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INTRODUCTION

Research Programmes

This report covers the tenth year of the Centre’s work. The Centre is now organised around four programmes, each of which comprises researchers from a range of disciplines.

Labour markets: is the largest programme in the Centre and from September 2000 is directed by Alan Manning. This year we report on work carried out on UK and comparative labour market performance, focusing on minimum wages and the low wage labour market, trade unions, and the relationship between early employment experiences and adult outcomes. The year saw the publication of the study on ‘The State of Working Britain’, which is already influencing thinking in government circles. It brings together much of the programme’s work on Labour Markets.

The importance of skills to economic performance is reflected in expansion of the programme of work that we already undertake on both the impact of skills on growth and productivity, and the economics of the provision of skills. The new Centre for the Economics of Education (CEE) has been funded by the DfEE, and a new CEP programme on Education and Skills has been formed to incorporate this and its other work on skills. Led by Steve Machin and with participation from the Institute for Fiscal Studies and the Institute of Education, research will focus on school inputs and educational outcomes. This is a major new area for the centre, bringing together educationalists and economists to develop rigorous methodologies and to work together collecting and analysing data. The objective is to improve on much of the sometimes piecemeal research on school effectiveness that has been undertaken hitherto.

Technology and growth, (programme director Christopher Pissarides). The research of this programme covers macro-economic performance, looking in particular at the roles of labour market flexibility and entrepreneurship in fostering growth, and at the role of new technologies in long run economic growth. The main development during the last year has been the launch of a major project on the internet economy. This is led by Harvard’s Richard Freeman, who from September 2000 becomes co-director of the Centre. Two major – and unique – sets of data are being collected, from internet recruitment companies and from a global internet auction firm. Analysis of these data sets will commence next year, and indicates the Centre’s commitment to rigorous and original empirical analysis of current issues driving economic performance.

Globalisation, (programme director Tony Venables). This programme researches international trade and investment, and the location of economic activity, at both the international and the regional level. The ‘new economic geography’ ideas developed in the Centre are now being developed and applied both inside and outside the Centre. In the Centre, the year has seen empirical applications of these ideas both to Europe and to developing countries. Policy work includes publication of a major work on regional integration and work on the future of the WTO.
International financial issues have been a part of the programme both in the context of EMU and the debate on the reform of international financial architecture. This aspect of our work is being strengthened with the launch in 2001 of a new project on International Financial Stability, to be run jointly by Charles Goodhart and Hyun Shin, a newly appointed LSE Professor of Finance and Accounting.

**Links Between Basic Research and Policy**

Most of this report will focus on our core research. As always, however, one of the Centre’s principle objectives has been to provide the link between the basic research that underpins all its activities and those who frame public policy. This we have been doing effectively for many years; the result of our work has played an increasingly important part in various aspects of the economic policy debate, and members of the Centre have had frequent contact with policymakers and advisers from across the political spectrum. Examples of such links in 1999-00 have been:

**New Deal and Making Work Pay** - Much of the Centre’s work on unemployment, training and the problems of the social welfare and the poverty trap has now been incorporated into the government’s New Deal and its Making Work Pay initiative. The Centre’s Director, Richard Layard, is a part-time consultant to the Department for Education and Employment, and is involved in the design and implementation of the New Deal. Paul Gregg, whose work with Jonathan Wadsworth on jobless households has been so influential, is a member of the Chancellor’s Council of Economic Advisers and has been advising the panel on Productivity and Innovation at HM Treasury. Steve Nickell and Richard Layard co-authored a paper for Prime Minister d’Alema on the likely impact of New Deal type policies on the Italian economy.

**Poverty and the minimum wage** – Reducing child poverty is one of the government’s major objectives, and research in the Centre has informed the development of policy in this area. Work by Gregg, Harkness and Machin has documented trends in child poverty and studied its impact on outcomes later in life. In addition, members of the Centre – including Dickens, Manning, Machin - have been doing important work on low pay and the impact of the minimum wage. Metcalf continues to work as a member of the Low Pay Commission and helped write the first report on its impact.

**Monetary policy** – Layard, Turner et al published an influential booklet, The Case for the Euro which was widely cited in the press and received significant television and radio attention. The Centre continues to have influence via the staff who take its ideas into new jobs. Steve Nickell has joined ex Centre colleague Sushil Wadhwani as a member of the Bank of England’s Monetary Policy Committee (although he continues to run projects in the Centre) and Charlie Bean joined the Bank of England as Chief Economist in September. At more junior level three PhD research assistants have joined the World Bank in the past year (Richter, Bolle, Haacker) another has joined the Bank of England (Balakrishnan) and another the International Monetary Fund (Wiegand).
International trade - Winters has written on the future relationships between developing countries and the WTO, and advised DfID and the World Bank on the relationship between trade and poverty. Venables and Winters co-authored a major World Bank study on policies towards regional integration.

The Centre’s Output

The above are only the most visible manifestations of the Centre’s policy-related activities. Our core work has always been, and will continue to be, our extensive programmes of basic research. The Centre’s *raison d’etre* is to provide an interdisciplinary framework in which to develop new - and better - ways of thinking about problems such as skill acquisition, the role of labour market frictions in determining the flows of jobs and workers, the impact of new technologies, and the location of economic activity.

During the year we produced over 350 items of *finished work* (including 57 pieces of work forthcoming after September 2000). These are listed at Annex B. We published 5 books, 53 articles in learned journals and 57 chapters in books. We produced 46 discussion papers circulated to around 400 recipients all over the world and made available on the Centre’s website. *CentrePiece*, the Centre’s thrice yearly magazine, published to disseminate our work to a wider audience, enjoyed an extremely successful year and now reaches a readership of 3,500. We also recorded 129 newspaper articles referring to our work and were involved in many TV and radio programmes; details of these and all other forms of Centre output for the year will be found in our separate Performance Indicator Return.

We organised more *public events* than ever before with 24 business forum meetings, roundtable dinners, public lectures and media seminars on topics including the New Economy, Productivity and Growth, Skills biased Technological Change, Global Capitalism, Poverty, Prospects for the World Economy, the Future of Trade Unions, Skills and Productivity. Contributors included Robert Solow, Alan Budd, Robert Mundell, Carlo De Benedetti, Mike Moore (WTO), and Adair Turner. The Chancellor of the Exchequer gave a public lecture on the occasion of the Centre’s 10 year anniversary celebration.

We held nine *conferences* covering our usual areas of work but branching out in the summer term with a conference bringing together neuroscientists, economists, policy makers, sociologists and psychiatrists looking into what we know about brain development and the efficacy of childhood interventions: if government is to pour money into schemes seeking to maximise children’s later schooling and labour market opportunities, we need to have a basis to know which schemes are most likely to succeed. The academic activities of the Centre converge around its *seminars and workshops series*: we now run one seminar every day of the week during term. These include a seminar on Skills which meets on Fridays, covering a wide range of topics (see Annex D); a regular Tuesday lunchtime seminar at which members of the Centre discuss work in progress; a Wednesday Globalisation seminar; a Thursday Money-Macro workshop run
jointly with the Economics Department; and an Interdisciplinary Management seminar. In addition, we run a Spring Centre Conference at Stoke Rochford attended by the entire Centre, where junior and senior staff present and discuss the best papers produced that year, giving members of each programme an opportunity to hear about the research of people in other programmes and disciplines.

The Centre provides a training ground for the social scientists of the future by providing research students with an environment in which to develop and hone their research skills. This year four research students were awarded their PhDs (see Annex F).

Research in the Centre is greatly helped by the information systems and information management team (page 34) who this year moved the Centre to Windows 2000 environment, improved remote access and mounted all the Centre’s data resources on a central server providing access to all staff.

Funding

Details of how we spent our funding and raised outside money are included at Annex G and in the section on funding (page 36). The funding of most of our programmes comes from the Economic and Social Research Council whose support we again acknowledge with gratitude. We were delighted at the Council’s agreement to continue the funding of the Centre for a further 5 years from September 2000 (at 62% of our current level) and have considerably boosted our fundraising events and activities in order to maintain our current level of research projects. We have had considerable success already, with the decision of the DfEE to site its Centre for the Economics of Education at CEP and the award by Leverhulme of a £1m 5-year programme into the Future of Trade Unions. We would like to acknowledge with thanks the other foundations and donors whose support has allowed us to pursue the full range of our activities: these contributed £746k, an additional 56% on top of our ESRC grant. We would also like to thank the firms participating in the Centre’s Senior Business Forum for their continued support of the Centre.

Policy Committee

Finally we would like to thank our Policy Committee for their wisdom and guidance during 2000 under our new Chairman Adair Turner. Adair has worked very closely with Richard Layard in running fundraising events for the Centre, visiting potential donors, hosting fundraising dinners and brainstorming with the Policy Committee to develop a fundraising strategy.
RESEARCH COMPLETED

LABOUR MARKETS

The labour markets programme continues to investigate the performance of labour markets with particular emphasis on government and workplace policies that seek to improve performance, and on evaluating those policies that have been introduced. We have extended our focus to include comparative work on labour markets in the UK with those of Europe and the US. Education and skills became an increasingly important part of the programme, with the establishment in January 2000 of the Centre for the Economics of Education. This centre is funded by the Department of Education and Employment (DfEE), is directed by Stephen Machin, and draws on researchers from the CEP, the Institute for Fiscal Studies and the Institute of Education. We turn to reviewing its progress after reporting on the research completed in the rest of the Labour Markets programme.

UK LABOUR MARKET PERFORMANCE

Overview Projects

The programme has run two projects providing overviews of labour market performance both current and over the past 20 years. The first of these was the highly successful publication last November of the State of Working Britain (3), which provided an overview of CEP perspectives on the current state of the British labour market accessible to interested outsiders, and referred to by the Treasury official launching the book as “essential bed-time reading”. Work has started on a follow-up which will contain a review of recent UK labour market developments plus a number of chapters on specific themes: minimum wages, trade unions and second-generation immigrants.

The second overview project has been two major conferences based on a research project joint with the US based National Bureau of Economic Research on the ‘Premier League Economy’. This project brings together leading researchers from the UK and the US and evaluates the impact of 20 years of institutional change in the UK. Since 1980 the British economy has become one of the most deregulated and market oriented economies in the world (second only to the US and New Zealand). The key question motivating this project is the extent to which this transformation has paid off in terms of better economic performance for the country. Researchers evaluated a variety of micro reforms, including: education, privatisation, housing policy, general income tax policy, and tax relief for firms that allot shares to workers. They examined the outcomes of these policies on productivity, poverty, labour mobility, income inequality, and unionisation. The project found considerable continuity between the policies of the Conservative Party and those of the Labour Party that have made the British economy an exemplar of a relatively deregulated market economy. While the reforms did not close the economic gap between the UK and the US, they seem to have contributed to halting the decline of the UK relative to other EU countries and to bringing the UK modestly closer to the leading EU economies. Centre papers that were produced as part of the conference are
reviewed in more detail in appropriate sections of this report. They will be edited for a book to be published by University of Chicago Press.

UK Productivity

The most striking aspect of Britain’s productivity performance is that, in spite of recent changes, it continues to lag behind that of its rivals and Britain’s position in the productivity league table is the same as 20 years ago. Nickell and van Reenen, (111a) investigate this in more detail. Much of the differential between Britain and Continental Europe is due to lower levels of capital intensity and skill. However, between Britain and the US, there remains a significant gap even if these are taken into account. These gaps cover all sectors and reflect not just a weakness in high tech areas but an inability to absorb best-practice technology and methods into wide swathes of the market sector. Underlying causes here include low levels of product market competition, high levels of product market regulation and general lack of exposure to best practise methods and technology.

Part of this story is a weakness in technological innovation despite a high quality science base. This includes comparatively low and falling levels of R&D and patenting, as well as a distinct lag in the diffusion of innovations. Specific factors underlying this weakness in the commercial application of technology innovations include the following:

(i) There is some evidence that financing constraints are important despite a thriving venture capital sector. Many also consider short-termism to be a significant factor but there is little hard evidence to support this commonly held view.

(ii) While the education system is excellent for those at the upper end of the ability range, the structure in place for post-school vocational education is weak and this leads to a noticeable shortfall in technician skills which holds back the absorption of innovations (175).

(iii) General management skills are not as highly valued as skills in finance, accounting and consultancy in the UK labour market, so the brightest graduates (science or arts) tend to go in to the latter areas. Furthermore, because a large proportion of UK companies are not operating at the frontier of best-practice, the majority of managers learn the job in a non-best practice environment. This, of itself, inhibits the generation and absorption of innovations.

(iv) Until the early 1980s, the rising power of trade unions and their adversarial nature sometimes militated against innovation. This problem is much less relevant nowadays.

(v) Underlying the above has been an overall weakness in competitive intensity in the UK economy in many sectors. This weakness is gradually being eroded with deregulation in various product markets, privatisation and strengthened legislation against anti-competitive practices. In some sectors, however, there is a good way to go.

(vi) Finally, in recent years, the macroeconomy has been far more stable than of late and the structure of both monetary and fiscal policy is geared to maintaining this stability. This should help the overall investment climate for firms.
Whilst Nickell et al have considered external determinants of productivity we have also continued to research internal determinants within the firm. West and the team of social psychologists at Aston have investigated the practices that are associated with management effectiveness. Their results reveal that where there is a climate or culture that emphasises human relations and valuing employees, the addition of Human Resource Management practices makes no difference to the prediction of company performance. In contrast, where there is a climate or culture that emphasises performance and goal achievement, the addition of HRM practices does appear to make a difference to company performance (71, 72, 73, 168). Given these findings it is strange to find that in most companies, such practices are ignored, the focus of the HR function being placed on those traditional ‘transactional’ activities and measures such as Personnel records, managing salary reviews and recruitment. Only 15% of companies spend 3% or more of their turnover on staff training and the largest percentage of companies are those that spend less than 1% of their sales turnover on training (over 40% of companies). These findings are similar to other recent research that suggests a UK average training spend of 1.08% of turnover.

Analysis of corporate performance data in manufacturing reveals that the extent of team-working, and in particular its quality, is an important predictor of company productivity and also of administrative innovation. Our data reveal that in companies where managerial and administrative teams take time out to review their objectives, strategies and process on a regular basis, companies tend to have higher levels of productivity and profitability. Team processes (clarity of and commitment to objectives, participation, task orientation, and support for innovation) predict (positively) company performance. Once again companies have been slow to adopt practices that could help their productivity, with only 6-8% of firms in the UK having introduced team based working (39–44).

The work of CEP economists on company share option plans bears out the findings of the social psychologists. Freeman and Conyon (137a) examined the impact of employee share ownership and profit-related modes of compensation on worker commitment, productivity and firm performance. Two studies were carried out. The first, using a survey based on 299 Stock Exchange listed companies, compares the performance of the same firm before and after it introduced a particular scheme. It found that firms with shared forms of compensation involving regular employees differed from others in two main ways. First, these firms are more likely to engage in consultation and communication or information sharing with their employees than other firms. Second, the productivity of these firms improved after they introduced their shared compensation system, although with differing results depending on the particular system. Introduction of a profit sharing scheme or an approved company share option plan raised productivity by sizeable amounts; whereas neither the approved profit related pay scheme (no longer in operation as of 2000) nor the approved all employee share option scheme raised productivity.

A second analysis used data on the performance of some 1800 establishments from the Workplace Employment Relations Survey (137a). Although this contains only
quantitative assessments of economic performance by managers, the study obtained broadly similar results to those in our analysis of firms. Establishments that raised the proportion of variable pay the most had the largest increase in the proportion of workers who worked hard and whose productivity increased. There is, however, no guarantee that any particular system of shared compensation will work for a particular company. As the work of West has shown above, the most important factor in improving productivity is for firms to develop a participative company culture and to allocate decision-making authority to workers. For example, United Airlines, which is 55% employee owned, failed to do this and experienced severe labour relations problems during the 90s rather than an increase in productivity. Nevertheless we should view new Treasury tax reliefs for such schemes as a good way of preparing to improve economic democracy and firm performance, if not as a magic bullet for UK productivity problems.

Marsden, (138-141) has continued his work on performance-related pay in the public sector, investigating the reasons for the collapses of the scheme in the Inland Revenue and Health Service. His work has been cited by the Makinson Report into civil service performance management as evidence that the existing schemes were demoralising and demotivating, and this contributed to the government’s decision to reform performance management. His current work has extended this research to an analysis of PRP for teachers the outcome of which we will be able to report next year. This latter study is of particular interest since it will be one of the only major studies to monitor performance before and after the introduction of PRP.

Minimum Wages, Low Pay and the Low Wage Labour Market

We have continued to work on minimum wages. Metcalf (164) helped to prepare the first report of the Low Pay Commission on the impact of the Introduction of the National Minimum Wage. Machin, Manning and Rahman, (178) reports the results of a CEP-collected data set on employment in residential care homes for the elderly over the 18-month period from July 1998 to January 2000. It investigates the impact of the introduction of the National Minimum Wage (NMW) in April 1999. Our main findings were that the minimum wage had a very dramatic impact on the low-paid with minimal spillover effects further up the wage distribution, that virtually all the adjustment to the minimum wage occurred in the month of its introduction with very little subsequent adjustment of wages, and that the effects on employment were very small. This suggests that the NMW was set at a very modest level and could probably be raised without costing jobs.

Other recent work (215) has looked at the introduction of the minimum wage and changes in crime rates across the police force areas of England and Wales. In areas where more low paid workers were affected by the introduction of the minimum wage crime rates fell, relative to areas with fewer initially low paid workers. This is in line with the notion that substantial enough increases in wages (like those offered by the NMW) can alter people’s decisions about whether to participate in crime. Analysis (176a) of the relation between changes in area crime rates and changes in wages at the lower end of the wage distribution over a much longer time period (since the mid-1970s) is also in line
with this notion. This work reports crime rising by more in areas where changes in the 25th percentile wage were lower.

We have also looked at the transitions from unemployment into low-paid and high-paid jobs. The data show that repeat spells of unemployment are quite common, with 40% of those leaving unemployment experiencing another spell within 6 months. However, unemployment does touch a large proportion of the population at some point in time. For example, in June 1996 the percentage of our sample experiencing unemployment was 9%. However, 17% of the sample experience unemployment at some point over the whole of 1996 year and 33% over a three-year period; 1995-97. Most of these additional individuals that experience some unemployment are in a core group. We will develop this work to examine the impact of spells in unemployment on the probability of future unemployment and examine whether the length or number of previous spells is an important determinant of this.

Ellwood and Dickens (136a) compared movements in poverty in the US and Britain as part of the ‘Premier League Economy’ project. Relative poverty has risen in both the US and Britain over the last couple of decades, but the rise has been considerably greater in the UK. Absolute poverty has fallen in both countries in recent years. Strong economic growth in the 1980’s in both these countries was not shared equally across the population, so that there was a break in the traditional relationship between growth and poverty. This paper decomposes the rise into various competing explanations; changing wage structure, changing distribution of work, changing demographic structure, changes to the benefits system. It draws lessons about policies designed for the alleviation of poverty, with a focus on work-based policies such as the New Deal, the Working Families Tax Credit and the Minimum Wage. This is very important, given the UK Government’s commitment to lift a quarter of a million people out of (relative) poverty by the next election and to halve child poverty in ten years. They show that in both countries demographic changes and rising wage inequality have played key roles in increasing relative poverty. Britain has seen a sharp rise in the number of workless households whereas the US has experienced a fall, probably due to changing work incentives in the benefit system. This has had a sizable impact on absolute poverty but little effect on relative poverty. They conclude that work-based policies alone may not have large effects on relative poverty but can successfully target absolute poverty.

**Early Experiences and Adult Outcomes**

We have continued our work on the impact of early-life (both childhood and young adult-hood) experiences on adult life-chances. A highly successful ‘Brains’ conference was organised by Richard Freeman and Leon Feinstein which considered the impact of environmental factors of child development in the early years. The conference brought together a number of leading practitioners in neuroscience, biological psychiatry, animal and human psychology, and economics, as well as UK policy-makers responsible for devising and evaluating early childhood programmes. Its objective was to look at the scientific base for judging potential effects of intervention at different ages. Discussion ranged over identifying critical periods in the development of different behaviours and
the nature/nurture debate. There is evidence that successful pre-school interventions can improve children’s scores on standardized tests and their performance for years into the future, but such programmes are intensive and expensive. Child-based interventions – those that target children – are more effective than parent-based interventions – those that try to get parents to interact differently with their children. The danger to the UK is that the Head Start programmes, which will be developed at the local level, will find it easier to target parents rather than to develop innovative programmes focused on children. The conference concluded with a discussion of ways in which the scientific information could be disseminated to local decision-makers so that they could devise Head Start programmes that would have the greatest chance for success.

Gregg (118a, 125) has investigated the ‘scarring’ hypothesis, that experience of unemployment in early life increases the chances of unemployment and/or lowers wages in later life. The problem in this area has always been to disentangle the impact of the experience of early unemployment from the impact of unobservable variables that affect the chances of unemployment in both early and later life. These papers use the level of unemployment in one’s local area when young as an instrument to ensure that we only pick up the former effect. They find small but significant effects suggesting that the misfortune of being brought up in a high unemployment area does have long-term consequences.

Chevalier and Viitanen, (148) investigate the impact of being a teenage mother on educational attainment, work and wages. Again, the problem in this area is to disentangle the true effect of teenage motherhood from factors which affect both labour market outcomes and the likelihood of being a teenage mother. Using age at menarche as an instrumental variable they find that teenage motherhood has a negative effect on education, employment and wages.

Gregg and Machin, (27, 201) have studied links between a range of childhood dated variables and subsequent success or failure in the adult labour market, using a sample of 18,000 individuals from the National Child Development Study born in the same month in 1958. They uncover links between a number of indicators of childhood disadvantage and economic and social factors that persist for some time. Whilst educational attainment is a very important attenuating factor, when this has been netted out negative correlations between economic/social success and disadvantage still remain. Feinstein, adopts a similar modelling approach in his examination of the impact of childhood psychological and behavioural attributes on adult outcomes (97). He discovers that while conduct disorders at the age of ten predict male adult unemployment particularly well it is self-esteem that predicts male earnings. For women the self-esteem variable is also particularly important. Another important finding was that while age ten mathematics ability is a good predictor of subsequent educational development for children from high socio-economic status families, reading is the stronger predictor for children from low socio-economic status groups. He therefore argues that parental attitudes are much more important than raw indices of social class for the explanation of the age ten scores. These studies contribute to building up a picture of the effect of early experiences on adult outcomes that will be developed in future work.
Regional Inequalities

Gregg, Machin and Manning’s paper for the Premier League Economy project investigates the impact and determinants of residential mobility (137b). In spite of the view that council house sales and deregulation of the private rental market should have made the labour market and housing markets much more flexible, regional inequality and mobility rates have hardly changed in the past 20 years. By contrast the UK graduate labour market is well-integrated, with very low levels of regional inequality. The paper argues therefore that the best way to reduce regional inequalities would be to try to make other labour markets more like that for graduates and that this situation could readily be improved if, for example, job centres routinely carried vacancies from other areas around the country. In particular, it suggests that it is currently very difficult for unskilled workers in one region to search for work in another.

Trade Unions

The 5 year Leverhulme Trust funded programme on “The Future of Trade Unions in Modern Britain” started in January 2000. The initial focus of interest is on union recognition, family friendly policies and equal opportunities, and explanation for differences in membership by both age of the individual and age of the workplace.

Metcalf, Hansen and Charlwood, (110) consider the impact of trade unions on wage inequality. Dispersion in pay is lower among union members than among non-unionists. This reflects two factors. First, union members and jobs are more homogeneous than their non-union counterparts. Second, union wage policies within and across firms lower pay dispersion. Unions’ minimum wage targets also truncate the lower tail of the union distribution. There are two major consequences of these egalitarian union wage policies. First, the return to human capital is lower in firms that recognise unions than in the unorganised sector. Second, unions compress the wage structure by gender, race and occupation.

We have also worked on the effects of unions on other variables apart from wages. (105) shows that dangerous workplaces are more likely to be unionised but that unions tend to reduce injury rates in such workplaces. Fernie and Gray, (77) looked at the difference in the provision of equal opportunities and family friendly policies and outcomes in workplaces with union recognition, compared to those with no union recognition. Findings were that women in unionised workplaces were more likely to have access to equal opportunities and family friendly policies, and experience equal opportunities and family friendly outcomes, than women in non-unionised environments.

Machin (106) considers the rapid decline in the unionisation rate that has occurred in Britain since the late 1970s. An establishment based analysis reports that the overwhelming factor in explaining falling unionisation was a failure by the unions to organise new establishments that were set up (often in the service sector, often with younger employees) replacing previously heavily unionised establishments in the last twenty years or so. Developments since 1990 represent a continuation of the pattern
revealed in earlier work for the 1980-90 period. The sharpest falls in unionisation occurred in private manufacturing establishments set up post-1980, with significant falls also occurring, but from a lower initial level, in private sector services. In the public sector there is no establishment age based decline in recognition.

Within the Workplace

There is a widespread popular impression that work is more demanding and stressful than before. This is a difficult hypothesis to test but Green and McIntosh (99, 100) use the European Survey on Working Conditions to show that work effort has risen more in the UK than other European countries, and that this can be linked to the decline in unionisation and the rise in the use of computers. Fernie (11, 137) has continued the research into one of the types of workplaces which most embody these changes, call centres. However, contrary to their popular stereotype, they found that the call centre workers studied (a sample of over 600 in this case) had levels of depression, anxiety, job satisfaction and general mental health that were no worse than other comparable forms of work. Indeed, in some instances, notably where employee control over the work was greater and where proper coaching was in place, levels of depression were significantly lower and levels of satisfaction much higher.

European Labour Markets

Many of the past research findings and policy recommendations that have emanated from the CEP (e.g. welfare-to-work, the National Minimum Wage and workless households) have had a marked effect on UK labour market policy and whilst there is still much UK work to be done our interest in labour market performance has been extending beyond the boundaries of the UK.

Nickell and Nunziata, (111) study the dynamics of labour demand and the determinants of employment rates across the OECD and find that:

(i) labour demand adjusts less rapidly when employment protection is more strict and union density higher;
(ii) there is no evidence that overall job turnover is influenced by employment protection;
(iii) union density and coverage are negatively related to employment/population ratios, although this effect can be entirely offset by coordination;
(iv) strict employment protection laws which limit the ability of employers to fire workers lead to lower levels of employment for women and young people but have no impact on employment among prime age men.

We have influenced the EU-wide discussion on the importance of welfare-to-work policies by writing a report (156) for Blair and d’Alema. We have investigated the widely-cited Dutch unemployment miracle (66, 67, 68), concluding that it is changes in the generosity of welfare benefits and the centralised wage agreement that can primarily explain the reduction in unemployment rates. We have also looked into the dramatic rise
and subsequent fall in Finnish unemployment (65), the striking use of temporary contracts in Spain (103, 152), the extent and determinants of wage arrears in Russian labour markets (70) and worker turnover in Poland and Russia (104). More work on the role of skill-biased technical change and the structure of employment has also been carried out (205), with the work now being extended to cover various low and middle-income developing countries. This work uncovers important evidence that skill-biased technologies are being transferred to the same kinds of industries across the world including to countries where skills are scarce.

EDUCATION AND SKILLS

Issues to do with the economics of education and skills remain high on CEP’s research agenda and the research has expanded in this area to such an extent that a new education and skills programme has been started up under the direction of Machin. The last year saw the establishment of the Centre for the Economics of Education (CEE), a research centre funded by the Department of Education and Employment (DfEE) involving researchers from CEP, the Institute for Fiscal Studies and the Institute of Education. During the past year we have produced a large body of work on the demand and supply of skills. Turning first to demand, several aspects of the increased demand for skilled/educated workers that have occurred in many countries have been investigated. These include work on cross-country trends and investigations of the critical factors that underpin such trends (205, 59, 203, 111a, 181); the relation of basic skills (or lack of them) to the labour market performance of British workers (157, 158, 160, 220); methods of measuring skill attributes of workers (163, 228). We now discuss these in more detail.

i) Changes in Relative Demand
Continuing on from earlier work, Machin and co-workers have documented international shifts in the relative wages and employment of more skilled workers, illustrating that demand has continued to shift in favour of workers with better skills and education levels. An interesting feature of some of this work (205, 51, 203) is that improvements over time in the wages and employment of skilled workers are seen not only in the advanced world, but also in developing countries. This rests well with notions that skill-biased technological changes have been the key driving factors behind the improved fortunes of more skilled and educated workers (and the deteriorating position of workers with low skills and education) in many countries around the world. Nickell and colleagues (111a, 181) have also corroborated this with international findings on the links between increased educational attainment and patterns of industrial specialisation.

ii) Basic skills
Much has been made of the fact that workers at the lower end of the skill distribution are severely lacking in basic skills in some countries that have experienced rising wage gaps between rich and poor in recent years (notably the UK and US). This contrasts sharply with countries like Germany and the Netherlands where wage inequality has not risen and where people are better educated to basic levels, particularly in literacy and numeracy. Some researchers have thus looked at the links between basic skills and labour market
performance of individuals in Britain, with significant earnings and employment penalties being observed for people with poor literacy and numeracy levels (157, 220). Consideration of what one may term as softer skills (like individuals’ ability to interact with other people, internal drive or motivation) shows them to be positively correlated with literacy and numeracy. However, it is the latter skills which display much more important links with earnings and employment than do the softer skills (160). Other related work here is research by Feinstein, Gregg, and Machin which establishes links between childhood behavioural variables and adult labour market and educational outcomes using the very rich British cohort studies data (97, 201, 27).

iii) Measurement of Low Skills
Work by McIntosh and Steedman has considered in some detail how one may measure the concept of low skill, and how this relates to existing data sources (228). Some of this work (163) has had a significant input into debates about the extent of low skill employment in Europe and allows for the first time rigorous comparisons between countries’ skills levels as measured by national educational qualifications.

Supply of Skills and Education

The rapid expansion of the education system in many countries has resulted in important increases in the supply of more highly educated workers. Trends in education supply have been documented by Steedman and colleagues (37, 38, 227). To allow rigorous work to be undertaken in the field of the economics of education, a comprehensive review of existing data sources to uncover what information exists on education issues has been undertaken by Vignoles and colleagues (131). This should prove to be a useful resource for researchers in this field. A series of methodology debates between the educationalists and economists has also taken place.

Central to the increased supply of more skilled/educated workers are questions to do with the educational choices made by workers and the labour quality of people graduating from universities. Chevalier (134a) has considered the way in which financial constraints may affect people’s ability to invest in education, and Gregg and Machin (201) have looked at the ways in which childhood and parental factors are related to educational attainment. Both point to important links between education participation and attainment and financial or family disadvantage. For example, Gregg and Machin showed that while 11% of a sample of 6000 men born in 1958 had a degree by age 33 and 26 percent had no educational qualifications, among the 1000 or so men who grew up in a family facing financial difficulties only 3 percent had a degree and 46 percent had no educational qualifications.

The implications of there being many more graduates in the workforce also raises the question about whether they are being employed in graduate jobs. Over-education, where people with degrees do jobs that are not normally thought of as graduate jobs, has been investigated. The research has shown both the incidence of over-education and also the wage penalties associated with not getting a graduate job (9, 54).
Rates of Return to Education

A key part of the Education and Skills programme concerns the estimation of the rate of return to education and how it alters over time in response to changing employment demand and supply patterns. A comprehensive survey of the UK evidence has been undertaken, and published in a volume on comparisons across Europe (195). Work of a more technical nature has focused on how changing education and returns to education interplay with cohort effects in affecting changes in wage inequality through time (213). This research, based on panel data from the Family Expenditure Survey and General Household Survey points to an important role for education in accounting for why the UK distribution of earnings has widened so much in recent years.

Other work has explored variations in the return to education. Some of this (174) focuses on the role of increased education supply and variations over time in the returns to education by sex and subject of study at degree level. Others (158, 171) have looked at differences in participation in academic versus vocational courses and how the acquisition of such qualifications impacts on earnings, with a lower wage payoff for a degree for those not doing graduate jobs (9, 54, 170). Finally, the wage payoff to obtaining mathematics A-level has been explored (10). The evidence suggests that there is a wage premium associated with having mathematics A-level, even when comparing individuals with a similar background, ability and overall level of education. This pay off is around 10% and is evident even in mid-career, i.e. when individuals are in their thirties.

The wider benefits to education have also been considered in our research. Gregg and Machin (18, 19) present results indicating that late returners to education do receive a wage payoff for such investments but that this is unlikely to be as high as for those going through the further education system earlier. Moreover, the returns for those characterised as growing up in a disadvantaged family are generally lower.

School Effectiveness

An extensive review has been undertaken on the sometimes controversial literature studying links between student or school performance and inputs to schools (expenditure, teacher salaries, class sizes and so on) (167). The review emphasises that, on balance, teacher quality (more than class size) lies at the heart of better student attainment, but it also points out the sizable methodological difficulties linked to work in this area. This will be an important CEE/CEP research question of the future.
TECHNOLOGY AND GROWTH

The programme has two main elements. The first is to do with macro-economic performance, particularly as it relates to job creation and destruction. Work in this area includes the macro-implications of labour market structure and investigation of the sources of job creation and entrepreneurship. The second main element of the programme is work on understanding the process of economic growth, with particular emphasis on knowledge accumulation and dissemination.

Macro performance and labour market flexibility.

Labour market flexibility is crucial for macro-economic performance, and continues to be the central research activity of Pissarides (233, 234, 225). The focus of Pissarides’ work is on the role of frictions – skill and location mismatches between jobs and workers, information imperfections, limited mobility, etc – in the flows of jobs and workers. The framework has found many applications in labour markets analysis and formulation of policy towards unemployment. Applications of these approaches have continued, both inside the Centre (253, 255, 260) and by others outside.

The emphasis of our research on labour market flexibility in the past year has shifted to the role of entrepreneurship in job creation. Years of research on the reasons for the sharply contrasting employment experience of the United States and European Union has led to some important findings, but not enough to convince labour economists that we now know why the United States has generated so many more jobs than Europe has. Of major importance among current findings are the role of the welfare state in providing a floor on low-skill wages and the role of labour-market flexibility in restricting employers’ freedom in job creation and destruction. The new focus of our work is related to labour-market flexibility but with a different emphasis. The emphasis now is on the creation of companies, the willingness of entrepreneurs to take risks and incentives they have to create jobs. This is yet another dimension where there is contrasting experience in the United States and Europe. In the United States a far larger number of small firms are created each year (and a larger number exit) than in Europe. Americans seem to be much more willing to take risks than Europeans are. Why is this? One of our projects in this area has been to look at start-up costs and the role of risk aversion. In (256) Lopez-Garcia shows that in an economy with frictions of the type analysed in search models more risk-averse agents will create fewer jobs, with consequently higher unemployment. The next stage of this work is to ask why agents may exhibit more or less risk averse behaviour, and rather than look at utility functions, we are looking at the constraints facing new entrepreneurs in different markets. This work is still at its very early stages, but the role of bankruptcy laws and financial structure look promising avenues to explore.

A piece of work (268) that is more advanced is the study of the role of start-up costs in job creation. Recent data – the best of which was assembled by a team of researchers working at the London Business School that includes Lopez-Garcia – show large variations in the cost of setting up new companies and in start-ups across the OECD. Countries where new companies can be set up fast with the minimum of administrative
hassle include the United States, the United Kingdom and Denmark. It takes on average a week to set up new companies in these countries. By contrast, setting up a new company in Germany takes on average 16 weeks and in Spain 24 weeks. Preliminary investigations show that these start-up costs are correlated with employment performance: employment performance has been better in countries with low start-up costs. We explain this fact by setting up a framework with managers and workers and show that if it is easier to set up a new company more workers will become managers and create jobs for themselves and others. The framework that we use is innovative and builds on our earlier theoretical work in matching models.

Labour market policies have been worked on by Bean (260) who develops a model to simulate the effects of various labour market policies such as hiring subsidies, firing costs and the minimum wage. The model itself draws heavily on the work of Chris Pissarides incorporating labour market frictions and an active job destruction decision. The model has already been used to simulate the impact of the Working Families Tax Credit and highlights an important general equilibrium effect on the natural rate of unemployment that has been ignored in other studies that focus purely on the impact on labour force participation. Specifically we find the effect of the tax credit is also to reduce the numbers unemployed by about half the estimated increase in labour force participation, i.e. the increase in employment is about 50% bigger than implied by previous estimates.

In the application of the matching model to Spanish unemployment, Fonseca and Munoz (253, 255) investigate two related questions. The first is whether aggregate productivity shocks can explain the dynamics of Spanish unemployment given the presence of frictions in Spanish labour markets. They find that a combination of aggregate and reallocation shocks could explain the bulk of the dynamics, which is in agreement with work by others who found that Spanish labour markets have failed to adapt to rapidly changing conditions in the structure of labour demand. The second question asks whether unskilled workers suffered more than their skilled counterparts because of competition from them; namely, as jobs became scarcer skilled workers moved down the occupational ladder and crowded out unskilled workers. Again, they find evidence for this effect.

A related piece of work by Burriel-Llombart (252) investigates whether the fact that pecuniary and psychic costs affect regional mobility and in turn whether this leads to the emergence of rich regions populated by skilled workers and poorer regions with a greater concentration of unskilled workers. When there are complementarities between the demand and supply of labour, and different sunk mobility costs for workers of different skills, polarization of the skill structure of different regions is likely to occur.

Other topics covered in this part of the programme include work on the role of international capital in easing domestic bottlenecks in job creation, and some comparative international macro-economic studies. International capital mobility has grown enormously recently, about four times as much as trade has. The growth has been especially rapid in Europe, where the removal of artificial barriers as part of the single market programme has contributed to the concurrent growth in world-wide capital movements. Such movements in capital – be it foreign direct investment or the
acquisition of non-controlling interest shares in domestic firms by foreigners – must have influenced domestic job creation. In (250) we show that international capital movements are more likely to influence the volatility of employment rather than net job creation. Countries that do well and are on an upward growth path attract capital from abroad and so reach their target employment level faster. The converse is the case for countries in recession, which tend to experience capital losses.

Further international studies include work by both Bean and Freeman. Bean undertakes a detailed evaluation of the economic performance of Australia during the 1990s, (265). The outstanding performance of Australia in recent years is something that observers in the northern/western hemispheres do not seem to have fully woken up to. Growth of output and productivity has rivalled that of the US, inflation has been stabilised at a low level and unemployment has been falling. Some observers have attributed this to a “new economy” phenomenon, and indeed Australia does seem to be well placed to take advantage of the information and communications technology revolution. However, our research, employing both international cross-sectional evidence and sectoral data, suggests that the explanation is rather more prosaic, namely that it is the consequence of a decade or more of structural reform, particularly the removal of tariffs, de-regulation in product markets, and the introduction of the market into the public sector that have increased competitive pressures on producers. Labour market reforms have also contributed to a decline in the natural rate of unemployment. Most of these imply a once-off improvement in the level of productivity rather than a permanent increase in its growth rate. These beneficial supply-side developments have been supported by complementary and well-judged macroeconomic policies. Successive governments have maintained responsible fiscal policies, so that public debt is fast disappearing, whilst monetary policy has been skilful, particularly during the Asian Crisis, when acquiescence in depreciation of the Australian dollar allowed Australian producers to compete in new markets to replace the decline in demand in East Asia.

Freeman has examined the relationship between economic institutions and performance among the advanced OECD countries (149). He and Ronald Schettkat have studied the slow growth of service sector employment in the EU compared to the US. They focused on Germany as the lead EU economy and developed a new Comparable German-American Sectoral (CGAS) data set to contrast employment and earnings at a micro-sectoral level. This analysis has found that the slow growth of services in Germany can be only modestly attributed to differences in wages and social programs between the countries, but rather seems to come from deeper differences in the marketization of activities. The implication is that as long as Europeans work fewer hours than Americans and engage in DIY activities, Europe will not generate the same level of growth of low level service employment as the US (150). Separately, Freeman has shown that it is the growth of female employment in the US that underlies most of the American jobs miracle, and that 30-40% of American women earn more than their husbands, depending on their skill level (148). The implication is that unless European women work more and are allowed to advance in the job market rapidly, the EU is unlikely to catch up with the US in GDP per capita, (whilst recognising that GDP per capita is not a complete measure of economic well-being).
Knowledge and growth

Danny Quah’s research in 1999/2000 has attempted to understand the forces underlying the evolution of the world’s cross-country income distribution (249). He has continued to document the clustering behaviour reported in earlier work: that subgroups of countries seem to converge, while the entire cross section becomes increasingly polarized (241, 249, 257a). Such dynamics are not well understood within standard thinking on the nature of economic growth. If it is technological progress, say, that drives growth, why doesn’t the whole world eventually become equally rich or equally fast-growing? Those currently poorer would simply, over time, learn to do things the same way as the already technologically advanced, suggesting convergence. The same implication follows if growth is driven by the accumulation of physical capital. Those countries already richer should experience lower returns to capital, driving capital to relatively capital-poor countries and causing convergence.

Quah’s research has sought to explain the observed emergent clustering in incomes, focusing mainly on technical progress. Technical progress can give rise to clustering if knowledge accumulation builds on itself, i.e., is strongly self-reinforcing, while dissemination, although important, is less synergistic.

Clustering in economic performance occurs not just in income levels but across space. We observe these particularly in a number of low transport-cost industries. The quintessential example is computer software; another is financial services and information; yet a third is scientific knowledge. Why do distinct clusters of economic activity arise, and notably in such (“weightless economy”) industries? Policy concerns here are immediate and direct: Governments worldwide seek to foster clusters of research and development in knowledge-intensive industries – of which the above are instances – by directly subsidising their emergence. Is such action necessary, or desirable? What mechanisms have led to the formation of those clusters, with or without policy intervention?

Quah studies alternative ways whereby such clusters might arise (241). In ongoing work, knowledge (or software or information or Internet content) production occurs in specific locations. Knowledge is useful for producing yet other forms of knowledge. However, the transmissibility of it across geography depends on local conditions, such as shared cultural understanding, common tacit norms, and so on. (Content providers, such as Yahoo or AOL for instance, see the benefits of local customization even in providing pure information.) Clusters of knowledge-intensive economic activity can then spontaneously emerge. What this implies for policy remains to be worked out. One message might be that clusters can arise spontaneously in situations free of externalities or market imperfections---directed government policy is unnecessary for their emergence, and might instead distort the efficient allocation of resources.

Such a conclusion could well be overly simplistic and naïve, and empirical analysis of this behaviour must remain high on the Centre’s research agenda. However, while the research thus far has been mostly only conceptual rather than empirical, indirect and
informal evidence is available for the effects described. As one leading example, the
news media and finance industries manifestly locate in swathes – either along time zones
or geographical proximity – not all in one place.

A further research project deals with the effects of growth on inequality (257a).
Inequality can sometimes increase as a national economy grows. Does inequality rise so
much that it undoes for the poor the putative benefits of growth? How much increased
inequality should society tolerate for a given percentage rise in aggregate growth? Are
such increases typical in historical growth experiences worldwide? The conclusion of the
research is that almost uniformly growth’s positive effects overwhelm the negative
effects of rises in inequality.

Nick Crafts (251) took a more conventional approach to the study of technical progress,
by investigating whether competition policy in the United Kingdom after the war helped
innovation. He finds no support for the Schumpeterian hypothesis that some monopoly
power helps the adoption of new techniques, which influenced competition policy at the
time. Britain did not lag behind her competitors in inventions but slow adoption of new
techniques could be blamed for its slower productivity growth. In (254) Crafts
investigates worldwide growth and in particular the divergence between OECD growth
and growth in less developed countries. Whereas there is evidence of divergence in living
standards if they are measured by GDP growth, he finds that there have been
improvements in the human quality index of all nations.

An important new programme on the internet economy has commenced under the
direction of Freeman. Progress has been made on acquiring two unique data sets, one
from internet recruitment companies and the other from a global e.auction company.
Work will begin on these in the coming year.
GLOBALISATION

The Globalisation program continues to work on issues of international trade, foreign investment, the location of economic activity, and on international finance.

International specialisation and the location of industry

A number of projects have been directed to understanding the changing pattern of international specialization, particularly in the EU. Trade theory predicts that integration should lead to specialization, although this can be driven by many different forces – comparative advantage based on endowment or productivity differences, or the clustering of related activities due to agglomeration forces. The effects of specialization will generally be beneficial – allowing countries to better align their production with their supply capacities, and firms to benefit from proximity to other firms in related activities. However, there is also a worry that specialization might make countries more vulnerable to industry specific shocks – a consideration that could be particularly important in monetary union, where one of the mechanisms to adjust to country shocks is removed.

Venables et al (313, 344) document the changing patterns of industrial location in the EU and argue that specialization is indeed increasing. The industrial structures of EU countries have become steadily more dissimilar since the early 1980s. Comparison with the US (where the industrial structures of states have been converging, although from a much more specialized level) indicates that the process of specialisation in Europe may yet have a considerable way to run. In a companion paper Venables et al (318) investigate the underlying determinants of the location of European industry. They show how supply of highly skilled labour and of scientists is disproportionately important in attracting high skill and R&D intensive sectors. In addition, linkages to related sectors are important, particularly for downstream industries that are dependent on supplies of intermediate goods; these industries are drawn into central areas of the EU with good access to intermediate supplies. Redding (310, 314) has analysed specialisation in the EU using sub-national data on production (although with more aggregate industrial data), and finds that endowments are important, as are some of the forces suggested by new economic geography. Using the broader set of OECD countries Redding et al (29) focus on the roles of educational attainment and labour market institutions in determining specialisation, finding, for example, that countries with higher levels of employment protection do have slower speeds of structural adjustment.

Work on foreign direct investment has continued, with publication of theoretical work exploring circumstances under which economic interaction between countries is more or less likely to take place through investment flows or trade flows, (292). We have also undertaken both theoretical and empirical work on the geography of foreign direct investment (275) both of these pointing to the extreme geographical concentration of FDI inflows, particularly amongst developing countries.
Cities and regions

The centre’s development of new economic geography is being extended with investigation of locational issues at the sub-national as well as the international level. Overman and Puga are continuing their work (with expanded data) which shows that unemployment patterns in Europe are increasingly driven by spatial forces, as compared to national, sectoral, or demographic considerations. Duranton and Monastiriotis (323) investigate the relationship between returns to education and regional inequalities in the UK, showing that much of the increase in regional inequality in the UK can be explained by increasing returns to education, favouring the regions which have a higher proportion of more highly educated workers. Duranton is studying local labour markets in France, using data that tracks a sample of a million employees. Overman and Duranton have commenced work with plant level data of the UK Annual Respondent Database, to investigate industrial location in the UK.

City structure has been explored by Duranton and Puga (281, 301), and a series of papers by Overman and Ioannides (286) have investigated the size distribution of US cities. Their work suggests several puzzles which will form the basis of further work. For example, large cities show a greater degree of population instability through time than do smaller ones, and the importance of cities’ access to markets as a determinant of both city growth and city wage levels varies with city size.

Trade and development.

Trade and development issues have been addressed in several projects. Winters (277) has worked on the relationship between trade liberalization and poverty, this work feeding into the World Bank’s ‘World Development Report’, as well as into the thinking of the WTO and DfID. Some of the work has been devoted to clarifying the mechanisms through which trade liberalization affects the poor – such as prices, wages, government revenues and possible volatility -- and some to evaluation of trade liberalization experience. Winters concludes that, while it is impossible to assert that trade liberalization never hurts the poor, the burden of experience is that incomes of the poor (as well as the average) are raised by liberalization.

Henderson, Shalizi and Venables (316) explored the relationship between geography and development, looking at both the effects of geography on development, and the effects of development on countries’ internal economic geography. The former of these relationships is explored in detail by Redding and Venables (315). They show how a theoretical model of economic geography yields predictions about the cross-country distribution of manufacturing wages based on countries’ remoteness from markets and from sources of supply of intermediate goods and equipment. By econometrically estimating a world trade model they are able to construct the theoretically correct measures of both ‘market potential’ and ‘supplier access’ for each country. These variables in turn explain 75% of the cross-country distribution of per capita incomes, and are robust to the inclusion of other variables that researchers have used to try and explain the world distribution of income. The estimates also yield predictions of the very large
penalties that landlocked developing countries face (an income loss of up to 65% for the poorest landlocked African countries), and of the gains from an open trade policy stance.

Trade policy

Following the failure of the Seattle summit in December 1999, research has been undertaken on the WTO system. Winters (277, 320, 321, 322) has studied the relationships between the WTO and developing countries, and between the WTO and the trade policies advocated by the World Bank. He argues that the failure of the Seattle summit highlights the divide between the developed and the developing country members of the WTO, a rift that needs to be healed if the WTO is to survive as an effective force and a new round of talks is to be launched. This will require that the developed countries take seriously the developing countries’ difficulties with the WTO – a perception of unfairness (e.g. continuing agricultural and textile protection in developed countries, while developing countries are required to liberalise intellectual property) and an overload of regulatory and institutional requirements. The future of the world trading system was the subject of a meeting ‘Jump Starting World Trade’, at which Mike Moore, the Director General of the World Trade Organisation spoke.

Venables (274) and Winters (294, 347, 316, 317) have continued work on regionalism, and the World Bank report ‘Trading blocs’ (270) which they coauthored was published. The report outlines different routes to integration and different policy options that countries considering integration face. It points to some of the costs as well as the benefits of regional integration, and argues that ‘south-south’ integration schemes are likely to be less valuable to developing countries than are ‘north-south’ arrangements.

Montado (337) has continued work on dumping and anti-dumping, motivated by the increasing use of anti-dumping laws and the suspicion that they are being abused. She finds that decisions on the finding that dumping is present seem to be determined on technical criteria. However, anti-dumping action also requires that ‘injury’ be established, and this decision seems to be influenced by a variety of political economy considerations, such as the prevalence of bilateral trade deficits, the country of origin of defendants and the lobbying potential of the domestic industry.

International finance

A new International Financial Stability programme is to be launched in 2001, reflecting the growing activity in this area. For 1999-2000, the major elements of work completed were on the determinants of international transactions in financial assets, and related to this, the impact of financial market integration on the development of asset markets and the location of financial centres.

Portes and Rey (308, 345) investigate the determinants of the volume of international trade in financial assets using several new data bases. They find that the main determinants of the volume of transactions between countries are the degree of sophistication of their financial systems, the capitalisation of the markets and, most
importantly, the degree of asymmetry of information of investors. These results suggest that – despite large incentives to construct internationally diversified asset portfolios – informational concerns dominate outcomes. In the end investors transact heavily in the markets they know best even if they could find better ways of diversifying their financial wealth by investment in other markets.

Martin and Rey (284, 305, 306) develop models of financial markets where the menu of financial assets available to investors is determined within the model, this allowing them to investigate the determinants of the development of financial centres. They find that size matters, and that large financial areas are able to support broader and more liquid financial markets, and hence reduce the cost of capital for firms. Consequently financial integration is likely to threaten the financial markets of small countries

Peter Kenen visited the Centre from Princeton, and worked on emerging countries’ choice between freely floating exchange rates and firmly fixed rates, supported by strong institutional arrangements such as currency boards, monetary unions, or formal dollarization (304). He argued that the influential literature on optimal currency areas understated the case for combining a monetary union with fiscal federation.
FORWARD LOOK
2000 – 2001

LABOUR MARKETS

The main focus of work will be on understanding the problems faced by those at the lower end of the labour market, and informing the design of policies to overcome their disadvantage. Specific projects to be undertaken are listed below.

Childhood Life and Adult Outcomes

The work on the impact of unemployment in the early years of life on adult labour market outcomes will be continued and extended to other European countries. Having looked at early childhood development and policy interventions at our “Brains Conference” we wish to extend our focus to teenagers and are organising a similar type of conference which will be held during July 2001. Work on the birth cohorts by Blanden, Gregg and Machin is progressing. Particularly exciting is the new 1991 Bristol birth cohort which contains a wealth of information on current childhood circumstances and can be linked to school and neighbourhood level data sets. Manacorda is also working on the living arrangements of young people in southern Europe as this may shed some light on the very persistent unemployment problems among this group.

Low Pay, Poverty and Minimum Wages

Work by Machin and Manning on the impact of the National Minimum Wage (NMW) will be completed. This will look both at the employment effects and the extent of spillover effects further up the wage distribution (an under-researched area). Dickens will start to analyse its impact on poverty as soon as the relevant data is in: this will be a useful complement to his work on comparative poverty in the US and the UK with Harvard’s David Ellwood. The impact of the NMW on labour market transitions will be examined.

Work on the Lifetime Labour Market Database will start in the New Year. This will allow, for the first time, analysis of lifetime employment histories and enable us to examine transitions from low-paid to high-paid jobs. In later years, we hope to be able to link this to the JUVOS data set so that transitions between employment and unemployment can also be tracked.

Unemployment, Inactivity and Worklessness

Gregg and Wadsworth are going to extend their influential work on worklessness in the UK to other European countries. The main motivation for this is to see if the same phenomenon of the growth of workless households occurs in other countries which have very different welfare system. Wadsworth is also investigating the distinction between
unemployment and inactivity and the reasons for declining labour market participation of older men.

Neighbourhoods

We have a number of projects looking at the role of neighbourhoods in issues like crime, employment, and school quality and we will be heavily involved in the evaluation of the Government’s Excellence in Cities Initiative. Study of neighbourhoods is important: as unemployment has fallen in the UK in recent years, general unemployment has become less of a problem; the greater problem is persistent pockets of unemployment. For example, the inner cities seem to have been in decline and areas of very high unemployment in inner London are not so far away from Oxford Street with the highest level of vacancies in the whole country.

Welfare Reform

Dolton is continuing his work on the evaluation of the New Deal. Manning will start work on the impact of housing benefit on the UK labour market. This is probably the main welfare benefit that has hardly been changed in the last 20 years yet it constitutes an increasingly large fraction of income received by the unemployed and an important contribution to the high marginal tax rates (and corresponding low work incentives) faced by many out of work. We propose to investigate the impact of changes in this regulation in the mid 90’s to see whether there was any effect on unemployment rates.

Public Sector Pay

The last 20 years have seen public sector pay reduced relative to pay in the private sector. We might expect the effect of this to have been to reduce the relative quality of public-sector workers. Nickell and Quintini are investigating this using the NCDS (National Child Development Study) and the BCS70 (British Cohort Study) and will explore the test score rankings of key public sector workers (including teachers) to try and explain why the relative pay of such workers has fallen by so much in recent years.

Education and Skills

Future research will continue to look at key issues to do with education and skills. Specific projects (and researchers involved) are as follows:

Wage Returns to Education and Relative Demand Shifts (Machin, McIntosh, Pischke): Some of this work will continue to update the earlier research here (174), paying particular attention to ways in which one can compute the scale of relative demand shifts for different groups of people (mainly by gender and education) and how these relate to observed indicators of technological change. Pischke will build on his earlier work to consider why there appears to be no relationship between patterns of wage returns to college and the number of new college graduates across OECD countries. He will also carry out work studying the way in which the changing of the start of the school year in
Germany in 1966-67 influenced educational attainment, learning outcomes and wages. The way in which such school reforms can be used to evaluate the payoff to an apprenticeship for youths will also be studied.

**Education Supply and Educational Choice** (Blanden, Conlon, Gregg, Machin, McIntosh, Steedman): This work will range from econometric modelling of education choice and participation, including work on links with parental incomes, through to detailed case study work of the continuing data collection at Croydon College. Cross-cohort comparisons of connections between family disadvantage and educational attainment, and how these relations impinge on future labour market performance, will also be investigated.

**School Inputs and Educational Outcomes** (Chevalier, Conlon, Dolton, Feinstein, Hansen, McIntosh, Vignoles): There are several dimensions to this work (e.g. to do with school effectiveness, the impact of class sizes, pupil-teacher ratios, teacher performance) which will begin from the key methodological findings of the extensive literature review carried out last year (167). Individual-level pupil data from the Youth Cohort Studies will be merged with school data (including information from DfEE’s LEASIS data) to facilitate a pupil-level analysis and some of this work will extend the analysis to look at wider outcomes, like youth crime, poor school attendance and exclusions.

**Improving Skills at bottom end of Education Distribution** (Steedman): There are three main strands to this future work. The first two will look at the role of vocational education at different ages (vocational studies at age 14-16 in school; and professional education at ages 16-21). The third is concerned with lifelong learning, focusing in particular on how one can improve the skills position of adults with low basic skills in numeracy and literacy.

**Labour Market For Teachers** (Chevalier, Dolton, McIntosh): this work will look in some detail at key issues to do with the recruitment and retention of able and well-trained teachers. Part of this will involve study of the DfEE’s longitudinal data base (the Database of Teacher Records). Further work by Marsden will continue to collect data to look at issues to do with the introduction of performance related pay for teachers.

**TECHNOLOGY AND GROWTH**

In addition to continuing work on labour market flexibility and entrepreneurship, the programme will extend its work on new technologies with the analysis of two major data sets on the internet economy.

**Macro policy and market flexibility**

The focus of the work on aggregate labour markets will be twofold. First, we intend to study the links between, on the one hand, investment, R&D and productivity growth and on the other hand employment, in the countries of the European Union, the United States and Japan. This project is partly financed by the European Union. Parallel with this, we
plan to build on our theoretical work on foreign direct investment and study the relation between foreign capital and domestic employment with data from the same countries. The second focus will be on the role of entrepreneurship in job creation. We intend to acquire more detailed data on job creation by new companies across the OECD and work both on the theory of entrepreneurship and on its empirical application.

Knowledge and growth

The focus of work in the coming year will be on technology dissemination and the internet. In studying dissemination, we will emphasise the role of intellectual property rights. Economists and policy-makers have long acknowledged that protecting intellectual assets – as a means to control technology – has both positive and negative implications for economic performance. On the one hand, that protection allows rents that, *ex ante*, motivate producers of intellectual assets. On the other hand, it artificially restricts the use, *ex post*, of those assets. If cross-country growth is due principally to technology dissemination, then this *ex-ante/ex-post* tension is key for the economics of international growth. Our work on the internet will have a similar focus. Internet technologies provide the promise of alternative means of disseminating information, knowledge, and thus technology. Transportation costs for some goods simply vanish and knowledge about technologies can be transmitted faster.

Freeman will use the large data-sets unique to CEP and collected throughout the year from internet recruitment companies and from a global e-auction company to work on the internet economy. He poses two fundamental questions. First, will the Internet create more perfect markets? The answer to whether the Internet is leading labour, product, and financial markets closer to the competitive ideal is an empirical one that may vary across products, types of labour, financial instruments, and the ways in which firms and consumers organize their Web activities. Work at CEP using this data will be the first attempt we know of to tackle these questions in a rigorous, detailed way. The second question is will the Internet create a fair global economy? While the effects of the Internet on markets and on inequality are logically separable, there is an important link between them. To the extent that the Internet creates perfect markets, it is more likely to produce a fair global economy than not. To the extent that the Internet creates monopolies on the Web that extend intellectual property rights to more and more of our stock of knowledge, it is more likely to contribute to inequalities. Thus, we anticipate considerable spillovers of knowledge and insight between analyses of our micro-economic and macro-economic questions.

The Internet has already substantially changed the process of job search. In IT firms post vacancies on the Web and workers do much of their searching for work there. Overall, individual job search is one of the 3-4 most time intensive web activities in the UK, US, and EU. With the data from Internet recruitment firms, we will be able to examine the efficiency of search and whether or not this search focuses labour demand on a limited set of workers or widens the pool that companies examine for hiring.

The Internet also offers a unique form of potential interaction between individuals and the institutions or organizations that affect their lives. In the labour market, unions will
increasingly rely on the Internet to organize and link with members, to provide information about disputes, and to bring pressure on firms. We are developing a database of union data sets and working with the Trades Union Congress on a world conference on Unions and the Internet.

GLOBALISATION

The year will see the launch of the new International Financial Stability programme. The research of this programme will fall under two broad headings.

International Financial Crises

What are the causes and propagating mechanisms of international financial crises, and to what extent are they contagious? How can they be modelled, and can models be devised to provide successful early warning indicators? How should policy – on financial regulation and capital mobility – be formulated to mitigate such crises?

The International Financial Architecture

What is the best exchange rate regime for countries to adopt? When should countries adopt a fully fixed system, and which kind of fixed system, eg Currency Board, Dollarisation, Regional Currency (e.g. euro) etc? What is the role of the IFIs, especially the IMF? Should there be an international Lender of Last Resort, and how should the IMF monitor national regulatory systems? Reform of the IFIs raises political economy issues, eg giving emerging, smaller countries more influence; voting and control of the IFI; meeting concerns about US domination.

Trade and Investment

(i) Work on industrial location in Europe will continue, with a number of new projects being undertaken, drawing on techniques developed in earlier years. The Annual Respondents’ Database gives data on 180,000 UK manufacturing establishments, and this has now been matched with the location of these establishments. Research will investigate industrial clustering and the regional performance of different sectors (Overman et al). Work on regional income inequalities will be developed (Duranton), and research into the effects of European integration and enlargement on the regional structure of the UK economy will be commenced (Overman and Winters). Policy toward industrial clusters and the design of regional policy will be investigated (Venables).

(ii) A series of projects will start on trade, industry and development. They are all directed to better understanding the effects of globalisation on changing the location of activity in the world economy. Several of these will extend the empirical methodologies developed in the EU context to the study of industrial location worldwide (using the UNIDO and COMTRADE databases). We also intend to develop sub-national analyses,
using data for China and India. Work on production networks and on determinants of international differences in wages and productivity will continue.

(iii) Micro-foundational work will continue, researching several issues. These include the micro-foundations of agglomeration, the bases of firms’ decisions to export or undertake foreign direct investment, and the impact of new technologies on location, at both the urban and the national level.

(iv) Work on cities will be extended, using the data sets developed by Overman and Duranton.

(v) The group will continue work on a variety of trade policy issues, investigating the determinants and effects of trade liberalizations. Amongst these projects, Winters will investigate the effects of increased openness on poverty, and on the volatility of economic performance. Venables will investigate the implications of foreign direct investment for the formulation of trade policy.
DISSEMINATION, IMPACT AND PUBLIC AFFAIRS UNIT

The Centre disseminates its work in a variety of ways each of which impacts on different, but overlapping, audiences. Much of the dissemination activity is via the Public Affairs Unit, considered below. It also takes place through standard academic activities; contributions to issues in public debate; research links with outside public and private sector organisations; public lectures both in the LSE and at other institutions; and direct policy advice. In addition colleagues who leave the Centre carry elsewhere the knowledge and skills they have gained in the CEP. Details and statistics on all these activities can be found in the companion Performance Indicator Return document.

We would like to acknowledge with thanks the leading role taken by the head of public affairs, Graham Ingham, in putting on such a successful series of public events as well as establishing and editing CentrePiece. After 5 years with the Centre he has left us to join The Economist, where we wish him great success.

1. Standard Academic Activities

The primary vehicle of dissemination is articles in academic journals and books. Since much of the Centre’s work is in the nature of basic research this is an entirely appropriate medium, and the research makes its influence felt over the longer term by changing the way people think about a problem. Examples of this in recent years are the Centre’s work on the determinants of unemployment, on the weightless economy and the location of economic activity. The impact of the Centre’s work is also evidenced by the large number of citations to CEP work. Virtually all senior members of the Centre, and many of the research assistants too, gave papers at major national or international conferences either to academic colleagues or to a more policy-based audience. Examples of papers to academic audiences include Quah on developments in the knowledge-driven economy to the Econometric Society World Congress in Seattle, Nickell and Quintini on wage equations to the European Association of Labour Economists in Milan, and Venables on trade and distance to the American Economic Association in Boston. More policy-orientated presentations include Layard on welfare to work in a meeting at UCLA; Metcalf on labour market flexibility and education to the No.10 Policy Unit; Freeman on alleviating social and economic disparities to the APEC conference in Korea; Steedman to the government’s Skills Task Force on literacy and numeracy and to the DfEE on Modern Apprenticeships; West to the NHS Policy Conference on transforming the organisation of the health services.

CEP’s research activities are also indirectly disseminated via membership of various committees and networks. The committees include Royal Economic Society Council, (Nickell is President elect for 2001), Royal Institute of International Affairs Council, Econometric Society, Council of the British Psychological Society and European Economic Association Programme Committee. Membership of networks includes, for example, the CEPR, NBER, the MacArthur Social Interactions and Economic Inequality
Network, the EC Cohesion network, and EU Research and Training Networks in Foreign direct investment, Economic Geography, EU EDEX NewSkills network, EU LoWER (Low Wage Network), the ILO Labour and Society network, and the World Bank Social Capital network.

The CEP organised a number of workshops and conferences. Full details are given in Annexes C and D. The active seminar programme continues. The Tuesday lunchtime seminar (30 per year) is an internal event where colleagues get feedback on preliminary ideas and results; the Friday seminar on Economic Performance and skills (30 per year) is open to non-CEP colleagues and remains a major vehicle of dissemination, as well as permitting CEP members to hear about non-CEP work. We also have a weekly specialist Trade seminar, a weekly Growth workshop and a weekly Money/Macro workshop (jointly with the Department of Economics).

Two of the 9 conferences run by the Centre were particularly noteworthy. The conference on ‘What do we know about Brain Development and Childhood Interventions?’ brought together a number of leading practitioners in neuroscience, biological psychiatry, animal and human psychology, and economics, as well as UK policymakers responsible for devising and evaluating early childhood programmes. Its objective was to look at the scientific base for judging potential effects of intervention at different ages. The short conference ‘Jump Starting World Trade’ was the inaugural debate of a new Reuters/Carnegie Global Public Policy Series and was a good example of outside institutions approaching the Centre to carry out joint work. The conference brought together Mike Moore (Director General of the World Trade Organisation) and panellists to discuss the challenges facing the world trading system.

2. Policy Advice

The Centre continues to have an impact at the highest levels of policy making with Nickell appointed to the Monetary Policy Committee and Bean appointed Chief Economist of the Bank of England. Nickell remains an active member of the Centre. Policy advice continues to be given, by Metcalf on the Low Pay Commission, Layard (since July in the House of Lords) continuing as a part-time adviser to the DfEE on the New Deal, Gregg on the Chancellor’s Council of Economic Advisors, Steedman on the Basic Skills Taskforce. Some outside bodies specifically come to the CEP to ask members to undertake research for them. Examples in 1999-00 include research by Keely for the Intellectual Property Institute on patents; a paper by Layard and Nickell for Prime Ministers d’Alema and Blair on Welfare to Work and the fight against long term unemployment; Dickens for HM Treasury on work on developing longitudinal data sources and greater understanding of the dynamics of the UK labour market; Winters’ policy papers on growth and inequality for the WTO; Gospel’s work on financial markets, corporate governance and enterprise social initiatives for the ILO in Geneva; Venables, Bean’s and Overman’s work on factors determining the location of European industry for EU DGII, and for the Portuguese government on the impact of EU cohesion
fund expenditures. At least five of our research students were given summer internships at the Bank of England and the World Bank.

3. Media and Wider Audience Coverage

We achieved our aim of increasing mentions of the Centre’s work in the press, with 129 recorded newspaper references during the year. Topics receiving the widest coverage in newspaper, tv and radio were performance pay, the case for the euro, trade liberalisation and poverty, factors affecting childhood development, returns to mathematics A-level, and overeducation (which received no fewer than 15 mentions in newspapers). The majority of those topics featured as articles in CentrePiece, the Centre’s magazine, which showcases the Centre’s research in a user-friendly way to a wider audience. It is not usual for academic books to reach a wider reading public, but Owen’s book “From Empire to Europe: The decline and revival of British industry since the Second World War” bringing together the work he carried out at the Centre on the impact of national policies and institutions on industrial performance has become a best seller and has been very widely (and positively) reviewed and cited.

4. Events

A particularly large number of public events was organised throughout the year (listed in annex C.) There were 11 eleven public lectures, including three by Nobel Laureates. The CEP’s 10-year anniversary was celebrated with the production of an anniversary booklet surveying its work and setting out the future, a public lecture by Gordon Brown on UK Economic Policy, a reception attended by 200, followed by discussion on how Britain is served by its research community over dinner. There were a number of media briefings, two book launches, and meetings surrounding the launch to two important Centre initiatives, the new Centre for the Economics of Education, and the Leverhulme Trust Research Programme on ‘The Future of Trade Unions in Modern Britain’.

As last year, the Centre had a profile at the party conferences. A fringe meeting on performance related pay was organised at the Labour Party Conference, in which the speakers were Barry Sheerman (Chair of the Education Select Committee) and Peter Dolton (Centre for the Economics of Education and University of Newcastle).

We have continued with our programme of events for the Senior Business Forum. In addition to inviting members to public events there have been a number of smaller private events aimed at CEOs and other senior executives. Speakers have included Peter Lilley MP, Paul Krugman, MIT, Sushil Wadhwani, Monetary Policy Committee, Willem Buiter, Chief Economist at EBRD. This year some members of the Business Forum took the initiative and set up a meeting on policies promoting and impeding entrepreneurship. The Centre was able to bring together CEO’s of major companies with several newcomers from the ‘new economy’ with a senior Treasury official and Centre staff. Far from becoming an ‘Us and Them’ confrontation between government and business, the
event stimulated considerable debate, a range of views and a recognition of the complexity of the issues. Several participants of these events have commented that they are unique in providing a forum for frank and high quality discussion at a senior level.

We also continued our series of roundtable dinners which aimed to involve journalists directly in the Centre's activities. Discussions included *Entrepreneurship in Europe* and *Economic Outlook in the UK*. We are however aware that journalists find it increasingly difficult to spare time for such events and we are therefore planning a more targeted approach to media dissemination in the coming year.

**INFORMATION SYSTEMS**

The Information Systems team comprises of the Information Manager, Information Systems Manager and the Data Manager. The team is integral to the CEP and supports the research activities of the Centre in the following way:

- Data acquisition and dissemination through the CEP's own Data Library accessible via the CEP network and dial-in access
- Data management and subsetting by installing and maintaining the appropriate computing facilities (approximately 100 intel Pentium machines for staff, with Windows NT and 2000)
- Data analysis and processing through the installation and management of statistical and econometric applications (mainly but not exclusively STATA, Excel, Gauss and SPSS)
- Collaborative Research – through improving remote access (ftp, telnet, email, WWW) to the CEP from home and to and from associate sites
- Dissemination - through audio-visual and IT presentation facilities, maintenance of DTP software on PC and Apple Mac, technical support for network, telephony (ISDN, PSTN), email, fax and printing and the maintenance of the CEP website
- Administration – through the maintenance of management information systems (including 5 servers for running applications, printers, data storage, user file storage, internet services, backup facilities)

The year saw the upgrading of the centre’s computers to accommodate the roll out of Windows and Office 2000, a large operation which will be completed in December. Remote access was improved for those working at home, in other institutions and in the field with eight users at a time now able to access the Centre’s servers and data library. Automatic data-backup, security and virus checking facilities were all put in place and the installation of new servers allow staff the extra processing power to subset complex, large panel datasets. The website is also in the process of being upgraded, with all discussion papers produced from 1999 onwards created in PDF format and placed on the web for downloading and the list of papers and their abstracts added automatically using
A new website for the magazine CentrePiece was also set and allows purchase of publications by credit card. We intend over the next year to incorporate a search engine into the website and to move towards distributing more of our publications electronically.

**Data Services:**
The main task over the past year has been the creation of a data library and the Centre’s data resources have been gathered together on a central server, providing access for all staff. Centralising the system has made it far easier for researchers to access data. Staff can see a list and description of CEP data holdings at a glance, minimising time spent searching for data and reducing incidences of double ordering. The data manager also helps to save time by providing a significant level of support to Centre staff by helping them identify data sets to use, liaising with data providers, managing queries related to such things as missing variables etc. A number of mailing lists have also been set up so that researchers can be alerted to any changes or errors in data they are using and to any developments with data in areas in which they are interested.

Much work has been put into preparing data in such a way that it can be used with the minimum of preparation, allowing it to be transferred into STATA or EXCEL. Where this has not been possible, straightforward instructions detailing how to install and use the software and the data have been written. The data library also contains pdf documentation for all data sets where it is available, and scanning of hard copy documentation has begun. All in all the speed and ease with which researchers can get to grips with new data greatly contributes to their productivity.
FUNDING

Full details of our income and expenditure are provided in Annex G. In addition to spend from our ESRC Core grant of £1.33m, we financed £608k of work additional to that covered by our ESRC funds from funds raised in 1999/00 and previous years. This represents a 39% increase in the proportion of externally funded work over last year. We would like to express our gratitude to the ESRC and to all our other funders for their continued support of the Centre.

We have considerably boosted our fundraising events and activities in order to stimulate funding from the private sector and have developed with our Policy Committee a funding strategy to raise funds for the period when the ESRC grant ceases. Most of our additional external funding continues to come from foundations and government with the DfEE Centre for the Economics of Education, a major project with NFER in the evaluation of the Excellence in Cities programme, and the Leverhulme £1m 5-year programme into the future of unions.

Funds raised this year for use in the future total £1.1 million (excluding £980,000 raised for other institutions working on joint projects). Details are as follows:

ESRC Funding

ESRC CORE FUNDING
Core Grant to the Centre for Economic Performance
1.4.99 – 31.3.00
£1,330,000

ESRC GRANT
Macroeconomy Programme
C.Pissarides, H.Overman, L.Winters
1/11/00 – 31/10/02
£157,254

GOVERNMENT

DfEE
Centre for Economics of Education (with IFS, Institute of Education)
S.Machin et al, Education and Skills Programme
1/1/00 – 31/12/03
£959,000

Excellence in Cities Evaluation
S.Machin et al, Education and Skills Programme
1/7/00 – 30/12/03
£192,164
Advice on New Deal
Prof. Layard Labour Markets Programme
1/7/99 – 30/6/01
£90,000

Skills Audit
Hilary Steedman, Education & Skills Programme
18/10/99 – 31/1/00
£8052

Skills Audit II
Hilary Steedman, Education & Skills Programme
Apr 2000 – July 2000
£6776

Basic Skills: Analysis of the National Childhood Development Study
Anna Vignoles, Education & Skills Programme
5/4/00 – 31/7/00
£15,960

Linking of Educational Outcomes to Resource Inputs
Anna Vignoles, Education & Skills Programme
25/11/99 – 28/2/00
£18,900

EUROPEAN UNION

EU LoWER Network (Low Wage Employment)
S. Machin, J. Wadsworth, Labour Markets Programme
1.1.00 – 31.12.04
40,392, ecus (£25,150)

EU FP5
Wage inequalities and economic performance in the EU
D. Marsden, Labour Markets Programme
1.03.00 – 1.03.03
276373 ecus + 782,000 to 7 university partners and 8 national statistical offices

EU TMR NETWORK
Economic Geography of Europe: measuring, testing and policy simulations
A. Venables, Globalisation Programme
1/6/00-31/5/04
£113,018
Labour Market Effects of European Foreign Investments
A.Venables, Globalisation Programme
1/4/00 – 31/3/02
£25,000

Patterns of employment enhancing economic growth
C.Pissarides, Technology and Growth Programme
1/2/00-31/01/01
£66,449

BUSINESS

Business Forum (for all programmes)
1/10/99-30/9/00
£63,393
ANNEX A
CENTRE STAFF 1999/00
Director: Richard Layard
Deputy Director: David Metcalfe

EDUCATION AND SKILLS
Programme Director: Stephen Machin

Senior Staff & Associates
Conlon, Gavan
Dolton, Peter (University of Newcastle)
Dougherty, Chris
Green, Francis (Kent)
Steedman, Hilary
McIntosh, Steve
Vignoles, Anna

Junior Staff
Bruniaux, Christine
Chevalier, Arnaud
Hansen, Kirsten

LABOUR MARKETS
Programme Director: Alan Manning
Group Leaders: David Metcalf, Richard Freeman, Richard Layard, Steve Nickell

Senior Staff & Associates
Abell, Peter
Dickens, Richard (QMW & CEP)
Diamond, Wayne
Feinstein, Leon (University of Sussex)
Fernic, Susan
Fisher, Gary (Aston)
Freeman, Richard (Harvard & CEP)
Gospel, Howard (King's London)
Gregg, Paul (CEP & Bristol)
Guell, Maia
Jackman, Richard
Marsden, David
Moore, Sian
Quintini, Glenda
Swafield, Joanna
Wadsworth, Jonathan (CEP & Royal Holloway)
West, Mike (Aston)
Wood, Steve (University of Sheffield)
Dore, Ronald (Visiting Senior Research Fellow)

Junior Staff
Barwell, Richard
Blanden, Jo
Charlwood, Andy
Clark, Damon
Fahr, Rene
Gibbons, Steve
Gray, Helen
Guadalupe, Maria
Guerrero-Domenech, Maria
Kawar, Leila
Kirchmaier, Tom
Lasaosa, Ana
May, Robyn
Morrison, Jessica
Quintini, Glenda
Rahman, Lupin
Viitanen, Tarja

TECHNOLOGY AND GROWTH
Programme Director: Chris Pissarides  
Group Leaders: Charlie Bean, Danny Tyson Quah

Senior Staff & Associates  
Acemoglu, Daron (MIT)  
Burgess, Simon (Bristol)  
Crafts, Nick  
Keely, Louise (Wisconsin)  
Kiyotaki, Nobu  
Lagos, Ricardo  
Petrongolo, Barbara (Madrid)  
Scott, Andrew (LBS)  
Wasmer, Etienne (ULB)  
Xu, Chenggang  

Junior Staff  
Burriel, Pablo  
Canto, Beatriu  
Fonseca-Benito, Raquel  
Kim-Jin, Yong  
Lopez-Garcia, Paloma  
Martin, Ralf  
Muñoz, Rafael  
Stewart, Martin  
Giovanna, Vallanti  
Vera-Martin, Mercedes  
Walker, Richard

GLOBALISATION  
Programme Director: Anthony Venables  
Group Leaders: Gilles Duranton, Henry Overman, Steve Redding

Senior Staff & Associates  
Buiter, Willem (Cambridge)  
Faguet, Jean-Paul  
Gomulka, Stanislaw  
Krugman, Paul (Stanford)  
Neary, Peter (Dublin)  
Puga, Diego (Toronto)  
Ruhashyankiko, Jean-Francois  
Winters, Alan (Sussex)  

Junior Staff  
Albertin, Giorgia  
Baumgarten de Bolle, Monica  
Falcetti, Elisabetta  
Gomes-Neto, Delfim  
Matouschek, Niko  
Montado, Estela  
Muñoz, Sonia  
Oh, Yong  
Poddar, Tushar  
Ramezzana, Paolo  
Robert-Nicoud, Frederic  
Shvets, Julia  
Sturm, Daniel  
Trionfetti, Federico  
Tudela, Mercedes Maria
## RESEARCH SUPPORT

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Bardhan-Roy, Anita</td>
<td>Information Manager</td>
</tr>
<tr>
<td>Cleaveley, Linda</td>
<td>Project Admin / Senior Secretary</td>
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<tr>
<td>Duckworth, Hannah</td>
<td>Publications Assistant</td>
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<tr>
<td>Durrant, Helen</td>
<td>Discussion Papers &amp; Publications</td>
</tr>
<tr>
<td>Ingham, Graham</td>
<td>Head, Public Affairs</td>
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<tr>
<td>Lodge, Gillian</td>
<td>Deputy Centre Administrator</td>
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<tr>
<td>Newton-Clare, Louise</td>
<td>Russia Project Manager</td>
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<tr>
<td>O'Brien, Marion</td>
<td>Administrative Secretary</td>
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<tr>
<td>Ofori, Ben</td>
<td>Information Systems Manager</td>
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<tr>
<td>Perry, Kate</td>
<td>Accounts/Finance &amp; Admin</td>
</tr>
<tr>
<td>Rogers, Nigel</td>
<td>Centre Administrator</td>
</tr>
<tr>
<td>White, Elizabeth</td>
<td>Russia Project Assistant</td>
</tr>
<tr>
<td>Yacoob, Mary</td>
<td>Administration/Library</td>
</tr>
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ANNEX B

Publications: October 1999-October 2000

LABOUR MARKETS

Books Authored


Books Edited


Chapters in Books


**Articles in Refereed Journals**


**Articles in Non-Refereed Journals**


**Centre for Economic Performance Discussion Papers**


Centre for Economic Performance/Leverhulme Discussion Paper Series


Other Discussion Papers


**Centre for Economic Performance Occasional Papers**


**Centre for Economic Performance Working Papers**


Other Working Papers


Non CEP Reports


Mimeos


174. S. Harkness, S. Machin and S. McIntosh, ‘Changes in the Wage Returns to Education in Britain: Supply Changes and the Evolution of Wage Differentials by Sex and Subject of Study’, mimeo.


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**Forthcoming Books Authored**


Forthcoming Books Edited


Forthcoming Chapters in Books


Forthcoming Articles in Refereed Journals


TECHNOLOGY AND GROWTH

Chapters in Books


Articles in Refereed Journals


**Articles Non-Refereed Journals**


**Centre for Economic Performance Discussion Papers**


**Centre for Economic Performance Working Papers**


Other Working Papers


Centre for Economic Performance Special Reports


Other Reports


Mimeos


**Forthcoming Books Authored**


**Forthcoming Chapters in Books**


**Forthcoming Articles in Refereed Journals**


GLOBALISATION

Books Authored


Chapters in Books


Articles in Refereed Journals


Articles in Non-Refereed Journals


Centre for Economic Performance Discussion Papers


Other Discussion Papers


Centre for Economic Performance Working Papers


Other Working Papers


Centre for Economic Performance Special Reports


Other Reports


Mimeos


Forthcoming Chapters in Books


Forthcoming Articles in Refereed Journals


Forthcoming Discussion Papers

ANNEX C

CONFERENCES, LECTURES AND POLICY DINNERS

Senior Business Forum / Fundraising Dinners

Dinner 5th October 1999
Guest Speaker: Rt Hon Peter Lilley MP, Deputy Leader of the Opposition

Dinner 28th March 2000
Guest Speaker: Professor Paul Krugman, MIT - Prospects for the World Economy

Dinner 31st May 2000
Guest Speaker: Dr Sushil Wadhwani, Monetary Policy Committee - Prospects for the World Economy

Dinner 21st June 2000
Guest Speaker: Peter Kenen, Professor of International Finance, Princeton - Prospects for the World Economy

Dinner 12th September 2000
Guest Speaker: Willem Buiter, Chief Economist, EBRD - Prospects for the World Economy

Roundtable Dinners

11th October 1999
Guest Speaker: Professor Charlie Bean, LSE/CEP – The Economic Outlook

2nd December 1999
Guest Speaker: Professor David Marsden, LSE/CEP – Can the Right Labour Institutions Create Jobs

6th June 2000
Guest Speaker: Professor Chris Pissarides, LSE/CEP – Entrepreneurship in Europe

Conferences

21st March 2000
Anthony Venables, Stephen Redding, Alan Winters and others
Globalisation Mini Conference

12th April 2000
Hilary Steedman and others
Modern Apprenticeship – Could Do Better?
4th May 2000
Richard Freeman, David Card, Richard Blundell and Richard Dickens
Is Britain a Premier League Economy?

14th – 16th May 2000
Stoke Rochford Annual Conference

16th June 2000
Mike Moore (WTO)
Reuters/Carnegie/CEP Conference: Jump Starting World Trade

13th – 14th July 2000
Richard Freeman, Leon Feinstein and others
What Do We Know About Brain Development and Childhood Interventions?

Press Briefings

11th February 2000
Steve Nickell appointment to Monetary Policy Committee announced by Chancellor Gordon Brown

17th February 2000
Low Pay Commission Press Release on National Minimum Wage

April 2000
Richard Layard awarded a peerage by the government.

18th April 2000

19th May 2000

Book Launches

30th November 1999

20th June 2000
Media Seminars / Receptions

18th April 2000
Louise Keely
Pathway from Poverty? : Intellectual Property and Developing Countries

19th May 2000
David Metcalf et al
Leverhulme Project Launch

Public Lectures

25th November 1999
Professor Sir James Mirrlees, Cambridge University
Economic Welfare and Nations

17th January 2000
Allan Larsson, European Commission

22nd May 2000
Anna Vignoles (CEP), Eric Hanushek (Princeton), Caroline Hoxby (Harvard) and others
CEE/TES Debate and reception: Schools: Does More Mean Less?

25th September 2000
Labour Party Conference Fringe Meeting

Public Lectures followed by Senior Business Forum Dinners

18th October 1999
Adair Turner, Director General CBI
Production, Growth and Employment: British, U.S. and Continental Performance Compared

1st December 1999
Robert Solow, Ed Balls, Sir Alan Budd, Will Hutton
What Use is Economics?

11th January 2000
Robert Mundell, Columbia University
3 Lionel Robbins Memorial Lectures on 11,12, 13 January

14th February 2000
Carlo De Benedetti, CIR and COFIDE
The New Economy and the Internet Revolution
7th March 2000
Adair Turner, LSE/Merrill Lynch Europe
Where will the Jobs Come From? The Impact of Technological Change on the Labour Market

8th May 2000
Gordon Brown
CEP 10th Anniversary

17th May 2000
Ron Dore, CEP
Will Global Capitalism be of the Anglo-Saxon Variety?
09.30-10.25 Industrial Location in the European Union
Tony Venables, Henry Overman, Karen Helene Midelfart-Knarvik and Steve Redding

10.30-11.25 How Regional Blocs affect Excluded Countries: The Price Effects of Mercosur
Alan Winters

11.45-12.40 “Ah-ha” Information Technology: Outsourcing vs. Foreign Direct Investment
Jean-Francois Ruhhashyankiko

1.40-2.20 Putting Numbers on an Economic Geography Model
Tony Venables and Steve Redding

2.20-3.00 Anti-dumping in Europe: Political Economy Aspects Revisited
Estela Montado

3.20-4.00 The Location of Production in European Regions
Steve Redding and Mercedes Vera-Martin

4.00-4.40 The Internet and Peculiar Consumption Needs: A Model of Search Costs and the Preferences of Minorities
Paolo Ramezzana
Modern Apprenticeship
Could Do Better?
Wednesday 12th April 2000

TIMETABLE
10.30 Welcome and introduction - Hilary Steedman

10.45 ‘Modern Apprenticeship - the State of Play’
   John Allbutt and Stephen North DfEE

11.15 ‘Non-completion of MA’
   Mark Winterbotham IFF Research

11.45 Questions and discussion

12.15 ‘Barriers to Takeup’
   David Sims and Sarah Golden NFER

12.45 Questions and Discussion

2.00 pm ‘Outcomes and progression from MA and NTr’
   Jenny Kodz and Nii Djan Tackey IES

2.30 pm ‘MA - The Inspectors’ View’
   Keith Marshall and Leslie Davies, Training Standards Council

3 pm Questions and Discussion ..... followed by ..... 

3.30 pm Concluding Discussion ‘The Way Forward for MA’ led by Ewart Keep and
   Lorna Unwin

4.30 pm Close
Monday 15th May

International Trade
Tony Venables
Steve Nickell, Steve Redding and Jo Swaffield
Delfim Gomez – Neto
Discussant: Charlie Bean

Labour Markets: Empirical
Steve McIntosh and Anna Vignoles
Peter Dolton
Damon Clark
Discussant: Chris Pissarides

Incomplete Contracts and Political Economy
Jean-Paul Faguet
Niko Matouschek
Discussant: Danny Quah

Miscellaneous Interesting Papers
Sandra Bulli
Pablo Burriel
Discussant: Steve Nickell

Tuesday 16th May

Human Resource Management
David Marsden
Michael West
Discussant: Alan Manning

Labour Markets: Search and Matching
Raquel Fonseca-Benito and Rafael Munoz
Barbara Petrongolo and Chris Pissarides
Paolo Ramezzana
Discussant: Tony Venables

Macro
Beatriu Canto
Maria Tudela
Sonia Munoz
Discussant: Richard Layard
PROGRAMME

9:30 Welcome: Richard Layard, Director of the Centre for Economic Performance

9:40 Gus O’Donnell, HM Treasury

10:00 Mike Moore, Director General, the World Trade Organization
Moderator: John Peet, Business Editor of The Economist

11:00 Panel discussion:
  Hugo Paemen, former EC Ambassador to Washington
  Alan Winters, Sussex University and LSE
  Thea Lee, AFL-CIO
  John Cuddy, Director trade and development, Unctad
  Nick Mabey, WWF

Moderator: Baroness Sarah Hogg, Chairman Frontier Economics

11:55 Closing remarks: Maureen Marlowe, Director, The Reuters Foundation

12:00 Program ends
What Do We Know about Brain Development and Childhood Interventions?
Thursday 13 July 2000

9:15 Introduction: the policy question and need for science-based knowledge

9:30 Brains: The Biochemical level
William Greenough, University of Illinois and Beckman Institute.
Ed Bullmore, Addenbrooke’s Hospital, Cambridge.

11:30 Genetics
Jim Stevenson, University of Southampton.

1:30 Human Development
Terrie Moffit, Institute of Psychiatry, London.
Michelle deHaan, Institute of Child Health, London

3.45 The Early Years Debate
Craig Ramey, University of Alabama
Sharon Ramey, University of Alabama
Deborah Phillips, National Academy of Sciences
Discussion led by Tom Cook, NorthWestern University

Friday, 14 July

9:00 The School Years and Adolescence
Kathy Sylva, University of Oxford.
Barbara Maughan, Institute of Psychiatry, London.

10:45 What Have We Learned?
Michael Rutter, Institute of Psychiatry, London

1:30 Policy Implications
Sheldon Danziger, University of Michigan
Norman Glass, National Centre for Social Research
Paul Gregg, Bristol University, CEP and Treasury
John Hills, CASE, London School of Economics

Other participants:
Yvette Cooper (invited), Department of Health
Lucy Makinson (invited), Treasury
Samantha Mason, Sure-Start Unit, DfEE
Elizabeth Green, Sure-Start Unit, DfEE
Richard Freeman, CEP and Harvard University
Jane Waldfogel, CASE, CEP, and Columbia University
Hilary Steedman, CEP
Richard Layard, CEP
Steve Nickell, CEP
Steve Machin, CEP
Sandra Danziger, University of Michigan
John Hobcraft, CASE
Leon Feinstein, Sussex University and CEP
ANNEX D

SEMINARS AND WORKSHOPS

Management Seminar
Organiser: Tom Kirchmaier

15/11/99 Danny Quah, CEP/LSE
The Weightless Economy in Economic Development

29/11/99 Steve Thompson, Leicester
The Impact of Divestment on Firm Performance

06/12/99 Geoffrey Owen, LSE
National Institutions and Firm Performance: Evidence from Britain

17/01/00 David Soskice, WZB Berlin
Explaining National Patterns in Innovation

31/01/00 Paul Davies, LSE
Legal Techniques for Corporate Governance.

14/02/00 James Sproule, Dresdner Kleinwort Benson
Challenges and Changes in the European Corporate Structure

28/02/00 Neil Pratt, LSE

28/02/00 David Soskice, WZB Berlin
Explaining National Patterns in Innovation

13/03/00 David Storey, Warwick
Human Resource Management Policies and Practices in SMEs in the UK:
Does it really influence their performance?

05/06/00 Helmut Anheier, LSE
Nonprofit Management: What are the Issues?
Labour Market Workshops
Organiser: Richard Jackman

05/10/99 Richard Barwell (CEP)
Demographic Change and the Unemployment Rate

12/10/99 Steve Nickell (CEP and LSE)
The Netherlands and the United Kingdom: A European Unemployment Miracle?

19/10/99 Steve McIntosh (CEP)
A Cross-country Comparison of the Determinants of Vocational Training

26/10/99 Paul Oslington (Oxford Institute)
How Much of Unemployment is Structural?

02/11/99 Richard Jackman (CEP)
The Persistence of Unemployment Following a Change in Regime

09/11/99 Steve Machin (CEP)
Union Decline in Britain

16/11/99 Jonathan Wadsworth (CEP)
The Making of the British (Non) Working Class? Area Labour Markets and the Economic Performance of Less Skilled Workers

23/11/99 Anna Vignoles (CEP)
Price of Skills

30/11/99 Richard Barwell (CEP)
Stylised Facts of Recurrent Unemployment

07/12/99 Glenda Quintini (CEP)
The Effect of Unemployment on the Earnings of Women

11/01/00 David Metcalf (CEP)
Unions and the Sword of Justice

18/01/00 Francis Green (Kent)
It's been A Hard Day's Night. The Concentration and Intensification of Labour in Late 20th Century Britain

25/01/00 Steve McIntosh (CEP)
The Intensification of Work in Europe
01/02/00 Rafael Gómez (LSE)
Do Attitudes Towards Unions Matter?: A Canada-US Comparison of Managerial Hostility to Unions

08/02/00 Paul Gregg (CEP/Bristol)
The Impact of Youth Unemployment on Adult Unemployment in the NCDs

15/02/00 Hilary Steedman (CEP)
Some International Comparisons of Growth in the Supply of Skills 1994-1999

22/02/00 Damon Clark (CEP)
Participation in Further Education in the UK

29/02/00 Kirsten Hansen (LSE/CEP)
The Role of Education, Labour Market and Social Factors in Shaping the Crime-Age Profile

07/03/00 Lupin Rahman (CEP)
The National Minimum Wage Survey: Some Preliminary Results

14/03/00 David Marsden & Yuki Kubo (LSE)
Why are Some People Motivated, and Others Demotivated, by Performance Pay?

02/05/00 Chris Dougherty (LSE)
Education, Ability and Earnings

09/05/00 Steve Nickell (CEP and LSE)
Wage Equations, Wage Curves and all That

23/05/00 Jonathan Wadsworth (CEP)
Bruce, Larry and Jim’s Generation Gain. Relative Labour Market performance of Second Generation Immigrants in Britain

30/05/00 Kirstine Hansen and Steve Machin (CEP)
Crime and the Minimum Wage

06/06/00 Ana Lasaosa (CEP)
Job Search Among Spanish Youth

13/06/00 Peter Kenen (Princeton)
Currency Area, Policy Domains and the Institutionalisation of Fixed Exchange Rates
20/06/00 Sarah Ashwin (LSE Industrial Relations)

27/06/00 Andy Charlwood (CEP)
Mystery Train: Are British Trade Unions Riding a Roller Coaster or Heading for the Buffers?

Macro/IEP Seminar
Organisers: Stephen Redding and Henry Overman

06/10/99 Danny Quah, LSE
6*10^9: Some Dynamics of Global Inequality and Growth

13/10/99 Louise Keely, New College, Oxford and CEP
Exchanging Good Ideas

20/10/99 Brett House, University of Oxford
Myth or Misunderstanding? Another Theoretical Look at the East Asian Miracle

27/10/99 Paul Oslington, Deakin University, Australia
Trade, Wages, and Unemployment in the Presence of Hiring and Firing Costs

28/10/99 Lucis Ellis, Reserve Bank of Australia
The Response of Financial Markets in Australia and New Zealand to News about the Asian Crisis

03/11/99 Sandra Bulli, CEP and LSE
Distribution Dynamics and Cross-country Convergence: Does Discretization Matter?

10/11/99 Jean-Francois Ruhashyankiko, CEP
How is the world specialising?

17/11/99 Rafael Munoz, LSE
The Ladder Effect: A Tale for Spanish Unemployment Persistance

24/11/99 Monica Baumgarten de Bolle, CEP and LSE
Financial Fragility and the Choice of Debt Maturity

01/12/99 Paco Requena-Silvente, LSE
Price Discrimination and Market Power in the Tile Export Industry

08/12/99 Yonghyup Oh CEP and LSE
Sectoral Determinants of International Return Differentials
19/01/00  Yong Jin Kim, LSE
Imperfect Credit Markets, Vintage Human Capital and Growth

26/01/00  Niko Matouscheck, CEP and LSE
Coercive Power and Economic Exchange: The Grabbing Hand Versus the Invisible Hand

02/02/00  Pablo Burriel, CEP and LSE
Regional Concentration of Human Capital and Education Externalities in the Labour Market

09/02/00  Maria-Luisa Mancusi, LSE
International Technological Specialisation in Industrial Countries: Patterns and Dynamics

16/02/00  Frederic Robert-Nicoud, CEP and LSE
Endogenous Regional Policy in a Model of Agglomeration

23/02/00  Alejandro Cunat, Bocconi University
Can International Trade Equalise Factor Prices?

01/03/00  Helen Simpson, Rachel Griffith and Michael Devereu, Institute for Fiscal Studies
The Geographic Distribution of Production Activity in the UK

08/03/00  Simon Quah & Tony Venables, Rutgers, Brookings and CEPR/CEP, LSE and CEPR
The Geographical Spread of Trade: How Argentina's Exports Actually Grew since 1970

15/03/00  Paul Krugman MIT
Liquidity Traps

03/05/00  Tony Venables, CEP/LSE
Winners and Losers from Regional Integration Agreements

10/05/00  Keith Head and Thierry Mayer, Univ. of British Columbia and Univ. of Paris
Market Size and Agglomeration

17/05/00  Tuomas Takalo, MIT
Financial Market Development and Self-fulfilling Currency Crises

24/05/00  Nobu Kiyotaki, LSE
Geography and R&D
07/06/00 James Harrigan (with Carolyn Evans), New York Federal Reserve
Bank Distance, Transport Costs, and Trade in the Global Apparel Industry

12/07/00 Mercedes Vera-Martin, LSE
Specialisation in European Regions

12/07/00 Estela Montado, LSE
Anti-dumping in Europe

**CEP/LSE Money Macro Workshop**
Organiser: Ricardo Lagos

05/10/99 Willem Buiter (Cambridge/Bank of England)
Liquidity Traps: How to Avoid Them and How to Escape Them (Joint
with Nikolaos Panigirtzoglou, Bank of England)

02/11/99 Charles Khan, Illinois/ Cambridge
The CLS Bank: A Solution to the Risks of International Payments
Settlement?

09/11/99 Morten Ravn, London Business School
Frictions in International Trade and Relative Price Movements

16/11/99 Jean Imbs, London Business School
Co-Fluctuations

The Macroeconomic Implications of Turnover Costs and Wage Contracts

30/11/99 Raquel Fernandez, New York/ LSE
Sorting and Long-Run Inequality

07/12/99 Thierry Verdier, DELTA/ CERAS
Monopolies Life Cycle, Bureacratization, and Schumpeterian Growth

18/01/00 Francesco Caselli (Chicago GSB)
How Regions Converge

25/01/00 Jonathan Heathcote (Stockholm School of Economics)
Factor Taxation with Heterogeneous Agents and Incomplete Markets
(joint with David Domeij, Stockholm School of Economics)

01/02/00 Eric Smith (Essex)
Asset Accumulation and Short-Term Jobs
08/02/00  Eran Yashiv (Tel Aviv)
The Asset Value of the Job-Worker Match and the Asset Value of the Firm
(joint with Monika Merz, Rice University)

15/02/00  Lucrezia Reichlin (ECARE)
Coincident and Leading Indicators: the NBER Methodology Revisited

22/02/00  Per Krusell (Rochester)
Equilibrium Welfare and Government Policy with Quasi-Geometric
Discounting (joint with Burhanettin Kuruscu, Rochester and Anthony
Smith, Carnegie Mellon)

29/02/00  Giuseppe Bertola (EUI)
Banks' Reserve Management, Transaction Costs, and the Timing of
Federal Reserve Intervention (joint with Leonardo Bartolini and
Alessandro Prati)

07/03/00  Andrés Velasco (NYU)
Indeterminacy Under Constant Returns to Scale in Open Economies (joint
with Qinglai Meng, NYU)

09/03/00  Edmund Phelps (Columbia)
Stocks and Jobs: the Valuation of Firms and Business Assets as a Factor in
Structural Slumps and Booms (joint with Gylfi Zoega, Birkbeck College)

14/03/00  Chris Pissarides (LSE)
Unemployment Dynamics with International Capital Mobility (joint with
Costas Azariadis, UCLA)

16/03/00  Steven Durlauf (University of Wisconsin)
Interactions-Based Models (joint with Econometrics)

02/05/00  Ricardo Lagos (joint with K. Burdett, Essex & R. Wright, Penn), LSE
Crime, Inequality and Unemployment

09/05/00  Etienne Wasmer (ECARE) (joint with P. Garibaldi, Bocconi),
The Macroeconomics of Endogenous Labor-Force Participation

16/05/00  Michele Boldrin (joint with D. Levine UCLA), Minnesota
Growth Under Perfect Competition

19/05/00  Chris Flinn, NYU
Minimum Wage Effects on Labor Market Outcomes Under Search with
Bargaining
23/05/00 Boyan Jovanovic (joint with P. Rousseau, Vanderbilt University), NYU
Accounting for Stock Market Growth: 1885 - 1998

25/05/00 V.V. Chari (joint with P. Kehoe, Minnesota), Minnesota
Financial Crises as Herds

06/06/00 Tom Cooley (joint with V. Quadrini, Duke), Rochester
Optimal Time-Consistent Monetary Policy in a Phillips-Curve World

13/06/00 Gianluca Violante, UCL
Deunionization, Technical Change and Inequality

19/06/00 Kiminori Matsuyama, Northwestern
Financial Market Globalization and Endogenous Inequality of Nations

**Labour Friday Seminar**
Organisers: Richard Dickens and Joanna Swaffield

22/10/99 Jennifer Hunt (Yale)
Determinants of Non-Employment and Unemployment Durations in East
Germany

29/10/99 Adriaan Kalwij (Oxford)
Overtime Work in Britain 1975-98: A Panel Data Analysis

05/11/99 Marianne Bertrand (Princeton)
Enjoying the Quiet Life? Managerial Behaviour Following Anti-Takeover
Legislation

12/11/99 Adrian Wood & Edward Anderson (Sussex)
Skilled Worker Mobility and Wage Inequality

19/11/99 Richard Disney (Nottingham)
Restructuring & Productivity Growth in UK Manufacture

26/11/99 Jennifer Smith (Warwick)
Nominal Wage Rigidity in the United Kingdom

03/12/99 Simon Burgess (Bristol)
Unemployment Dynamics in Britain

10/12/99 Barry McCormick (Southampton)
House Prices, Unemployment, and the Changing Geographic Flexibility of
the British Labour Market 1973-1998
21/0100  Alison Booth (Essex)
General Training, Rent-Sharing and Unions: Theory and Evidence

04/02/00  Samuel Berlinski (Nuffield, Oxford)
Contracting-out and the interindustry wage structure. Do norms of internal equity matter in wage determination

18/02/00  Mark Stewart (Warwick)
The Inter-related Dynamics of Unemployment and Low Pay

03/03/00  Richard Blundell (UCL)
Evaluating the Labour Market Impact of In-Work Benefit Reforms

17/03/00  Wiji Arulampalam (Warwick)
Is Unemployment Really Scarring? Effects of Unemployment Experiences on Wages

**CEE Friday Seminar**
Organiser: Anna Vignoles

28/01/00  Professor Ian Walker, University of Warwick
Gross and net returns to education joint with Aruad Chevalier

11/02/00  Professor Rosalind Levacic, Centre for Education Policy & Management, Open University
Allocating resources to and within schools: how can the CEE contribute to evidence informed policy and practice?

25/02/00  Professor David Autor, MIT
Why Do Temporary Help Firms Provide Free General Skills Training?

10/03/00  Professor Carol Propper, University of Bristol
GP Fundholders and Waiting Times

12/05/00  Professor Costas Meghir, UCL and IFS

26/05/00  Professor David Reynolds, Loughborough University
Contemporary Education Policies, the Green Paper and the Next Wave of Educational reform - an insider account

09/06/00  (Joint Seminar with CASE)
Professor Richard Berthoud
Parents and Employment: Will Working Families Tax Credit Make Much Difference?
23/06/00  Professor Costas Meghir, UCL and IFS
Assessing the returns to schooling using a social experiment

7/07/00  Arnaud Chevalier
Over-education in the British Graduate Labour Market

05/09/00  Harvey Goldstein, Richard Blundell, Costas Meghir
CEE methodological workshop

**Globalisation Friday Seminar**

05-May-00  Jonathan Eaton, Boston University
Technology, Geography, and Trade (with Sam Kortum)

19-May-00  Alan Winters, University of Sussex
Putting “Humpty” Together Again: Including Developing Countries in a Consensus for the WTO (with Zhen Kun Wang)

02-Jun-00  Peter Schott, Yale
Do Countries Specialise?

16-Jun-00  Jonathan Haskell, Queen Mary and Westfield College
Trade and Labour Approaches to Wage Inequality
ANNEX E  
CENTRE VISITORS

Karolina Ekholm  
University of Stockholm  
December 2000

Peter Kenen  
Princeton University  
January-June 2000

Maurice Kleiner  
University of Minnesota  
June 2000, November 2000

Karen Helene Knarvik  
University of Bergen  
December 2000

Paul Krugman  
Stamford University  
March-April 2000

Barbara Petrongolo  
Universitat Pompeu Fabra, Barcelona  
July 2000

Diego Puga  
University of Toronto  
July 2000
ANNEX F

PhDs

PhDs Awarded - 4

Leon Feinstein
Henry Overman
Glenda Quintini
Johannes Wiegand

Research Assistants Registered for PhD – 32

Giorgia Albertin
Shuvojit Banerjee
Richard Barwell
Jo Blanden
Jordi Blanes
Sandra Bulli
Pablo Burriel
Beatriz Canto
Andy Charlwood
Damon Clark
Elisabetta Falcetti
Steve Gibbons
Helen Gray
Maria Guadalupe
Maria Gutierrez Domenech
Kirstine Hansen
Tom Kirchmaier
Paloma Lopez-Garcia
Ralf Martin
Niko Matouschek
Estela Montado
Jessica Morrison
Sonia Munoz
Tushar Poddar
Frederic Robert-Nicoud
Julia Shvets
Mercedes Tudela
Giovanna Vallanti
Mercedes Vera-Martin
Tarja Viitanen
Richard Walker
Theodora Xenogiani
## ANNEX G

### TABLE 1

**APRIL 1999-2000**

<table>
<thead>
<tr>
<th>INCOME</th>
<th>EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ESRC IRC Core Grant</strong></td>
<td><strong>Senior Research Staff and Consultants</strong></td>
</tr>
<tr>
<td>1328.2</td>
<td>797.8</td>
</tr>
<tr>
<td><strong>ESRC Newcastle Buyout of Vignoles</strong></td>
<td><strong>Research Assistants (inc. Hourly Paid)</strong></td>
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<tr>
<td>5.1</td>
<td>235.3</td>
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<tr>
<td><strong>BUSINESS FORUM</strong></td>
<td><strong>Admin, Computing and Secretarial Staff</strong></td>
</tr>
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<td>63.4</td>
<td>341.9</td>
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<tr>
<td><strong>DfEE Centre for Economics of Education</strong></td>
<td><strong>Computing Equipment, Software and Maintenance</strong></td>
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<td>82.4</td>
<td>114.8</td>
</tr>
<tr>
<td><strong>DfEE Other Projects</strong></td>
<td><strong>Dissemination, Public Affairs Unit, Office Costs, Research Materials</strong></td>
</tr>
<tr>
<td>138.7</td>
<td>341.8</td>
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<tr>
<td><strong>EMPLOYMENT POLICY INSTITUTE: Employment Audit</strong></td>
<td><strong>Travel, Conferences, Seminars, CEP Public Events</strong></td>
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<td>9.3</td>
<td>113.2</td>
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<tr>
<td><strong>EU TSER: NewSkills project; EDEX Project (Toulouse), Marsden Inequality, LoWER</strong></td>
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<td><strong>EU: Regional Studies (Cohesion, JAE)</strong></td>
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<td><strong>HM TREASURY Labour Market Study</strong></td>
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<td><strong>LEVERHULME: Technology &amp; the Labour Market</strong></td>
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<td><strong>LEVERHULME: Future of Unions</strong></td>
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<td>31.75</td>
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<td><strong>LSE: Contribution to CEP costs</strong></td>
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<tr>
<td><strong>MISCELLANEOUS: conference income, closure of small grants, publications</strong></td>
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</tr>
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<td>33.9</td>
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<td><strong>OVERSEAS FOUNDATIONS Mellon, Yoo Kwo Hua, CEPS</strong></td>
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</table>

**TOTAL** 2074 **TOTAL** 1945

### TABLE 2

**ESRC FUNDING ONLY**  **APRIL 1999-2000**

<table>
<thead>
<tr>
<th>INCOME</th>
<th>EXPENDITURE</th>
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<tbody>
<tr>
<td><strong>CORE GRANT</strong></td>
<td><strong>Senior Research Staff</strong></td>
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<tr>
<td>1328.2</td>
<td>378.8</td>
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<tr>
<td><strong>Research Assistants</strong></td>
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<tr>
<td><strong>Admin, Computing and Secretarial Staff</strong></td>
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<tr>
<td><strong>Computing Equipment, Software and Maintenance</strong></td>
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<tr>
<td>114.4</td>
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<tr>
<td><strong>Dissemination, Public Affairs Unit, Office Costs, Research Materials</strong></td>
<td></td>
</tr>
<tr>
<td>289.2</td>
<td></td>
</tr>
<tr>
<td><strong>Travel, Conferences, Seminars, Subsistence</strong></td>
<td></td>
</tr>
<tr>
<td>105.2</td>
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**TOTAL** 1328 **TOTAL** 1337
## TABLE 3

### EXPENDITURE BREAKDOWN: ESRC & NON ESRC

<table>
<thead>
<tr>
<th>APRIL 1999-2000</th>
<th>ESRC £000’s</th>
<th>Outside £000’s</th>
<th>All Funds £000’s</th>
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<tbody>
<tr>
<td><strong>STAFF</strong></td>
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<tr>
<td>Research Staff By Programme</td>
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<td></td>
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<tr>
<td>Labour Markets</td>
<td>251.5</td>
<td>147.3</td>
<td>398.8</td>
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<tr>
<td>Education and Skills</td>
<td>116.4</td>
<td>130.6</td>
<td>247.0</td>
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<tr>
<td>Technology and Growth</td>
<td>42.7</td>
<td>28.1</td>
<td>70.8</td>
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<tr>
<td>Globalisation</td>
<td>97.5</td>
<td>85.6</td>
<td>183.1</td>
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<tr>
<td>Outside Funded Consultants</td>
<td>0.0</td>
<td>133.3</td>
<td>133.3</td>
</tr>
<tr>
<td>Total Research Staff</td>
<td>508.1</td>
<td>524.9</td>
<td>1032.9</td>
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<tr>
<td>Support Staff</td>
<td>319.8</td>
<td>22.1</td>
<td>341.9</td>
</tr>
<tr>
<td><strong>TOTAL STAFF</strong></td>
<td>827.8</td>
<td>547.0</td>
<td>1374.8</td>
</tr>
<tr>
<td><strong>NON-STAFF</strong></td>
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<tr>
<td>Travel</td>
<td>105.2</td>
<td>8.0</td>
<td>113.2</td>
</tr>
<tr>
<td>Equipment</td>
<td>114.4</td>
<td>0.4</td>
<td>114.8</td>
</tr>
<tr>
<td>Other (Publications, Office Costs)</td>
<td>289.2</td>
<td>52.6</td>
<td>341.8</td>
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<tr>
<td><strong>TOTAL NON-STAFF</strong></td>
<td>508.8</td>
<td>60.9</td>
<td>569.8</td>
</tr>
<tr>
<td><strong>TOTAL STAFF AND NON-STAFF</strong></td>
<td>1336.7</td>
<td>607.9</td>
<td>1944.6</td>
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</table>

### RESEARCH STAFF: EXPENDITURE BY GRADE

<table>
<thead>
<tr>
<th>APRIL 1999-2000</th>
<th>FTE’s</th>
<th>% of RESEARCH STAFF FUNDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Research Fellows</td>
<td>4.8</td>
<td>26%</td>
</tr>
<tr>
<td>Research Fellows</td>
<td>2.0</td>
<td>4%</td>
</tr>
<tr>
<td>Research Officers (inc 4.5 EU TMR Fellows)</td>
<td>12.7</td>
<td>34%</td>
</tr>
<tr>
<td>Junior Research Staff</td>
<td>11.0</td>
<td>20%</td>
</tr>
<tr>
<td>Other (incl. Buyout &amp; Consultants)</td>
<td>3.4</td>
<td>16%</td>
</tr>
<tr>
<td><strong>TOTAL FTE’s</strong> (excl 7 FTE HEFCE staff)</td>
<td>33.9</td>
<td>100%</td>
</tr>
<tr>
<td><strong>TOTAL INDIVIDUALS</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ANNEX H

COMPLETED OBJECTIVES FOR 2000

CORPORATE PERFORMANCE ¹

Year 5, April 30 2000

All programme objectives have been completed and the Financial Environment Project and R&D, Innovation and Technical Change project had mostly been completed by 98.

i) a. DATA WORK: The fourth wave of interviews and climate surveys on the core sample plus the third set of innovation surveys will be complete. We shall now have a very detailed and extensive longitudinal dataset which will enable many questions to be investigated which we have not, as yet, even recognised.

The fourth wave of interviews and climate surveys on the core sample plus the third set of innovation surveys were not conducted because of increasing sample attrition and a perceived need to extend the research to the service sector and to increase sample size.

Consequently a much larger and more heterogeneous sample of 600 companies was identified, extending across the service sector and including a sub sample of financial service organisations. This group of companies provided data on managerial practices, HRM, innovation, teamworking and economic performance.

i)b. FURTHER GENERAL WORK ON CORPORATE PERFORMANCE

Management Teams, Corporate Climate etc.

See: 1,2,20,21,39,41,44,59,72,73,168, 191,229a ² and from 1998/9:


¹ Nomenclature. Since 1998 some programmes have merged and been retitled:

Corporate Performance, Industrial Relations, Business Policy and Discontinuous Change are now Labour Markets.

Human Resources is now partially under Labour Markets and partially under Education & Skills.

National Economic Performance is now Growth and Technology.

International Economic Performance and Post-Communist Reform are now Globalisation (most of the post-communist reform objectives have now altered, reflecting history)

² Numbers refer to publications in Annex B to this report. Where publications have been given in full, this will be from publications reported 1998/99. Except where specified, all objectives have been achieved.


ii) All projects set out above will be complete.

All other projects described in the objectives for 96 and 98 have been exceeded

**Competition Project:**
See: 251 and from 1998/9:


**Financial Environment Project:**
From 1998/9:


**R&D, Innovation and Technical Change:**
See: 35, 95 and from 1998/9:


iii) Further work exploiting the longitudinal aspects of the innovation surveys.

Further work has been conducted exploiting the longitudinal aspects of the innovation surveys, though further work is still planned. We now have more economic performance data to relate to the longitudinal innovation data.

See: 40, 41, 42, 43, 70, 71, 114, 111a, 189, 191, 229a and from 1998/9:


**INDUSTRIAL RELATIONS**
Year 5, April 30 2000

i) Examine inter-firms relations and collective bargaining in a number of countries.

See: 59 and from 1998/9:


ii) (added Oct 96). Book written on pay setting behaviour

See: 138, 139, 140, 141, 143, Conference held 98/9 and from 1998/9:

iii) Examination of factors in workplace associated with high employee performance and satisfaction.
See: 4,11,137,188 and from 1998/9:

iv Completion of research on skill-biased technical change.
See 34,109,118,119,181,204 and from 1998/9:

vi (added Dec 96). Analysis of evidence to allow us to discriminate among competing theories of the labour market.
Central to the completion of this objective is the manuscript of Manning’s 15 chapter book “Monopsony in motion” to be completed for publication in 2001/2.
This objective was widened to take account of the impact of the Minimum Wage on the economy, employment and the structure of Wages, which was introduced in 97 and much of the work draws on 8,31,52,53,128,155,177,178,179,211

HUMAN RESOURCES
Further work has been undertaken on objectives whose progress has been reported in 1998 as follows:

ii) A comparative analysis of the causes of the increase in the post-compulsory education participation rate in Germany, the Netherlands, Sweden and the UK
COMPLETED: 219

iii) Analyse flows through further education using survey data from a London FE college to assess the relationship between prior educational attainment and vocational course outcomes
ONGOING: Two years’ data have been collected by Croydon College, but there have been delays in getting the data to us to analyse. It should be with us by Mar 2001

iv) Benchmarks for measurement of progress towards qualifications comparable to English National Foundation Target levels 1 and 3 and National targets in France, Germany, Singapore the UK & USA
166,187

v) (Added June 1996) an analysis of the educational attainments of schoolchildren in relation to family background, early educational experience including nursery schooling and school quality variables such as class size.
See: 97,76,126,160

vi) (Added June 1996) How does childhood disadvantage (including the effects of juvenile delinquency) translate into the adult labour market and onto the next generation? Can people compensate by returning to education or training in later life?
See: 2,14,18,19,27,28,118a,201, and from 1998/9:

See: 22,23,24,25,26,61,214,122
viii) Continuing work on the major underlying causes of unemployment, including skills imbalances, the causes and effects of long-term unemployment and the effects of labour market policies, to form part of the second and fully revised edition of the Layard, Nickell and Jackman book Unemployment: Macroeconomic Performance and the Labour Market

See: 33, 30a, 157, 163, 175 and from 1998/9:

Year 5, April 30 2000

i) Analyse factors influencing enrolment rates in post-16 full-time education and training, using combination of time-series and cross-section data.

COMPLETED: See: 69 and 219 & from 1998

ii) Review the causes of international, occupational and socio-economic differentials in Unemployment rates drawing upon the investigations of the role of skills imbalance, the efficacy of education and training, labour market institutions and the role of active labour market policies.

See: 33, 34, 35, 37, 62, 65, 66, 67, 68, 96 and from 1998/9:

BUSINESS POLICY AND ENTREPRENEURSHIP

Year 5, April 30 2000


UNCOMPLETED
Abell’s paper ‘Social capital and entrepreneurship in Great Britain’ Enterprise and Innovation Management Studies forthcoming based on a survey of 1,500 managers of small companies shows that the propensity of individuals to become entrepreneurs is influenced primarily by social capital issues, i.e. by whether they have strong social links to other individuals who have themselves become entrepreneurs. Whilst work on entrepreneurship has continued via the Growth and Technology programme (see this year’s report 256, 268) Abell’s role in pursuing conclusions was curtailed on his becoming Convenor of the Management Institute. Research in this programme has instead developed work on previous objectives on the impact of demergers and corporate restructuring on performance (based on a joint survey with the FT) to be reported next year.

ii) Industrial performance: Draw general conclusions about the link between national institutions and industrial performance.

COMPLETED: Owen’s best-seller book “From Empire to Europe: The decline and revival of British industry since the Second World War” (Harper Collins 1999) brings together the work he carried out at the Centre. The book is an examination of the impact of national policies and institutions on industrial performance seeking to compare Britain, Germany and France in detailed case studies of key industrial sectors. Its main conclusion is that pre-Thatcher policies towards industry have been insufficiently pro-competitive and that the effect has been to slow down adaptation and modernisation.
NATIONAL ECONOMIC PERFORMANCE

Year 5, April 30 2000

i) Complete study of relation between market structure and institutions and economic growth.  
See: 246,257a and from 1998/9:  

ii) Completion of project on job and worker flows.  
See 233,234 and from 1998/9:  

iii) Conduct case studies of the spread of large ideas and extract general lessons on flow of ideas.  
The study is still ongoing. See 258 and from 1998/9,  

iv) Study integrated macroeconomic models with business cycles and seasonal fluctuations.  
COMPLETED: Scott left the CEP in 1995 but the following works are relevant to the completion of this objective:  

As anticipated, we have continued to do work on the following objectives reported on previously  
vi) (1996) Analyse patterns of convergence and polarization across and within countries  
See 192,198,241,248,249,257a,266 and from 1998/9:  

vii)(1996) Examine the efficacy of monetary and fiscal policy in a series of small theoretical models of the UK economy  
See 260 (this publication focuses on Australia, the work on the optimal design of monetary policy having been completed, Bean wished to focus on the interaction between fiscal policy and structural reform). And from 1998/9:  

POST-COMMUNIST REFORM

Year 5, April 30 2000

i) To provide useful guidance and teaching to countries in the third wave of transition.  
Jackman and colleagues have helped set up (1997) and run the International College of
Economics & Finance in Moscow and have established an economics curriculum on which students are examined via the University of London external B.Sc degree. The College has succeeded even in the face of the Russian financial crisis of 1998. Jackman & Witztum are also involved in other training programmes run via EU Tempus.


iii) To use lessons from the earlier waves of transition countries to orient research and advice for the later countries, especially at the microeconomic and sectoral levels. COMPLETED: The papers published in P. Boone, S. Gomulka and R. Layard (eds.), Emerging from Communism: Lessons from Russia, China, and Eastern Europe, MIT Press: Massachusetts, 1998 brought together the findings of the programme.

iv) Use the new data sets to examine questions such as the relative effects on restructuring and performance of insider and outsider privatisation; the impact of employee ownership; and the performance of firms in the continuing state sector, where privatisation has not occurred. Work has been carried out on these objectives although mostly by staff who left the Centre (Estrin, Schaffer, Boone) and were not replaced since funding from the EU which had supported the programme for 6 years was terminated in 1998. In any case, as reform proceeded and, economic conditions in these countries became more similar to those in mainstream capitalist economies, we are focusing on matters of greater urgency, currency crises, international financial architecture, and, as reported have established a new group headed by Prof. Goodhart working on international financial stability.

Considerable work has been done however, and the following are relevant to the attainment of the objective:


Andrea Richter’s 2000 PhD thesis (unpublished, University of Oxford) compares the performance of de novo with state and privatised firms in Russia and links wage changes to labour market mobility in Russia.

v) To explain the changing pattern of wages and employment as labour demand changed in second wave countries.


Complete earlier projects.

(i) **Completion of theoretical work on industrial location.**
   
The core theory has been completed. See from 1998/9:
   

(ii) **Completion of work on high technology industries and contingent protection.**
   
   This work has been completed, with publications from 1998/9:
   
   

(iii) **Extend study of reverse linkages to include technology transfer and migration.**
   
   This project is concerned with interactions between north and south.
   
   See: 278, 282, 288, 289, 309, 315, 316 and from 1998/9:
   

(iv) **Initiate study of the relative contributions of technical change, domestic policies, and global competition to low growth and high unemployment in Europe.**
   
   This project had a change of direction following the departure of Willem Buiter to the MPC and EBRD, but was taken up by Redding et al.
   
   See: 271, 303 and from 1998/9:
   
   
   
   
   
   
   
   

v) **Complete book on measuring trade policy restrictiveness.**

Book nearing completion. Output in publications already reported including from 1998/9:

vi) [Added Oct 96] Extend theoretical work on foreign direct investment, and initiate study of characteristics and impact of outwards UK foreign direct investment using DTI survey data.

Theoretical work completed. See: 292, 312 and from 1998/9:

DTI data abandoned because of low quality of data.

vii) [Added Sep 96] Redrawing the map of Europe: outline of issues for further work

Completed – book published. See from 1998/9:

**DISCONTINUOUS CHANGE**

Year 5, April 30 2000

i) **Further work developing themes from earlier conference and production of final book.**

Rather than a book, Freeman has decided that the discontinuous change work should be done as part of substantive projects. He has published 4 papers on this area and is now pursuing the last project that developed from the work -- an analysis of the possibility of discontinuous change in China as a result of labor problems

Richard B. Freeman Spurts in Union Growth: Defining Moments and Social Processes published in Claudia Goldin NBER volume


Freeman and Danny Quah are members of a MacArthur group meeting at LSE in March 2001 that is doing work in this area.