likely to succeed in encouraging more UK firms to start exporting providing them with a report in May 2013. Ottaviano, Breinlich and Dhingra were commissioned by BIS to quantify the impact on consumers of recent free trade agreements on consumers, with the purpose of enabling an assessment of quality and price effects of past and future FTAs for UK and EU consumers. This work draws heavily on CEP research and will be used to help BIS forecast the potential effects of two FTAs which are currently being negotiated: the EU-Japan Economic Partnership Agreement (EPA), and the EU-US Transatlantic Trade & Investment Partnership (TTIP). Abroad, Breinlich and Criscuolo submitted to the OECD a report on trade barriers in services trade, and Van Reenen and Martin have advised the Chief Economist of DG-COMP, and several European Commissioners, on new state aid rules on Regional Aid. Ottaviano has held meetings with Central Banks of the Eurosystem to promote the use of micro data for the definition, measurement and promotion of competitiveness and summarised our work on competitiveness in the EFIGE cross country report in the Bruegel Blueprint Series. This, and his advice to the ECB Governing Council, has fed into the Competitiveness Research Network’s Compnet report published by the ECB in June 2015. The Bank of England report on EU membership, underlying Mark Carney’s speech on 21st October 2015, cites research from no fewer than 11 members of the CEP.

More recently we have contributed written evidence to consultations from BIS, DWP and NSF http://cep.lse.ac.uk/_new/publications/responses.asp.
4.5.3. Business
We have also worked with business, collaborating with firms such as Towers Watson who have provided invaluable data on top executive pay; Computershare (employee partnership schemes) on carrying out surveys, building on and developing datasets in their possession; and with McKinsey on productivity and management practices. This is a symbiotic relationship which, on the one hand, brings our commercial partners benefits – research output which can help organisational goals and impress clients - and on the other, allows us to use data and freely given specialist expertise for research. Working with McKinsey for example, has allowed us not only to develop their management effectiveness evaluation tool for our huge management practices survey of 34 countries and 20,000 managers worldwide, but has also given us invaluable training in conducting our survey of firms and a joint platform for launching reports to business and policy audiences. We have also worked with Accenture and C-Trip (the largest Chinese Online travel agency) to implement our management practice experiments.

4.6. Capacity Building
Capacity Building Methods: The Centre has undertaken capacity building in a number of ways.
1) It has employed around 30 hourly paid students enrolled on the PhD and involved them in its many projects, benefiting both its own work and theirs by helping them quickly define a viable thesis topic by being involved in projects and sometimes using the project data in their thesis.

2) It has provided training through project supervision and through running work-in progress seminars whereby staff can expose their work to peer and senior critique, but in a more informal, less combative environment than the mainstream CEP seminars; it has put on seminars by world class speakers who stay an extra day to hold “research surgeries” with students and staff.

3) It has run courses on presenting to, and writing for, the media run by our journalist with opportunities of being filmed in interview. There is also the opportunity for staff to meet with journalists at dinner afterwards where they quiz journalists on what they are looking for from economic research, and what they anticipate the major topics are for the coming year. Staff have been encouraged to write for non-technical audiences, by giving them professional assistance in writing for CentrePiece.

4) Junior staff have been supported by programme directors to become involved in policy oriented work. Many were involved in providing research back-up for the LSE Growth Commissioners and for the evidence sessions, in writing up the evidence in non-technical prose, and some also deputised for senior staff at meetings where the findings of the work were presented to civil servants and practitioner audiences.

5) It has provided funding for them to present their papers at mainstream conferences and has run a two-day away event in which all staff and students discuss their work. CEP has also run a Summer Internship programme where Masters students have the opportunity of gaining their first experience of project research. Several of these have then been taken on by the Centre each year.

6) It has provided funding for advanced methodology training at CEMAP and has run its own courses on STATA (usually given by researchers). In 2014 it hired an expert researcher in “Big Data” methods to train others in their potential and the programming elements required.

7) It has run more training sessions on management practices survey methodology for agencies such as Canadian Institute of Competitiveness and Prosperity, Irish Management Institute, Oregon Health and Science University (OHSU) UCH Ibadan, and to education researchers in Italy to extend the data collection on management practices across 300 private and public schools. Finally, just as Pischke’s (Labour Markets Programme) textbook on econometrics disseminates the methodology the CEP has
adopted and developed in many of its projects, we have distilled the management practices research into a course for 1st and 2nd year MBA students to introduce new generations (starting with Stanford) to the new field of empirical economics of management we have helped establish.

8) Finally, the Centre has developed resources for use by other social scientists. In addition to taking our research findings to these audiences, we have also developed resources which may give longer term benefit to users in the future. For example, from our management productivity survey, we set up a World Management Survey website http://worldmanagementsurvey.org/ for businesses, hospitals and schools. This includes all our reports, downloadable data and methods, and an on-line benchmarking tool that small and medium sized firms, hospitals and schools can use to measure their management practices, and compare this with other firms in their country/industry/size class. This will be a valuable tool in enabling firms to improve their productivity and management. We have also developed a materials and video guide for those wishing to run their own survey at http://worldmanagementsurvey.org/?page_id=187. Evidence of this capacity building in action can be seen by the use made of our methods by other researchers in a wide variety of contexts outside manufacturing such as nursing homes, charities, drug addiction clinics, etc. See http://worldmanagementsurvey.org/?page_id=177.

Another website has been set up with a large database of information on economic policy uncertainty – this is available at www.policyuncertainty.com. Currently, information from this database is being used to evaluate its impact on investment, employment and growth. The data is also available for public access and has been included, as well, by on-line data providers like Bloomberg, Reuters and FRED. It is becoming a key facility used by banks, fund managers and pension funds, as a way to maximise returns and minimise risks.

Junior CEP researchers set up a Higher Education online hub to bring CEP research on higher education together, with that of others in the HE space, to form a community of practitioners and scholars. The core element of this network is a blog (www.economicsofhe.org) which is focused on current higher education research and written by network members for a non-technical blog (www.economicsofhe.org), a monthly e-newsletter and tweets. The network is an important conduit for connecting researchers to each other and the ‘outside world’. It has over 150 expert members, 500 twitter followers and 37 blogs to date. More recently, we have also launched a State of Working Britain blog, focusing on labour market developments (http://stateofworkingbritain.blogspot.co.uk/).

Capacity Building Results: We measure our success in capacity building by the very high number of PhD’s obtained whilst working in the Centre, which has averaged 6 a year, and by the high calibre of jobs they move into – universities, central banks, international financial institutions, government departments. Of the 59 researchers who moved on in the past 5 years, 38 took up lectureship posts including Princeton, Yale, Berkeley, Sciences Po, Oxford, Cambridge, Imperial, UCL and Surrey; Central Banks (England, EBRD, Turkey and Slovenia); the OECD and various governments (including UK, Singapore and Israel). We know that many of them are carrying their experience of working at CEP into their work at these institutions since many of them have remained involved with CEP. This has helped build an exceptionally strong international network of academic and policy contacts. Taking just one out of several possible examples: Chiara Criscuolo, previously a research officer at the CEP, and now working at the OECD, was asked to develop work which originally started at the centre, by investigating the long-lasting impact of a major regional industrial subsidy policy on employment growth, unemployment, and productivity in the areas supported and at policy spillover effects in neighbouring areas. She is now in charge of a team reviewing state aid practices and sharing not only their countries’ ex-post evaluations and best practice but also looking at implementing both ex-post and ex-ante valuation and randomisation. She contributed to the Guidelines on regional state aid for 2014-2020.
This very much relates to the methodology she developed at CEP that develops new instrumental variables for uncovering causal effects as well as exploiting an “accidental randomisation”. We would be able to give many other examples of ongoing connections and spreading of best practice as a result of working at CEP. As well as spreading the reputation through best research practice, former members of the Centre bring it enormous tangible benefit. For instance Zack Cooper, a research fellow at CEP, on moving to Yale University involved our productivity programme in work on the causes of variation in US hospital spending. This has been an extremely high profile project (featured on the front page of the New York Times [http://www.nytimes.com/interactive/2015/12/15/upshot/the-best-places-for-better-cheaper-health-care-arent-what-experts-thought.html?_r=1]), giving us access to the largest ever assembled database of hospital claims data, as well as remote access to advanced computing facilities at Yale. A further international network with former staff and students was set up around our management practices and productivity work: with Sadun at Harvard and Bloom at Stanford. They have also helped us obtain valuable access to resources for carrying out randomised experiments on textile enterprises in India and on home vs office working in China. They are also working with us on extending our World Management Survey to American hospitals to boost our work on productivity in the public sector; to Pakistan, (via their World Bank contacts), Africa (a successful joint application to PEDL/CEPR), Brazil (via the ITAU Bank), Nicaragua and a re-survey of Latin American firms (financed by the Inter-American Development Bank).

Our contacts also help us gain access to US policy makers to present CEP’s work: recently Van Reenen and Bloom, formerly at CEP now at Stanford, met with the head of Obama’s Council of Economic Advisers and staff to discuss their management productivity work and work/life balance issues [http://www.whitehouse.gov/blog/2014/05/29/leading-academics-discuss-changes-family-life-and-implications-21st-century-workplace].

4.7 How Will Continuity and Extension of Centre’s Work and Impact be Ensured?

As well as completing some of the extensions to the work of the past five years (see pages 15-16), the Centre’s new objectives for 2015-20 will continue to connect to some of its previous work. Whilst there are innovations in its new programme - a new Urban programme; new projects on Entrepreneurship; a concentration on Big Data; partnerships with business to carry out field experiments; a financial services focus bringing micro-data for the first time to existing theory frameworks - the fundamental questions underlying the work, how to promote, share growth and ensure that it is the right sort of growth continue to guide our selection of projects.

The advantage of winning another five years funding for the Centre allows us to build on previous work. For example, the Productivity Programme we will introduce more RCT experiments to test some of our previous findings; we will see through the recommendations we put forward in the LSE Growth Commission Report, advising the new Infrastructure Commission – set up largely following our recommendations in its work by pushing through our findings and new analyses and evaluations of policies. The findings of our Globalisation Programme on the impact of trade liberalisation, stands us in good stead to disseminate new work begun in the last months of 2015 analysing the economic implications of BREXIT (see [http://cep.lse.ac.uk/pubs/download/pa016.pdf]). Our work on Wellbeing, although not paid for by the ESRC for the next five years and only pump primed in the previous five, has raised funding from other sources to develop its model of subjective wellbeing over the life-course, in order to show the quantitative causal impact of factors like parenting, schooling, employment, income and health. The Wellbeing Programme’s longitudinal study evaluation of the impact of a programme to improve schoolchildren’s wellbeing and school performance started in 2013 and will come to fruition in 2018. In the Education Programme we shall be able to assess the longer term impact on student performance and on bringing up the tail of disadvantaged students of
the first “sponsored” academies compared with the “converter” academies (schools converting to academies to benefit from greater autonomous governance).

We have been successful in raising £3m from BIS to establish a Centre for Vocational Education Research. This will build on the Centre’s work on post-compulsory education carried out from as early as 1991 when Layard and Steedman established a network of experts proposing remedies to the problem that Britain was failing half its young people by not providing a proper vocational education to those who do not go to university. Work carried out by CEP and the Skills for All Programme (set up in 2001), involved a more careful comparison than had ever been attempted before, of educational outcomes in Britain and our competitor countries, including the study of curricula and the content of examinations (http://cep.lse.ac.uk/research/skills/about.asp). In 2015, with data never before available, the Centre will be able to capitalise on this past intellectual and lobbying effort. It serves as a good example of the advantages of a centre in having the experience and extended tenure to be able to capitalise on new opportunities and to not have to reinvent the wheel – without its past experience it would not have been able to put together a winning bid for such work.

We will continue to successfully disseminate our work as per our Pathways to Impact Plan and this will involve reiterating existing findings from previous years as well as new findings. We recognise the importance of pushing key findings again and again because of the short memory of the media, because a trickle effect is needed in order to get complex issues understood, and because the same issues tend to reoccur. Many of our classic older papers continue to be highly downloaded years after they have been written – e.g. our 2010 election analyses have been downloaded 14,000 times a year up till 2016. Finally, our next five years will build not only on the ESRC’s investment in the CEP but also on the Spatial Economics Research Centre (SERC). SERC has merged with the economic geography strand of the Globalisation programme and will expand into a new Urban Programme. Over the next 5 years we are building on the legacy of two centres, not one. As mentioned above we have three other Centres co-located in the CEP: the Centre for Vocational Education Research, the What Works Centre for Wellbeing and the What Works Centre for Local Growth. It is clear that the legacy of the Centre is not only continuing but greatly expanding.

PART FIVE - DIRECTOR’S ROLE, CENTRE MANAGEMENT & CENTRE CHALLENGES

5.1 Director’s Role & Centre Management

The Director’s role, discussed below, is key to the success of a Centre but, given the size of CEP, can only be effective with the support of other vital ingredients. The Management Structure at CEP, consisting of the Programme Directors and Research Director, has ensured that in charge of each programme of work is a someone who is a leading expert in their field; who has been involved in drawing up the projects of the programme and can oversee the project leaders’ running of the project; can be responsible for quality control through supervision, seminar critique, editing of discussion paper submissions, programme meetings; and for bringing on new work. Because the evolution of the Centre’s programme of work this has been a collaborative effort and draws on such a wide breadth of expertise internationally. This has ensured that the coverage of the questions under investigation has been comprehensive; that the questions are significant, not just adding a wrinkle on the literature; that they take account of what is already known by other fields; that they are amenable to natural experiment and tractable given the known state of existing or collectable data. Although CEP’s ethos has been decidedly un-bureaucratic, the meetings it does set up: programme meetings, the 6 seminars per week, the plenary annual two day conference and annual report and planning meetings, ensure that the Centre operates as an integrated whole. Maximum face to face interaction is enabled by the Centre’s being based on one large floor with several multiple occupancy offices and a crucial
kitchen/social space and it is common for researchers to see their supervisors a good three times a week or so.

The Centre has also benefited from a professionally organised administrative, data and IT infrastructure and the services of a leading economic journalist who, on a part time basis, leads a public affairs unit.

**Setting the Centre’s Direction:** The Director has been responsible for defining the main thrust and direction of the Centre's mission and, for three times in 12 years, has sifted and drawn together the programme project 5-year plans into a coherent whole and an attack on big questions often from a range of theoretical or empirical perspectives. Examples have been given above of the integration of the Centre’s research effort (summary publications, events, books, LSE Growth Commission) and it is often the case that different programmes will focus on the same topic from different perspectives.

These are often substantive topics. Immigration is tackled by the Labour Programme from the perspective of whether immigrants depress the wages and job prospects of native Britons (empirically it does not); from the trade programme over whether immigration helps exports and productivity (it does); and from the Community Programme over whether immigrants damage communities through (e.g.) more anti-social behaviour and access to public services (we found that this was not the case). These findings often come together in special reports (e.g. [http://cep.lse.ac.uk/pubs/download/ca019.pdf](http://cep.lse.ac.uk/pubs/download/ca019.pdf)). Similar cross-CEP integrative issues are the puzzle of the UK's low productivity growth (Productivity and Labour), austerity (Macro and Productivity) and Brexit (Trade, Productivity and Labour).

Sometimes this integration happens on methodological issues. For example, the issue of how the actions of one agent “spill-over” to others comes up in Education (peer effects), Community (neighbourhood effects) and Trade (agglomeration effects). In Productivity the issue is spillovers from innovation where the R&D by one firm helps the productivity of others. Bloom, Schankerman and Van Reenen’s 2013 Econometrica paper develop a general statistical methodology based around “distance metrics” for measuring and identifying these spillover effects which has been used across a number of areas.

**Raising Centre Profile:** Beyond the intellectual steer the Director gives to the centre, one of his most important roles has been to raise the profile of the Centre in scientific and policy circles. The scientific profile of the Centre was always impressive but the Centre has never previously recorded such a high number of articles in five years – 37 - in the top five journals, nor the record number of prizes awarded to 17 senior and 11 junior staff. These included prizes for top papers, Fellowships of the British Academy, Econometric Society, EIB Prize, the Arrow Prize, Frisch Medal, Bernacer Prize, Addington Prize, Austin Robinson Memorial prize and President's Medal of the Royal Psychological Society. In December 2010 the Nobel Prize was awarded to Christopher Pissarides who had contributed hugely to the Centre’s work on unemployment.

The Director has helped achieve more public profile by engaging continuously and getting others engaged, with current economic and social policy issues through dissemination methods exemplified above and including innovations for which he was responsible: election and policy analyses, Centrepiece 10 Big Ideas, his own Twitter account and daily feeds of Centre work relating to the day’s news. He has ensured that the flexibility of response that a Centre’s experience and infrastructure make possible has been used to the maximum in responding to changing economic and political circumstances. This has happened both for the UK and internationally. For example, in the 2010 UK Elections we produced election analyses building upon the success of the 2005 Election Analyses. In 2011 we had publication launches of an appraisal of the Labour government’s economic policies [http://cep.lse.ac.uk/conference_papers/15b_11_2011/CEP_Report_UK_Business_15112011.pdf](http://cep.lse.ac.uk/conference_papers/15b_11_2011/CEP_Report_UK_Business_15112011.pdf).
Luis Garicano has been active in maintaining a blog on European and Spanish politics (“No Free Lunch”) and has written several best-selling books and reports on the Eurocrisis (e.g. “Breaking the Deadlock A Path out of the Eurocrisis” presented in a CEP Public Lecture at LSE and in Washington’s Peterson Institute). Other examples are the 2012 US presidential elections; Austerity (e.g. the debate with Krugman, Portes and Evan Davies organised by Layard at the Houses of Parliament launching the joint “Manifesto for Economic Common Sense” http://www.manifestoforeconomicsense.org/.

Internationally, the Director has extended links through developing his own programme’s agenda. The Centre’s name has received huge interest as a result of studies coming out of the World Management Survey he pioneered, firstly with CEP London colleagues and then with Harvard and Stanford when these colleagues moved there. Leveraging this international nexus and as a result of working and feeding back to the 20,000 surveyed managers in 34 countries, the programme has drawn the attention of business, academics and policymakers world-wide with countless presentations and keynotes to academic audiences as well as the World Bank, the EBRD, the Asian Development Bank, US President Council of Economic Advisers, EU, IMF, Bank of England and BIS. The Centre has helped others wishing to set up Management Surveys in the UK ONS, US Census Bureau and similar outfits in Mexico, Germany and Pakistan. The IMF Article IV Team commented repeatedly on the CEP’s work in its annual “Healthcheck Report” to H.M. Treasury. Our international reputation has enabled the Centre to attract world class long term academic visitors such as Tito Boeri, Keith Head, Elhanan Helpman, Daniel Kahneman, David Donaldson, Steve Redding, Victor Lavy, Yann Algan, Vernon Henderson and Philippe Aghion (both now joined full time), and top policymaker visitors and contributors such as Gus O’Donnell, Jonathan Portes and David Halpern. Our seminar programme has also featured some top names who always are set aside several hours to hold “surgeries” with research staff and students.

Integrating Centre and Staff activities: In setting up the LSE Growth Commission, (described on p.8 and p.21) and writing with Tim Besley its Report and Book, the Director has ensured that work and staff from all the Centre’s programmes has been drawn together to provide evidence to government of the need to move away from short-termist policies. Internally it has been good for esprit de corps since it has ensured that the Centre pulls together as one, all programmes contributing to the research secretariat we set up in partnership with the Institute for Government. Externally, there has been the huge dissemination of the Report’s findings by the Director and Besley to more than 40 policy audiences and in over 30 meetings with senior civil servants and ministers (including the Chancellor George Osbourne and his advisors, Shadow Chancellor Ed Balls, Michael Heseltine, BIS Secretary of State Vince Cable, First and Second Permanent Secretaries at the Treasury Nick McPherson and Sharon White and Treasury Chief Economist David Ramsden). On the back of the LSE Growth Commission, the Director was Commissioner on the City Growth Commission which spearheaded the government’s “Northern Powerhouse” plans and the Inclusive Prosperity Commission chaired by Larry Summers. This has helped maintain the high profile of the Centre and have ensured it will be consulted in future plans of the Infrastructure Commission. Programmes such as the LSE Growth Commission, the management practices project, the longitudinal RCT’s, and other projects involving length assemblage of huge amounts of primary and secondary data would have been impossible without a centre structure.

Fundraising: Finally the Director’s role in fundraising has been key. He has been responsible for raising £11.9m with the Research Director, Machin, in two ESRC centre competitions for 2010 and 2015. But in addition he has raised between 2010 and 2015 a further £2.63 million from 13 different funding sources to carry out his programme’s work on productivity and to fund the management survey. The Centre as a whole has for these 5 years spent £7.03m from grants won from outside the £6.45m ESRC core, putting in an average of 2 research applications every month. A further £3m has
just been raised for the new Centre on Vocational Education Research. Just as the Director has made it the responsibility of staff at all levels to get involved in dissemination, he has placed the same responsibility on them for fundraising: staff understand that after initial two to three year funding by ESRC they are expected to pursue other sources of funding to extend contracts.

5.2 Challenges and Their Impact
The main challenges to meeting some of our objectives have been difficulties with data, which we have documented (pp.15-16) above. The challenge of branding output from the Centre for Economic Performance, rather than London School of Economics, remains a constant one despite our efforts to clearly brand all output, releases, emails and publications. Nevertheless it is a mixed blessing because it is possible that our work gets more prominence in association with the LSE name than it would without it.

The challenge of staff retention always remains as some of the leading researchers in the Centre are poached by places such as Princeton (Redding), Stanford (Bloom), Harvard (Sadun), Oxford (Venables) and Yale (Cooper). Our constant investment in careful hiring has meant that we have successfully met this challenge recruiting people like Aghion, Garicano and Ottaviano into the Centre (see section 5a).

Despite the success of the CEP’s rising record in dissemination, we face the problem that it is not necessarily the most academically important items that are considered newsworthy – often quirky “freakonomics” pieces make larger splashes. This can often mean that work we consider important and covering big topics with long term implications are overlooked. Our response to this, outlined above, is to choose several methods and formats of dissemination and to keep a consistent message that high quality, quantitatively rigorous work on long-term issues matters. This has been successful in our productivity work for example. The “productivity puzzle” is one of the most talked about economic issues (i.e. why UK GDP per hour is now about 15% below pre-2008 trends) and the Centre’s work is often mentioned as we have extensive work in the area.

A further challenge has been misrepresentation of our work by the media or wider world. The danger here is that staff can become more wary of putting their research out for press attention. Ironically, even the misrepresentation can become an opportunity if used well. We produced several pieces on the benefits of hospital competition which influenced the direction of government policy. Our worked was attacked, but the investigators replied in full to their detractors through an article in the Lancet.

Another example is that Machin et al’s work on the success of sponsored academy effects was cited by the government justifying the Academies Act which rolled out converter academies to most secondary schools in England. In all cases the press allowed us to respond and the arguments caused greater press interest and public downloads (http://www.theguardian.com/education/2012/apr/09/labour-academies-research-coalition-programme).

Increasing demands by data providers for ever tighter security conditions for storing confidential data have placed extra demands on research and support staff, especially as the post of Data Manager was made redundant in 2012 given the efficiency savings required to meet the cuts on our core grant.

5.3 Impact of Any Budget Changes (positive and negative)
The significant budget changes occurred before the Centre’s programme of work started during post-competition negotiations with ESRC which cut the requested budget by £870,000. We have nevertheless been successful in slightly more than matching the ESRC core grant (£6.51m) with outside funds (£7.03m) which has allowed us to run our Wellbeing Programme and the Productivity Programme’s management survey as intended. The successful application to ESRC for a £200,000
supplementary grant in 2013 was helpful as pump priming for the Wellbeing Programme and helped tide the programme over the period when its DWP funding had ceased and during which it made successful applications to the Templeton Foundation and to the ESRC What Works Competition which have secured its continuation beyond 2015.

PART SIX: REFLECTIONS ON THE CENTRE

The Centre’s experience of working with ESRC continued to be harmonious and efficient during 2010-15. We found our ESRC representatives Jennifer Edwards and Claire Mussen very helpful and responsive. The Troika meetings were helpful ways of providing two-way information exchange and we believe that discontinuing them will be a disadvantage to the ESRC which has lost a way of gathering useful information on the internal workings of its investments. We also believe that dropping Annual Reports and instead relying on Research Fish data prevents ESRC or its committees from gaining an overview of the progress of its investments and lets its investments “off the hook” by not calling them to annual account. Relying on Research Fish does not allow anyone to find out whether a Centre is adding up to more than a set of disparate projects or to get a bird’s eye view of its achievements. Apart from this however, Research Fish is, as we have at several points commented, of negative value and it imposes, for a centre, very large commitments of administrative effort for data entry and checking. The research engine of Research Fish is so difficult and slow for anyone to navigate or find the most basic information that Google or the website of the institution involved would always be the first port of call for enquirers.

Funding is a constant challenge as the crisis and its aftermath has made raising research funds considerably harder. We were also disappointed at the way the decisions were made during the last ESRC centre competition. Despite excellent reviews from all referees our funding was cut, once again in cash terms. There also seems to be a disconnect between the decisions of the panel and the referees. Making major funding decisions based on an interview of under an hour with a panel who refused to share substantive questions prior to the interview does not seem to us a sensible way of allocating taxpayer money.

PART SEVEN: FORWARD LOOK

In the next five years CEP will make substantial progress in completing the projects below. We describe how the Centre’s “legacy” will endure in Section 4.7 above.
<table>
<thead>
<tr>
<th>Theme</th>
<th>Project</th>
<th>Key Question</th>
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<tbody>
<tr>
<td><strong>G.GROWTH PROGRAMME</strong> <em>(VAN REENEN, Estrin, Bloom, Martin)</em></td>
<td></td>
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<tr>
<td><strong>G1 Innovation</strong></td>
<td>G1A Inventor careers</td>
<td>What makes or breaks a potential inventor?</td>
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<td></td>
<td>G1B Financial crisis</td>
<td>Did the financial crisis cause a permanent fall in innovation &amp; productivity?</td>
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<td>G1C Entrepreneurship</td>
<td>What factors (such as crowdsourcing) stimulate more entrepreneurship?</td>
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<td><strong>G2 Management practices</strong></td>
<td>G2A Wealth of nations</td>
<td>Does management explain why some countries are richer than others?</td>
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<td></td>
<td>G2B Managers</td>
<td>Do better management practices simply reflect managerial talent?</td>
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<td>G2C Corporate culture</td>
<td>How can Big Data measure firm “culture”? Does it affect performance?</td>
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<td><strong>G3 Environment</strong></td>
<td>G3A Climate policies</td>
<td>Can we evaluate and improve the EU’s ETS and UK’s CRC?</td>
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<td></td>
<td>G3B Clean spillovers</td>
<td>How big are the technology spillovers from low-carbon innovation?</td>
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<td>G3C Power balance</td>
<td>Can nudges in RCTs reduce energy consumption in UK &amp; China?</td>
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<td>G3D Extreme weather</td>
<td>Can we use the past to understand how to adapt to climate change?</td>
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<tr>
<td><strong>E. &amp; L. EDUCATION AND LABOUR PROGRAMME (MCNALLY/MACHIN, Pischke, Michaels, Petrongolo,)</strong></td>
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<tr>
<td><strong>E1 Schools as economic organisations</strong></td>
<td>E1A Academies</td>
<td>What is the effect of school autonomy on pupil achievement?</td>
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<td>E1B Networks</td>
<td>How effective are school networks for raising attainment?</td>
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<td>E1C School choice</td>
<td>How does choice and school competition influence pupils’ outcomes?</td>
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<td>E1D Segregation</td>
<td>What are the drivers and consequences of increased school segregation?</td>
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<td><strong>E2 Beyond school</strong></td>
<td>E2A Long-term</td>
<td>What are the long-term impacts of early educational interventions?</td>
</tr>
<tr>
<td><strong>L1 Wages</strong></td>
<td>L1A A picture of pay</td>
<td>What has happened to UK pay structures over the last 40 years and why?</td>
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<td></td>
<td>L1B Wage stagnation</td>
<td>Why have real wages stagnated and fallen?</td>
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<td>L1C Risky CEOs</td>
<td>Does the level and structure of CEO pay affect firm performance?</td>
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<tr>
<td><strong>L2 Inequality</strong></td>
<td>L2A Labour share</td>
<td>What are the causes of the global fall in labour’s share of GDP?</td>
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<td>L2B Wealth inequality</td>
<td>How has wealth inequality changed across the world?</td>
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<td>L2C Tasks</td>
<td>How have tasks within occupations changed over the long run?</td>
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<tr>
<td><strong>L3 Gender</strong></td>
<td>L3A Gender &amp; Services</td>
<td>How has the rise of services changed women’s labour market position?</td>
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<td>L3C Gender gaps</td>
<td>Can we explain male-female gaps in education &amp; subject choice</td>
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<td><strong>T. TRADE PROGRAMME</strong> <em>(OTTAVIANO, Sampson, Dhingra,)</em></td>
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<td><strong>T1 Britain’s place in the world</strong></td>
<td>T1A Union break-up</td>
<td>What will be the impact of the UK leaving EU? How will Scotland diverge?</td>
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<td>T1B Immigration</td>
<td>Do immigrants foster international trade in services?</td>
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<td>T1C FDI</td>
<td>What determines foreign ownership and what is its economic impact?</td>
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<tr>
<td><strong>T2 Trade &amp; export policies</strong></td>
<td>T2A Promoting trade</td>
<td>Can we use RCT evidence on policies to improve UK firms’ exports?</td>
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<td></td>
<td>T2B Industrial policy</td>
<td>How do industrial policies affect growth and can we design them better?</td>
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<td></td>
<td>T2C Trade agreements</td>
<td>What are the effects of trade agreements &amp; how can they be improved?</td>
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<tr>
<td><strong>T3 Multinationals and global value chains</strong></td>
<td>T3A Productivity</td>
<td>How can trade boost productivity via changes in product mix &amp; imports?</td>
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<tr>
<td></td>
<td>T3B Offshoring</td>
<td>How do firms use online markets to offshore jobs and what is the impact?</td>
</tr>
<tr>
<td></td>
<td>T3C Business groups</td>
<td>Does the hierarchical structure of business groups affect performance?</td>
</tr>
</tbody>
</table>

| **T4 Trade & Finance** | T4C Banks and Risk | Has banking globalisation increased risk to the world trading system? |

| **U. URBAN PROGRAMME** (GIBBONS, Overman, Silva) |
| **U1 Evolution of urban systems** | U1A City growth | What are the triggers and patterns of city growth/decline? |
| | U1B Industries | Can we map & re-balance the way industries specialise across areas? |
| | U1C Broadband | What is infrastructure’s impact on local economic performance? |

| **U2 The internal structure of cities** | U2A Micro-structure | How does diversity of building use affect city performance? |
| | U2B Prime locations | What is role of geography vs. agglomeration in determining prime location? |
| | U2C Finance & space | How do financial services influence the spatial pattern of economies? |
| | U2D Spatial spillovers | Can RCTs in tech incubators help identify how ideas spread? |

| **U3 Housing policy** | U3A Planning | Do land use & other policies affect geographical mobility? |

| **C. COMMUNITY & WELLBEING PROGRAMMES (MANNING)** |
| **C1 Change and resilience** | C1A Shocks | How do economic and social shocks affect community wellbeing? |
| | C1B Ethnicity | How does local ethnic and migrant composition affect communities? |
| | C1C Big Society | Does public expenditure crowd-out private donations and volunteering? |
| | C1D Crime & welfare | Have welfare to work reforms decreased or increased crime? |

| **WELLBEING PROJECTS (LAYARD)** | To be funded by Non-ESRC Funds |
ANNEX A
Details of Project Outputs achieving Objectives

LABOUR PROGRAMME (MACHIN, Freeman, Layard, Petrongolo, Pischke)

L1A ARE AGGREGATE EMPLOYMENT FLUCTUATIONS DUE TO RIGID WAGES?

PLAN 10/11: Initial data work: Compare employment fluctuations in occupations with very flexible wages to other occupations with more typical wage setting by looking at estate agents data, and at wage and employment data from the CPS, Census, and ACS, combining these with data on home sales from the National Association of Realtors, and price data from OFHEO (Pischke).

OUTCOME 10/11: Some initial data collection and preliminary analysis has been completed. However, the house price data so far only reach up to just before the crisis, and there is not enough variation in the data to get precise enough estimates for these to be valuable. As the price data have to be pulled from the web and put together by hand, the project will be returned to in the academic year 2013/14 to ensure there is enough data through the crisis and associated house price drop.

PLAN 11/12: To ensure there is enough data through the crisis and associated house price drop, and as the price data has to be pulled from the web, the project will be returned to in the academic year 2013/14.

OUTCOME 11/12 On Track

PLAN 2012/13 New project planned from Manning/Petrongolo on the determination of reservation wages: how they respond to the business cycle and/or psychological motives.

OUTCOME 2012/13: Draft Paper Reservation wages and the wage flexibility puzzle by Petrongolo/Koenig We show using micro data for the UK and Germany that reservation wages are not at all cyclical, contrary to the predictions of the standard model. Thus there seem to be important missing elements in the standard model. Alternative stories that can be considered are (i) fairness – i.e. reservation wages are mostly determined by a largely acyclical concept of “fair wage” and don’t respond so much to outside labour market conditions; (ii) over-optimism – i.e. when the unemployed overestimate how quickly they will find work, their reservation wages won’t fall as much in a recession. Pischke continued work on wage rigidity and employment fluctuations. Compares how estate agents, who are paid basically on a commission basis in the US, versus architects and construction workers react to regional house price shocks. Results show a lower employment response for estate agents, who have the most flexible wage contracts, followed by architects and construction workers. There are no effects on weekly hours for any of these groups. These results are roughly in line with the idea that wage rigidity is responsible for large employment fluctuations over the business cycle.

PLAN 2013/14: Draft papers by Manning/Petrongolo and Pischke to be produced.

OUTCOME 13/14: We are comparing employment fluctuations in occupations with very flexible wages to other occupations with more typical wage setting - estate agents, architects and construction workers reacting to regional house price shocks. Results show a lower employment response for estate agents, who have the most flexible wage contracts, followed by architects and construction workers. There are no effects on weekly hours for any of these groups. These results are roughly in line with the idea that wage rigidity is responsible for large employment fluctuations over the business cycle. This work needs to be written up during the year. Work on both the CEO and gender equality projects will go on.

PLAN 2014/15: Draft papers by Manning/Petrongolo and Pischke to be produced. This work needs to be written up during the year. Work on both the CEO and gender equality projects will go on.


COMPLETED
L1B Does linking wages with firms’ value improve productivity and wellbeing?

PLAN 10/11: Write a report reviewing the literature and providing new evidence on the impact of incentive payment schemes on economic outcomes for firms and establishments (Bryson) and consider connections between different well being measures and income (Bryson)

OUTCOME 10/11: The first objective was achieved with a report (written by Bryson, Freeman, Lucifora, Pellizzari and Perotin) to the Fondazione Rodolfo DeBenedetti entitled Paying for Performance: Incentive Pay Schemes and Employees’ Financial Performance. This was presented at the 12th European Conference of FRDB, Cagliari, 29 May 2010. Forthcoming, Oxford University Press. The second objective was achieved with Bryson, A., Barth, E. and Dale-Olsen, H. (2010) Do Higher Wages Come at a Price?, CEP Discussion Paper No. 1011. This paper is currently under revision for a journal.


Work On link between Pay and Performance for CEOs As Well As Workers Firm Performance and Wages: Evidence from Across the Corporate Hierarchy (Brian Bell and John Van Reenen) CEP Discussion Paper No. 1088, http://cep.lse.ac.uk/_new/publications/series.asp?prog=CEP During the last decade, CEO pay has increasingly been structured toward Long Term Incentive Plans (LTIPS) that vest only on relative performance criteria. Do these high-powered incentives actually affect CEO actions and hence firm performance? We examine whether the exposure to such packages affects performance and plan to use accounting changes to identify exogenous variation in the share of pay in such LTIPS (Completed Discussion Paper Nov 2011)


OUTCOME 2012/13: Worked on link between pay and performance for CEO’s as well as workers. Brian Bell and John Van Reenen: have created a unique database of over 400 UK-listed firms covering the period 1999-2010.

PLAN 13/14: Run special Session on productivity and jobs paradox at the Royal Economic Society. Submit to special issue of EJ or Fiscal Studies.

OUTCOME 13/14: Special session on productivity and jobs paradox run at RES and brought out in “The UK Productivity and Jobs Puzzle: Does the Answer Lie in Labour Market Flexibility?” (Pessoa and Van Reenen), forthcoming, Economic Journal http://cep.lse.ac.uk/pubs/download/special/cepsp31.pdf and “Real Wages and Unemployment in the Big Squeeze” (Gregg, Machin and Fernandez-Salgado), forthcoming, Economic Journal have been accepted for publication. A CEP/IFS collaboration.

PLAN 13/14: Brian Bell and Steve Pischke to produce draft paper using the same dataset to examine how risk-taking behaviour of CEOs varies according to the convexity of their expected wealth. Bryson to produce paper on performance related pay and its correlates. Do an LSE launch on people management practices in public sector in autumn.

OUTCOME 2013/14: Work launched. Various features of executive compensation produce gains for the recipients if things go well while protecting the CEOs from the downside if things go badly. There has been a lot public attention to this contributing to excess risk taking in the run up to the crisis. We have started to document that there seems to be relatively little convexity in
UK compensation schemes. We want to refine this further, particularly looking at the role current and future flow compensation plays. We will then go on to relate convexity to characteristics of the firms and CEOs, and link the convexity to risk taking of the firms. Much of the year has been spent on initial set up and further data collection.

**PLAN 14/15:** Brian Bell and Steve Pischke to produce draft paper using the same dataset to examine how risk-taking behaviour of CEOs varies according to the convexity of their expected wealth. Bryson to produce paper on performance related pay and its correlates. Do an LSE launch on people management practices in public sector in autumn.

**OUTCOME: 2014/15:** Completed. “Has Performance Pay Increased Wage Inequality in Britain?” (Mark Bryan and Alex Bryson, Discussion Paper 1346). Bell/Pischke CEO risk taking has been involved with updating the data and will run into new Centre research agenda.

**L2A HOW IMPORTANT ARE DEMAND AND SUPPLY IN EXPLAINING THE INTERNATIONAL DIFFERENCES IN GENDER WAGE GAPS? WHAT CAN BE DONE TO REDUCE DISCRIMINATION?**

**PLAN 10/11:** Investigate data on marketisation of female labour supply using American Time User Survey; Investigate Current Population Survey to decompose rise in female employment into within and between industry components (Petrongolo)


**PLAN 11/12:** Petrongolo and Ngai to draft paper investigating impact on women’s employment of two developments: structural transformation from production to services and marketisation of home production (cleaning, childcare etc) We will decompose the rise in female market hours into a between-industry and a within-industry component, where the between-industry component captures the impact of structural transformation on female employment. Also, we will use time use data to quantify the impact of marketisation.

**OUTCOME 11/12** We have a preliminary draft and will present the paper at the Society for Economic Dynamics conference in June 2012.

**PLAN 2012/13:** Present at the Society for Economic Dynamics conference in June 2012 Ngai, Petrongolo Paper on the joint impact on women’s employment of structural change from production to services, and the marketisation of home production.

**OUTCOME 2012/13:** A paper by Claudia Olivetti and Barbara Petrongolo "Gender gaps across skills and countries: supply, demand and the industry structure" is a revise and resubmit in the Review of Economic Dynamics.

**ADDITIONAL OUTCOME 2012/13:** Petrongolo has a second project in this topic "Female employment and structural transformation" joint with Rachel Ngai, which looks at time series evidence for the US. See *Gender Gaps and the Rise of the Service Economy*, CEP Discussion Paper 1204.

**PLAN 2013/14** Azmat and Petrongolo will write a survey paper on New Developments in Gender Economics (this will appear in a special issue of Labour Economics for the 25th anniversary of the European Society for Labour Economists).

**OUTCOME 2013/14:** Forthcoming in Labour Economics, in a special issue for the 25th anniversary of the Journal. Gender and the labor market: What have we learned from field and lab experiments? (with Ghazala Azmat). *Labour Economics* 30: 32-40, 2014 Experiments have offered new findings on gender discrimination, and while they have identified a bias against hiring women in some labor market segments, the discrimination detected in field experiments is less pervasive than that implied by the regression approach. Experiments have also offered new insights into gender differences in preferences: to gain less from negotiation, women appear to
have lower preferences than men for risk and competition and may be more sensitive to social cues.

Another paper conditionally accepted in the Review of Economic Dynamics (Petrongolo and Olivetti) on international comparisons: cross-country variation in the share of services explains between one quarter and one third of the overall cross-country variation in wage and hours gaps. Further paper (Petrongolo and Ngai) models the impact of the rise in services on female outcomes. The key ideas are that women have a comparative advantage in producing services rather than manufacturing goods, and that consumer preferences favour variety, i.e. goods and services are poor substitutes in consumer preferences. Faster productivity growth in the goods sector shifts labour from goods to services, thus raising relative demand for female labour and, as a consequence, female relative wages. Furthermore, slower productivity growth in home production than in market services shifts labour from the household to the market, and raises female employment. We compare model predictions with the historical evolution of the service share and gender outcomes in the US.

**PLAN 2014/15:** Submit women and services paper to journal.


**L2B WHAT EXPLAINS THE “GLASS CEILING” FOR WOMEN IN HIGH SKILL PROFESSIONS (E.G. LAW FIRMS) AND WHAT NEEDS TO CHANGE TO IMPROVE FEMALE CAREER PROGRESSION IN SUCH FIRMS?**

**PLAN 10/11:** Initiate telephone survey of law firms: Target 800 interviews (Iyengar)

**OUTCOME 10/11:** Done - Petrongolo and Iyengar surveyed several hundred lawyers in partnership with the Law Society. Initial analysis suggests female lawyers suffer from lower wages, especially after starting families. This is primarily because of choice of speciality (e.g. family law vs. corporate tax)

**PLAN 11/12:** Use existing surveys, augmented by our own primary data collection from 2010, to determine the effect of changes in the returns to partnership on the career tracks of men and women. Complete final report for the Law Society, and work on an academic paper in 2011/12.

**OUTCOME 11/12** An interim briefing of findings was presented to the Law Society in the summer 2011. Further work on the analysis has been delayed by Iyengar’s personal leave during 11/12. Work by Azmat on “Gender Gaps in Performance: Evidence from Young Lawyers”.

**PLAN 2012/13** Carry out analysis of law firm survey data.

**OUTCOME 2012/13:** Petrongolo and Iyengar performed survey and draft of results, but sample response rates low. Has been redirected due to change of staff (Iyengar has left, Ghazala Azmat has joined as CEP associate). Ghazala Azmat has paper on Gender Gaps in Performance: Evidence from Young Lawyers (Joint with Rosa Ferrer).

**PLAN 2013/14** Azmat to revise paper Gender Gaps in Performance: Evidence from Young Lawyers (Joint with Rosa Ferrer)

**OUTCOME 2013/14:** Revisions made to paper and resubmitted to Journal of Political Economy.

Unlike most high-skilled professions, the legal profession uses widely accepted and objective methods to measure and reward lawyers’ productivity: the number of hours billed to clients and the amount of new client revenue generated. We find clear evidence of a gender gap in performance. We find that the differential impact of the presence of young children and the differences in aspirations to become a law-firm partner account for a large part of the difference in performance. These gaps in performance have important consequences for gender gaps in earnings. While individual and firm characteristics explain a large part the gap in earning, the inclusion of performance measures explains most of the remainder. This has important policy-
implications as it helps us to understand the factors that contribute to gender differences in performance, as well as earnings.

PLAN 2013/14: Azmat to revise paper Gender Gaps in Performance: Evidence from Young Lawyers (Joint with Rosa Ferrer).

L2C WHAT IS THE STRUCTURE OF THE MARKET FOR CHILD SERVICES (SUCH AS DAYCARE) AND DOES IT HOLD BACK THE ABILITY OF WOMEN TO PROGRESS IN THE LABOUR MARKET?

PLAN 10/11: One of the following according to which appears most fruitful: a) estimate the relative wage of childcare workers (relative to workers in care homes) against measures of relative supply and demand; b) analyse labour market participation of mothers – how this relates to increase in the supply of childcare provision ;(c)chart the relationship between quality of childcare provision (as measured by OFSTED) and characteristics of childcare providers (McNally) Preliminary investigation conducted. Still ongoing

OUTCOME 10/11: The research assistant working on this left in the Summer; work will recommence in the academic year 2011/2012.

PLAN 11/12: Complete data work and analysis.

OUTCOME 11/12 Project not started: possibly to be abandoned owing to data issues.

OUTCOME 2012/13: Project remains in abeyance.

PLAN 13/14: It is likely that there will be no one to take this objective on since McNally moved to Surrey and although she is part time with CEP is having to concentrate on running the programme and other education projects.

L3A WHY DOES THE PROPORTION OF YOUTHS NOT IN EMPLOYMENT, EDUCATION OR TRAINING (NEETs) REMAIN SO HIGH? WHAT CAN BE DONE?

PLAN 10/11: An academic paper should look at the effects of incentives schemes for staff at State Employment Services on the re-employment probability of youths (Petrongolo)


Completed chapter by Goujard, Petrongolo and Van Reenen (2011) "The labour market for young people" for the edited volume "The Labour Market in Winter: The State of Working Britain". Produced a pre- election briefing in 2010. Presented to Prime Minister on youth unemployment (March 2011)

PLAN 11/12: Petrongolo and Van Reenen prepare a paper on incentives at Public Employment Service. While interest in NEETS and JSA continues we shall also investigate other benefit recipient categories. A draft paper will be produced during 2011.

OUTCOME 11/12 Ongoing work with Petrongolo and Bagaria. Led special session in RES on youth including impact of A8 immigrants presenting initial results on job points pilots. Lots of media reports on youth unemployment in general. CentrePiece Article published B.Petrongolo and J.Van Reenen, “Youth Unemployment” http://cep.lse.ac.uk/pubs/download/cp338.pdf

PLAN 2012/13 planned paper on incentive schemes by Petrongolo, Van Reenen and Bagaria.

OUTCOME 2012/13: Draft paper "Incentives, Disruption and Jobs: Evidence from Public Employment Service Reforms" has been produced and it has been submitted to the EEA/ESEM conference. It was been presented in the CEP Tuesday labour workshop in December 2012.

PLAN 2013/14: Bagaria, Petrongolo and Van Reenen continue to work on public sector employment service paper.

OUTCOME 2013/14: In Can Helping the Sick Hurt the Able? Incentives, Information and Disruption in a Disability-Related Welfare Reform (joint with John Van Reenen and Nitika Bagaria) we have shown that the introduction of job placement incentives in the PES in the UK has initially had a beneficial impact on the exit rate from Incapacity benefits, but a detrimental impact on the job
finding rates of JSA claimants. We have concluded the paper with a cost-benefit assessment of this policy, and argue that the introduction of incentives has strong positive effects on welfare.

**PLAN 2013/14:** Bagaria, Petrongolo and Van Reenen continue to work on public sector employment service paper."

**OUTCOME: 2014/15:** Bagaria, N., Petrongolo, B. and Van Reenen, J *Can Helping the Sick Hurt the Able? Incentives, Information and Disruption in a Disability-Related Welfare Reform*, CEP Discussion Paper 1347

<table>
<thead>
<tr>
<th><strong>L3B APPRENTICESHIPS IN THE PAST, PRESENT AND FUTURE. CAN THE MASSIVE PLANNED EXPANSION OF APPRENTICESHIPS BE MADE TO WORK? DID APPRENTICESHIPS WORK HISTORICALLY?</strong></th>
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<tr>
<td><strong>OUTCOME 10/11:</strong> Steedman produced a report &quot;The State of Apprenticeship in 2010: Australia, Austria, England, France, Germany, Ireland, Sweden, Switzerland&quot;. Downloaded 16,500 times from CEP website in 5 months.</td>
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<tr>
<td><strong>PLAN 11/12:</strong> Steedman produced a report &quot;The State of Apprenticeship in 2010: Australia, Austria, England, France, Germany, Ireland, Sweden, and Switzerland&quot;. To accompany this, a paper setting out the next moves for policy will be written in 2011. Steedman to arrange with Gatsby and Nuffield to run a series of seminars on Technical Education in the UK. A report on Scottish Apprenticeship will also be written.</td>
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<td><strong>PLAN 2012/13:</strong> Given that the legislation to bring in the guaranteed apprenticeship was dropped by the Coalition government, we will need to change the focus of the project.</td>
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<td><strong>OUTCOME 2013/14:</strong> This objective had to be dropped because the Education Act 2011 removed the duty to provide an apprenticeship place to all qualified young people (aged 16-19) who did not have one and wanted one. Nevertheless, Steedman is still active in advisory positions. In a new work programme of the ILO to investigate ways of promoting productivity in SMEs, Steedman examined the contribution apprenticeship can make to safe working, decent work and productivity in SMEs, ‘The Effectiveness of Quality Apprenticeship for SMEs’. This paper provides a typology of apprenticeship provision and at various stages of institutional formalisation. Steedman has also worked alongside OECD colleagues to advise the authorities in Ireland on ways of tackling youth unemployment with particular reference to apprenticeship.</td>
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<td><strong>PLAN 14/15:</strong> Steedman will follow on her ILO paper with an analysis of apprenticeship initiatives and experiments in developing and developed countries to try to understand which models are most robust in predominantly informal economies.</td>
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<td><strong>OUTCOME: 2014/15:</strong> Completed. Steedman, H. <em>Overview of Apprenticeship Systems and Issues, ILO contribution to the G20 Task Force on Employment</em>, International Labour Office, Skills and Employability Department, Job Creation and Enterprise Development Department. - Geneva: ILO, 2014 This paper was finished and presented at an ILO seminar in Geneva on 9-10 May 2013. The paper is awaiting publication by the ILO. Application by CEP to BIS for a centre dedicated to Vocational Education Research successful.</td>
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<tr>
<th><strong>L3C USING NEW INTERNATIONAL DATA ON NUMERACY AND LITERACY, CAN WE IDENTIFY HOW MUCH BASIC SKILLS AFFECT ECONOMIC PERFORMANCE AND WHAT POLICIES IMPROVE THEM?</strong></th>
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| **PLAN 10/11:** Use OECD data to assess current literacy, numeracy and ICT skills issues and their
effect on labour market outcomes, and how this picture has changed since the mid-1990s. (Green, Machin)

**OUTCOME 10/11:** Green and Machin have attended meetings at OECD to suggest research topics that the data will be useful for.

**PLAN 11/12:** Research will be undertaken in academic years 2012/13 and 2013/14 when the PIAAC data should first become available for analysis.

**PLAN 2012/13:** Research will be undertaken in academic years 2012/13 and 2013/14 when the PIAAC data should first become available for analysis.

**OUTCOME 2012/13:** Still waiting on data becoming available.

**PLAN 2013/14:** Should get access to PIAAC data to begin analysis (subject to OECD data collection and access).

**OUTCOME: 2013/14:** Access to PIAAC data obtained in September 2013, data preparation begins summer 2014.

**ADDITIONAL OBJECTIVE:** Blanden to carry out a project on the effect of free pre-school education on child outcomes in primary school, exploiting the staggered implementation of free part-time pre-school for three-year-olds across Local Education Authorities in England in the early 2000s.

**PLAN 2014/15:** Project delayed since the PIIAC data has been released for public access only in the autumn of 2013. Work will begin this year on data analysis. The outputs will be a paper on international comparisons of wage inequality and skills. The same data will also be used to write a chapter for the next Handbook of the Economics of Education.

**OUTCOME: 2014/15:** After carrying considerable data work, this project had to be shelved because the data was not good enough (especially regarding the impossibility of comparing the IALS data to PIAAC) to reproduce earlier work and carry out a sufficiently rigorous study. Blanden project on effect of free pre-school education on child outcomes in primary school brought out discussion paper: [http://cep.lse.ac.uk/pubs/download/dp1352.pdf](http://cep.lse.ac.uk/pubs/download/dp1352.pdf) The policy led to small improvements in attainment at age five, with no apparent benefits by age 11. The paper suggests this is because the expansion of free places largely crowded out privately paid care, with small changes in total participation, and was achieved through an increase in private provision, where quality is lower on average than in the public sector.

**EDUCATION AND SKILLS PROGRAMME (MCNALLY, Besley, Gibbons, Silva, West)**

**E1A WHAT DETERMINES THE DIFFUSION OF PHONICS TEACHING AND WHAT IS ITS EFFECT ON EDUCATIONAL ACHIEVEMENT?**

**PLAN 10/11:** Data collection started. Build model Preliminary regression analysis conducted.

**OUTCOME 10/11:** Currently analysing data and refining model. (Machin, McNally, Viarengo).

**PLAN 11/12:** Continue data analysis and write up draft paper

**OUTCOME 2011/12:** progress with data analysis and methodology. First seminar presented at IFAU (Institute for Labour Market Policy Evaluation), Uppsala in March 2012.

**PLAN 2012/13:** Continue with data analysis and prepare a discussion paper.

**OUTCOME 2012/13:** Data applied for (and access given) which will enable us to consider the impact of the phonics pilots on later outcomes. We expect to write a discussion paper in the coming year.

**OUTCOME 2013/14:** A draft of the paper, ‘Learning to Read’ has been prepared. It has been presented at the CESifo conference on the Economics in Education in Munich (September 2013).

**PLANNED 2014/15:** To revise the paper in the light of comments, present at conferences and submit to the CEP Discussion Paper series this year. A draft of the paper, ‘Learning to Read’ has been prepared and will be presented at the Royal Economic Society (April 2014).
OUTCOME 2014/15: The paper has been refined and presented at the Institute of Education (November 2014) and the European Association of Labour Economics (June 2015). A draft for the CEP Discussion Series is currently being written up and will be completed December 2015/January 2016.

ADDITIONAL OBJECTIVE E1A(i) 2014/15: Evaluations will be carried out for the Education Endowment Foundation on the impact of teaching assistants on children’s reading in schools.

Outcome 2014/15: This field work has been completed and has gone to plan. The data work is ongoing for the evaluation.

ADDITIONAL OBJECTIVE E1A(ii) 2014/15 The effect of free pre-school education on child outcomes in primary school

OUTCOME E1A (ii) 2014/15 Publication produced CEP Discussion Paper No 1352 May 2015 Universal Pre-School Education: The Case of Public Funding With Private Provision

E1B HOW DO ASPECTS OF THE DEVOLVED EDUCATION SYSTEMS IN DIFFERENT COUNTRIES WITHIN THE UK (E.G. LEAGUE TABLES IN ENGLAND VS. WALES) AFFECT SCHOOL QUALITY?

OUTCOME 10/11: paper on reform to the grammar school system in Northern Ireland The Effect of Tracking Students by Ability into Different Schools: A Natural Experiment (Nina Guyon, Eric Maurin and Sandra McNally).

PLAN 11/12: Revise and Resubmit The Effect of Tracking Students by Ability into Different Schools: A Natural Experiment for the Journal of Human Resources. Scene setting article planned for 2011 on England v Wales in Education Performance and Accountability. Work proper to start on this in 2012


PLAN 2012/13: Scoping study to examine feasibility and usefulness of additional work comparing England to Wales. (McNally).

OUTCOME 2012/13: We have been working on what comparisons can be made across the UK (and also in conjunction with a separate ESRC project for which we applied for funding, looking specifically at Scottish Independence). We have produced a working paper Machin, McNally and Wyness (2012), ‘Educational Attainment across the UK: Performance, Inequality and Evidence’, Program on Education Policy and Governance Working Papers Series, Harvard University. This is also forthcoming in the NFER journal “Educational Research”

PLAN 2013/14: This objective has been fulfilled and there are no plans to conduct further work on this topic in 2013/14 other than to bring out article), ‘Educational Attainment across the UK: Performance, Inequality and Evidence’, in the NFER journal “Educational Research”

OUTCOME: The paper was published as anticipated: Machin, Stephen, McNally, Sandra and Wyness, Gill (2013) Educational attainment across the UK nations: performance, inequality and evidence. Educational Research, 55 (2). pp. 139-164. ISSN 0013-1881. We found that while the systems of the four countries of the UK are becoming increasingly divergent, there are still many similarities. This is borne out in the evidence on educational outcomes, which show many similarities between the four countries. Because of these similarities, the positive impacts of many of the policies and programmes adopted in England may have relevance for Scotland, Wales and Northern Ireland.
**EIC What is the effect of different forms of governance and management on quality?**

**PLAN 10/11:** a) Initial data collection survey by productivity programme of schools management will take place alongside survey of hospital management. b) An evaluation by Machin and Vernoit of the performance of state funded secondary schools in close proximity to an academy. They will also gather evidence on how academies use autonomy from LEA to pursue admissions policies favouring the most advantaged. See also EC2.

**PLAN 11/12:**
Bring out discussion paper on the impact of academy school conversions (autonomy increases) on a number of neighbourhood characteristics (for example, crime rates and unemployment rates in the local area). Start by creating a new dataset that matches each school to the neighbourhood characteristics of the local area.

**OUTCOME 2010/12:** Machin, S., and J. Vernoit, Changing School Autonomy: Academy Schools and their Introduction to England’s Education. CEE Discussion Paper. April 2011. [http://cee.lse.ac.uk/ceedps/ceedp123.pdf](http://cee.lse.ac.uk/ceedps/ceedp123.pdf). This paper has been presented at conferences/seminars in Trondheim, Maastricht, Chicago, the Royal Economic Society Conference and the CEP annual conference. A less technical version has also been presented at the Spectator schools conference and to the Department of Education.

**OUTCOME 2012/13**
The data has been collected for school autonomy increases and neighbourhood characteristics. But, no further work is planned because of the difficulty in finding a counterfactual.

Stephen Machin and Olmo Silva have completed a chapter that investigates the effect of school autonomy on the attainments of pupils in the bottom tail of the ability distribution. Their results show that schools that converted to academies between 2002 and 2007 improved their overall age-16 GCSEs results by further raising the attainments of students in the top half of the ability distribution, and in particular pupils in the top 20% tail. Conversely, the authors find little evidence that academies helped pupils in the bottom 10% and 20% of the ability distribution. Finally, they find little evidence that late converters (2007 and 2008) had any beneficial effects on pupils of any ability. This work was recently published as “School Structure, School Autonomy and the Tail”, Stephen Machin and Olmo Silva, Chapter 7 in *The Tail: How England’s Schools Fail One Child in Five – and What Can Be Done*, Paul Marshall (Ed)., Profile Books Ltd, February 2013. *School Structure, School Autonomy and the Tail*, CEP Special Paper No. 29 based on this publication released.

“Changing School Autonomy” paper submitted to journal.


**PLAN 2014/15:** Present latest work at CESifo Economics of Education Conference, Munich Sept.14 Revise Machin/Vernoit paper.


A draft paper on inferring parental preferences for academies versus other schools has been prepared.

**E2A How do Private Schools and Higher Post-Graduate Degrees Affect Social Mobility?**

**PLAN 10/11:** Using data from HESA, document composition of those studying 6 months after graduating; analyse effect of increasing number of foreign students on intergenerational mobility.

**OUTCOME 10/11:** Stephen Machin and Richard Murphy have produced two interim reports on this in collaboration with the Sutton Trust who co-financed the research; *The Social Composition and Future Earnings of Postgraduates* and *Increasing University Income from Home and Overseas Students*. Machin & Murphy found that 75% of students from independent schools go to the leading research universities, compared with only 38% of those who are state-educated; yet students from state schools do better at university than those from similar backgrounds who were privately educated, four percentage points more likely to get a first or 2:1, and also outperforming their independent-school peers by almost as much at Russell Group universities.

**PLAN 2011/12:** Test the model for whether overseas students displace domestic student. Present paper at UCL conference "Migration: Economic Change, Social Challenge".

**OUTCOME 2011/12:** Research on evidence for whether overseas students displace domestic student. No evidence for such displacement has been found. The paper *Globalisation and Higher Education: Do Foreign Students Crowd Out Domestic Students in UK Universities?* (Machin & Murphy) has been presented at the UCL conference "Migration: Economic Change, Social Challenge".

**Additional Outcome 2012/13:** Book chapter “The causes and consequences of the growth in international students in the UK Higher Education System” in “The Mobility of Students and the Highly-Skilled” Editors: Marcel Gérard and Silke Uebelmesser. Series: CESifo Seminar Series.

**PLAN 2012/13:** Displacement of domestic students: draft will be written up as a discussion paper and submitted to a journal (Stephen Machin and Richard Murphy).

**OUTCOME 2012/13:** Paper by Lindley and Machin on postgraduate education and wage inequality to be submitted.

**PLAN 2013/14:** Further empirical analysis on whether overseas students displace domestic students is being undertaken using changes in visa regulations relating to Chinese students. This could extend the scope of analysis to US universities who have also experienced a large rise in overseas students and have had similar visa relaxations relating to Chinese students. Paper by Lindley and Machin on postgraduate education and wage inequality to be submitted.


**PLAN 2014/15:** Submit paper to journal. Machin will present this paper at the Royal Economics Society conference this year.

E2B WHAT DO PARENTS VALUE MOST IN SCHOOLING FOR THEIR CHILDREN? DOES THIS REDUCE THE RELATIVE ACHIEVEMENT OF PUPILS FROM LOW INCOME FAMILIES?

PLAN 10/11: Journal article expected.


PLAN 11/12: Investigate whether the capitalisation of school quality differentials into house prices varies by the density of the environment: do better schools fetch higher premia in urban vs. rural areas? This is interesting for a number of "spatial economics equilibrium" reasons, and also from the point of view of education quality and neighbourhood stratification.


PLAN 2012/13: Continue analysis on whether the capitalisation of school quality differentials into house prices varies by the density of the environment (Steve Gibbons and Olmo Silva).


PLAN 2013/14: Silva, Gibbons and Bertoni negotiate with a major urban Local Authority to obtain application, preference and admissions data at student level, which could be potentially linked to National Pupil Database records. These data would allow the first analysis of the applications and admissions process using UK administrative data, and will aim to answer questions about which school characteristics attract which type of student, and how this impacts on the composition of schools. Some descriptive work based on information about the admissions process from LAs across the country is also planned. Machin and West to write paper on house prices, school admissions and academies for Lincoln Institute conference.

OUTCOME 2013/14 Silva, Gibbons and Bertoni: the data collection exercise begun, allowing matching of data from a large urban local authority to the NPD using a mapping that will be constructed by the DfE on behalf of the researchers.

PLANNED 2014/15: To use this data to look at what parents’ value and demand in schools. Given the data preparation that has been completed in 2013/14, the analysis should be straightforward once the data has been matched and provided to the researchers. The researchers will also link school choice to subsequent school outcomes (e.g. early test scores). This analysis should be completed in the next year, allowing the researchers to present their findings at conferences.

OUTCOME 2014/15: Substantial progress has been made. A draft will be ready by mid-autumn. The paper will be presented at Barcelona (October), UC Santa Cruz and Urban Economics Association meetings (November) and Helsinki and CEP Labour Workshop (December).

ADDITIONAL OBJECTIVE 2014/15: Write up the work on impact of an information campaign about the value and affordability of going to university and its effects on the attitudes of pre-GCSE school students towards staying in education.

Outcome 2014/15: Completed (IZA DP 8596: CEE DP 0139: http://cee.lse.ac.uk/ceedps/ceedp139.pdf) the paper has been submitted to a journal
**E2C How do school admissions work and what is the impact of different procedures? How much evidence of ‘cream skimming’ exists?**

**PLAN 10/11:** Primary data collection on schools admissions has recently begun and will continue in 2010.

**OUTCOME 10/11:** Data enquiries and collection work from non-London Local Education Authorities nearly complete. Currently seeking admissions data from the Pan London Admissions Authority. Data being consolidated and cleaned prior to analysis.

**PLAN 11/12:** Produce a descriptive paper on admissions arrangements using the available data and develop a strategy for further empirical analysis.

**OUTCOME 11/12:** Finalised data collection process. This research (led by Steve Gibbons and Olmo Silva) has involved gathering information at the school level on admissions, parental preferences and school mechanisms for allocation of school places. Unfortunately significant resistance from some schools means that the data does not cover as many schools as had been hoped for.

**PLAN 2012/13:** Analyse data collected to see whether sufficient to understand the determinants of schools’ admissions; evaluate the success of different admissions arrangements in fulfilling various criteria; investigate differences in admissions outcomes for different socioeconomic strata.

**OUTCOME 2012/13:** Data at the Local Authority level have been cleaned, but unfortunately different LAs provided data in different formats and – more importantly – very different information from what was originally requested. This has substantially slowed down and negatively affected any empirical analysis. However, the investigators are currently liaising with one large self-contained urban local authority about the possibility of accessing complete information on pupil level applications at different primary and secondary schools for a number of years. If this data was made available, it would be unique in its nature in the UK and it would allow exploration of patterns of parental demand and school intake decisions at an unprecedented level of detail.

**OUTCOME 2013/14:** Unfortunately it has not been possible to pursue this project. Despite trying very hard to systematise the data we received from the LAs we contacted, the information was not comparable.

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**GLOBALISATION PROGRAMME (OTTAVIANO, Michaels, Ornelas, Sturm)**

**G1A What determines how much trade is within firms and how much is between firms?**

**PLAN 10/11:** Discussion paper and journal article planned.

**OUTCOME 10/11:** Redding (joint with Andrew Bernard, Bradford Jensen and Peter Schott) published "Intra-firm Trade and Product Contractibility", American Economic Review, Papers and Proceedings, 100(2), 444-448, 2010. The authors create a new measure of product contractability and find that intra-firm trade is higher for products with low levels of contractability sourced from countries with weak governance, for skill-intensive products from skill-scarce countries, and for capital-intensive products from capital-abundant countries. Ornelas (joint with John L. Turner) has submitted the paper “Protection and International Sourcing” (initial version: CEPDP0900) to Economic Journal, how import protection affects relationship-specific investments, the conditions under which firms choose to outsource versus to vertically integrate, and welfare.

**PLAN 11/12:** Ornelas (joint with John L. Turner) will revise and resubmit “Protection and International Sourcing” (initial version: CEPDP0900) to Economic Journal.

**OUTCOME 11/12:** “Protection and International Sourcing” was accepted for publication at the EJ. The paper shows how import protection affects relationship-specific investments, the conditions...
under which firms choose to outsource versus to vertically integrate, and welfare. In particular, it specifies that tariffs can be useful to promote relationship-specific investments when firms are reluctant to invest because contracts are incomplete. But it also shows that protection can lead to inefficient incentives to vertical integration.

The Determinants of Intra-Firm Trade (Mion, G.) accepted for publication at The Review of Economics and Statistics. The paper shows that trade is more likely to be within firms than between firms, (i) for firms that are more capital- and skill-intensive; (ii) for firms that are highly productive; (iii) for firms in countries with well-functioning judicial institutions.

G1B WHAT DETERMINES TRADE PATTERNS IN SERVICES (E.G. HOW IMPORTANT IS PHYSICAL DISTANCE AND HAS THIS CHANGED OVER TIME)?

PLAN 10/11: Journal article planned


Breinlich and Criscuolo submitted the paper “Service Traders in the UK” (initial version: CEPDP0901) to the Journal of International Economics. Authors find that many of the novel recent empirical findings about goods trade apply also to services trade in the UK. In particular, trade volume, employment, turnover and value added are highly concentrated among a small group of firms trading with many countries and/or in many services types.

PLAN 11/12: Breinlich and Criscuolo will revise and resubmit “Service Traders in the UK” (initial version: CEPDP0901) to the Journal of International Economics

OUTCOME 11/12: “Service Traders in the UK” has been accepted for publication at the JIE.


PLAN 12/13: Submit Service Trade and Occupational Tasks: An Empirical Investigation, (CEP DP 1107) to journal.

OUTCOME 12/13: paper was submitted but didn’t go through. Now being prepared for a new submission.

PLAN 13/14: Bring out “Service Traders in the UK” for publication at the JIE.

OUTCOME 2013/14: published at the JIE with title “International Trade in Services: A Portrait of Importers and Exporters”.

PLAN 2014/15: Re-Submit Service Trade and Occupational Tasks: An Empirical Investigation, (CEP DP 1107) to journal


G1C WHAT IS THE CAUSAL IMPACT OF OFFSHORING ON JOBS, WAGES, PRODUCTIVITY AND PROFITABILITY? WILL THIS CHANGE IN THE FUTURE?

PLAN 10/11: Journal article planned

OUTCOME 10/11: Redding (joint with Elhanan Helpman and Oleg Itskhoki) published “Inequality and Unemployment in a Global Economy”, Econometrica, 78(4), 1239–1283, 2010. The authors uncover new theoretical channels through which the opening of international trade is likely to enhance wage inequality and raise unemployment. They find that after some trade has been opened, further liberalisation can either raise or reduce wage inequality.

Redding (joint with Elhanan Helpman and Oleg Itskhoki) published "Unequal Effects of Trade on Workers with Different Abilities", Journal of the European Economic Association, Papers
Redding (joint with Elhanan Helpman, Marc Muendler and Oleg Itskhoki) has assembled detailed data on Brazil's labour market outcomes and trade policies in the 1980-1990s to study empirically the relationship between trade liberalisation and wage inequality.

**PLAN 11/12:** Redding plans to publish the paper “Trade and Labour Market Outcomes” (CEPDP1028) in an academic journal and will carry out initial empirical analysis on how trade liberalisation has affected wage inequality in Brazil.

**OUTCOME 11/12:** “Trade and Labour Market Outcomes” accepted as an Econometric Society World Congress Monograph.

**PLAN 12/13** Redding’s draft of “Trade and Inequality: From Theory to Estimation” to be worked into a DP.

**OUTCOME 12/13:** *Trade and Inequality: From Theory to Estimation* CEP DP 1138 published and under submission (R&R at AER).

**ADDITIONAL OUTCOME 12/13:** Ottaviano’s paper on *Immigration, Offshoring and American Jobs*, CEP DP 1147 produced, forthcoming at AER.

**ADDITIONAL OUTCOME 13/14:** Ottaviano’s paper on “Internationalization and innovation of firms: evidence and policy” published in *Economic Policy* v28(76), pages 663-700.

**COMPLETED**

**G2A How does trade affect inequality when firms produce a wide variety of products?**

**PLAN 10/11:** Journal article planned

**OUTCOME 10/11:** Redding (joint with Andrew Bernard and Peter Schott) published "Multi-product Firms and Product Switching", *American Economic Review*, 100(1), 70-97, 2010. The authors find that U.S. manufacturing firms frequently alter their mix of products and that these changes are an important factor behind trade growth in the U.S. The firms more likely to drop products are younger and have smaller production volumes relative to other firms producing the same product. A consequence of this product switching is that economic activity is relocated within firms towards more productive uses, with implications for workers’ productivity and compensation.

**OUTCOME 11/12:** Redding (joint with Andrew Bernard and Peter Schott) published "Multi-product Firms and Trade Liberalisation", *Quarterly Journal of Economics*, 126(3), 1271-1318, 2011. A theoretical and empirical analysis of firms’ decision to export and their selection of which products to supply to each market, in a general equilibrium framework. This selection process can explain several observed regularities about trade across firms, products and countries. Secondly, Ottaviano’s *Market size, competition and the product mix of exporters* report for the National Bank of Belgium shows how market size and geography affects a firm's exported product range and its exported product mix across foreign destinations. Theoretical and prediction results show that tougher competition in an export market induces a firm to skew its export sales towards its best performing products, and that this increases the firm’s productivity as usually measured.

**PLAN 12/13** Ottaviano revise *Market size, competition and the product mix of exporters* paper for journal

**OUTCOME 12/13:** paper has been revised and resubmitted and has been “conditionally accepted” at the AER.

**ADDITIONAL OUTCOME 13/14:** Ottaviano’s paper on “Market Size, Competition, and the Product Mix of Exporters”. Published in *American Economic Review* v104(2), pages 495-536.
Dhingra’s paper on “Trading Away Wide Brands for Cheap Brands”. Published in American Economic Review v103(6), pp.2554-84.

**PLAN 14/15**: Ottaviano’s paper *The Buyer Margins of Firms’Exports* (CEP DP 1234) to be revised and submitted to journal

**OUTCOME 14/15**: paper has been revised and submitted to the Review of Economic Studies

**COMPLETED**

**G2B** How does trade affect inequality when there is substantial heterogeneity of firms and workers and labour markets have search and other serious frictions?

**PLAN 10/11**: Paper planned

**OUTCOME 10/11**: See outcomes for G1C

**PLAN 11/12**: As G1C

**OUTCOME 11/12**: Sampson: *Assignment Reversals: Trade, Skill Allocation and Wage Inequality*, CEP DP1105. The paper explores the allocation of skilled labor across industries to explain inter-industry wage differences and the effect of trade on wages. Key for the analysis is to recognise that the ranking of sectors by input productivity can differ across countries, and if they do, then their ranking by workforce skill will also differ. The consequence is that trade integration between 2 countries can cause the relative wage of high skill workers and wage inequality within the high skill sector to increase in both countries.

**PLAN 12/13** Sampson submit to journal *Assignment Reversals: Trade, Skill Allocation and Wage Inequality*. CEP DP 1105

**OUTCOME 12/13**: Paper submitted but didn’t go through in the first attempt. Now being prepared for a new submission.

**PLAN 13/14**: submit “Assignment Reversals, Trade, Skill Allocation and Wage Inequality” to journal


**PLAN 14/15**: Sampson’s paper on “Assignment Reversals, Trade, Skill Allocation and Wage Inequality”. Revise and submit to journal.

**OUTCOME 14/15**: DONE. CEP DP 1105. Sampson. Submitted to JET. Revision requested.

**COMPLETED**

**G2C** Has trade changed the demand for different skill types and through what mechanisms has this occurred (e.g. via faster technical change)?

**PLAN 10/11**: Data being collected on 11 countries over 25 years: mimeo will be produced.

**OUTCOME 10/11**: Michaels and Van Reenen (joint with Ashwini Natraj) have collected the data and produced DP on “Has ICT Polarized Skill Demand? Evidence from Eleven Countries over 25 Years”, CEPDP0987. The authors find that OECD labour markets have become more “polarised”, with employment in the middle of the skill distribution falling relative to the top and also the bottom of the skill distribution. They find that information and communication technologies are the main drivers of this polarization.

**PLAN 11/12**: Michaels and Van Reenen (joint with Ashwini Natraj) submit the paper “Has ICT Polarized Skill Demand? Evidence from Eleven Countries over 25 Years” (CEPDP0987) to an academic journal.

Mion (joint with Luca David Opromolla) will complete empirical analysis and produce a DP on “Managers' Mobility, Trade Status and Wages”.

Faber will compile data on Mexican micro prices database 1980-2010 and prepare draft on “Trade Integration and Real Income Inequality When Preferences and Technology Conspire”.

**PLAN 12/13** Mion (joint with Luca David Opromolla) submit the paper “Managers' Mobility, Trade Status and Wages” (CEP DP 1106) to an academic journal.

**OUTCOME 12/13**: Paper submitted but didn’t go through in the first attempt. Now being prepared for a new submission.

**PLAN 13/14**: submit “Managers' Mobility, Trade Status and Wages” to journal

**OUTCOME 13/14**: DONE. Mion. Submitted to JET. Rejected in March 2014. Yet to be resubmitted elsewhere.

**ADDITIONAL OUTCOME 2013/14**: Mion’s paper on “Managers' Mobility, Trade Status and Wages”, American Economic Journal: Microeconomics, forthcoming.

**PLAN 14/15**: Sampson’s paper on “Selection into Trade and Wage Inequality”, American Economic Journal: Microeconomics, forthcoming.
OUTCOME 11/12:
Database compiled and initial analysis started.

PLAN 12/13: Faber to complete draft of Trade Integration and Real Income Inequality and possible DP. Dhingra: submit Trading Away Wide Brands for Cheap Brands to journal.

OUTCOME 12/13: working paper title “Trade Liberalization, the Price of Quality, and Inequality: Evidence from Mexican Store Prices” to become DP soon.
Dhingra: submitted and already accepted, for American Economic Review, 103(6): 2554-84


PLAN 13/14: Submit Michaels, Rauch and Redding Task Specialization in U.S. Cities from 1880-2000 (CEP DP 1186) to journal.


ADDITIONAL OUTCOME 2014/15: Faber published Retail Globalization and Household Welfare: Evidence from Mexico, CEP DP 1351

COMPLETE

G3A HOW CAN REGIONAL FREE TRADE AGREEMENTS BE POLITICALLY SUSTAINED? DO SUCH AGREEMENTS HELP SUPPORT (AND ARE IN TURN SUPPORTED BY) DEMOCRACY?


OUTCOME 10/11: Ornelas (with Xuepend Liu) has produced a work in progress version of "Free Trade Agreements and the Consolidation of Democracy". Their key (preliminary) findings are that free trade agreements help democracy to “consolidate” in a country, and that, in turn, governments in fledgling democracies are more likely to engage the country in free trade agreements. (http://personal.lse.ac.uk/ornelas/Liu&Ornelas_lastversion.pdf).

PLAN 11/12: Ornelas (with Xuepeng Liu) will carry out additional robustness checks on their main empirical findings in “Free Trade Agreements and the Consolidation of Democracy” and produce a DP.

OUTCOME 11/12: Draft has been completed, but not yet DP, due to additional changes in paper after comments from several audiences. Plan: produce DP.

PLAN 12/13 ORNELAS produce discussion papers on “Free Trade Agreements and the Consolidation of Democracy” and “Preferential Trade Agreements and the Labor Market”.

Ornelas Free Trade Agreements and the Consolidation of Democracy (CEP DP 1184, Jan 2013).

PLAN 13/14: submit “Free Trade Agreements and the Consolidation of Democracy” to journal.
Mrazova to produce theoretical DP on "Trade Agreements when Profits Matter". INCOMPLETE – her focus was on a different paper (DP last October); but will produce it this year and submit to journal.
Submit Free Trade Agreements and the Consolidation of Democracy to journal, AEJ Macro.


OUTCOME 14/15: Revision submitted Journal of Political Economy. ISSN 0022-3808 (In Press).

G3B IS EXPORTING TO NEARBY COUNTRIES A “SPRINGBOARD FOR GROWTH”? 
PLAN 10/11: Discussion paper expected.

OUTCOME 10/11: Ornelas (with Facundo Albornoz, Hector Calvo-Pardo and Gregory Corcos) has produced the working paper “Sequential Exporting” (initial version: CEPDP0974). Their key finding is that firms discover their profitability as an exporter only after actually engaging in exporting, but that this profitability is positively correlated across foreign destinations. This gives rise to a process where firms enter foreign markets sequentially. This implies that trade policies have multi-market consequences so far neglected by both academics and practitioners.

PLAN 11/12: Submit the paper Sequential Exporting, CEP DP 974 to academic journal.

Defever will finish assembling Chinese customs and firms data to study how firms choose their new export destinations. Produce a draft of “Spatial Exporter Dynamics”.

OUTCOME 11/12: Ornelas Sequential Exporting: Journal of International Economics has requested a revision.

Defever paper produced Spatial Exporters(CEP DP 1100).

ADDITIONAL OUTCOMES: Mion and Ornelas (with Luis Araujo): produced Institutions and Export Dynamics(CEP DP 1118, Jan 2012). The paper shows how firms choose to export and adjust their foreign sales based on the degree of contract enforcement in the destination countries. Develops a model and tests implications using Belgium firm-level data. A key result, which has empirical support, is that the growth rate of a firm’s exports to a country decreases as the quality of the country’s institutions decreases.

Ottaviano: “SMEs in Argentina: Who are the exporters?” published in Small Business Economics Journal in 2011 (with Christian Volpe). The paper studies the behaviour of small and medium firms in Argentina. Uncovers the factors that are associated with a higher probability of exporting. Finds in particular that training of employees is an important factor for exporting outside the Mercosur region.

PLAN 12/13 Plan: complete the revision of “Sequential Exporting” (initial version: CEPDP0974) for Journal of International Economics.


OUTCOME 12/13: DONE – DP produced Institutions and Export Dynamics CEP DP 1118, Jan 2012

PLAN 13/14: submit DP of “Institutions and Export Dynamics” to journal


G3C HAS THE EASTERN EXPANSION OF THE EU GENERATED BETTER ECONOMIC PERFORMANCE IN WESTERN EUROPE? WILL FURTHER EXPANSION CONTINUE TO DO THIS? 
PLAN 10/11: Discussion paper expected.

OUTCOME 10/11: Redding and Sturm (joint with Gabriel Ahlfedlt and Nikolaus Wolf) have produced a draft on “The Economics of Density: Evidence from the Berlin Wall”. In the paper the authors attempt to explain the uneven distribution of economic activity by separating agglomeration and dispersion forces from natural advantages and amenities, a perennial empirical challenge for researchers in the field. They do so by using the division and reunification of Berlin as a natural experiment.
PLAN 11/12: Produce a DP on *The Economics of Density: Evidence from the Berlin Wall*.

Redding and Sturm will start project using the experience of East Germany during the period of Germany division to quantify the efficiency loss from a spatial misallocation of resources.

OUTCOME 11/12: *The Economics of Density: Evidence from the Berlin Wall*, CEP DP 1154, June 2012. Paper produced. Develops a quantitative model of city structure that explains the uneven distribution of economic activity, separately accounting for both agglomeration and dispersion forces and locational fundamentals by using Berlin’s division and reunification as a source of exogenous variation in the surrounding concentration of economic activity. The model can account both qualitatively and quantitatively for the observed changes in city structure.

PLAN 12/13 Sturm, Redding, Ahlfeldt, Wolf submit *Economics of Density: Evidence from the Berlin Wall* to DP series (SERC, NBER, CEPR) and journal.


PLAN 14/15: Submit density paper to journal

OUTCOME 14/15: *Economics of Density: Evidence from the Berlin Wall* Econometrica, November 2015 1-55. ISSN 0012-9682

COMPLETED

PRODUCTIVITY AND INNOVATION PROGRAMME (VAN REENEN, Bloom, Criscuolo, Garicano)

**PIA** DOES OUR DESIGN AND IMPLEMENTATION OF RANDOMISED CONTROL TRIALS OF BUSINESS POLICIES SHOW (A) ANY EFFECT AND (B) A CAUSAL IMPACT OF MANAGEMENT ON PRODUCTIVITY?

PLAN 10/11: Complete experimental period of providing management consulting to some firms (in India) and not others and evaluate impact of better management on performance. Over the next two years explain why firms do not adopt practices and the extent to which practices do and do not “spill over” from one firm to another. A draft paper will be prepared for AEA 2010 Papers and Proceedings. Discussion Paper will be produced during year and experimental data will be made available when main paper published.

OUTCOME 10/11: A randomised control trial of running a management field experiment on Indian textile firms: implemented and evaluated free consulting and implementation of modern management practices was offered to a randomly chosen set of treatment plants and their performance was then compared to the control plants. Results found an 11% rise in productivity, increased decentralisation of decision making, and increased use of computers. CEP Discussion Paper 1042 a Centrepiece Article and podcast.

PLAN 11/12: Make experimental data available when main paper published (it is submitted to American Economic Review).

There will be further investigation in the experiment of why so many firms had failed to adopt best practice and of spillover effects within and between. Negotiate with EBRD to set up other management practices RCTs to test our hypotheses.

OUTCOME 2011/12: All data, papers, survey methodology, case studies and an online tool that enables managers to benchmark themselves available on new website http://worldmanagementsurvey.org/.


Nick Bloom has led a team performing a randomised control trial intervention to improve people management in China’s largest on-line travel company (“Does working from home work? Evidence from a Chinese experiment”). This allowed call centre workers to be given the option
of working from home and led to large improvements in productivity. This relates to analysis of work-life balance which was published in Strategic Management Journal (2011) 32(4) 343-367 as lead article http://onlinelibrary.wiley.com/doi/10.1002/smj.879/pdf.

Continued negotiations with EBRD on conducting an RCT in Ukraine (problem is mainly high costs due to large distances between plants).

OUTCOME 2012/13: The RCT on a managerial innovation (working from home) in China’s largest online travel firm has been made into a DP in March 2013. The RCT on Indian textile firms showed a large improvement in management and a 10% increase in Total Factor Productivity from a one standard deviation in management. The paper was published as lead article in the first issue of 2013 QJE.

We published Americans Do I.T Better: US multinationals and the productivity miracle (Nick Bloom, Raffaella Sadun and John Van Reenen), American Economic Review (2012) 102 (1),167-201 If the US "productivity miracle" is due to a natural advantage of being located in the US then we would not expect to see any evidence of it for US establishments located abroad. This paper shows in fact that US multinationals operating in the UK do have higher productivity than non-US multinationals in the UK, and this is primarily due to the higher productivity of their IT. Furthermore, establishments that are taken over by US multinationals increase the productivity of their IT, whereas observationally identical establishments taken over by non-US multinationals do not. One explanation for these patterns is that US firms are organised in a way that allows them to use new technologies more efficiently.


PLAN 2013/14: We plan to use the causal estimates inform RCT’s to produce more sophisticated macro-models to simulate the effects of policy changes that improve management to see how much they account for productivity differences between countries and industries. We will produce a DP version of this ("Management as a technology"). Submit China RCT DP to journal.

OUTCOME 13/14: We have a draft paper of “Management as a Technology” http://cep.lse.ac.uk/textonly/_new/staff/vanreenen/pdf/mat_2013dec1.pdf and have presented this to about 15 of the world’s leading economics departments, business schools and in workshops. The paper includes a macro-economic analysis and semi-structural model suggesting that about a quarter of the TFP differences across firms and countries are due to management. The RCT on a managerial innovation (working from home) in China’s largest online travel firm has been made into a DP in March 2013. The RCT on Chinese management is under revision at the Quarterly Journal of Economics.

PLAN 2014/15 Prepare to run RCTs in the UK and overseas working with partner organisations (like the EBRD and Nesta). Whether these are successful or not largely depend on overcoming political and institutional resistance to discovering “what works”.


PIB WHAT ARE THE CAUSES AND CONSEQUENCES OF DIFFERENT MANAGEMENT PRACTICES IN PRIVATE SERVICES (E.G. RETAIL AND LEGAL SERVICES) AND PUBLIC SERVICES (E.G. SCHOOLS AND HOSPITALS)?

OUTCOME 10/11: Completed data collection surveyed almost 1200 hospitals across seven countries and nearly 1000 secondary schools across five countries. Presentation with McKinsey at “Management Matters in Healthcare” October 26th 2010; CEP DP 983 May 2010 Impact of Competition on Management Quality: Evidence from Public Hospitals. Better managed hospitals in our study also have better clinical outcomes, such as lower mortality rates from emergency heart attacks, as well as higher levels of patient satisfaction and enhanced financial performance.

PLAN 11/12: Write an overview of new work on management and organisation for leading management journal


We organised three sessions in the American Economic Association on management (in manufacturing, schools and healthcare).

Analysis of hospital and school data across countries. Collected more data on retail, schools and hospitals in Italy and India.

Collection of data on management from US Census Bureau (MOPS) as special supplement to US Annual Survey of Manufacturers. Obtain data from about 50,000 plants that can be linked to US Census.


PLAN 13/14: We will write up two Discussion papers for the work on schools and hospitals.

We will collect additional data on schools in Brazil this summer to improve the size of the panel. In partnership with TNS and BIS we are planning a survey of management and leadership in England and Wales designed to be comparable with our successful US MOPs survey. This will cover all parts of the UK private sector including retail services. This will initially be a DP for

**OUTCOME 2013/14:** We have two separate drafts of paper on hospitals and schools; *Does Management Matter in Schools* (CEP DP 1312) CEP Discussion Paper No 983 May 2010 (Revised February 2013) The Impact of Competition on Management Quality: Evidence from Public Hospitals Nicholas Bloom, Carol Propper, Stephan Seiler and John Van Reenen (published in Review of Economic Studies (2015) 0, 1–33) The hospitals paper has been presented in many arenas and is under consideration at a health journal. Present the schools paper in a Special Session at the Royal Economics Society Annual Conference 2014.

**PLAN 13/14** In partnership with TNS and BIS we are planning a survey of management and leadership in England and Wales designed to be comparable with our successful US MOPs survey. This will cover all parts of the UK private sector including retail services.

**OUTCOME 13/14:** Unfortunately the collaboration with BIS did not work out as they wanted to focus on very small firms and the management survey tool is not well designed for this. We have produced many review papers and presentations of the management work. This includes the Richard Stone Lecture in Cambridge in February 2014 http://cep.lse.ac.uk/textonly/_new/staff/vanreenen/pdf/2014_02_27_stone.pdf. Review papers include: Van’ Reenen’s monograph for the world congress of the Econometric Society (an invited session for the volume that appears once every 5 years including about 15 invited talks from the world’s most senior economists) “Productivity and Management Practices” (2013), *Advances in Econometrics: Proceedings of the Tenth World Congress of the Econometric Society Volume III* 355-400 ;Van Reenen’s presentation of the invited EEA Lecture at the American Economic Association. This is to be published as “The new economics of management” with Nick Bloom, Renata Lemos, Raffaella Sadun and Daniella Scur, in the *Journal of the European Economic Association*.


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**PIC IS GROWTH CAUSED BY FIRM RE-ORGANISATION? WHAT CAUSES MANAGEMENT AND ORGANISATIONAL PRACTICES TO CHANGE OVER TIME?**

**PLAN 10/11:** For 1b,1c completing survey of management practices in Chinese and Indian Firms. We will also re-survey this year the c.4,000 firms we collected data from in 2006 so we can observe the extent to which organisations change over time.

**OUTCOME 10/11:** The work re-surveyed all the firms surveyed in 2006. The 2010 work finds that there is a persisting management gap between the UK and its EU peer countries such as France and Germany, and it falls significantly below the US in terms of management. The UK’s position and overall productivity could significantly increase by raising the management quality of British firms especially in the lower tail of the distribution. A report was written and presented to the Department of Business and Innovation and will appear as a DP. The presentations are available on: http://cep.lse.ac.uk/textonly/_new/staff/vanreenen/pdf/bis_pres5_HC.pdf

**PLAN 10/11:** We will match up performance data with this survey over the next two years to explain extent to which changes in management practices can explain differences in growth rates across countries and ultimately help evaluate policies to accelerate British growth. We have also audited all the related existing large-scale datasets in the world and will prepare a paper in stylised facts of
organisational change.

**OUTCOME 10/11:** Draft report confirms (unfortunately) that the CEP Management/Organization data was best practice in the world on this. We have set up a website (World Management survey) which has all management materials including an on-line tool where managers in four sectors (manufacturing, retail, schools and hospitals) can benchmark themselves against best practice (using our database of 10,000 interviews over 20 countries). http://worldmanagementsurvey.org/. Some of the publications in the area include: Does Competition Raise Productivity through Improving Management Quality? CEP DP 1036, Dec 2010; Organizing for Growth (2010, Journal of Economic Theory) Garicano and Raossi-Hansberg.


**PLAN 11/12:** Continue analysis of the new data in public and private sector and produce papers

**OUTCOME 11/12** Draft paper on “Management as a Technology” which analyses all 21 countries across 8000 firms presented in Bocconi, LBS, etc. Analysis of changes of management practice over time.

Paper on the effects of trust on decentralisation (http://cep.lse.ac.uk/pubs/download/dp0937.pdf) accepted for publication in the *Quarterly Journal of Economics.*

Overview of work on organisation “Incomplete contracts and the internal organisation of firms” under Consideration for special volume of *Journal of Law, Economics and Organisation* - “Grossman and Hart at 25 conference”.


Evidence that competition is important for management consistent with healthcare work. New paper showing how competition policy can foster innovation (in context of Microsoft vs. European Commission. http://cep.lse.ac.uk/pubs/download/dp1060.pdf.

Examination of how size-related labour market regulations keep firms small and damage European productivity (http://cep.lse.ac.uk/pubs/download/dp1128.pdf). Reported in *Economist.*


**PLAN 13/14:** Do a DP of “Management in America” which has MOPs data on 35,000 US plants and submit to journal. Release data on website. Present at various conferences such as NBER and AEA.

Collect and analyse a UK (and maybe German) version of MOPs to compare to US Analyse the organisational questions in MOPS for a draft paper.
Work on paper on organisational change and growth with Philippe Aghion (Harvard), focusing on decentralisation.
Revise paper on the effects of Chinese trade on innovation (including managerial innovation) for publication.

OUTCOME 13/14 This has been released as a DP, has been presented at conferences and work is ongoing on revising it. We have constructed a website http://www.managementinamerica.com/ where reports and public use data will be available to download. The confidential data can also be accessed through Research Data Centers.

PLAN 13/14: Collect and analyse a UK (and maybe German) version of MOPs to compare to US
OUTCOME 13/14: We have a German version in the field as well as plans to start one in Pakistan next month.

OUTCOME 13/14: The analysis paper on MOPS has not been done yet.
Aghion joint paper: We have some tables and a proposal to include in an AEA session in January 2015.
“The distinct effects of Information Technology and Communication Technology on firm organization” (with Nick Bloom, Luis Garicano and Raffaella Sadun) is accepted for publication in Management Science http://cep.lse.ac.uk/pubs/download/dp0927.pdf.
Summaries of the work on firm organisation are in “Incomplete contracts and the internal organization of firms” (Van Reenen with Philippe Aghion and Nick Bloom), forthcoming, Journal of Law, Economics and Organization http://cep.lse.ac.uk/pubs/download/occasional/op036.pdf

PLAN 14/15: Analyse the organisational questions in MOPS for a draft paper.

OUTCOME 14/15: Paper on organisational change and recessions drafted and presented in AEA and various conferences and seminars.

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P2A DO R&D TAX CREDITS RAISE THE RATE OF INNOVATION AND PRODUCTIVITY GROWTH?

PLAN 10/11: We will do a preliminary draft of the effect of fiscal policies on innovation and productivity. A new version of Bloom, Schankerman and Van Reenen Identifying Technology Spillovers and Product Market Rivalry (CEP DP 675, 2005) will be produced (and hopefully published) which incorporates these.

OUTCOME 10/11: New draft of CEP DP 675 under revision at Econometrica. Van Reenen together with Slade and co-authors produced an extension paper which looked at geographical spillovers http://cep.lse.ac.uk/pubs/download/dp0991.pdf; We have a draft paper examining R&D tax policy suggesting that it is effective.

PLAN 11/12: Publish the Bloom, Schankerman and Van Reenen paper by extending to look at general properties of spillover indices. Defer tax effects paper planned to 2012 because of maternity leave of Criscuolo.


PLAN 2013/14: Present Moretti, Steinwender, Van Reenen The Intellectual Spillovers of War? Defense R&D, Productivity and Spillovers R&D paper and submit as a DP. Look at feasibility of evaluating UK R&D tax credit.

OUTCOME 2013/14: We have a draft of the paper on defense R&D and have submitted to the NBER Summer Institute.
We have an RA working on the UK R&D tax credit with access to confidential administrative data through HMRC. Initial results looks promising, suggesting a positive effect on R&D and innovative activity

PLAN 2013/14: Present defense R&D paper and submit as a DP. Look at feasibility of evaluating UK R&D tax credit.
OUTCOME 2014/15: Finished draft of UK R&D tax credit and presented in HMT, BIS and other places.

P2B DO INNOVATION POLICIES FOR SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs) WORK? HOW SHOULD WE IMPROVE THEM?

PLAN 10/11: Extend theoretical model of how patent thickets and judicial enforcement affect settlement, extend econometric work that exploits our comprehensive data set on patent disputes for the U.S. covering 1978-2000. Martin will begin a study of barriers and drivers to firm level innovation related to Climate Change.


PLAN 11/12: Examine the effects of carbon pricing and green R&D subsidies on innovation using an endogenous growth framework. Apply this to auto market and look at innovations in electric and hybrid cars (“clean innovation”) vs. internal combustion engine (“dirty innovation”). Use patents dataset from EPO and USPTO.

OUTCOME 11/12: Paper “Carbon Taxes, Path Dependency and Directed Technical Change: Evidence from the Auto Industry” (Philippe Aghion, Antoine Dechezlepetre, David Hemous, Ralf Martin and John Van Reenen) presented all over the world (NBER, AEA, EEA) and accepted for presentation in Nobel symposium.

PLAN 12/13: Revise industrial policy (Regional Selective Assistance (RSA)) paper, CEP DP 1113 and submit to journal. Look at the longer term effects of Regional Selective Assistance comparing SMEs with larger firms (e.g. multinationals). Use Google metrics and other social media to develop new (clean) innovation indicators.

OUTCOME 2012/13: RSA paper submitted to QJE and rejected. Obtained a Google grant to look at green innovation and working with Google to obtain better data.


OUTCOME 2013/14: We are still in extensive revision of the RSA paper and close to re-submission Criscuolo and Polat have a second paper on RSA using more recent data from another change of the state aid rules. It has been presented twice at OECD and Bruegel. http://ec.europa.eu/invest-in-research/pdf/download_en/annex1_impact_tax_incentives_investment_location.pdf. The Google paper is delayed because of problems with the quality of the data from Google.

PLAN: 2014/15: Submit RSA paper to journal. Produce CEP DP’s: one on exploiting an accidental randomisation to identify what happens when support to an area gets withdrawn; one on how availability of subsidies affects the location of firms across the UK exploiting both detailed geographical information of the location of plants and information on the availability of the support in a new way.

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P2C WHAT IS THE EFFECT OF DIFFERENT POLICIES ON CLIMATE CHANGE RELATED INNOVATION?

PLAN 10/11: Carry out econometric evaluations on European countries’ government firm level energy datasets similar to those currently being carried out on the Climate Change Levy.

OUTCOME 10/11: Analysis underway of the EU Emissions Trading Scheme: initial findings that the EU Commissions criteria for identifying those businesses that are at risk are flawed, leading to an excessive number of business and sectors receiving free permits, even though there is no risk to competitiveness. At the same time there are businesses failing to take advantage of the permits causing an unnecessary risk to jobs. Finally there appears to be a link between free permit allocation and clean product innovation: we find that businesses receiving free permits conduct less Climate Change related product R&D than they would otherwise do.
OUTCOME 11/12 (earlier than expected): Paper, CEP DP 1141 showing limited impact of EU ETS on green innovation (Dechezlepetre). Paper showing that direct regulation in developing countries helps them catch up to the frontier in green technologies (Dechezlepetre).

CEP DP 1178 paper Carbon Taxes, Path Dependency and Directed Technical Change: Evidence from the Auto Industry (with Philippe Aghion, Antoine Dechezlepetre, David Hemous and Ralf Martin) presented all over the world (NBER, AEA, EEA) and accepted for presentation in Nobel symposium. Finds that high carbon prices induce more auto-innovation. Uses comprehensive data on EPO on “green” technologies in 80 countries.

Plan 12/13: Publish DP of Aghion et al (CEP DP 1178) and submit to journal. Write CEP DP 1141 on EU ETS into full academic paper. Examine causal effect of EU ETS on innovation


Criscuolo report (with OECD) Environmental policies and risk finance in the Green Sector on green technology finds role for government policies through market size more than R&D incentives. (published as ‘Environmental Policies and Risk Finance in the Green Sector: Cross Country Evidence’ (with Carlo Menon), Energy Policy, vol. 83(C), pages 38-56, 2015

P2D CAN WE DEVELOP A MACRO MODEL USABLE BY GOVERNMENTS TO PREDICT THE EFFECTS OF DIFFERENT INNOVATION POLICIES ON THE GROWTH AND DISTRIBUTION OF PRODUCTIVITY?

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PLAN 10/11: We will develop a model to allow interactions in product and technology markets and will use this to work out the social and private rates of return to R&D and innovation policies.

OUTCOME 10/11: This relies on a summation of the work we are producing in the P&I projects and will therefore take place towards 2015.

PLAN 11/12: To be done towards end of the current grant since existing work needs to be drawn together.

presentations. [http://cep.lse.ac.uk/LSEGrowthCommission/RES.asp](http://cep.lse.ac.uk/LSEGrowthCommission/RES.asp). This is part of our commitment to collaborative working across ESRC Centres.

The work on UK is in comparative perspective, especially with other EU countries. Spain had a similar housing and asset bubble and Garicano has been involved in many projects over the crisis including publishing the book “Nada Es Gratis” (No Free lunch) to explain problems of economy (already on fourth edition). More generally on Euro Crisis Garicano led group of top economists to publish proposals and books on solution to Euro-crisis (e.g. [http://www2.lse.ac.uk/newsAndMedia/news/archives/2011/09/safebonds.aspx](http://www2.lse.ac.uk/newsAndMedia/news/archives/2011/09/safebonds.aspx)).

An important element is better measurement of productivity. Oulton has completed several DPs on this topic, e.g. [http://cep.lse.ac.uk/pubs/download/dp1080.pdf](http://cep.lse.ac.uk/pubs/download/dp1080.pdf) which are lodged with journals.


**OUTCOME 11/12:** We set up the LSE Growth Commission to lay analytical and policy framework. ([http://cep.lse.ac.uk/LSEGrowthCommission/](http://cep.lse.ac.uk/LSEGrowthCommission/)). Builds on work evaluating productivity over last 30 years ([http://cep.lse.ac.uk/conference_papers/15b_11_2011/CEP_Report_UK_Business_15112011.pdf](http://cep.lse.ac.uk/conference_papers/15b_11_2011/CEP_Report_UK_Business_15112011.pdf)).

Special session on Growth at Royal Economic Society on Growth with CEP/CAGE/IFS presentations. [http://cep.lse.ac.uk/LSEGrowthCommission/RES.asp](http://cep.lse.ac.uk/LSEGrowthCommission/RES.asp). This is part of our commitment to collaborative working across ESRC Centres.

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Examining the importance of globalisation on innovation (especially China’s impact on Europe). Theory with Paul Romer and empirics in a new discussion paper ([http://cep.lse.ac.uk/pubs/download/dp1000.pdf](http://cep.lse.ac.uk/pubs/download/dp1000.pdf)). Shows that China accounted for about 15% of innovation in EU in 2000s.

Paper explaining China’s faster growth through technology transfer ([http://cep.lse.ac.uk/pubs/download/dp1121.pdf](http://cep.lse.ac.uk/pubs/download/dp1121.pdf)).

**PLAN 12/13:** Growth Commission Reports at end of 2012. Examination of whether fall of UK productivity is permanent. Further work towards end of the current grant since existing work needs to be drawn together.


Analysis of Labour period productivity performance

PLAN 13/14. We will work on bringing together our preliminary macro-models - the NIGEM model to allow for dynamic effects in the labour market to look at the effects of government policy (with NIESR) and an open economy endogenous growth model with Paul Romer to quantitatively simulate some different policies on innovation and growth.

Continue dissemination of the LSE Growth Commission with launches in Scotland, Manchester, OECD, IMF, etc. Public Growth Commission summary in Published in National Institute Economic Review.

Continue pulling work together on productivity policy. Publish review of Labour period.

OUTCOME 2013/14: We have made progress pulling together work from other streams. We have established the underlying parameters for the macro-model from RCTs and other work as noted above (e.g. P1A on managerial innovation and the work on the effects of China in P1C).

We have a couple of workhorse macro-models. First, jointly with NIESR we have been extending their NIGEM model to allow for dynamic effects in the labour market to look at the effects of government policy (Bagaria et al, 2012, “Fiscal Consolidation during a Depression” National Institute Economic Review (2012) 221 (July) 38-50 http://cep.lse.ac.uk/pubs/download/special/cepsp27.pdf. Second, with Paul Romer we have produced an open economy endogenous growth model that we have used to quantitatively simulate some different policies on innovation and growth. The paper was published in AER Papers and Proceedings 2013 V103(3) pp.208-23. The second model is more ambitious than the first, but incorporates less real world features. We are working bringing them together – see CEP DP 1261 A Trapped Factors Model of Innovation (with Nick Bloom, Paul Romer and Stephen Terry) http://cep.lse.ac.uk/pubs/download/dp1261.pdf.


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COMMUNITY PROGRAMME (MANNING, Hobbs, Iyengar, Manacorda)

CIA How are attitudes passed through families? Do these affect economic outcomes?

PLAN 2011-13: Manning’s position as LSE Head of Department of Economics delayed the start of planned projects.

OUTCOME 2013/14: Manning and co-authors have focused on how notions of identity and attitudes are connected to family and ethnic groups in a number of papers and presentations. They have found that identity with Britain remains strong even within ethnic minorities in the
UK. This work was published as One Nation Under a Groove? Understanding national identity, *Journal of Economic Behavior and Organization*, Vol 93, Sept 2013, pp.166-185

**OUTCOME 2014/2015:** Paper produced on the impact of actual immigration on attitudes to immigration using exogenous changes in immigration from changes in the way social housing is allocated. – (Battiston, Dickens, Manning & Wadsworth) *Immigration and the Access to Social Housing in the UK* CEP DP1264. Paper *Residential Segregation*, by Azmat, Kugler, Machin, Manning on impact of immigration on population flows nearing completion

**CIB What types of behaviour are admired and respected in society and how have these changed? What are the economic effects of these changes?**

**PLAN 10/11:** Document similarities and differences in values across communities in the UK. Initial paper.

**OUTCOME 2013/14:** Work by Manning has progressed, focusing on the Gallup opinion data which has some questions on admiration and respect asked in a consistent manner since the late 1940s. The initial findings show (surprisingly) remarkable stability over time in what is respected. There is no evidence, for example, that respect for entrepreneurs has risen nor that for business leaders has fallen as one may have expected from media reports of attitudinal change. We do find evidence, however, that there are changes in attitudes towards a more "liberal" disposition over such things as discrimination against minorities and drug-taking. Increases in liberalism seem to have increased in cohorts growing up in the post war period up to the 1970s. After this, however, attitudes do not seem to have become more liberal. This work is preliminary, but we plan to probe it further and convert it into a paper over the next year.


**C2A To what extent are migrants from Eastern Europe integrating? Does this have productivity growth and labour market effects?**

**OUTCOME 2010/11:** Alan Manning The integration of immigrants and their children in Europe, CentrePiece, Feb 2010; Alan Manning “The Economic Situation of Immigrants and their Children in France, Germany and the UK” Economic Journal Features 120, F4-F30 2010; “Culture Clash or Culture Club: The Identity and Values of Immigrants in Britain” Economic Journal Features 120, F72-F100 2010 Sanchari Roy; Bell, Machin, Fasani, 'Crime and Immigration: Evidence From Large Immigration Waves', CEP DP 984. A specific focus in this paper is on the A8 wave of migrants.

**OUTCOME 2012/13:** Ana Matos, *The Career of Immigrants*, CEP DP 1171. It finds that immigrants remain in the same occupations but get jobs with better paying firms. Over time immigrants move to larger, more productive firms and with a higher share of native workers. These patterns are similar for all the recent immigrants irrespective of their origin and in particular of whether their mother tongue is the host country's language.

**PLAN 2013/14:** Will wait to work specifically on eastern Europeans to be able to comment on Bulgaria/Romania free labour mobility.

**ADDITIONAL OBJECTIVE C2A(i) 2013/14** The impact of immigration on the probability of being in social housing in the UK. Draft paper written, CEP DP 1264, Apr 2014, CentrePiece Vol.19(1), Article 420: In recent years immigrant households are slightly more likely than natives to be in social housing but once one controls for relevant household characteristics immigrants are significantly less likely to be in social housing than natives. However, there has been change over time – the immigrant penalty has fallen over time probably because of changes in allocation rules. Overall we find that the rising number of immigrants and the change in the allocation rules can
explain about one-third of the fall in the probability of being in social housing with two-thirds being the result of the fall in the social housing stock.

PLAN 2013/14: Papers on crime and immigration.


PLAN 2014/15: Data on eastern Europeans needs to be made available in order for this project to progress to be able to comment on Bulgaria/Romania free labour mobility.

ADDITIONAL OBJECTIVE C2A ii)

PLAN 2014/15: Employment levels are a vital constituent to the health of communities. We therefore need to understand the persistence of unemployment in some communities. We will use decennial US census data from 1950-2010 to investigate.

OUTCOME 2014/15 CEPDP1357 The impact of local economic shocks on population, Amior-Manning. Joblessness across US commuting zones shows a high level of persistence even over a period of 60 years. The paper suggests this cannot be explained by permanent (or highly persistent) differences in the characteristics of areas, whether due to demographic composition or amenities. Using a simple model, we derive an ECM specification to model the adjustment of population to local demand shocks which explicitly accounts for the response to disequilibrium. We show that this model performs well empirically. The migration response is large, but not as large as commonly thought: adjustment to shocks is not complete within a decade. Over longer periods, we explain persistence in joblessness by serial correlation in the local demand shocks themselves. An adverse local demand shock is followed by population adjustment; but further negative shocks are likely to follow also, so the employment rate does not return to its original level. We have argued this persistence in local demand growth may be driven by long-run changes in industrial composition, but the exact causes should be the subject of future research. Application for further funding has been submitted under ESRC’s Data call to understand local persistence of unemployment in the UK.

C2B HOW ARE SOUTH ASIAN COMMUNITIES IN THE UK EVOLVING SOCIALLY (E.G. THROUGH INTER-MARRIAGE) AND ECONOMICALLY? HOW DOES THIS AFFECT THE LOCAL ECONOMY?

PLAN 10/11: Manacorda and Manning to start work on theoretical and empirical modeling of marriage markets.


OUTCOME 2013/14: This work is continuing. Data sources have proven more difficult than thought, but we are planning a paper for next year.

PLAN 2014/15: Complete paper on south Asian communities in the UK. Paper on intermarriage by Manning & Manacorda Minorities, Marriage and the Melting Pot nearing completion. This paper explores how group size affects marriage rates and the types of marriages, using a case study of African Americans in the US.

C2C HAS THE NEW IMMIGRATION “POINTS BASED” SYSTEM WORKED & HOW CAN IT BE IMPROVED?

OUTCOME 10/11: This project had to be discontinued since the Principal Investigator was made a member of the Migration Advisory Committee and was constrained from carrying on the project. A project on Immigration and Health was planned instead.

A rise in population caused by increased immigration is sometimes accompanied by concerns that the increase in population puts additional or differential pressure on welfare services and as such might affect the net fiscal contribution of immigrants. The UK and Germany have experienced significant increases in immigration in recent years and this study uses longitudinal data from both countries to examine whether immigrants differ in their use of health services than native-born individuals on arrival and over time. While immigrants to Germany, but not the UK, are more likely to self-report poor health than the native-born population, the samples of immigrants use hospital and GP services at broadly the same rate as the native-born populations in both countries. Controls for observed and unobserved differences between immigrants and native-born sample populations make little difference to these broad findings.

**OUTCOME 2012/13:** Published Musn’t Grumble. Immigration, Health and Health Service Use in the UK and Germany in *Fiscal Studies Vol.34(1) pp.55-82* (March 2013).

**OUTCOME 2014/15:** CEP Election Analysis #19, Immigration and the UK Labour Market (Wadsworth).

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**C3A How can policy and economic incentives reduce repeat offending?**

**PLAN 10/11:** Liaise with Home Office to obtain more up to date data on repeat offending and to analyse its connections to economic incentives and different crime fighting policies (Bell, Machin, Marie).

**OUTCOME 10/11:** Data currently being put together.


**OUTCOME 11/12:** Venice CESifo Conference run July 11 by Machin and Marie. Machin gave Keynote Lecture; papers presented by Marie and Cornaglia. There is to be an edited volume to be published by MIT Press (editors Philip Cook, Stephen Machin, Olivier Marie, Giovanni Mastrobuoni).


**PLAN 13/14:** Bell, Bindler and Machin will produce paper on Crime Scars; Bell, Jaitman and Machin will produce paper on the crime deterrence effects of harsher sentencing from the August 2011 London riots; Bell, Costa and Machin are working on crime and education using combined US FBI and Census data.

**OUTCOME 2013/14:** *Crime Scars: Recessions and the Making of Career Criminals* (Bell, Bindler, Machin). CEPDP 1284: [http://cep.lse.ac.uk/pubs/download/dp1284.pdf](http://cep.lse.ac.uk/pubs/download/dp1284.pdf). Are there long-run effects on criminal behaviour of leaving school in the middle of recession? We know that there are persistent effects on wages, but it seems reasonable to think that effects on crime may be more long-lasting since criminals often have ‘careers’ in crime. Using US and UK data on arrests and convictions we show this indeed the case and that the effects are substantial. A typical recession can increase lifetime offending by about 7% for males.

**PLAN 2014/15:** Machin, Marie and Priks working on paper on prolific offenders, with evidence on prolific offenders programmes from the UK and Sweden. Crime scars (CEP DP 1284) paper will be submitted to a journal.

**OUTCOME 2014/15:** Bell, Costa, Machin completed *Crime, Compulsory Schooling Laws and Education* (CEP DP 1374) - paper sent to journal. Bell, Bindler, Machin completed (CEP DP 1284)- paper sent to journal. Machin, Marie and Priks have draft paper: *Targeting Prolific Offenders to Reduce Crime: Theory and Evidence*. This paper investigates the impact of the targeting of the most prolific offenders on area crime rates. It is estimated that only a few offenders are responsible for a very large proportion of all crimes committed. A rough cost benefit analysis of the policy suggests that targeting prolific offenders is an efficient policing strategy to reduce crime.

### C3B **HOW DO ECONOMIC INCENTIVES AFFECT ORGANISED CRIME?**

**PLAN 10/11:** Obtain Istat data on allocation of European structural funds across different municipalities of Italy and match to crime to begin analysis (Cornaglia, Manacorda).

**OUTCOME 10/11:** We have looked at our proposed project on organised crime. At this stage we are not sure that this would pan out and lead to a top publication. This is mainly because the level of geographical variation in the data that we have managed to obtain is too coarse to generate precise and fully credible estimates. We replaced this with C3B (I) below.

**OUTCOME 11/12** Although the work on incentives on organised crime could not be carried out, Iyengar carried out work on the impact of incentives from paid employment on reductions in insurgency activity in Iraq. Building peace: the impact of aid on the labour market for insurgents Radha Iyengar Jonathan Monten Matthew Hanson Working Paper 17297 http://www.nber.org/papers/w17297. To determine if increased employment affects violence the paper analyses varying employment in development programs run by different US military divisions in Iraqi districts. Employment levels vary with funding periods and the military division in charge. Controlling for variability between districts, we find that a 10% increase in labour-related spending generates a 15-20% decline in labour-intensive insurgent violence. Overall the 10% spending increase is associated with a nearly 10% violence reduction, due to reduction in attacks which kill civilians, but increased attacks against the military. These findings indicate that labour-intensive development programs can reduce violence during insurgencies.

### REPLACEMENT OBJECTIVE C3B (I) **HUMAN TRAFFICKING (RADHA IYENGAR).**

**PLAN 2010/11:** In order to improve counter measures against human trafficking we need to understand the labour market and organisation structure of trafficking operations: previous studies give no clue as to the extent of the market and trafficking networks nor the relationship between this illicit market and traditional labour markets.

**OUTCOME 2012/13:** Dropped since Iyengar took took up post in US Rand Organisation following secondment to US forces in Iraq.

### MACRO-ECONOMIC GROWTH PROGRAMME (CASELLI, Pissarides, Sheedy, Tenreyro)

**M1A NATURAL RESOURCES CURSE: WHAT ARE THE CHANNELS WHEREBY AN ABUNDANCE OF NATURAL RESOURCES AFFECTS THE ECONOMY AND SOCIETY?**

**PLAN 10/11:** Submit papers on theory of ethnic conflict, oil windfalls and the improvement of living standards to top journals.

PLAN 10/11: Build cross country panel dataset of giant oil discoveries to see their impact.

OUTCOME 10/11: Work has started on building the dataset but has been interrupted whilst the RA involved is on leave. The CEP DP 960 Do Oil Windfalls Improve Living Standards? Evidence from Brazil is currently under review by a journal. Michaels' paper The Long Term Consequences of Resource-Based Specialisation (CEP DP 766) is forthcoming in Economic Journal.

PLAN 11/12: Caselli & Tesai to write up a new paper on the effects of natural resource windfalls on democracy-autocracy. Revise and submit CEP DP 732, On the Theory of Ethnic Conflict to a new journal.


PLAN 2012/13: Submit interstate resource wars paper to journal. Submit Oil Windfall paper to AEJ.


PLAN 2014/15: Submit CEP DP 1212 on Inter-State War to journal. Submit Resource Windfalls paper to journal.


M1B DOMESTIC INSTITUTIONAL CONSTRAINTS: HOW QUANTITATIVELY IMPORTANT IS THE UNDER-DEVELOPMENT OF LOCAL FINANCIAL MARKETS (AND OTHER INSTITUTIONS) IN EXPLAINING AGGREGATE ECONOMIC GROWTH?

PLAN 11/12: Develop and calibrate a growth model with agents who are heterogeneous in managerial skills, and study how exogenous variation in the efficiency of credit markets maps into endogenous variation in per-capita income levels (Caselli & Boehm) Run simulations and plan a new draft within first half of 2011.

OUTCOME 11/12 Done. (Caselli & Gennaioli), Dynastic Management Economic Inquiry Western Economic Association International, vol. 51(1), pages 971-996, 01.

OBJECTIVE COMPLETED 2011.

MIC BUSINESS POLICIES: CAN BUSINESS AND INDUSTRIAL POLICIES EVER BE EFFECTIVE IN SUPPORTING GROWTH?

This will be investigated further on return of co-author Criscuolo from maternity leave in 12/13. Initial finding is that investment subsidies do appear to have a causal effect on raising jobs and capital in the treated firms, but do not raise TFP. However, we identify policy effects only on smaller firms. Larger firms appear to be able to game the system insofar as they “pocket” the subsidies without raising their investment or employment levels.
PLAN 11/12: Van Reenen & Criscuolo will produce working paper on industrial subsidies (RSA).
Caselli and Siegel will begin calibration of model.

OUTCOME 11/12 Found that investment subsidies only increase investment and jobs for SMEs – large firms “pocket the money”. We found that the RSA policy raises area level manufacturing employment mainly through significantly reducing unemployment, however has no effect on (total factor) productivity. From a policy perspective, the fact that the subsidies were effective in raising employment and investment in these deprived areas at a modest “cost per job” (around $6,331) should be regarded as a positive outcome. DP “Causal Effects of An Industrial policy” Criscuolo, Martin, Overman, Van Reenen published in http://cep.lse.ac.uk/pubs/download/dp1113.pdf and presented to European Commissioners, influencing their discussion of state aid rules. Also published a CentrePiece “In Brief” Article: http://cep.lse.ac.uk/pubs/download/ep370.pdf.
RA hired. Extensive literature survey written, and after sorting difficulties with VML data accessibility through BIS Chief Economist, have put together data from various sources and started the analysis.

PLAN 2012/13: Caselli and Siegel complete work on calibration of model.

OUTCOME 2012/13: Still working on this. We have decided to change the model in some major ways so we still don’t have a first draft.

PLAN 2012/13: Criscuolo & Polat complete data analysis using:
- Firm level surveys done by the Office for National Statistics: ARD, BSD, AFDI, ASHE, LFS
- Firm level Regional Selective Assistance data provided by DTI/BIS
- Regional level Regional Selective Assistance data collected by us from official documents
- Regional level GDP, unemployment, R&D, patent stocks and infrastructure data collected from sources such as ONS, OECD, etc.

Complete two discussion papers one on the “Role of Government Policies, Local Knowledge Stocks and Firms Patenting Activity for High-Growth Financing in Clean Technologies”; the other on “Attracting Large Multinational Corporations With Subsidies. Is It Money Well Spent?”.

DOI: http://dx.doi.org/10.1787/5k486qttotq46-en

OUTCOME 2013/14: Working Paper Knowledge based capital, innovation and resource allocation Chiara Criscuolo and Dan Andrews –While structural reforms offer the most cost-effective approach to raising investment in knowledge based capital, there is also a role for innovation policies. R&D tax incentives and, (contrary to previous research), direct support measures can be effective, but design features are crucial in order to minimise the fiscal cost and unintended consequences of such policies. Well defined intellectual property rights (IPR) are also important to provide firms with the incentive to innovate and to promote knowledge diffusion via the public disclosure of ideas. However, such IPR regimes need to be coupled with pro-competition policies to ensure maximum effect while the rising costs of the patent system in emerging KBC sectors may have altered the trade-off inherent to IPR between the incentives to innovate and the broad diffusion of knowledge. (Published as OECD (2013), "Knowledge-based capital, innovation and resource allocation", in OECD, Supporting Investment in Knowledge Capital, Growth and Innovation, OECD Publishing, Paris.
DOI: http://dx.doi.org/10.1787/9789264193307-5-en

PLAN 14/15: Criscuolo complete new paper that exploits an accidental randomisation to identify what happens when support to an areas gets withdrawn. Complete a 2nd paper on how availability
of subsidies affects the location of firms across the UK; prepare draft of 3rd paper on whether multinationals are more likely to shut down plants after support has ended and after the areas where the plant is located loses support relative to other multiplant firms and to single plant enterprises.

M2A (i) How can we incorporate uncertainty and volatility shocks into macro models of business cycles? Does uncertainty cause recessions and is this now happening?

**PLAN 10/11:** Build a US Census database on establishment level volatility over time and a micro to macro model of uncertainty. Draft paper analysing the impact of uncertainty in driving business cycles.

**OUTCOME 10/11:** Bloom’s building of a micro and macro dataset of uncertainty is well underway as is his construction of a micro to macro simulation model of uncertainty.

**PLAN 11/12:** Bloom to develop a draft paper analysing the impact of uncertainty in driving business cycles. Produce paper using natural disasters as instruments for uncertainty (i.e., trying to get the causal impact). For example, what is the destruction impact and the uncertainty impact of the Japanese earthquake?


**PLAN 12/13:** Bloom and Baker to submit to DP series “Does uncertainty reduce growth? Using disasters as natural experiments.”


**OUTCOME 2013/14:** Bloom has built a large database of information on economic policy uncertainty – available at www.policyuncertainty.com – and evaluated the impact of this on investment, employment and growth. Work was presented, for example, in the UK at several events including to the Bank of England, the Society of Business Economists, to Goldman Sachs, to the Royal Bank of Scotland and to a Fund-Managers conference. It has also been presented extensively across the US, Europe and Canada, including to Martin Carney when he was Governor of the Bank of Canada. The data is also public access and has been included as well by on-line data providers like Bloomberg, Reuters and FRED.


**COMPLETED**

M2A (ii) New Objective: The relationship between trade and macroeconomic volatility. (Caselli/Tenreyro)

**PLAN 2011/12:** Attempt a quantification of the contribution of trade to the observed changes in volatility since 1970 in a large group of countries.

**OUTCOME 2012/13:** We had to considerably complicate the model in order to allow for multiple sectors. Working out the new model now done.

**PLAN 2013/14:** Code up volatility model.

**OUTCOME 2013/14:** Paper *Diversification through trade*, shaping up nicely and almost finished. Presented at many universities and conferences. Many argue that openness to trade increases
volatility in incomes and living standards, because it leads to countries to specialise in only a few sectors (e.g. agriculture, natural resources). But this logic is faulty. The paper explains why trade can actually reduce volatility, by allowing countries to switch to alternative suppliers when domestic suppliers experience productivity shocks.


**M2B THE FINANCIAL SECTOR AND THE REAL ECONOMY: ARE MORAL HAZARD AND PAY INCENTIVE STRUCTURES A CAUSE OF SYSTEMIC FINANCIAL CRISSES? CAN WE IMPROVE FINANCIAL REGULATION TO REDUCE THE RISK OF FUTURE FINANCIAL CRISSES?**

**OUTCOME 10/11:** The data collection from the Towers Watson database has begun.

**PLAN 11/12:** Analyse Towers Watson data (i) rent sharing at all levels of the organisation from CEO to shop floor worker; (ii) the role of incentive pay in stimulating productivity, growth and volatility.

**OUTCOME 11/12:** Measuring Executive Pay (with John Van Reenen and Brian Bell, Edinburgh)
Using the dataset created for the project above, we are examining how the pay-performance link for CEOs varies as one changes the measurement of pay. Crucially, a large share of CEO pay is in long-term incentive packages that vest only on relative performance results. This is ignored in the empirical literature and drives down the pay-performance elasticity substantially. (See also Bell, Van Reenen, *Firm Performance and Wages: Evidence from Across the Corporate Hierarchy* reported under L1B).


Luis Garicano has been involved in examining the causes of the financial crisis in a range of papers, policy blogs and talks, particularly around the Eurozone crisis. Chairing committee of George Soros Institute for New Economic Thinking (INET) on this issue (video http://www.youtube.com/watch?v=6cjfHaBe3R4).


Garicano Published paper Towards a New Architecture for Financial Supervision: Seven Principles.


**OUTCOME 2013/14:** Besley, Roland and Van Reenen have drafted a paper on the role of financial markets on the real economy, in particular the collapse of UK productivity since 2008. This will be presented in a special session at the Royal Economic Society in 2014 and discussed by MPC member David Miles. Versions of the paper have also been presented to the Department of Business and Innovation, the Competition authorities (OFT and CC) and a special international workshop organised by the Chief Economist of the Bank of England.


The role of institutional investors (like pension funds) and financial structure on innovation by Aghion, Van Reenen and Zingales has been published in the American Economic Review, “Innovation and Institutional Ownership”
**M2Bii An additional project to replace the dropped M2C**

**Plan 2013/14:** To research the Greek debt crisis and the impact of decision making processes within the EU on it.

**Outcome 2013/14:** Ardagna, Silvia, and Francesco Caselli. 2014. "The Political Economy of the Greek Debt Crisis: A Tale of Two Bailouts." *American Economic Journal: Macroeconomics*, 6(4): 291-323. The political economy of the Greek debt crisis. Was the policy response to the Greek crisis the best that Europe could do? No: the “bailout packages” given to Greece made unrealistic demands of the Greek government and its people, and should have been more generous. This excessive severity was as bad for creditor countries as for the debtor. Why then did “core countries” pursue a response that made even them worse off? The paper formulates a number of hypotheses that have to do with the protocols through which decision making takes place within the EU.

**M2C Can Central Banks use the experiences of central banks in other countries to improve their economic models and monetary policy decisions?**

This objective has been dropped; the project turned out to be much more challenging than anticipated, and we no longer felt we would be able to devote to it the amount of time and effort that it turned out to require. We have replaced it with M2A(ii), detailed in our Forward Plan 2011-2012, and an additional project on financial crises, looking in particular at the Greek crisis which we report under M2B above.

**Outcome 2012/13:** The paper and resubmission were completed and submitted to the journal.


**Plan 2013/14:** Project dropped as it turned out to be much more challenging than anticipated, and we no longer felt we would be able to devote to it the amount of time and effort that it turned out to require. We have replaced it with M2Aii and M2Bii above.
ANNEX B
POLICY COMMITTEE OF THE CENTRE FOR ECONOMIC PERFORMANCE

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