

**TRADE, INEQUALITY AND EUROPEAN
UNEMPLOYMENT**

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FINAL REPORT

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ABSTRACT

EXECUTIVE SUMMARY

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Abstract

This project developed a coherent framework for the analysis of the causes of unemployment, which takes into account factors such as international trade, market integration and globalization, and 'skills-biased' technological change. The network also contributed to our understanding of the patterns of unemployment and social exclusion, by bringing together researchers working in the fields of international trade and labour economics with specialists in income distribution, focusing in particular on the relationship between inequality in the distribution of wages and the distribution of incomes across households. Finally the network has attempted to integrate this analysis of trade, inequality and unemployment with newly emerging techniques within the field of political economy.

The network aimed to achieve three goals, each of scientific importance and policy relevance:

- develop a framework for the analysis of unemployment which takes into account the impacts of international trade, 'skills-biased' technological change, as well as labour market policies and institutions, and to assess the relative importance of each of these factors in explaining unemployment in Europe
- increase our understanding of unemployment and social exclusion, in particular the relationship between inequality in the distribution of wages and the distribution of incomes across households. The relationship appears to be an important factor in explaining the very different ways in which inequality manifests itself in Europe and the United States.
- integrate the analysis of trade, inequality and unemployment with techniques from the field of political economy, in order to clarify the relationship between the public's attitudes towards redistribution and the political feasibility of policies designed to address the problems of inequality, social exclusion and unemployment, whether through redistribution or reforms to the operation of labour markets.

The network organized three workshops over the course of the project, which brought together policy-makers with researchers in the network. Previous reports have described in detail the workshops: here we mention only the papers of particular interest.

The first workshop, on 'Trade and labour markets' was held in Rotterdam in June 1998, focusing particularly on issues emanating from work package 1 on the work programme (Trade and wage inequalities). The second workshop, on 'International Trade and Wage Inequality: Theory and Measurement' took place in Milan in October 1999 and also focused on elements of Work Package 1, trade and wage inequalities. The final workshop, on 'Inequalities, Labour Market Regulation and Redistribution' was held in Madrid in April 2000 which focused on elements of Work Package 4, Labour market regulation, redistribution and the political process.

During the period of the project, research by members of the network was published and distributed in the CEPR Discussion Paper Series. The Series is one of the leading working papers series in the world, and has a wide readership in the

research and policy communities. The report provides short descriptions of 13 papers published in the CEPR Series under the auspices of the network.

The Centre organized a number of public discussion meetings, at which researchers from the network presented some of the results to a wider audience drawn from the policy community and the private sector. We report in detail on two of the meetings, held in London and Brussels. The London meeting addressed the first research objective outlined in the previous section, namely the assessment of the relative importance of international trade, 'skills-biased' technological change, and labour market policies and institutions in explaining unemployment in Europe. Jonathan Haskel argued that the contribution of technical change has been exaggerated, and that the evidence suggests that globalisation is a more likely explanation. At the Brussels lunchtime meeting, Daniel Cohen explored some of the political economy issues addressed by the network. Cohen's talk, entitled 'What Causes the Differences between French and US Labour Markets?' focused on the differences between the European and US experiences of labour markets and inequality.

EXECUTIVE SUMMARY

The rise of inequalities is unquestionably one of the most decisive factors shaping the political agendas of most OECD countries. In the United States, rising wage inequalities are at the heart of debates concerning the role of minimum wages on the one hand, and of tax policies on the other. In Europe, the problem manifests itself in the inequality of workers in their access to jobs -- that is, unemployment -- and the debate is over the amount of flexibility that is needed to circumvent this inequality. Yet after almost two decades spent analysing this crucial topic, we still lack a clear understanding of the main causes of this (joint) phenomenon and its policy implications.

This project brought together a number of disparate strands of research on this topic, fostered collaboration between groups of researchers who tended in the past to work in relative isolation and so developed a coherent framework for the analysis of the causes of unemployment, which takes into account factors such as international trade, market integration and globalization, and 'skills-biased' technological change. The network also contributed to our understanding of the patterns of unemployment and social exclusion, by bringing together researchers working in the fields of international trade and labour economics with specialists in income distribution, focusing in particular on the relationship between inequality in the distribution of wages and the distribution of incomes across households. Finally the network has attempted to integrate this analysis of trade, inequality and unemployment with newly emerging techniques within the field of political economy.

The network brought together policy-makers with researchers based at five leading European research institutes as well as researchers associated with the Centre for Economic Policy Research (CEPR) in London.

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This workshop aimed to evaluate different strands of empirical and theoretical research on this topic, and thereby contribute toward developing a consensus on the analytical framework, designed to analyse the relationship between the process of globalization and the twin inequalities of income and access to jobs. The final workshop, on 'Inequalities, Labour Market Regulation and Redistribution' was held in Madrid in April 2000 which focused on elements of Work Package 4, Labour market regulation, redistribution and the political process.

During the period of the project, research by members of the network was published and distributed in the CEPR Discussion Paper Series. The Series is one of the leading working papers series in the world, and has a wide readership in the research and policy communities. The report provides short descriptions of 13 papers published in the CEPR Series under the auspices of the network.

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- increase our understanding of unemployment and social exclusion, in particular the relationship between inequality in the distribution of wages and the distribution of incomes across households. The relationship appears to be an important factor in explaining the very different ways in which inequality manifests itself in Europe and the United States.
- integrate the analysis of trade, inequality and unemployment with techniques from the field of political economy, in order to clarify the relationship between the public's attitudes towards redistribution and the political feasibility of policies designed to address the problems of inequality, social exclusion and unemployment, whether through redistribution or reforms to the operation of labour markets.

Research on the first issue (the relative impacts of international trade, 'skills-biased' technological change, labour market policies and institutions on unemployment) included both the elaboration of improved theoretical models and empirical work on European countries that aimed to quantify the impact of the factors. Previous investigations of the relationship between trade, technological change and inequality focused on manufactured goods, ignoring services. Yet developing countries (such as India) are increasingly exporters of services.

The research by Michael Burda and Barbara Dluhosch exemplified the theoretical work in network that aimed to relax this assumption. In work presented at the second workshop, the two authors develop a general equilibrium model of horizontal and vertical product differentiation in a North-North world, focusing in particular on the role of manufacturing versus services and the choice by firms of the degree of 'fragmentation' of production processes.

Their model accounts for a range of stylised facts: bimodal growth of high skilled and low skilled services; fragmentation of production processes as concomitant phenomenon of globalization; the decline in relative demand for unskilled workers; and the negative relationship between unemployment and inequality. Their model extends the conventional Krugman-Dixit-Stiglitz framework in several respects: there are three sectors (differentiated final manufacturing goods, consumer services, and business services); two factors (high and low-skilled labour); manufacturing firms determine endogenously the 'fragmentation depth' of the production process, thereby competing not only by their choice of prices but also by their choice of production technology; and firms face the trade-off of a smaller marginal cost as fragmentation increases, while at the same time fixed costs in terms of high-skilled business services (i.e. management) rise. Most analysis of trade and inequality assume that

all firms operate with the same technology (captured by the assumption of identical production functions), which seems clearly counterfactual.

Gilles Duranton (London School of Economics and CEPR) also carried out theoretical work which aimed to relax this assumption and allow the coexistence of 'new' and 'old' technologies within the same industry. In the paper he presented at the second workshop, entitled 'Globalization, Productive Systems, and Inequalities' Duranton argued that this more general model suggested that competing explanations of unemployment -based on skill-biased technological change and on international trade - may in fact represent two sides of the same coin. Second, as globalization continues, the modern intermediate good firms of both countries begin to produce for a modern final good sector in both countries, whereas old technology suppliers produce for old technology final good firms.

Researchers carried out a number of empirical studies as well, aimed at quantifying the impact on unemployment of trade, technological progress and labour market institutions for a number of European countries, including Italy, Spain, Portugal, and France and the United Kingdom. The results of these empirical studies were not entirely uniform, since they were based on different models and different time periods. Most of the studies suggested, however, that international trade played only a minor role in the evolution of unemployment and inequality in Europe. In their study of Italy Faini, Falzoni, Galeotti Helg and Turrini concluded that international trade could not be blamed for Italy's labour market problems. Their results suggest that the stumbling block in Italy's economy is the inability of its weakest component, i.e. the Mezzogiorno region, to adjust to the changing international economic environment. International trade did not play a significant role in the deterioration of labour market conditions in Italy as a whole. On the contrary, the main effects of trade have been rather favourable, and if anything, tended to increase the demand for labour in Italy.

Sébastien Jean and Olivier Bontout, in work presented at the second workshop, reached a similar conclusion for France, finding only a weak impact of trade on the increase in inequality. They modelled the relative change in skilled and unskilled wages in France using a computable general equilibrium (CGE) model. They decomposed the relative wage change into four possible explanations: technology bias, factor supply changes, changes in consumption structure, and international trade, taking the interactions between the four factors into account through the general equilibrium nature of the model.

Jean and Bontout found that technological change contributed strongly towards a rise in relative wages for skilled labour, but that this was offset by the increased relative factor supply of skilled labour. The net result was to leave the relative wages roughly unchanged. The shift of consumption patterns towards services slightly increased the wage inequality, whereas international trade contributed only weakly to wage inequality (mainly via trade-induced skill-biased productivity increases).

Trade also seemed to have a small impact on the increase in inequality in the UK, according to work by Jonathan Haskel and Matthew Slaughter, presented at several network meetings and at a public discussion meeting in London. They estimated the contributions to rising UK wage inequality of international trade (measured by changes in product prices) and skill-biased technical trade (measured by changes in total factor productivity). They allow for the Rybczynski effect, that a larger demand for skilled workers may be accommodated by changes in inter-sectoral specialization

patterns rather than relative wage changes of skilled and unskilled labour. They examined the 1960s, 1970s, and 1980s separately.

The results showed that the sector bias in price changes led to a significant rise in inequality of skilled relative to unskilled wages, whereas total factor productivity led to only an insignificant decline in wage inequality for the UK during the 1980s. The fall in unionization in the UK significantly increased inequality as did innovation, which must be counterbalanced by other determinants of total factor productivity to be in line with the results of the first method. There was only mixed support for the hypothesis that trade-induced total factor productivity growth has raised inequality. The findings indicate that increased international competition has increased total factor productivity, but not induced a sector bias. Import price changes resulted in an insignificant rise in inequality indicating that sectoral value added price changes are only weakly linked to international trade.

Research on the second issue (the relationship between inequality in the distribution of wages and in the distribution of incomes across households and its impact on differences in inequality in Europe and the United States) featured mainly empirical work. Juan Francisco Jimeno, Olga Cantó and Ana Rute, for example, carried out empirical work on the impact of EU accession on Portugal and Spain which they presented at the second workshop. Their work underlined the importance of labour market policies and institutions for the evolution of inequalities. They analysed the impact of the entry of Spain and Portugal into the EU in 1986 on wage and income inequality, both at the national and regional levels.

They examined the implications of international trade flows and specialization patterns, and the importance of labour market and government institutions (e.g. the social welfare system) for the different trends in the two countries. Whereas Portugal experienced a widening of both income inequality and wage inequality, but no rise in geographical inequality or unemployment, Spain was characterised by stable income inequality, a rise in wage inequality and unemployment, and larger regional inequalities.

For Spain, the research suggests that the difference in wage and income inequality can be attributed to the establishment of a welfare state similar to the rest of Europe. For Portugal, the increase in wage inequality is explained by an increase in the returns to education.

Research on the third issue (the role of political factors and the political feasibility of policies designed to address the problems of inequality, social exclusion and unemployment through redistribution or reforms to the operation of labour markets) was both empirical and theoretical in nature. Work by Cohen, presented at a Brussels public meeting, examined the differences between French and American labour market institutions. Surprisingly, Cohen found that for the vast majority of workers, the lifetime discrepancy between the welfare of an employed and that of an unemployed worker is similar in the two countries, corresponding to nine months wages in the US, and 13 months' wages in France.

Cohen then goes on to calculate the quantitative incidence of unemployment benefit to equilibrium hiring rates. Reducing the level of French unemployment benefits to the level of American ones would dramatically reduce the welfare of the most vulnerable workers on the labour market, and may help account for the lack of political impetus for labour market reforms in Europe.

Work by John Hassler and his colleagues exemplifies the elaboration of the theoretical political economy approach. In a paper presented at the third workshop, entitled 'The Survival of the Welfare State', Hassler, José V. Rodríguez Mora, Kjetil Storesletten and Fabrizio Zilibotti explored the interaction between the welfare state and the electoral mechanism. Their paper investigates how the welfare state evolves when it redistributes income but does not play an insurance role.

The authors consider three alternative political mechanisms: majority voting, probabilistic voting (e.g. there is a function assigning political weights to agents) and lobbying. Under majority voting, multiple equilibria with different levels of redistribution exist, while with probabilistic voting the equilibrium is unique. In the latter case, no redistribution is feasible if all agents in society have the same political influence. Finally, redistribution can also take place in the case where small groups are more effective at organizing lobbies. The existence of multiple equilibria could in principle, explain the differences between the US and the (continental) European welfare state.

In other work, Hassler and his colleagues examined the interaction between voting and the insurance functions of the welfare state. In 'Equilibrium Unemployment Insurance', published as CEPR Discussion Paper No. 2126, www.cepr.org/pubs/dps/DP2126.asp) they examined unemployment insurance in a dynamic overlapping generations model with search-matching frictions and on-the-job learning-by-doing. The interaction between the political decision about the level of the unemployment insurance and the optimal search behaviour of the unemployed gives rise to a self-reinforcing mechanism that may again generate multiple steady-state equilibria. In particular, a European-type steady-state with high unemployment, low employment turnover and high insurance can co-exist with an American-type steady-state with low unemployment, high employment turnover and low unemployment insurance.

The Centre organized a number of public discussion meetings, at which researchers from the network presented some of the results to a wider audience drawn from the policy community and the private sector. We report in detail on two of the meetings, held in London and Brussels. The London meeting addressed the first research objective outlined in the previous section, namely the assessment of the relative importance of international trade, 'skills-biased' technological change, and labour market policies and institutions in explaining unemployment in Europe. Jonathan Haskel argued that the contribution of technical change has been exaggerated, and that the evidence suggests that globalisation is a more likely explanation. The meeting took place on held in London on 23 June 1999 and was based on the research reported in CEPR Discussion Paper no. 2091 (www.cepr.org/pubs/dps/DP2091.asp" www.cepr.org/pubs/dps/DP2091.asp)

At a Brussels lunchtime meeting held on 30 September 1999, Daniel Cohen explored some of the political economy issues addressed by the network. Cohen's talk, entitled 'What Causes the Differences between French and US Labour Markets?' focused on the differences between the European and US experiences of labour markets and inequality. The presentation was based on the research reported in CEPR Discussion Paper no. 2114 (www.cepr.org/pubs/dps/DP2114.asp)

The US labour market, Cohen noted, is often thought to be more dynamic than that of France and, consequently, it is commonly thought that the unemployed fare better in the US. The most frequently cited statistic in support of this assertion is that

jobless workers suffer a shorter spell of unemployment than their French counterparts. Cohen's analysis demonstrated, however, that the welfare of the unemployed in France is little different from that of those unemployed in the US, because the French system of welfare benefits compensates the jobless for their slower exit out of the pool of unemployment. As a result, and contrary to popular theory, reducing French unemployment benefits to US levels would dramatically reduce the welfare of the unemployed. This result, he argued, helps explain the absence of political pressure for changes in French labour market institutions: reforms would make the unemployed dramatically worse off and their opposition to such reforms is thus easy to explain.____

1 BACKGROUND AND OBJECTIVES OF THE PROJECT

The rise of inequalities is unquestionably one of the most decisive factors shaping the political agendas of most OECD countries. In the United States, rising wage inequalities are at the heart of debates concerning the role of minimum wages on the one hand, and of tax policies on the other. In Europe, the problem manifests itself in the inequality of workers in their access to jobs – that is, unemployment – and the debate is over the amount of flexibility that is needed to circumvent this inequality.

Yet after almost two decades spent analysing this crucial topic, we still lack a clear understanding of the main causes of this (joint) phenomenon and its policy implications. This project aims to bring together a number of disparate strands of research on this topic, foster collaboration between groups of researchers who tended in the past to work in relative isolation and so to develop a consensus on the analytical frameworks which are appropriate to analyse the relationship between the process of globalization and the twin inequalities of incomes and of access to jobs, two key factors affecting social exclusion. This thematic network therefore addresses two key aspects of the Work Programme for the Targeted Socio-economic Research Programme: (i) the relationship between employment and technical change (area I.2.1) and (ii) developing new analytical approaches for identifying key mechanisms (such as unemployment and income inequalities) which produce social exclusion (area III.2).

The network developed a coherent framework for the analysis of the causes of unemployment, which takes into account factors such as international trade, market integration and globalization, and ‘skills-biased’ technological change. The network also contributed to our understanding of the patterns of unemployment and social exclusion, by bringing together researchers working in the fields of international trade and labour economics with specialists in income distribution, focusing in particular on the relationship between inequality in the distribution of wages and the distribution of incomes across households. This relationship appears to be an important factor in explaining the very different ways in which inequality manifests itself in Europe and the United States. This has important implications for policies designed to address inequality and exclusion in Europe: policy prescriptions based on the US experience may be seriously flawed if applied /within Europe.

An analysis has been made of the relationship between the economic and sociological aspects of the problem of social exclusion, in order to fully understand how certain decisions, such as those relating to investment, are made. Finally the network has attempted to integrate this analysis of trade, inequality and unemployment with newly emerging techniques within the field of political economy. This aspect of the research agenda attempts to clarify the relationship between the public’s attitudes towards redistribution and the political feasibility of policies designed to address the problems of inequality, social exclusion and unemployment, whether through redistribution or reforms to the operation of labour markets.

The network brought together policy-makers with researchers based at five leading European research institutes as well as researchers associated with the Centre for Economic Policy Research (CEPR) in London. The activities of the thematic network have been managed and coordinated by the Centre for Economic Policy Research.

2 SCIENTIFIC DESCRIPTION OF PROJECT RESULTS AND METHODOLOGY

The network organized three workshops over the course of the project, which brought together policy-makers with researchers in the network. Previous reports have described in detail the workshops: here we mention only the papers of particular interest.

2.1 Workshops

Workshop No 1: 'Trade and labour markets'

The project held its first workshop in Rotterdam in June 1998, with additional financial support provided by the Tinbergen Institute and the Ford Foundation. The meeting took place under the auspices of the European Research Workshop in International Trade (ERWIT), an annual workshop that brings together international economists from across Europe and key researchers from outside the region. The programme normally runs for four days, combining workshop sessions with time for collaboration and consultation. The 1998 meeting was targeted on a number of sub themes, one of which was trade and labour markets. A number of papers were presented by researchers involved in the TSER project, focusing particularly on issues emanating from work package 1 on the work programme (Trade and wage inequalities).

Should globalization be blamed for the deteriorating fortunes of unskilled workers in industrial countries? To what extent does increasing competition from developing countries' imports displace jobs in relatively advanced countries? Is the outsourcing of production to low wage countries responsible for the weakening power of unions and for falling wages? Is policy intervention required to alleviate the supposedly negative impact of international economic integration? These questions were addressed in the paper at the workshop presented by Riccardo Faini (Università degli Studi di Brescia, Centro Studi Luca d'Agliano and CEPR, and a partner in the TSER project), co-written with Anna M Falzoni (Università degli Studi di Bergamo and Università Bocconi, Milano), Marzio Galeotti (Università degli Studi di Bergamo), Rodolfo Helg (LIUCC and Università Bocconi, Milano) and Alessandro Turrini (CESPRI, Università Bocconi, Milano, CORE and Università degli Studi di Bergamo).

Their conclusion is that international trade should not be blamed for Italy's labour market problems. Their results suggest that the stumbling block in Italy's economy is the inability of its weakest component, i.e. the Mezzogiorno region, to adjust to the changing international economic environment. International trade did not play a significant role in the deterioration of labour market conditions in Italy as a whole. On the contrary, the main effects of trade have been rather favourable, both because of the growing trade surplus – at least since the 1992 devaluation – and as a consequence of the peculiar pattern of comparative advantage of the Italian economy in labour intensive productions.

Workshop no 2: 'International Trade and Wage Inequality: Theory and Measurement'

The project held its second workshop in Milan in October 1999 and focused on elements of Work Package 1, trade and wage inequalities. Wage inequalities shape the political agendas in both the US and Europe. In the US, they motivate the debate on the need for minimum wages and different tax policies. In Europe, workers experience inequality in their access to jobs, and so the debate focuses on the need for flexibility in labour markets to reduce unemployment. This workshop aimed to evaluate different strands of empirical and theoretical research on this topic, and thereby contribute toward developing a consensus on the analytical framework, designed to analyse the relationship between the process of globalization and the twin inequalities of income and access to jobs. The organizers were Riccardo Faini (Università degli Studi di Brescia, International Monetary Fund and CEPR), Giorgio Barba Navaretti (Università di Ancona and Centro Studi Luca d'Agliano), André Sapir (ECARES, Université Libre de Bruxelles, European Commission, and CEPR), and Alessandro Turrini (CESPRI, Università Bocconi, Milan, Università di Bergamo and CEPR).

The following papers were presented at the workshop:

Globalization and Labor Markets	Michael C Burda (Humboldt Universität zu Berlin and CEPR) Barbara Dluhosch (Universität zu Köln)
Globalization, Productive Systems, and Inequalities	Gilles Duranton (London School of Economics and CEPR)
Local Labor Markets, Skill Accumulation and Regional Disparities	Philippe Monfort (Université Catholique de Louvain) Gianmarco I P Ottaviano (Università di Bologna, Università Bocconi, Milan, and CEPR)
Estimating the Wage Costs of Inter- and Intra-sectoral Adjustment	David Greenaway (University of Nottingham) Michelle Haynes (University of Nottingham) Richard Upward (University of Nottingham) Peter Wright (University of Nottingham and CEPR)
Integration and Income Distribution: Lessons from the Accession of Portugal and Spain to the EU	Olga Cantó (Fundación Universitaria San Pablo CEU-Elche) Ana Rute Cardoso (Universidade do Minho) Juan Francisco Jimeno (Universidad de Alcalá, FEDEA, Madrid, and CEPR)
Trade, Technology and UK Wage Inequality	Jonathan Haskel (Queen Mary and Westfield College, London, and CEPR) Matthew J Slaughter (Dartmouth College and NBER)
The Form of Technical Progress and the Trade and Wages Debate	Lisandro Abrego (University of Warwick) John Whalley (University of Warwick, University of Western Ontario and NBER)
What Drove Relative Wages in France? Structural Decomposition Analysis in a General Equilibrium Framework, 1970-1992	Olivier Bontout (DREES, Paris) Sébastien Jean (CEPII, Paris)

Multinational Corporations, Wages and Employment: Do Adjustment Costs Matter?	Giovanni Bruno (Università Bocconi, Milan) Anna M Falzoni (Università di Bergamo)
Multinationals and Wage Competition Between Different Locations	Henrik Braconier (IUI, Stockholm) Karolina Ekholm (IUI, Stockholm, and CEPR)
Treating the Stolper-Samuelson Theorem Seriously: Is there a Long-run Relationship between Relative Commodity Prices and Relative Factor Prices?	Rodrigo Navia (Universidad Catolica de Valparaiso) Douglas R Nelson (Tulane University) Timothy Wedding (US General Accounting Office, Washington)
Rybczynski Effects and Adjustment to Immigration in Israel	Neil Gandal (Tel Aviv University) Gordon H Hanson (University of Michigan and NBER) Matthew J Slaughter (Dartmouth College and NBER)

A detailed report on the workshop can be found at <http://www.cepr.org/pubs/bulletin/meets/1445.htm>

Workshop no 3: 'Inequalities, Labour Market Regulation and Redistribution'

The project held its third workshop in Madrid in April 2000 which focused on elements of Work Package 4, Labour market regulation, redistribution and the political process.

The workshop was organized by Samuel Bentolila (CEMFI, Madrid, and CEPR) and Juan F. Jimeno (FEDEA, Madrid, and CEPR), and it looked at how different countries are coping with increasing inequalities and analysed how the operation of labour market policies and other institutions feeds back into the generation of wage and unemployment inequalities.

The following papers were presented at the workshop:

Breaking Down Married Female Nonemployment in France	Guy Laroque, INSEE, Malakoff Bernard Salanié, INSEE, Malakoff, and CEPR
Deunionization, Technical Change and Inequality	Daron Acemoglu, Massachusetts Institute of Technology and CEPR Philippe Aghion, University College London, EBRD, and CEPR Gianluca Violante, University College London and CEPR
The 35 Hour Week: How Much It Costs, How Much Employment It Creates	Victoria Osuna, Universidad Carlos III, Madrid José-Víctor Ríos-Rull, University of Pennsylvania and CEPR
Early Retirement	José I Conde Ruiz, Universitat Autònoma de Barcelona Vicenzo Galasso, Universidad Carlos III, Madrid,

	and CEPR
Using Search Theory to Compute Life-time Labor Values: Does This Change Our Knowledge About Labor Market Inequality?	Audra J Bowlus, University of Western Ontario Jean-Marc Robin, Ecole Normale Supérieure, Paris, and CEPR
From Wages to Income and Consumption Inequality: Tracking Shocks	Orazio Attanasio, University College London and CEPR Gabriella Berloff, Università degli Studi di Trento Richard Blundell, University College London Ian Preston, University College London
Technology, Policy, and the Inequality–Unemployment Trade-Off	Andreas Hornstein, Federal Reserve Bank of Richmond Per Krusell, University of Rochester and CEPR Gianluca Violante, University College London and CEPR
The Survival of the Welfare State	John Hassler, Stockholm University and CEPR José V Rodriguez Mora, Universitat Pompeu Fabra, Barcelona Kjetil Storesletten, Institute for International Economic Studies, Stockholm, and CEPR Fabrizio Zilibotti, Institute for International Economic Studies, Stockholm, and CEPR
Altruism with Endogenous Labor Supply	Ana Fernandes, CEMFI, Madrid
Endogenous Labor Market Participation in Equilibrium Search Unemployment	Pietro Garibaldi, Istituto di Economia Politica, Università Commerciale Luigi Bocconi and CEPR Etienne Wasmer, ECARES, Université Libre de Bruxelles and CEPR
Informal Family Insurance and the Design of the Welfare State	Rafael Di Tella, Harvard University Robert MacCulloch, ZEI, Universität Bonn
Inequality and Poverty in Greece after the Restoration of Democracy (1974-1994)	Theodore Mitrakos, Athens University of Economics and Business and Bank of Greece Panos Tsakloglou, Athens University of Economics and Business

A detailed report on the workshop can be found at <http://www.cepr.org/pubs/bulletin/meets/4513.htm>

2.2 Publications

During the period of the project, the following papers have been prepared and distributed in the CEPR Discussion Paper Series. The Series is one of the leading working papers series in the world, and has a wide readership in the research and policy communities.

- ‘Globalization and European Labour Markets’, Michael C Burda and Barbara Dluhosch, CEPR Discussion Paper No. 1992, www.cepr.org/pubs/dps/DP1992.asp

This paper examines the linkage between trade and the dismal state of labour markets in Europe. On the face of superficial evidence, the nexus is weak and is overshadowed by more compelling evidence of skill-biased technical change. Yet a complete dismissal of globalization is inconsistent with current opinions of businessmen, policy-makers and workers in globalized industries. The authors propose an alternative model in which globalization – defined as the increase in world trade relative to other indicators of real economic activity – occurs along with deterioration of labour market prospects, especially for the less-skilled. As an alternative or complement to conventional trade and technology explanations, they model both the fragmentation of production and resulting reallocation of economic activity across national boundaries as equilibrium responses to trading opportunities as well as the technology of production. Increasing integration is therefore linked to both trade as well as pervasive skill-biased technical change. The model’s predictions are consistent with a number of outstanding empirical puzzles in the trade-wages debate and can also explain the bimodal growth in services (high and low skill) observed in all OECD countries, and especially those with deregulated labour markets.

- ‘Importing Jobs or Exporting Firms? A Close Look at the Labour Market Implications of Italy’s Trade and Foreign Direct Investment Flows’, Riccardo Faini, Anna M Falzoni, Marzio Galeotti, Rodolfo Helg and Alessandro Turrini, CEPR Discussion Paper No. 2033, www.cepr.org/pubs/dps/DP2033.asp

International economic integration is often blamed for the deteriorating fortunes of unskilled workers in industrial countries. This paper looks at the labour market impact of trade and foreign direct investment in the case of Italy. The empirical framework allows for trade, technology and factor supply effects. The authors find that international trade did not contribute to Italy’s labour market problems. Indeed, given that Italy holds quite a distinct pattern of trade specialization, compared to other industrialized countries, international integration as reflected in falling import prices may have boosted the demand for labour there. They also argue that the inability of the Mezzogiorno’s economy to adjust to the changing international environment is one of the main stumbling blocks in Italy’s economy. Finally, they find that greater firm’s mobility may have weakened the power of trade unions and contributed to wage moderation.

- ‘Trade, Wages, and Superstars’, Paolo Manasse and Alessandro Turrini, CEPR Discussion Paper No. 2262, www.cepr.org/pubs/dps/DP2262.asp

This paper studies the effect of 'globalization' on wage inequality. Our 'global' economy resembles Rosen's (1981) 'Superstars' economy, where a) innovations in production and communication technologies enable suppliers to reach a larger mass of consumers and to improve the (perceived) quality of their products and b) trade barriers fall. When transport costs fall, income is redistributed away from the non-exporting to the exporting sector of the economy. As the former turns out to employ workers of higher skill and pay, the effect is to raise wage inequality.

Whether the least skilled stand to lose or gain from improved production or communication technologies, in contrast, depends on whether technology is skill-complementary, or a substitute. The model gives an intuitive explanation for the empirical regularities that skill intensity, market size and wages tend to be positively associated with exporting activity across sectors and plants.

- 'Inequality of Earnings', Dennis J Snower, CEPR Discussion Paper No. 2321, www.cepr.org/pubs/dps/DP2321.asp

This paper surveys major empirical regularities concerning changes in earnings inequality in Europe and the US over the past 25 years. Next, it indicates which of these regularities can be explained within the competitive demand-supply framework of analysis and what is left unexplained. Finally, it considers the implications of organizational change as a possible rationale for recent inequality developments.

- 'Equilibrium Unemployment Insurance', John Hassler, José V Rodríguez Mora, Kjetil Storesletten, Fabrizio Zilibotti, CEPR Discussion Paper No. 2126, www.cepr.org/pubs/dps/DP2126.asp

In this paper, we incorporate a positive theory of unemployment insurance into a dynamic overlapping generations model with search-matching frictions and on-the-job learning-by-doing. The model shows that societies populated by identical rational agents, but differing in the initial distribution of human capital across agents, may choose very different unemployment insurance levels in a politico-economic equilibrium. The interaction between the political decision about the level of the unemployment insurance and the optimal search behavior of the unemployed gives rise to a self-reinforcing mechanism which may generate multiple steady-state equilibria. In particular, a European-type steady-state with high unemployment, low employment turnover and high insurance can co-exist with an American-type steady-state with low unemployment, high employment turnover and low unemployment insurance. A calibrated version of the model features two distinct steady-state equilibria with unemployment levels and duration rates resembling those of the U.S. and Europe, respectively.

- 'Welfare Differentials Across French and US Labour Markets', Daniel Cohen, CEPR Discussion Paper No. 2114, www.cepr.org/pubs/dps/DP2114.asp

The paper computes lifetime welfare functions for French and American workers. For the vast majority of workers, we find that the lifetime discrepancy between the welfare of an employed and that of an unemployed worker appear to quite similar in the two countries, corresponding to nine monthly wages in the US, and 13 monthly wages in France. From these and other values, we then calibrate standard parameters of equilibrium theories of unemployment such as hiring and firing costs and the quantitative incidence of unemployment benefit onto the equilibrium hiring rates. We find that the latter factor dominates the other. Because of the heterogeneity that we document on the labour market, we show, however, why

reducing the level of French unemployment benefits to the level of American ones would dramatically reduce the welfare of the most vulnerable workers on the labour market.

- 'Trade, Technology and UK Wage Inequality', Jonathan Haskel and Matthew J Slaughter, CEPR Discussion Paper No. 2091, www.cepr.org/pubs/dps/DP2091.asp

The U.K. skill premium fell from the 1950s to the late 1970s and then rose very sharply. This paper examines the contributions to these relative wage movements of international trade and technical change. We first measure trade as changes in product prices and technical change as TFP growth. Then we relate price and TFP changes to a set of underlying factors. Among a number of results, we find that changes in prices, not TFP, were the major force behind the rise in inequality in the 1980s. We also find that although increased trade pressure has raised technical change, its effect on wage inequality was not quantitatively significant.

- 'The Core-Periphery Model With Forward-Looking Expectations', Richard E Baldwin, CEPR Discussion Paper No. 2085, www.cepr.org/pubs/dps/DP2085.asp

The 'core-periphery model' is vitiated by its assumption of static expectations. That is, migration (inter-regional or intersectoral) is the key to agglomeration, but migrants base their decision on current wage differences alone – even though migration predictably alters wages and workers are (implicitly) infinitely lived. The assumption was necessary for tractability. The model has multiple stable equilibria, so forward-looking behaviour requires characterisation of global stability in a non-linear dynamic system (a potentially intractable problem). This paper's main contribution is to present a set of solution techniques—partly analytic and partly numerical—that allows consideration of forward-looking expectations. Surprisingly, we find that if migration costs are sufficiently high, allowing forward-looking behaviour changes nothing, so static expectations are truly an assumption of convenience. If migration costs are lower, history-vs-expectations considerations emerge. Agglomeration, therefore, can be a self-fulfilling prophecy.

- Raquel Fernandez (New York University and CEPR) and Richard Rogerson (University of Pennsylvania), 'Sorting and Long-Run Inequality', CEPR Discussion Paper No. 2352, January 2000, www.cepr.org/pubs/dps/DP2352.asp

Many social commentators have raised concerns over the possibility that increased sorting in a society can lead to greater inequality. To investigate this we construct a dynamic model of intergenerational education acquisition, fertility, and marital sorting and parameterize the steady state to match several basic empirical findings. Contrary to Kremer's (1997) finding of a basically insignificant effect of marital sorting on inequality, we find that increased marital sorting will significantly increase income inequality. Three factors are central to our findings: a negative correlation between fertility and education, a decreasing marginal effect of parental education on children's years of education, and wages that are sensitive to the relative supply of skilled workers.

- Dan Ben-David (Tel Aviv University and CEPR) and Ayal Kimhi (Hebrew University of Jerusalem), 'Trade And The Rate Of Income Convergence',

To the extent that trade policy affects trade flows between countries, the ramifications can be far-reaching from an economic growth perspective. This paper examines one aspect of these ramifications, namely the impact of changes in the extent of trade between countries on changes in the rate of reduction in the size of the income gap that exists between them. Export and import data are used as the criteria for determining bilateral trade between major trade partners, resulting in the creation of 127 pairs of countries on the basis of export data and 134 pairs on the basis of import data. An increase in trade between major trade partners – and in particular, increased exports by poorer countries to their wealthier partners – is shown to be related to an increase in the rate of convergence between the countries.

- Peter Howitt, Philippe Aghion (University College London and CEPR) and Gianluca Violante (University College London and CEPR), 'General Purpose Technology and Within-Group Inequality', CEPR Discussion Paper No. 2474, June 2000, www.cepr.org/pubs/dps/DP2474.asp

This paper develops a theoretical model to analyse how a General Purpose Technology (GPT) shapes within-group wage inequality when workers are ex-ante equal, but their adaptability to new technologies is subject to stochastic factors that are history dependent. It is argued that the diffusion of a GPT leverages the importance of these stochastic factors in three ways. First, a rise in the speed of embodied technological progress raises the market premium to workers adaptable to the leading-edge technology. Second, the generality of the technology raises the ability of adaptable workers to transfer recently acquired knowledge to new machines. Third, the generality of the technology reduces the cost of retooling old machines, which increases the demand for adaptable workers. In the model the rise in within-group inequality is mainly transitory, and is mirrored by a rise in wage instability. The key predictions of the model are shown to be in line with some of the existing empirical evidence.

- Jonathan Haskel, 'The Trade and Labour Approaches to Wage Inequality', CEPR Discussion Paper No. 2476, June 2000, www.cepr.org/pubs/dps/DP2476.asp

This paper compares the trade and labour approaches to wage inequality. We first look at the theoretical differences, stressing the different roles ascribed to sector and factor bias, labour supply and the theory of technical change in trade models with endogenous prices. It then reviews some of the evidence on the sector bias of prices and technology.

- Joseph Francois (Tinbergen Institute and CEPR) and Doug R. Nelson (and CEPR), 'Victims of Progress: Economic Integration, Specialisation and Wages for Unskilled Labour', CEPR Discussion Paper No. 2527, August 2000, www.cepr.org/pubs/dps/DP2527.asp

This paper demonstrates that intra-industry trade (or FDI) between identical countries could produce the observed deterioration in the relative wages of unskilled workers. This involves a model of North-North integration through either increased trade flows or increased MNE-based production. Our motivation in this regard is a series of arguments to the effect that trade cannot be responsible for the observed labour market trends because trade with developing countries is quantitatively too

small to have significant labour market effects. We also introduce a relatively unexploited class of model that possesses attractive properties with respect to the explicit incorporation of firm-theoretic considerations in trade models.

3 CONCLUSIONS AND POLICY IMPLICATIONS

The network aimed to achieve three goals, each of scientific importance and policy relevance:

- develop a framework for the analysis of unemployment which takes into account the impacts of international trade, ‘skills-biased’ technological change, as well as labour market policies and institutions, and to assess the relative importance of each of these factors in explaining unemployment in Europe
- increase our understanding of unemployment and social exclusion, in particular the relationship between inequality in the distribution of wages and the distribution of incomes across households. The relationship appears to be an important factor in explaining the very different ways in which inequality manifests itself in Europe and the United States.
- integrate the analysis of trade, inequality and unemployment with techniques from the field of political economy, in order to clarify the relationship between the public’s attitudes towards redistribution and the political feasibility of policies designed to address the problems of inequality, social exclusion and unemployment, whether through redistribution or reforms to the operation of labour markets.

We describe briefly the most important results obtained in exploring each of these issues.

Research on the first issue (the relative impacts of international trade, ‘skills-biased’ technological change, labour market policies and institutions on unemployment) included both the elaboration of improved theoretical models and empirical work on European countries that aimed to quantify the impact of the factors.

Previous investigations of the relationship between trade, technological change and inequality focused on manufactured goods, ignoring services. Yet developing countries (such as India) are increasingly exporters of services. The research by Michael Burda (Humboldt Universität zu Berlin and CEPR) and Barbara Dluhosch (Universität zu Köln) exemplified the theoretical work in network that aimed to relax this assumption. In work presented at the second workshop, the two authors develop a general equilibrium model of horizontal and vertical product differentiation in a North-North world, focusing in particular on the role of manufacturing versus services and the choice by firms of the degree of ‘fragmentation’ of production processes.

Their model accounts for a range of stylised facts: bimodal growth of high skilled and low skilled services; fragmentation of production processes as concomitant phenomenon of globalization; the decline in relative demand for unskilled workers; and the negative relationship between unemployment and inequality. Their model extends the conventional Krugman-Dixit-Stiglitz framework in several respects: there are three sectors (differentiated final manufacturing goods, consumer services, and business services); two factors (high and low-skilled labour); manufacturing firms determine endogenously the ‘fragmentation depth’ of the production process, thereby competing not only by their choice of prices but also by their choice of

production technology; and firms face the trade-off of a smaller marginal cost as fragmentation increases, while at the same time fixed costs in terms of high-skilled business services (i.e. management) rise. As management methods become more efficient and world market size grows, firms choose to outsource more and more production steps yielding finer vertical differentiation. Burda and Dluhosch undertake two comparative-static experiments. First, they examine what happens if productivity of business services rises, e.g. because communication costs have fallen. Production depth increases and the demand for high-skilled business services rises, raising wages for high-skilled relative to low-skilled labour, or if wages are assumed sticky (i.e. the European case), inducing unemployment. Second, what happens if the size of the economy, in terms of endowments, rises? This yields both an increased horizontal and vertical differentiation, an accelerated de-industrialization, and wage inequality/unemployment if the fraction of skilled workers in services exceeds that of unskilled workers.

Most analysis of trade and inequality assume that all firms operate with the same technology (captured by the assumption of identical production functions), which seems clearly counterfactual. Gilles Duranton (London School of Economics and CEPR) also carried out theoretical work which aimed to relax this assumption and allow the coexistence of 'new' and 'old' technologies within the same industry. He then explored how this would affect the growth of the industry in core and periphery countries.

In the paper he presented at the second workshop, entitled 'Globalization, Productive Systems, and Inequalities' Duranton argued that this more general model suggested that competing explanations of unemployment –based on skill-biased technological change and on international trade – may in fact represent two sides of the same coin. Duranton's analysis was inspired by the experiences of the Spanish car-part supply industry after EU accession. A two-tier technology market structure emerged, with a traditional technology used by some firms and a modern one (e.g. just-in-time production) used by others. The two-country model allows for two types of workers: skilled and unskilled. The endowments and the level of skill are exogenous. There are competitive firms assembling a final good from an intermediate good using a functional form similar to that developed by Dixit-Stiglitz-Krugman. The assembling technology is chosen endogenously by trading-off the higher total factor productivity of the modern technology with a smaller factor productivity caused by a smaller number of intermediate good suppliers, since only those intermediate good suppliers that use at least the same skill level can supply to the final good firm. Foreign intermediate good suppliers are required to have an even higher skill level than the domestic final good producer (i.e. additional communication skills).

The process of globalization is described as follows. The endowment of skilled workers increases and the requirements of additional communication skills fall continuously. First, a core-periphery pattern emerges with foreign modern intermediate good firms delivering to domestic final good firms and old technology firms delivering to foreign old technology final good producers. As a consequence, the home country is richer and has equal wages among skilled and unskilled, whereas the foreign country has wage inequality, is poorer, and becomes marginalized in the world trading system. Second, as globalization continues, the modern intermediate good firms of both countries begin to produce for a modern final good sector in both countries, whereas old technology suppliers produce for old

technology final good firms. As a result, there is wage inequality among the skilled and unskilled in the rich home country.

Most analyses of inequality have treated skill-biased technical change and deunionization as competing explanations for wage inequality, arguing that the former is at the root of both deunionization and rising inequality. Acemoglu, Aghion and Violante took issue with this assumption and developed an alternative model, in which technological change interacts with deunionization. In the paper 'Deunionization, Technical Change and Inequality', presented at the third workshop, they examined a model built around the assumption that unions establish firing restrictions and enforce wage compression, which induces firms to hire skilled workers and to train unskilled ones rather than fire them. Skill-biased technical change then causes deunionization because it increases the value of outside opportunities for skilled workers, undermining the coalition among skilled and unskilled workers that supports unions. Skill-biased technical change should therefore lead to new plants being set up with young deunionized workers, who choose schooling instead of firm training. Although deunionization does not directly cause the increase in inequality, it amplifies the effects of skill-biased technical change by removing the wage compression imposed by unions.

Researchers carried out a number of empirical studies as well, aimed at quantifying the impact on unemployment of trade, technological progress and labour market institutions for a number of European countries, including Italy, Spain, Portugal, and France and the United Kingdom. The results of these empirical studies were not entirely uniform, since they were based on different models and different time periods. Most of the studies suggested, however, that international trade played only a minor role in the evolution of unemployment and inequality in Europe. In their study of Italy Faini, Falzoni, Galeotti Helg and Turrini concluded that international trade could not be blamed for Italy's labour market problems.

Their results suggest that the stumbling block in Italy's economy is the inability of its weakest component, i.e. the Mezzogiorno region, to adjust to the changing international economic environment. International trade did not play a significant role in the deterioration of labour market conditions in Italy as a whole. On the contrary, the main effects of trade have been rather favourable, and if anything, tended to increase the demand for labour in Italy.

Sébastien Jean and Olivier Bontout, in work presented at the second workshop, reached a similar conclusion for France, finding only a weak impact of trade on the increase in inequality. They modelled the relative change in skilled and unskilled wages in France using a computable general equilibrium (CGE) model. They decomposed the relative wage change into four possible explanations: technology bias, factor supply changes, changes in consumption structure, and international trade, taking the interactions between the four factors into account through the general equilibrium nature of the model. The CGE model employs an Armington condition, but allows also for horizontal product differentiation, increasing returns to scale, monopolistic competition, Cournot competition, and trade-induced effects on productivity.

The model allows for one service sector and eight industrial and agricultural sectors, as well as four production factors, namely high and low-skilled labour, and capital and intermediate goods. Import goods from the South and the North are distinguished. In order to deal with the French unemployment problem mainly among

unskilled workers in a context of general equilibrium, the wages are adjusted as if there was full employment. The model is calibrated for French data for the years 1970–92.

Jean and Bontout found that technological change contributed strongly towards a rise in relative wages for skilled labour, but that this was offset by the increased relative factor supply of skilled labour. The net result was to leave the relative wages roughly unchanged. The shift of consumption patterns towards services slightly increased the wage inequality, whereas international trade contributed only weakly to wage inequality (mainly via trade-induced skill-biased productivity increases).

Trade also seemed to have a small impact on the increase in inequality in the UK, according to work by Jonathan Haskel and Matthew Slaughter, presented at several network meetings and at a public discussion meeting in London. They estimated the contributions to rising UK wage inequality of international trade (measured by changes in product prices) and skill-biased technical trade (measured by changes in total factor productivity). They allow for the Rybczynski effect, that a larger demand for skilled workers may be accommodated by changes in inter-sectoral specialization patterns rather than relative wage changes of skilled and unskilled labour. They examined the 1960s, 1970s, and 1980s separately.

The results showed that the sector bias in price changes led to a significant rise in inequality of skilled relative to unskilled wages, whereas total factor productivity led to only an insignificant decline in wage inequality for the UK during the 1980s. The fall in unionization in the UK significantly increased inequality as did innovation, which must be counterbalanced by other determinants of total factor productivity to be in line with the results of the first method. There was only mixed support for the hypothesis that trade-induced total factor productivity growth has raised inequality. The findings indicate that increased international competition has increased total factor productivity, but not induced a sector bias. Import price changes resulted in an insignificant rise in inequality indicating that sectoral value added price changes are only weakly linked to international trade.

Research on the second issue (the relationship between inequality in the distribution of wages and in the distribution of incomes across households and its impact on differences in inequality in Europe and the United States) featured mainly empirical work. Juan Francisco Jimeno, Olga Cantó and Ana Rute, for example, carried out empirical work on the impact of EU accession on Portugal and Spain which they presented at the second workshop. Their work underlined the importance of labour market policies and institutions for the evolution of inequalities.

They analysed the impact of the entry of Spain and Portugal into the EU in 1986 on wage and income inequality, both at the national and regional levels. They examined the implications of international trade flows and specialization patterns, and the importance of labour market and government institutions (e.g. the social welfare system) for the different trends in the two countries. Whereas Portugal experienced a widening of both income inequality and wage inequality, but no rise in geographical inequality or unemployment, Spain was characterised by stable income inequality, a rise in wage inequality and unemployment, and larger regional inequalities.

For Spain, the research suggests that the difference in wage and income inequality can be attributed to the establishment of a welfare state similar to the rest of Europe. For Portugal, the increase in wage inequality is explained by an increase in the

returns to education. There is a negative wage premium for blue-collar production workers and for textile workers, indicating that low wages are the basis for the international competitiveness of Portugal. In Spain, wage inequality is explained by returns to tenure, a lower gap between wages of production workers, a lower variation of wages across industries, and regional dummies. This indicates that labour market institutions (i.e. collective bargaining) may play an important role in explaining wage inequalities.

By focusing on the employment share of workers with a university degree, the authors conclude that industry bias of technological progress may be the main force behind the increasing demand for high-skilled workers. Export sectors, however, remain specialised in low-skill production for both Spain and Portugal. Finally, FDI is found to have a positive impact on regional labour productivity above that of its capital accumulation effect, whereas the impact of EU transfers on regional labour productivity has been relatively small.

Research on the third issue (the role of political factors and the political feasibility of policies designed to address the problems of inequality, social exclusion and unemployment through redistribution or reforms to the operation of labour markets) was both empirical and theoretical in nature. Work by Cohen, presented at a Brussels public meeting, examined the differences between French and American labour market institutions. Surprisingly, Cohen found that for the vast majority of workers, the lifetime discrepancy between the welfare of an employed and that of an unemployed worker is similar in the two countries, corresponding to nine months wages in the US, and 13 months' wages in France. Cohen then goes on to calculate the quantitative incidence of unemployment benefit to equilibrium hiring rates. Reducing the level of French unemployment benefits to the level of American ones would dramatically reduce the welfare of the most vulnerable workers on the labour market, and may help account for the lack of political impetus for labour market reforms in Europe.

Work by John Hassler and his colleagues exemplifies the elaboration of the theoretical political economy approach. In a paper presented at the third workshop, entitled 'The Survival of the Welfare State', Hassler, José V. Rodríguez Mora, Kjetil Storesletten and Fabrizio Zilibotti explored the interaction between the welfare state and the electoral mechanism. Their paper investigates how the welfare state evolves when it redistributes income but does not play an insurance role. The authors consider three alternative political mechanisms: majority voting, probabilistic voting (e.g. there is a function assigning political weights to agents) and lobbying. Under majority voting, multiple equilibria with different levels of redistribution exist, while with probabilistic voting the equilibrium is unique. In the latter case, no redistribution is feasible if all agents in society have the same political influence. Finally, redistribution can also take place in the case where small groups are more effective at organizing lobbies. The existence of multiple equilibria could in principle, explain the differences between the US and the (continental) European welfare state.

In other work, Hassler and his colleagues examined the interaction between voting and the insurance functions of the welfare state. In 'Equilibrium Unemployment Insurance', published as CEPR Discussion Paper No. 2126, (www.cepr.org/pubs/dps/DP2126.asp) they examined unemployment insurance in a dynamic overlapping generations model with search-matching frictions and on-the-job learning-by-doing. The interaction between the political decision about the level

of the unemployment insurance and the optimal search behaviour of the unemployed gives rise to a self-reinforcing mechanism that may again generate multiple steady-state equilibria. In particular, a European-type steady-state with high unemployment, low employment turnover and high insurance can co-exist with an American-type steady-state with low unemployment, high employment turnover and low unemployment insurance.

Galasso and Conde Ruiz offered a similar theoretical analysis of the interaction between the institution of early retirement and the political mechanism. The authors provide a political economy explanation for the introduction and sustainability of early retirement provisions. Their explanation relies on two facts: most OECD countries adopted more-than-actuarially-fair early retirement provisions between 1967 and 1977, which the authors identify as resulting from the first oil price shock; and a large proportion of early retirees are low wage workers. In an economy with young and old workers, if there is an initially high enough proportion of elderly individuals with incomplete working histories and if early retirement induces enough future low-ability workers to retire early, then a social security system with an early retirement provision is an equilibrium outcome with voting. Such provision creates its own future conclusions by reducing human capital accumulation. The decrease in low-income workers' human capital and their working life raises labour income inequality.

4 DISSEMINATION AND EXPLOITATION OF RESULTS

The Centre organized a number of public discussion meetings, at which researchers from the network presented some of the results to a wider audience drawn from the policy community and the private sector. We report in detail on two of the meetings, held in London and Brussels.

The London meeting addressed the first research objective outlined in the previous section, namely the assessment of the relative importance of international trade, 'skills-biased' technological change, and labour market policies and institutions in explaining unemployment in Europe.

UK workers in the bottom 10% of the income distribution have seen almost zero real growth in their wages over the last 20 years. In contrast, workers in the top 10% of the income distribution have had real wage increases of around 50%. Two potential causes have been cited for this widening wage gap: international trade and technical change. But which really is to blame? At a lunchtime meeting on 'Trade or Technology: Which is Responsible for UK Wage Inequality?' Jonathan Haskel argued that the contribution of technical change has been exaggerated, and that the evidence suggests that globalisation is a more likely explanation. The meeting took place on held in London on 23 June 1999 and was based on the research reported in CEPR Discussion Paper no. 2091 (www.cepr.org/pubs/dps/DP2091.asp)

The view that trade is the culprit is based on the fact that developing countries are rich in unskilled labour and can supply goods where production is unskilled-intensive at a fraction of developed country costs. Hence, unskilled wages in developed countries must fall if domestic producers are to remain competitive. The technology view argues instead that rapid technical change in recent decades, especially with the widespread introduction of computers, has been skill-biased, raising the relative productivity of skilled workers but reducing demand for unskilled workers and thereby lowering their wage. The main counter-argument to the trade view is that only a small fraction of goods in developed economies are internationally traded. The service sector makes up an increasingly significant part of production and although some services are traded, such as financial services, the bulk are not.

What matters for wages, Haskel argued, is the potential flow of workers between sectors, so the question is whether the effects of technical change and globalization are felt more in some sectors than in others, that is, it is the differences across sectors that potentially cause wage adjustments. The finding that technical change is occurring within many sectors is not informative about changes in wages: it does not indicate whether technical change is occurring faster in some sectors than in others – i.e. whether there is sector bias. The many studies that find technical change within many sectors are simply uninformative about the effects on wages.

To see the effects of sector bias on wages, consider a fall in the price of T-shirts due to imports from abroad. This would cause a fall in prices in the unskilled-intensive sectors relative to the skilled-intensive sectors. The fall in price in these unskilled-intensive sectors means that such sectors are now unprofitable. These sectors release unskilled workers, who it is now unprofitable to employ, and therefore wages have to change to restore profitability.

Changes in technology work in a similar way. Technical progress in a sector will potentially raise profitability. If technical change occurs in the skill-intensive sector, then skilled wages must rise to restore relative profitability there. If it occurs in the unskilled-intensive sector, then unskilled wages must rise. All technical change matters since any advances might raise sector profitability. This suggests that researchers should look at skilled, unskilled and neutral technical change – i.e. total factor productivity (TFP) – to see if there is an impact on wages. Hence, the impact of sector bias can be summarized: if prices or TFP grow faster in the skill-intensive sectors, then skilled wages tend to rise relative to unskilled wages. But if prices or TFP grow faster in the unskilled-intensive sectors, then skilled wages tend to fall relative to unskilled wages. Thus, the appropriate empirical strategy is to examine whether price or TFP change is more concentrated in the skill- or unskilled-intensive sectors.

According to Haskel's findings for the UK, changes in TFP in the 1980s were not concentrated in skill-intensive sectors. Indeed, TFP changes were more or less uniform across all sectors. Thus, changes in technical progress could not have caused the increase in wage inequality since it would have had to be concentrated in skill-intensive sectors to change relative profitability and hence set off a rise in skilled wages. This finding is robust to using different data sets with different measurements of skill. With regard to the movement in prices, Haskel found that price rises were concentrated in skill-intensive sectors whereas price falls were concentrated in the unskilled-intensive sectors, thus concluding that it was price changes that had led to the rise in wage inequality.

Haskel concluded by stating that these results cast considerable doubt on technology being the major cause of the rise in wage inequality in the 1980s in the UK. The results strongly support the proposition that it was changes in prices. How much such price changes are due to trade was an open question for future work, he added.

At a Brussels lunchtime meeting held on 30 September 1999, Daniel Cohen explored some of the political economy issues addressed by the network. Cohen's talk, entitled 'What Causes the Differences between French and US Labour Markets?' focused on the differences between the European and US experiences of labour markets and inequality. The presentation was based on the research reported in CEPR Discussion Paper no. 2114 (www.cepr.org/pubs/dps/DP2114.asp)

The US labour market, Cohen noted, is often thought to be more dynamic than that of France and, consequently, it is commonly thought that the unemployed fare better in the US. The most frequently cited statistic in support of this assertion is that jobless workers suffer a shorter spell of unemployment than their French counterparts. Cohen's analysis demonstrated, however, that the welfare of the unemployed in France is little different from that of those unemployed in the US, because the French system of welfare benefits compensates the jobless for their slower exit out of the pool of unemployment. As a result, and contrary to popular theory, reducing French unemployment benefits to US levels would dramatically reduce the welfare of the unemployed. This result, he argued, helps explain the absence of political pressure for changes in French labour market institutions: reforms would make the unemployed dramatically worse off and their opposition to such reforms is thus easy to explain.

5 ACKNOWLEDGEMENTS AND REFERENCES

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- 'Globalization and European Labour Markets', Michael C Burda and Barbara Dluhosch, CEPR Discussion Paper No. 1992
- 'Importing Jobs or Exporting Firms? A Close Look at the Labour Market Implications of Italy's Trade and Foreign Direct Investment Flows', Riccardo Faini, Anna M Falzoni, Marzio Galeotti, Rodolfo Helg and Alessandro Turrini, CEPR Discussion Paper No. 2033
- 'Trade, Wages, and Superstars', Paolo Manasse and Alessandro Turrini, CEPR Discussion Paper No. 2262
- 'Inequality of Earnings', Dennis J Snower, CEPR Discussion Paper No. 2321
- 'Equilibrium Unemployment Insurance', John Hassler, José V Rodríguez Mora, Kjetil Storesletten, Fabrizio Zilibotti, CEPR Discussion Paper No. 2126
- 'Welfare Differentials Across French and US Labour Markets', Daniel Cohen, CEPR Discussion Paper No. 2114
- 'Trade, Technology and UK Wage Inequality', Jonathan Haskel and Matthew J Slaughter, CEPR Discussion Paper No. 2091
- 'The Core-Periphery Model With Forward-Looking Expectations', Richard E Baldwin, CEPR Discussion Paper No. 2085
- Raquel Fernandez (New York University and CEPR) and Richard Rogerson (University of Pennsylvania), 'Sorting and Long-Run Inequality', CEPR Discussion Paper No. 2352, January 2000
- Dan Ben-David (Tel Aviv University and CEPR) and Ayal Kimhi (Hebrew University of Jerusalem), 'Trade And The Rate Of Income Convergence', CEPR Discussion Paper No. 2390, February 2000
- Peter Howitt, Philippe Aghion (University College London and CEPR) and Gianluca Violante (University College London and CEPR), 'General Purpose Technology and Within-Group Inequality', CEPR Discussion Paper No. 2474, June 2000.
- Jonathan Haskel, 'The Trade and Labour Approaches to Wage Inequality', CEPR Discussion Paper No. 2476, June 2000
- Joseph Francois (Tinbergen Institute and CEPR) and Doug R. Nelson (and CEPR), 'Victims of Progress: Economic Integration, Specialisation and Wages for Unskilled Labour', CEPR Discussion Paper No. 2527, August 2000

6 ANNEXES

A LIST OF PARTICIPANTS OF THE WORKSHOPS IS ATTACHED