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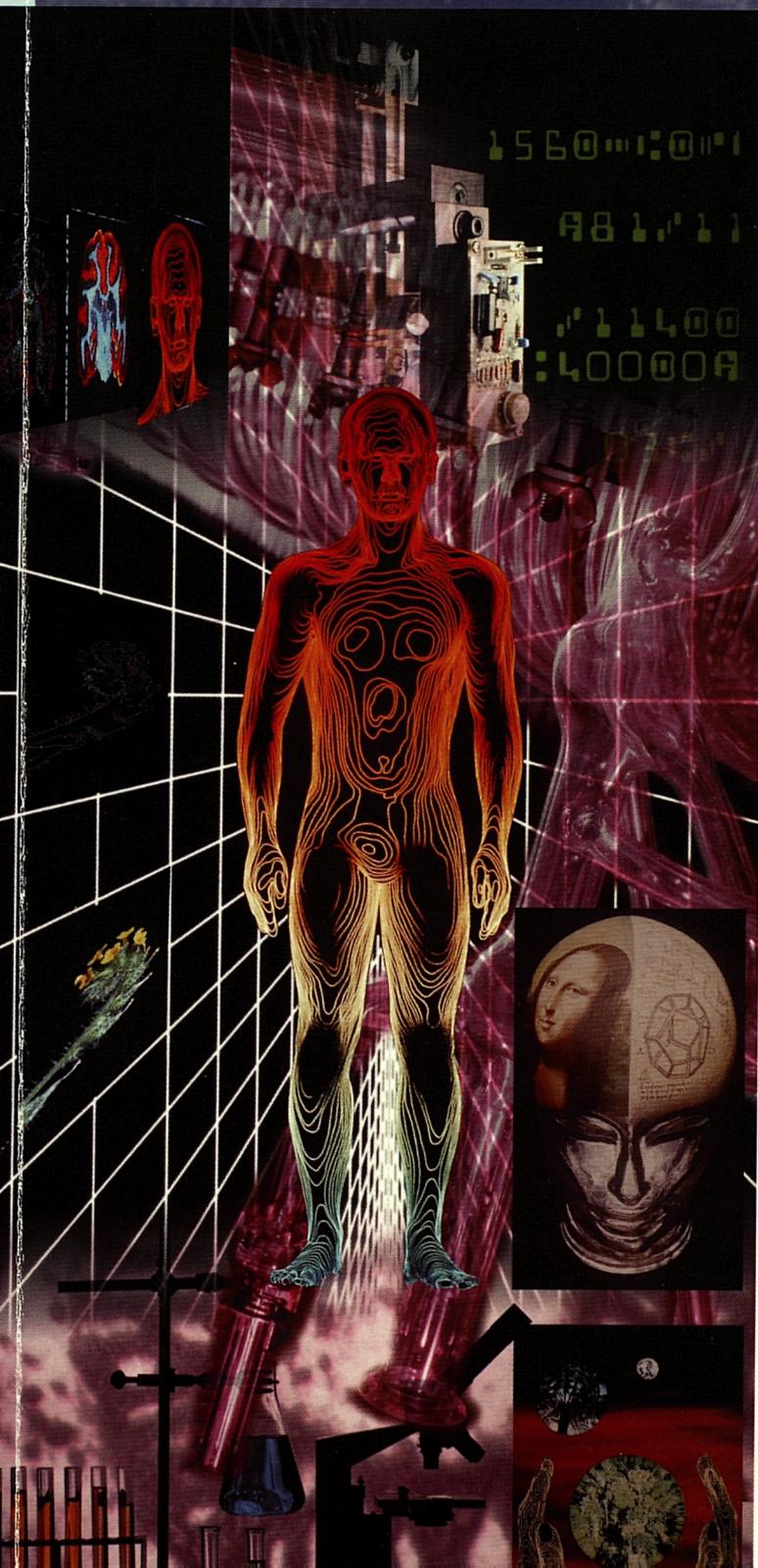
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*Studies*

*Europeanisation of  
economic research*





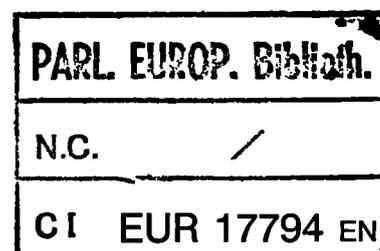
# Europeanisation of economic research

Mogens Dahl and Alan P. Kirman (eds.)

with

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## Foreword

In deciding to support the present report on the "Europeanisation of economic research" the European Commission sought not only to solicit independent external opinion on the quality of Community funded research in the field of the economic sciences, but also to learn how this research fits into a broader context.

Clearly, no single report can deal with all aspects of this ambitious theme, and indeed the objective of this work was restricted to certain research fields where grants awarded by Community programmes SPES (Stimulation Plan for Economic Science) HCM (Human Capital and Mobility) and ACE (Action for Co-operation in Economics) have supported co-operation and mobility at European level for research conducted during the first half of the 1990s. We realised that many of the benefits of such research become clear only after some years, and that a review was needed in order to identify these benefits, before they become too dispersed over time. On the other hand, there might also be lessons to be learnt or in the perspective of developing new insights as regards best practice.

We regard this report, therefore, as one of the inputs to the general debate on the quality of EU funded activities in this area, and it should be considered carefully alongside contributions from elsewhere - including the rigorous programme evaluations that we now conduct.

It is interesting to note that in addition to the detailed analyses set out in the report the authors identify two key trends: that Europe is strengthening its capabilities and intellectual creativity vis à vis the USA, who have dominated this field of research; and, furthermore, that the orientation of research in Europe is shifting from national preoccupations towards areas with a distinct European dimension. Moreover, Community funded programmes mentioned above are cited as having played a significant role in this evolution.

I commend this report, therefore, to readers wishing to explore the issue of the Europeanisation of economic research from various perspectives offered by the authors.



Achilleas Mitsos  
Director  
Programmes "Training and Mobility of Researchers" and  
"Targeted Socio-Economic Research"



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## INTRODUCTION

*Roger Guesnerie*

The report on Europeanisation of Economic Research aims at reviewing "scientific results of EU funded theoretical and applied research ..." and at evaluating "quality and relevance of selected core economic activities so as to identify trends and recommend EU actions". In some sense, the present book adopts a perspective broader than suggested in the previous sentence. The seven chapters can be viewed as a series of snapshots on the state of economic research in Europe; they provide, in addition to actual information on EU funded research, a tentative assessment of intellectual trends in different areas. In another way, the ambition of the book is limited to offering an array of views rather than a definitive synthesis. Here, first rate experts provide well informed, but also subjective and dated opinions.

At this point in time such opinions should be welcomed by the research community as well as by the European Commission and other funding authorities as contributions to the design and co-ordination of future support for economic research in fields of relevance for Europe.

Splitting the subject in different areas has necessarily some arbitrariness. Then, the plan compromises between purely intellectual considerations - they may vary across experts - and the internal logic and dynamics of the EU programmes that have exerted differential attraction across different fields of economics. The EU programmes are described in the first chapter and the seven areas that have been subjected to scrutiny are:

- Real macroeconomics, Convergence and Applied Econometrics
- Microeconomics and the relation between micro and macro phenomena
- Money and Capital
- Empirical Micro-economics Research on Labour Markets
- Recent Developments in Public Economics
- Research in Industrial Economics in Europe
- The Transformation of post-communist Economies

An attempt has been made to cluster EU supported economic research under broad headings which are appropriate to capture progress in fundamental and theoretical research as well as in some of the important issues where such progress can be applied. This division proposes a transversal analysis that is not based on the "vertical" division of economic activity. Although a few subjects are excluded, the division allows a rather comprehensive coverage of EU research activity in economics. Overlaps exist and should be welcomed because they broaden the field each author investigates, call for confrontation of perspectives and put more emphasis on borders in economic research which (as elsewhere) are often fertile with new approaches.

All the authors who have been solicited are leading experts in the field on which they write. Their expertise has been their main working tool. They were given access by the Commission to reports from SPES projects available in the beginning of 1995. At the time when individual parts were written not all

## INTRODUCTION

projects had produced final reports (this is expected to be the case in early 1996) but the research was by then known to varying degrees through the usual publication channels. Otherwise, only publicly available material has been used. Except for one meeting of authors in May 1995 individual parts were written separately.

In each chapter authors express personal views that do not necessarily reflect a consensus in the area. However, as the reader will notice, diverse sensitivities and opinions are expressed across chapters - rather than within - on various aspects of the European performance in economics and on the role of the EU intervention.

The seven snapshots provide a picture of economic research in Europe, three features of which can be emphasised at the outset.

First, economics as a science is immersed in a process of world-wide interaction of ideas. Some other social sciences or humanities keep more specific characteristics - or even in some cases consciously avoid confrontation and remain protected behind the borders of narrow intellectual and geographical provinces of knowledge. On the contrary the economic discipline has a long tradition of international exchange. Nowadays, it is difficult to deny that the US remains the principle centre of intellectual creation and of diffusion of ideas. US dominance has good and bad reasons. The good reason is excellence, the bad reason is fashion. It is clear however that Europe is strengthening its capabilities and the development of its intellectual theoretical creativity will displace excellence and remove fashion and will more and more challenge the primacy of US universities.

Secondly, European research on applied and policy issues is taking a distinctly European perspective.

The national perspective that was previously predominant is more and more associated with comparative preoccupations with a clear European dimension. The collaboration within trans-national teams, clearly easier in theoretical fields where it was earlier developed, is steadily increasing in applied studies.

Third, the chapters contain a number of remarks, comments and suggestions on the improvements of present procedures. M. Dahl and A. Kirman review a number of those suggestions in the *Summary and conclusions*. At this stage, one can note that the assessments made throughout the book suggest differences. They however leave the strong impression that the contribution of EU funding to the evolution stressed above - even on the relatively short period of time on which the book concentrates - has been very significant. In spite of the hazards of the promotion, information and selection, the two programmes (Stimulation Programmes for Economic Sciences from 1989 to 1992 and the Human Capital and Mobility programmes at its outset) have been successful in encouraging some of the most alive and creative research in Europe.

It was outside the mandate of authors to evaluate individuals or single results but I would like to conclude by evoking a point that is not taken by the authors, but that is crucial for the future. For those who have been close to the process, it is clear that the achievements of the programme reflect the high quality of the different selection committees that have been set up by the European Commission. The momentum is still there. But it is important to maintain it, and then to stabilise or create procedures that will guarantee the permanency of the quality of the evaluation process.

# I SUMMARY AND CONCLUSIONS

*Mogens Dahl and Alan Kirman*

## 1. INTRODUCTION

### *The question of research agenda*

One of the principle questions that arise when discussing economic research in Europe is as to how much path breaking work is being done here and how much effort is simply spent on refining work originally done in the United States or on taking models which have first been confronted with U.S. data and then testing them against European figures. A typical argument is that Europe has now adopted the U.S. "research agenda", that this is preventing the development of independent economic models in Europe and that in consequence decision makers in Europe are becoming conditioned to reasoning within the terms of the same standard framework as their American counterparts. An answer that is sometimes suggested to this hypothetical problem is that European economists should be encouraged to give less weight to theoretical research and to focus their attention on empirical research on specifically European problems and thus develop an independent view.

The danger in taking such an approach is obvious. The idea of leaving fundamental research to others is likely to aggravate the situation rather than improve it since the best young European researchers will seek their training where that research is being done and will help to increase the dependence of European decision makers on the sort of analysis that is developed there.

Thus the real question for European economic research is - *To what extent, in recent years, have we managed to develop a strong and relatively independent group of economists whose work is recognised as being at the frontier of economic research at the highest international level and who provide themselves the sort of economic expertise that is needed by decisions makers and who train individuals who are also qualified to do the same*

*thing?* If as this report suggest the answer is generally positive then the question becomes how may we best reinforce this development? As will become clear the notion that there is a narrow and well defined research agenda within the international economics profession is illusory and the range of topics and approaches to dealing with them is very wide.

### *Policy and models*

Furthermore many of the problems of current interest to policy-makers are ones which involve fundamental conceptual issues which can first be analysed in term of models which are, at least at the outset, independent of particular national contexts. Such issues are: - how best to regulate certain economic activities, - how to study the consequences of deregulating others, - how to analyse the behaviour of financial markets, - how to analyse the consequences of privatisation, - how best to dispose of assets such as licenses to broadcast or to use certain frequencies for radio, television or telecommunications, - how best to sell government debt, - how to analyse the effects of minimum wage policies on employment levels. The list is almost endless. Here the question is to what extent are European economists contributing to the fundamental analysis of these questions?

### *Our task*

The purpose of this report is to provide answers to these questions. The field of economic research has become far too large to make it suitable for a single unified review so the task was divided somewhat arbitrarily amongst a number of authors each of whom gave his own account of a particular area. There is inevitably some overlap between the areas and there are also, since authors were encouraged to give their own point of view, a number of gaps.

The brief given to authors was to review scientific results of EU-funded theoretical and applied research

... (with the aim) to evaluate quality and relevance of selected core economic research activities so as to identify trends and recommend future EU actions for economic sciences.<sup>1</sup> In practical terms authors of individual sections of this report have:

- described what they consider to be interesting developments in their area,
- identified who in Europe is actively contributing to these developments,
- assessed to what extent European research funding has been used to fund these individuals or groups.

The method of work has been guided by three considerations. Firstly, in evaluating the effectiveness of European funding it was decided to concentrate on the SPES programme where results are now available. However when describing the general characteristics of European funding programmes it was also possible to include HCM and ACE. Secondly, since it was essential to see the results of funded research within their scientific context, the broad flow of European economic research output needed to be described. Thirdly, where possible the policy consequences of the research were to be analysed, particularly where these concern issues of importance to the European Union.

### *Productive indirect effects*

Before proceeding to the discussion of the body of the report it is worthwhile making an observation about the sort of funding which has been very productive but which is more indirect. Whilst what emerges in the report is essentially the specific contributions made in the various areas it covers, a few examples serve to emphasise the fact that a great deal of work has been made possible through networks, conferences, and training programmes. Thus work in macro-economic and policy areas has been stimulated and focused by the creation of the Centre for Economic Policy Research many of whose activities have been financed with European funds. Another effect is a marked shift in the "centre of gravity" of economic research in Europe towards the South, with the development of centres of excellence from Lisbon to Istanbul. This is revealed by a study of the publication statistics in economics for Europe where it can be clearly seen that the weight of publications from, for example, Lisbon, Madrid, Barcelona, Toulouse, Marseille, Florence, Athens and

Istanbul has greatly increased over the last ten years, (see Kirman and Dahl, 1995). This has been facilitated by European financing through, for example, the Association of Southern European Economic Theorists (ASSET) which has organised conferences and bilateral exchanges which have resulted in significant output of joint work. A third and more general trend is seen in European programmes for doctoral and post-doctoral fellowships, which has also been fruitful in stimulating joint research. In addition the creation of doctoral training programmes supported by several universities such as that pioneered by the European Doctoral Programme involving Louvain, the L.S.E., Bonn and Paris as well as the Scandinavian and Dutch programmes and the development of the European University Institute in Florence have already produced a new generation of internationally recognised economists.

### *The report's content*

The indirect benefits of such developments are less easy to pinpoint in an exercise such as ours, which is limited to selected areas and divided among individual authors. All of this should be borne in mind when reading the following chapters. To summarise then our report consists of eight contributions.<sup>2</sup>

#### *EUROPEAN PROGRAMMES*

M. Dahl presents the core European funds for economics: SPES, HCM, and ACE; discusses the type of funding; and considers issues of training and mobility, specialisation, joint financing, and needs for evaluations.

#### *MACRO-ECONOMICS*

H. König and H.S. Buscher review recent developments in business cycle theories, international trade and finance, public sector economics, macro-econometrics.

#### *MICRO-ECONOMICS*

A. Kirman discusses research in the various fundamental areas of individual economic behaviour, on developments in equilibrium theory, and focuses on the changing theoretical view of the relationship between micro- and macro-economics.

#### *MONEY AND CAPITAL*

K. Cuthbertson and M.P. Taylor assemble the research on monetary and financial economics and in particular discuss the EMS, fiscal policy and monetary union and financial services.

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<sup>1</sup> The remit was based on our proposal to the European Commission, DG XII G, *Human Capital and Mobility*, and whose support - financially and crucially in terms of access to final research reports from SPES - has been essential. As our project got underway only minor modifications of structure had to be made.

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<sup>2</sup> This book's list of references is an illustration of the 'compartmentalisation' of economics. In spite of the large number of references in each chapter there is remarkably little overlap.

***PUBLIC ECONOMICS***

P. Pestieau considers the state of research on public finance, public economy, taxation, public expenditures and public enterprises.

***LABOUR ECONOMICS***

C. Meghir reviews empirical micro-economic research on supply and demand in labour markets, wage determination, mobility, regulation, and empirical research methods.

***INDUSTRIAL ECONOMICS***

S. Martin discusses the problems of imperfect competition, regulation, market structures, the recent development in contingent theory, and the application of game theory

***TRANSFORMATION***

D.M. Nuti discusses the work of international institutions and individual researchers in the flourishing (new) field of research on transformation in Central and Eastern European Countries.

We shall now attempt to condense what are already quite compact reviews. Firstly there are some general trends which emerge across the individual surveys (section 2). Secondly we illustrate those trends with examples drawn from the following chapters (section 3). The conclusions are presented in terms of areas of research strength and issues for research policy (section 4). Finally we shall give a short list of recommendations (section 5).

## 2. GENERAL TRENDS

Economic research now generates a volume of work which makes serious single-handed reviews no longer feasible. In fact, we estimate that around 20000 professors and researchers constitute the 'population' of economists in Europe (EU and EFTA). Even within sub-disciplines individuals cannot claim to give complete surveys. By looking for the core activities and trends and by considering only those contributions which seemed most important to the authors of the following sections of this report we may well have overlooked important work by certain individual researchers or groups.

The research community is now however sufficiently aware of the importance of getting wider recognition of their work to make an effort to publish their work extensively. In general we are therefore confident that the results which have made an impact on those areas covered are taken into consideration, although the main emphasis is upon selected core issues. To

assess how much scientific progress will be made in the future or how it will relate issues of today and tomorrow is, of course, the really interesting question. A good part of the answer to that question will be provided by the doctoral candidates who are produced by the universities at a rate of about 2000 per year. Indeed, the ability of certain topics/fields to attract young researchers is a factor which has a considerable long term impact on the structure of future research.

### *Standard theory is no longer sufficient*

The feedback from empirical reality to economic research, despite some suspicions to the contrary, is important. Events such as the oil price "shocks", the fall of the Berlin Wall and the consequent transformation of the east European and Russian economies, the various recent upheavals on the currency markets, the persistent chronic high unemployment in the countries of the European Union all demand explanation or analysis and some of the events mentioned have provoked a rethinking of previously standard theoretical approaches.

The economic policy agenda of the European Union continues to be dominated by questions to which economic theory provides no complete or unambiguous answers. The welfare consequences of achieving a single market with harmonised taxes are far from being fully understood. The way in which the future European central bank should function in the transition to or after the establishment of a single currency has been put into doubt by recent events on the foreign exchange markets. The conventional wisdom which emphasised smooth control of exchange rates within narrowing bands during the "convergence" to a single currency has been put on one side as the impossibility of sustaining rates within tight bands has come to be recognised.

### *New basic analyses*

It is prudent and standard practice to start by undertaking the fundamental analysis of many of the problems mentioned, in a theoretical framework which is largely institution-free. The value of this can be seen as the institutional setting is also itself being modified for a number of these problems. The creation of regulatory and anti-monopoly legislation has, in some cases, shifted from the national to the international level. The problem of monetary policy which reflected national interests and priorities will shift to the new European monetary authority if and when monetary union takes place. Social legislation, in particular, as it affects working conditions, and the harmonisation of taxation have also shifted institutional frameworks. The problems of transition from centrally planned economies to market

economies pose a number of basic questions as well as those which are specific to each of the countries in question. All of this argues for encouraging basic analysis of these questions rather than starting from particular applications or cases.

### *Improved analytical tools*

The use of econometrics and statistical methods such as non-parametric data analysis is becoming increasingly important as more and more data become available and this militates for the support of research in these fields. Nowhere is this more clear than in labour economics where the availability of panel data for firms and for households has required the use of new methods to deal with the mass of information now available at the individual level and where an approach that combines cross-section analysis with that of time series is necessary. More generally, no modern economist can afford to be unfamiliar with current techniques for data analysis and any funds that are spent to develop resources in these areas in Europe will be well spent.

### *Government policies*

Whilst the trend over the past few years has apparently been to put less emphasis on the public sector there is little evidence of any decline in its share of GDP so analysis of public expenditure and the role of the public sector, despite the fact that less weight has been put on this type of research, is still of great importance. The role of the public sector in reducing business cycle fluctuations is one which has been debated extensively with the appearance of "real business cycle" analysis and its contradictions with other macro-economic approaches. The argument for rigorous fiscal discipline, for example, was pushed at one point in the German debate to the point of requiring that all countries within the European Union should not allow their public deficit on an annual basis to exceed 1% if they are to be able to participate in the EMU, suggests little scope for European counter cyclical policy. (Although less is said about this issue since the annual deficit in Germany exceeded 3% in 1995.) Such recommendations reflect a very specific analytical point of view and given their importance it would clearly be wise to devote resources to the analysis of the underlying macro-economic theory and in particular, the role of the public sector.

### *Economies in transition*

However, perhaps the most striking example of an area where resources are most badly needed for economic analysis is that, already mentioned, of the transformation of the economies of the former communist countries. Although it has rapidly become

clear that there are no ready-made recipes for guiding these transitions and that macro-economic prescriptions which essentially ignore distributional considerations naturally meet with enormous resistance, the need for economic analysis in this area is still overwhelming. Analytical reflection on the processes involved and the collection and analysis of both micro- and macro-economic data from these economies have already proved worthwhile and will no doubt continue to be so in the future. Not only does this involve the financing of research projects but also the development of integrated research networks, the exchange of scholars and the admission of Eastern European students into Western academic training programmes.

## 3. EXAMPLES

The above brief sketch provides an idea of the directions in which economic research has been moving and a background for some examples where significant changes have occurred in the past. For a detailed discussion we refer to individual chapters.

### *The relationship between micro-economic and macro-economic analysis*

- There has been an increasing tendency to insist on macro-economic analysis which has "rigorous micro-foundations". This has been associated with the dissatisfaction with the models which were predominant in the 70s and the opinion that they were incapable of giving adequate account of the consequences of the oil price "shocks".
- Paradoxically theoretical developments in the field of general equilibrium analysis, which underlies most of modern macro-economic analysis, showed that very few restrictions are imposed on aggregate behaviour by the assumptions of the standard theory. Thus the "comparative statics" method used by macro-economists to examine the consequences of some policy measures is not valid under normal assumptions. The standard way out of this difficulty has been to assume that the economy as a whole acts like an average or "representative" agent. This approach has been subjected to considerable criticism and an alternative approach, largely developed in Europe, has been to show that the very heterogeneity of economic agents may produce regular and predictable behaviour at the aggregate level.
- Game theory has produced interesting and important insights into the sort of situations that

can arise from the direct and conscious interaction between economic agents. When, as typical in macro-economic analysis, we are concerned with large numbers of individuals game theoretical reasoning becomes very complex and this has led to a resurgence of interest in which agents are "boundedly rational" or act according to simple rules. Furthermore there has been an extensive discussion of the problem of how economic agents learn about their economic environment. All of this has provided a foundation for new micro-founded macro models.

### *Growth theories, innovation and trade*

- A second main trend has been the revival of growth theories in the 1980s. The so called "endogenous growth theories" now emphasise the role of human capital, infrastructure, innovation activity and of externalities. At the theoretical level progress has found one starting point by modifying the standard model to accommodate these features and another one by returning to the Schumpeterian entrepreneur who exploits innovations and new technologies. This stream of research benefits from advances in tools (artificial intelligence for example) and from trends within the sciences such as statistics and physics where relationships between micro and macro behaviour are the subject of intense discussion. For economics - as a social science - the historical perspective is often prevalent, but the contrast between the endogenous growth models and the evolutionary approach is striking.
- The practical (policy) relevance of this research into the understanding of the behaviour of individual economic agents in an environment characterised by change, uncertainty and learning is obvious, since the research focuses upon incentive mechanisms, information inequality, interactions and other factors that are amenable to policy interventions.
- There seems however still to be a significant gap which has not yet been satisfactorily bridged between the micro-foundations of growth, technological change and innovation and the macro-aggregation of those findings into a better model for business sectors, geographical regions or at country and world level. The evolutionary approach has not been fully integrated into a macro-economic model whilst the endogenous growth approach takes for granted the step from micro to macro level.
- International trade theory has experienced a new orientation by incorporating the analysis of imperfect competition situations from industrial organisation theory. Trends towards

globalisation of production and markets are being explored for their practical relevance. Although there may be need for better theoretical foundations with regard to the relationship between trade and competitiveness, for example, the arguments for international trade as a major stimulus for world growth remain largely uncontested although the distributional consequences of the growth in trade are widely discussed.

### *Public sector economics - the macro-economic issues*

- The third mainstream in real macro-economics stresses the inclusion of the public sector in macro-economic models on the basis of optimising behaviour. This allows for new insights into the effects of taxation and public debt on private agents decisions. In addition to the theory of public choice an alternative theory of the public sector is gaining ground. The development of the "new political economy" has been important in this regard.
- Micro-models have been developed in parallel with but parting from the traditional approach of atomistic agents. There are promising outcomes of such models with multiple profiles of behaviour and they have particular relevance for the discussion of impacts from various fiscal measures. VAT harmonisation across Europe or the introduction of carbon-taxes are applications well suited to this kind of theoretical work. The effect is to bring distributional issues back into a central position both in the theoretical and political debate.

### *Public sector economics - applied research*

- Several trends emerge from the fact that public finance and public economics have now spawn autonomous areas of research: apart from the above mentioned macro-economic issues they are, among others, education, health and regulation, and the nature of macro-economic policy making. Since these are topics of high political visibility public economists face a permanent up-hill task of providing theoretical foundations for proposals as to solutions and reforms that are practically feasible in a relatively short period.
- The core of public economics, which deals with taxation and public expenditures, builds upon a strong European tradition, compared with the USA, and economists tend to undertake theoretical and normative research while empirical research on individual countries receive less attention. Much current research is however being used to evaluate the political

agenda set by the progressive integration of European economies.

- One trend is therefore that the issue of efficient and equitable fiscal policy in an economic union has been studied by public economists, recognising that policy decisions are taken by individual Member States. While work based on the principal agent paradigm has produced a number of techniques for analysis, although little empirical analysis is available, others have pursued the search for optimal taxation and optimal public pricing through the theory of the second best. The recommendations for reforms to achieve an incentive compatible system, however, appear as either too demanding from an informational viewpoint and too complex to implement or run up against the objective of equity in the tax system.
- Another concern high on the agenda both among economists and in the general political debate is the crisis facing social insurance systems in many countries. Also here economists have taken up a range of specific issues on financing, allocation of benefits, poverty traps, etc., but again they tend to come out with rather pessimistic answers and solutions which on a theoretical basis are difficult to implement.
- A third trend of research which is topical in both western and eastern Europe is that of decentralisation or privatisation of public enterprises. Progress through both empirical and theoretical work has led to propositions such as the one that it is not ownership which matters but competition and regulation, or even more explicitly it has been argued that it is desirable to keep at least one public firm in oligopolistic markets.

### *Different directions of research on the European Monetary System*

#### Target zones

- The theory of *multilateral target zones* such as the ERM has not yet been worked fully out. Literature has appeared with remarkable speed on *unilateral target zones* such as those pursued by Finland, Norway and Sweden outside the ERM, yielding useful insights.
- Empirical research on whether a country gains a '*credibility bonus*' by fixing its exchange rate to the low inflation German economy does not give clear-cut results.

#### Demand for money

- The instability of the *money demand function* observed in many European countries in the 1980s has led researchers to include further variables, to allow for financial innovations for example, and thus attempt to rescue the demand

for money function by proposing new models of inflation and exchange rate links.

- Econometric approaches have been widely adopted by European economists.
- Aggregation problems persist when trying to measure the effect of currency substitution on conventional estimated money demand functions (some studies show a very low or non-existent intra-EU currency substitution).
- There is scope for empirical work on the estimation of a general EU or a core-EU money demand function. This work would provide a useful baseline of empirical evidence as one moves towards a common currency.

#### Capital market integration

- The correlation between *savings and investment* in different core-EU countries is high, indicating low capital mobility, in part because this measurement includes capital emanating from banks.
- Some evidence exists that exchange rate stability tends to enhance capital mobility and that *the rate of return on capital* increasingly correlate with flows of foreign direct investment, as capital controls are relaxed.
- *Stock market returns* in EU countries appear to be predominantly controlled by global factors

#### Trade flows and production structures

- The EU would seem to have the makings of a common currency area, since individual countries are relatively open and the EU as a whole is relatively closed - with a ratio of external trade to GDP which is similar to the USA's or Japan's.
- Likewise many EU countries have *diversified productions structures* which means that 'shocks' (technology or demand for example) will have less effect on the country as a whole than on individual industries.
- It is possible that further growth of *intra-industry trade* will further lessen the asymmetric effects of 'shocks' across Europe, but research results suggest that divergence across countries may actually increase as a result of EMU.

#### Wages

- The existence of higher *real wage rigidity* in Europe than in the USA places a premium on other instruments than the exchange rate to counter real shocks, but some studies provide evidence of wage claim moderation and possibly greater labour market flexibility in the wake of the loss of the exchange rate instrument.

#### Fiscal spillovers

- Empirical estimates using multi-country econometric models are not conclusive on the *spillover effect from national fiscal policies*. They seem, however, to support the basic

proposition of the simple two-country model, which is that bond-financed increase in domestic government spending has positive transmission effects abroad under flexible exchange rates but negative effects under fixed exchange rates.

- The research on fiscal policy and fiscal transfers strongly suggests that policy co-ordination is required in order to obtain a discipline that inhibits the non-trivial spillover effects within a currency union.

*Progress in empirical labour economics - the use of micro data*

- Increasing availability of micro data has enriched the evidence concerning widely debated issues such as the effect on labour supply of tax rates, means-tested benefit, regulation of minimum wages, etc. Experiments (or reforms) involving benefit and incentive systems are direct applications of the emerging consensus that changes in tax rates meet with little response from labour supply. On the research side new avenues are opened also for exploring life cycle models involving consumption behaviour of individuals, and transitions in and out of the labour market. Data series over longer periods can throw further light on the temporal behaviour and thus on the adjustments that will take place when there is a policy shift.
- In general, research has met with problems of comparability across different countries where institutional frameworks and labour market flexibility differ. This is also an advantage however, since the importance of those differences in employment levels needs to be evaluated. At national level there is nevertheless important work on various policy instruments aimed at reducing or alleviating the effects of unemployment.
- There is a very extensive body of research on the problem of training and re-training for long term unemployed (and for young people). Relative to the state of research in the USA the work in Europe is quite new but seems to suggest some new directions and, in particular, does not support the conclusion that flexibility is the panacea for the unemployment problem.
- The debate over job creation versus job destruction induced by technological innovation, i.e. positive demand side dynamics, has also led labour market economists to exploit new micro data on firm level, although the main contributions to this debate emanate from growth economists. From both sides there is a focus on the shift in firms' demand towards more highly skilled labour.
- Collaboration with macro-economists on the topic of wage determination is of course not new for

labour market economists. Among the recent results is the observation that the trend towards greater income inequality has been more marked in certain countries than in others.

- Progress in econometric methods is noteworthy and important methodological debates are taking place on the best way of measuring the effects of economic policies on behaviour. The emergence of more intra-European comparability of data is likely to facilitate the testing of the impact of various institutional features.

*Industrial economics*

- The pursuit of policy questions is explicit in recent empirical work and motivates the theoretical parts of theoretical research.
- A promising area of research is to develop rigorous theoretical models of and empirical test for market integration.
- Privatisation in transition economies is among the most active literatures, pointing beyond the 'principal-agent' approach and to bargaining models of the influence of workers in privatisation of state-owned assets. The empirical literature contains a wealth of case and country studies.
- Models of the internal structure of the firm are being developed in new directions and also tie together industrial economics and macro-economics.
- The basic problem that public policies can make it difficult for firms to collude, but cannot compel firms to compete remains an issue where research is strongly policy relevant, for example with respect to the strategic behaviour of firms.
- The empirical literature on co-operation in the form of joint ventures in R&D or production is large, with theoretical and empirical literatures running in parallel tracks largely independent one from another.
- Market power, innovative behaviour and the determinants of technological performance require further studies.
- The "new" theory of international trade emphasises scale economies and product differentiation, rather than relative factor endowments, as factors driving trade flows. Among the striking findings of a SPES-funded project are: (i) *In the EU, industries with low scale economies record higher levels of intra-industry trade*, (ii) *Factor endowments dominate the localisation problem, implying that further inter-industry trade can be expected*, (iii) *Technological spillovers do not appear to lead to a clustering of geographic industries in the core at the expense of the periphery*, (iv) *Trade*

*change has played only a minor role in explaining employment changes.*

### ***Transformation and systemic changes***

- Initially, the lead in stimulating and funding research was given by international institutions: the World Bank in the very early stages with OECD and the European Commission following suit. Those efforts involved the mobilisation of academic economists and the expansion of work in old and new institutions.
- Co-operation and wider networks were enhanced by the predominantly international orientation of most of the existing university based institutions (and which were coincidentally also pushed by the funding authorities - governments - towards fund raising research). After five years it seems that the quality of both policy and research has been enhanced by the two-way traffic between academia and government.
- As far as the theoretical side is concerned, the starting point was admittedly very modest and was too focused on applying standard economic models in contexts where they were not applicable. Progress is noted however, including the very useful work of institutions (in East and West) specialising in the monitoring and reporting of current economic trends and the collecting of and improvement in the quality of economic data.
- The themes that have been analysed across a broad range of topics include macro-economic stabilisation, gradualism versus shock therapy, fiscal and monetary policy, unemployment, sector policies, privatisation and governance, trade, dis-integration and re-integration and EU enlargement.
- The gap between the standards of research of East and West has been reduced but remains significant.

## **4. CONCLUSIONS**

### **4.1. Areas of research strength**

Whilst Europe has steadily increased its contribution to the international debate in a wide range of fields of economics, particular fields have experienced strong growth often aided by European funding. Some examples of this strength amongst those cited by the present group of authors are worth emphasising although, because of the nature of this report, it must be stressed that this list is only illustrative.

### ***Financial markets***

Among the strong fields is that of the theory of financial markets where significant contributions have been made in understanding the dynamics of high frequency data, in developing stochastic models to answer for the abrupt movements that the markets exhibit, in looking at stochastic models for the term structure of interest rates, in studying "insider trading", and in examining the theoretical soundness of various propositions made to stabilise these markets in particular in the light of their "globalisation".

### ***Industrial organisation***

Another area that has undergone a revolution is that which is gathered, similarly loosely under the heading of "industrial organisation" where not only the study of "imperfect" competition has been changed by the introduction of sophisticated non-cooperative game theoretical methods, but also the theory of regulation and of incentive compatible contracts has been considerably developed.

### ***International economics***

In the area of international economics the importance of imperfect competition in influencing the ways in which firms compete in different markets is now widely recognised. This provides a different insight into how prices move with changes in exchange rates and thus means that simplistic notions of "competitiveness" have to be rethought. The sort of oligopolistic behaviour envisaged and its consequences for prices, in particular if discrimination between markets is allowed, are important for European Union policy as to trading rules for cars, for example.

### ***Foreign exchange markets***

Work on foreign exchange markets themselves has also passed through a number of phases. Earlier work on "target zones" for exchange rates is now seen in a critical light after a number of recent turbulent periods in the markets. Whether such periods were due to the unwillingness of central banks to undertake the policies consistent with the sort of smooth adjustments envisaged in the theoretical models or whether such policies are not feasible in the face of "epidemic" movements in exchange rates, is a subject for debate. This debate is of particular importance when deciding when any restrictions should be put on the permitted movements of exchange rates prior to EMU.

### *Micro-underpinning of macro-economics*

The micro-underpinning of macro-economics has evolved with the analysis of the problem of aggregating the behaviour of heterogeneous individuals. As has been emphasised earlier the relationship between micro- and macro-economics regularities is far from simple and the importance of distributional considerations has for too long been overlooked. Yet many modern problems such as poverty, exclusion and unemployment itself are essentially distributional both in their origins and in their consequences. To ignore the effects of major distributional changes, whether they be of income, of the importance of sectors, of changes in demand, or of the consequences of technical change is to overlook one of the most striking characteristics of modern economics.

### *Public economics*

These micro-economic foundations of macro-economic policies are rapidly bringing a new generation of theoretically novel propositions forth, in some cases into the economic, social and industrial policy agenda of the European Union and its Member States, and often under the heading of public economics. The analysis of the changing role of the state and its involvement in various economic activities is a subject which has attracted considerable interest. The pace of change in framework conditions for economic and industrial activity in Europe - East and West - has made it difficult for theory to keep up with events - not least when including the social constraints of a pluralistic society.

### *Econometrics*

Finally the importance of econometric work has already been emphasised and it is interesting that econometrics has moved from being considered as a purely technical matter to one which is now the subject of methodological debate; for it is now recognised that the fundamentals of the different econometric approaches are significantly at variance with each other. Thus the wider availability and use of data has brought with it an intensive discussion as to what the relationship, if any, is between empirical regularities and economic theories.

## 4.2. Issues for research policy

All of this activity shows that economic research in Europe is increasing in strength and that the essential international infrastructure of good basic research is being built. There are still many difficulties and many establishments which still

remain detached from the international scene but European funding programmes have already done much to improve the structure.

The broad evolution of the objectives of EU funding for economics, from SPES and ACE through the Human Capital and Mobility programme to the current programme for Training and Mobility of Researchers, is therefore reflected in some of the concerns raised by individual authors in this report.

### *Policy co-ordination*

SPES has supported the mobility of young researchers; this has continued under HCM and the current programme for training and mobility, although without the previous arrangement of "grouped" fellowships. On the other hand ACE has continued support both to individual Ph.D. students and to doctoral programmes. SPES has encouraged the formation of cross-national centres and this has continued in HCM; likewise, ACE has been funding research at the flourishing new 'institutes' for East-West studies. The question therefore arises, whether EU funding in its current form of time-restricted programmes but until now providing a substantial funding for certain activities, involves some kind of commitment (or at least generate expectations) with regard to future financing. EU funding cannot be seen in isolation. It is a consequence of the success in generating justified research that a longer term question now requires an answer: - how can the EU, together with the multitude of other funding sources, assure sustained and high quality 'networks' and 'centres' without excluding other potential contributors? Should funds be allocated to centres of excellence and flourishing networks or to stimulating the creation of new ones?

### *Setting priorities and letting them be known*

The fact that research projects, networks and thereby institutions receive partial funding from a variety of different sources does not present a problem in itself. The market place for research seems to have institutionalised this feature and each source (European level programmes are quite important in certain fields) has to let its funding priorities be known.

The question of where to focus the scarce funding for future research grants is not so clear cut, if one is looking for easy ways to determine priorities and high yield investments of human resources. The common denominator of this report is that the stimulation of diversity and open competition based on quality within the scientific community should continue to be the first priority. The experience that can be drawn from SPES is positive in confirming this

with regard to fundamental and theoretical research and with regard to research methodology.

*Further priorities: Ph.D.s, career patterns, tools and data, etc. developed together with Member States*

As a result of this overview there emerges a number of ideas regarding the framework conditions for the market place of economics. These deserve reflection in the fora that co-ordinate EU and Member States' funding mechanisms. We have already mentioned the gradual change of the role of Ph.D. programmes in the direction of being more course-oriented and of being considered a standard training for economists, whether for academic careers or for work in the public and private sector. Indeed the market place for economists is far wider than the research community, but university-based research remains the foundation for up to date teaching of new generations of economists - and for their ability to move to places where their skills are in demand. Thus a long term perspective, even for short term and flexible funds, is essential, although the task of putting this into practice has to be shared with (mainly national) authorities which pay and legislate for the more permanent structures of the research system.

Another item is the tools of the trade such as statistical data collections and econometrics. While methodology and creative research can always be developed on a fairly limited layer of data the more "terre-à-terre" research which examines whether specific policies have the intended effects necessarily requires homogeneous and large data sets. There is still too little comparability among data across Europe on many of the principle issues of the political-economic agenda for the European Union: the ability of researchers to contribute to our understanding of society and to political decisions is therefore hampered.

An outstanding example of the lack of completely comparable data is that of the labour market. The Social Chapter of the Maastricht Treaty will have a profound effect in the future on the labour market in Europe following continued integration and harmonisation of public fiscal and social policy. Since labour market flexibility and institutional frameworks differ significantly from one country to another there is a need for innovative approaches to empirical studies with a European perspective. This is important for related issues such as migration. The data at national level exist but it is far from evident that they can be easily used in joint studies. A necessary condition for governments to align their policies is the production of more studies and

comparative evaluations of reforms and incentive systems. This will probably add to the demand for higher quality and more comparable data.

### *Priority areas?*

The final question is whether priority setting can or should point to certain issues. This report cannot provide a definite answer but the argument is that economic research in Europe should be able to contribute to the analysis of issues of current importance. It is a question that cannot be ignored and the way in which this contribution can best be encouraged is one that needs to be debated. The dilemma can be illustrated as follows. In the era of yet another Intergovernmental Conference on European integration researchers will undoubtedly be called upon to contribute and others will do the same of their own volition. Much of this will be based either upon results of fundamental research or on those obtained from thematic research. However the latter were achieved with yesterday's objectives and priorities. The setting of priorities for further EU funding of economic sciences may seem even less obvious today than in the late 1980s when SPES was conceived. The dialogue between the economic research community and the authorities that finance new short term projects will continue and will reflect the current sentiment of uncertainty about speed and direction of further European integration of national economies and the implications of the development of an industrial policy at European level. If one can define a list of priority areas where European economic research may be promoted through high quality European networks and joint projects and where there is already a demand for more solidly based European policies it would include: *relationships between innovation activity, growth and employment; capital market imperfections; strategies to improve human capital mobility; social security systems; real convergence; subsidiarity and fiscal policies.*

As is clear from the contributions from individual authors in this book, centres with a high reputation exist in Europe. Each of these has its own comparative advantage. The increasing specialisation of centres in more and more fields of research deserves to be included in any discussion of how research capabilities can develop to meet the demand for applied analysis.

## 5. RECOMMENDATIONS

The main evidence of this report is that Europe has been steadily constructing an internationally oriented reserve of economics researchers and that

the results can be seen both in the visibility of the research and the improvement in the quality of newly qualified researchers. In general it seems that the European programmes have served the purpose well and deserve continuation and expansion.

*Continue research at the highest level*

The basic aim should continue to be to aid and stimulate economic research at the highest level and to encourage the training of doctoral students capable of contributing to the research activity and of taking their place in the economic profession outside universities and institutes. The specific recommendations that can be added to this can be summarised as follows:

*Consolidation and extension can be achieved*

Research programmes such as those developed through SPES and HCM (and ACE for the involvement of researchers from Central and Eastern Europe) should be continued and strengthened. This should be done without losing sight of two fundamental objectives which may at first sight seem to be incompatible, that of giving resources to less privileged or more isolated centres and that of increasing the quality of economic research by helping centres of excellence. One route here is to give substantial resources to networks which include less privileged partners and from which will emerge nuclei of high level research. The best example of this is the group of universities in Southern Europe that formed the ASSET. Although when this happened some fifteen years ago the researchers in this region were relatively isolated a network of centres excellence, for example in Lisbon, Madrid, Bordeaux, Toulouse, Marseille and Athens, has developed. A second approach is to develop more limited networks pursuing research on a common project and thus enable smaller centres to profit from increasing returns to scale.

*European doctoral programmes need funding and statutory recognition*

The other course of action that has to be pursued is to give funds to well established centres of excellence and in particular to provide funds for them to attract doctoral, post-doctoral and established researchers. Funding for doctoral programmes, particularly the various European programmes that have followed from the original joint programme involving Bonn-Louvain-London-Paris, and thus involving students from all EU countries and the E.U.I. in Florence, has been very productive. Parallel moves have to be made to ensure that there is international recognition of doctoral degrees. This is more than a formal requirement since the possession of a national

degree is a prerequisite for obtaining certain posts. Although there is more flexibility now, there is still a strong tendency, not without reason, towards local recruitment.

*European research and teaching chairs should be of long duration*

One idea that has been noted on several occasions is that of establishing visiting chairs which could facilitate the exchange of senior researchers on a somewhat longer term basis than the arrangements that are available at present. This would have the double advantage of allowing fuller participation in the life of the host institution and the possibility of longer and more fruitful contact with graduate students.

*The co-ordination of European economic research programmes with the research environment in each of the Member States*

The overall success of the grants from SPES and ACE (and the likelihood of similar good outcome from researchers supported by current funding) has had a number of very positive effects. Future EU actions for economic research may be the victim of this success and will face a new situation. Part of the success has been the creation of an infrastructure of formal networks, new centres of excellence, and more or less long term research work integrated to different degrees in their local environment. The advantage is that this increases the outward look and international visibility of researchers. Until now the underlying assumption has been that the task of carrying success stories forward should be borne by national schemes and that this would release the 'flexible' European funds to finance new projects. While it is probably a good thing that successful research should also be able to fend for itself "at home" there are three reasons for creating a closer link between EU funding priorities and those of Member States.

The first is the sheer size of the domain of economics in Europe today and the number of specialised fields. In order to assure as transparent a "market place" as possible for funding authorities as well as for beneficiaries the European programmes should include objectives and means for evaluation field by field across the board. The decision on which fields and how such European evaluations could be implemented could be modelled upon similar exercises that have been carried out at national level.

The second reason stems from the problem that is caused directly by the international orientation of

## SUMMARY AND CONCLUSIONS

this research because the research demands of access to data from the field have become a much more complex matter. Improved quality of data and their availability are the result of long term efforts and it is arguable that much research is hampered by inadequate data, for example in the area of taxation, social security, labour markets, and international competition. It was an obvious objective for the ACE programme to support the building up of source data on the unique processes that took place in Central and Eastern Europe, while in the EU this is the task of statistical offices. An obvious first choice for reinforcing this tool for European economists is in the area of labour market statistics. Again this requires close co-operation with national authorities.

The third reason is the very difficult question of 'priority areas' or whether future funding should be oriented at least in part towards certain issues, or to very general priorities. Since numerous specifically oriented programmes exist in which economists are heavily involved the case for giving greater direction is quite weak. It is still important however that those who furnish funding should have an overall picture

of how the different programmes in specific areas are linked. This should avoid over-concentration of certain areas at the expense of others.

### *Develop the capability to respond to questions as they arise*

Programmes such as those discussed in this report should not be considered as providing a direct answer to questions that are confined in time and space. Economic research will naturally orient itself to the discussion of such problems and what is important is to create a pool of highly qualified economists who can respond to the questions. Thus our recommendation is to promote the production of answers to specific questions indirectly. This can be achieved by continued funding to networks that link research and policy, to European doctoral programmes that develop and consolidate economic talent capable of responding to such challenges as they arise. Investment in the necessary human capital in Europe has been productive and should prove to be more so in the future.

## II EUROPEAN PROGRAMMES IN ECONOMICS

### Facts and emerging issues

*Mogens Dahl*

#### 1. INTRODUCTION

The last six years have seen a considerable growth of funding for theoretical and applied research on European economic issues, notably through three European programmes: SPES (*Stimulation Plan for Economic Science, 1989-92*), HCM (*Human Capital and Mobility, 1992-94*) and ACE (*Action for Co-operation in Economics, 1990-94*). The influence of this financing on the nature of research is amplified because EU funding builds upon existing infrastructure in universities and research institutes and stimulates cross-border mobility and interaction. It has also been a period in which individual governments have begun financing national and bilateral schemes and centres for European studies, East-West relations, etc., and these now exist at numerous universities.

Economic research is also carried out as an integral part of scientific research for industry, energy, environment, agriculture, etc. which draws upon economic analysis. Similarly, the upsurge in research on the transformation processes in former communist countries is a response to political and economic realities. Although this is outside the remit of the present chapter, such multi-disciplinary research funding which reflects complex scientific, industrial and political objectives represents a substantial additional area where economists apply and develop their science. We shall focus on SPES, HCM and - in less detail - ACE but we are able to make general comparisons with some estimates of the total resources devoted to economic research in the EU and EFTA countries.

The common proposition of this report is that the agenda of the economics profession in Europe has become European. This means, firstly, that Europe has gained importance for researchers in their choice of subjects, partners, presentation form, peer judgements and, generally, for the internal quality criteria. A second meaning of 'European agenda' refers to the external demand for research, influenced by technical, political and economic issues. These two dimensions of 'Europeanisation' are interdependent but not necessarily in opposition; this chapter and the following ones are about those two kinds of 'Europeanisation' of economic research,

in particularly as seen from the perspective of the European programmes.

This chapter describes the growth and character of the core, or first generation, of European funds for economics research (SPES, HCM and ACE) and answer such questions as:

- What are the aims and means of the programmes? (*section 3*)
- Which fields of research have been supported? (*section 4*)
- How much has been given to research projects, training of researchers and conferences? (*section 5*)
- Which economic research policy issues need to be addressed by the funding authorities? (*section 6*)

Other chapters to this report deal with key fields of that research and its scientific output which, it should be noted, emerges only with a time lag. Research topics, scientific results, funding needs, training possibilities, etc. do not necessarily develop at the same speed within all disciplines. Many parameters need to be assessed: theoretical models, new societal demands, data availability and, not least, the supply of young Ph.D.'s.

While we can be specific about the content of European programmes, all the factors just mentioned would have to be considered for the more interesting questions:

- Has European support led to significant advances?
- What are the needs of the future?
- How can further progress be stimulated?

#### 2. FUNDING OF PROGRAMMES IN ECONOMICS

##### 2.1. European

European funding for research projects, conferences and scholarships in economic sciences is now (1995) above 20 Mio. ECU per year. This is counting only HCM and ACE which are the current specific support



programmes for economic research at post-doctoral level<sup>1</sup>. A much higher figure would be reached if all research work and economic policy studies financed by other European Commission funds were counted as well.

This money has been a significant addition to national funding sources of similar flexibility - perhaps in the order of 1:5 - although small by comparison with the bulk of salaries and infrastructure costs financed at the national level.<sup>2</sup>

Increasingly, European programmes emphasise mobility, co-ordination and co-operation across different countries. Thus, in terms of human resources and of longer term benefits from trans-European links, their impact on the nature of research is greater than might be indicated by the proportion of total financing that they provide.

The present level of some 20 Mio. ECU per year has been reached within the short period since SPES was launched in 1989. Economists from new Member States and from outside the EU have become eligible for support since then. Apart from increasing the quantity of output there is a qualitative effect from such expansion. Inevitably, the next few years will see more results by joint teams and more young economists with research training from across the whole of Europe, and the results will have more impact on the international scene.

ACE is complementary to SPES/HCM in several ways. It operates in a similar bottom-up approach and it gives researchers from Eastern and Central Europe access to participate in other European research groups. The budget of ACE is comparable to that of HCM (economics) and a de facto division of work can be seen between the programmes. Sufficient evidence is at hand to allow some observations about how the money has been spent but any further interpretation should be accompanied by two cautionary remarks. Firstly, it is the output that really matters and precise assessments of scientific content will always lag by several years. Secondly, other actions at European level in which academics participate and which pursue related objectives should also be considered if one is to get an accurate impression of these programmes.

In the longer term it is obvious that increasing finance for networking among universities and student mobility will also increase the number of people who, later, become engaged in research at the European level. Since commitments within each programme are short term, the Commission has the possibility to respond and to expand the scope of new programmes in ways that reflect the political and economic problems of the 1990's.

## 2.2. National

Some global characteristics of the R&D resources devoted to economics in Europe are available, against which the European programmes can be evaluated. In a previous study (Kirman and Dahl, 1995) we found that total funding of economics and management science in the European Union and EFTA countries was at the level of around 500 Mio. ECU in 1991. More than half of this was devoted to economics. Overall, 80% went to universities, mainly to salaries, but with considerable variation among countries.

It was estimated that of this total about 100 Mio. ECU per year originate from various different funds and programmes which provide flexible and short term support in the same manner as does European finance.

We also estimated academic manpower in economics and management science to be in the order of 8000 man-years or 20000 professors and researchers in 1991, and the annual output of doctoral degrees to be in the order of 2000. These global figures are very rough approximations and valid only as an indication of the order of magnitude involved. For many reasons more precise estimates are difficult to get at. Budget mechanisms differ considerably between countries and over time as well. Moreover, when considering the topics of research, there are different definitions of economics and management in the science and research budgets of individual countries.

What is common is that national funding has three strands of which only one is complemented by EU programmes. First and foremost there are budgets for staff and other permanent costs at universities and independent research institutions. Next come strategic programmes. These two sources finance research infrastructure and adapt it to new requirements. Thirdly, there are allocations from much smaller 'budget lines' to projects and individual grants and scholarships which encourage renewal and changes of research orientation. Usually, they involve bottom-up procedures with competition among different proposals for projects to be funded.

<sup>1</sup> The exact level of funding under the new Training and Mobility programme is not known at the time of drafting.

<sup>2</sup> Below, we put the total funding at around 500 Mio. ECU per year and the flexible part thereof at 100 MIO. ECU per year. These are round estimates based on 1991 figures for EU and EFTA countries. Hence, only a cautious comparison of orders of magnitude can be defended (see Kirman and Dahl, 1995).

It is to this last type of funding, where private donations are also important in several countries, that the European programmes add their finance.

### 3 OBJECTIVES AND SCOPE OF EUROPEAN PROGRAMMES IN ECONOMICS

#### 3.1. Volume of SPES, HCM and ACE

Our remit is to analyse the results of SPES support and trends in economic science. The present section focuses upon structure and volume; we are able to add information on this issue from two related programmes. They are the *Human Capital and Mobility programme - HCM* which continued the support to economics after SPES and the parallel programme *Action for Co-operation in Economics - ACE*.

This section describes *the aims and the means of these European programmes in economics*. The funding during these first years of SPES, HCM and ACE is summarised in Table 1.

	1989	1990	1991	1992	1993	1994
SPES	11 MECU					
HCM (economics)				25 MECU		
ACE (PHARE)	20.5 MECU					
Total per year	3	6	8	11	12	22

Sources: Re. SPES: Schneider et al., (1992); re.: HCM: European Commission (1994); re.: ACE: Kolodko et al. (1993) and own estimates

In the 1980's there was growing concern about three problems for Europe: 1) the predominance of the USA in scientific terms, 2) inadequate funding of research co-operation within Europe and 3) the need for more research on European economy issues<sup>3</sup>. Actions aimed at providing at least a partial solution to such problems could be taken within the *Framework Programmes for Research and Technological Development* and SPES was launched in 1989

<sup>3</sup> Schneider et al. (1992).

allocating nearly 11 Mio. ECU to economics between 1989 and 1991. This was followed immediately by HCM for 1992-94 widening the scope and more than doubling the volume: about 25 Mio. ECU to economics and management science as part of the human and social sciences.

In parallel and within the *PHARE Technical Assistance Programmes for Eastern and Central Europe* four successive rounds of the ACE programme have allocated some 20 Mio. ECU between 1990 and 1994 to beneficiaries in the PHARE countries (and their Western partners). It is the primary objective of ACE to help with the transformation processes of the former communist countries and with their integration in the world economy.

Overall, and including 5 Mio. ECU from the *TACIS programme* involving economists from the former Soviet Union (not shown in Table 1), SPES, HCM and ACE have supported economic research in Europe to the extent of some 60 Mio. ECU over the last six years. Annual funding started at the level of around 3 Mio. ECU and increased to more than 20 Mio. ECU by the end of the period, during which also both the scope of the research and geographical coverage became wider.

A comprehensive estimate of EU funding for economics would include many other programmes which have economists amongst their recipients. This is the case for most of the specific RTD programmes and COST actions for industrial research, energy and environment, for example, and the same can be said to a lesser extent for some of the actions specifically intended to support scientific institutions in Eastern and Central Europe and in the CIS, such as *PECO-COPERNICUS* which was launched in 1992<sup>4</sup> and the *International Association for Technical Assistance (INTAS)*<sup>5</sup> created in 1993. Also, economic research components may be found within other EU budget lines for in-house

and contract research. We will concentrate however on SPES/HCM and ACE because of the orientation of the former towards economic research in a strictly defined sense, the clearly defined scope of the latter, and in both cases their bottom-up approach to the selection of projects.

<sup>4</sup> Scientific and technical co-operation with Eastern and Central Europe is now included in the 4th RTD Framework Programme, (European Commission, 1994b)

<sup>5</sup> INTAS awarded 25 Mio. ECU to 563 projects in all scientific areas in June and December 1993, (European Commission, 1993h)

	SPES and HCM (economics)	ACE
Disciplines	Economics Management since 1992	Economics Management
Primary objectives	Training and mobility	Transformation and integration
Eligibility	Individuals and institutions in the EU (and EFTA since 1992)	Individuals and institutions in the EU, PHARE and TACIS countries
Selection	Several peer reviews per year	One peer review per year
Success rate	10 - 20 pct. for research projects and 30 - 40 pct. for fellowships	

Sources: (Schneider et al. 1992), (European Commission 1994), (Kolodko et al. 1993)

### 3.2. Common features of SPES, HCM and ACE

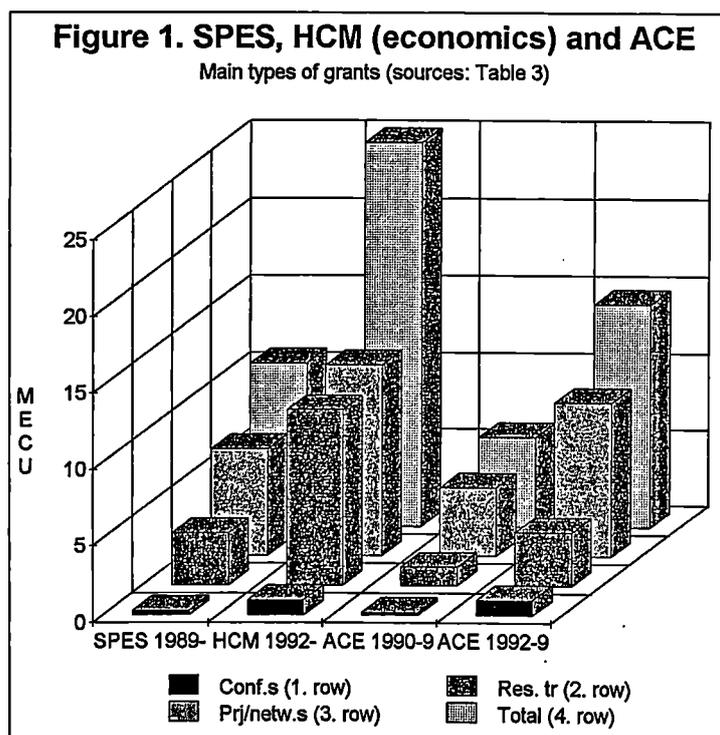
SPES, HCM (economics) and ACE have common features with regard to disciplines, eligibility and selection procedure as shown in table 2. The notable differences between them concern their primary objectives and geographical scope. It should also be noted that while economics in HCM is grouped together with other social and human sciences, ACE belongs to the PHARE/TACIS actions which cover countries with quite different needs.

Turning to the question of how that money has been spent we see that similarities go further. Each programme has the same three main types of grants, as shown in Figure 1, namely research projects/networks (3rd row), fellowships/training (2nd row) and conferences (1st row). This illustrates how similar the programmes are seen from that perspective.

In the following table 3 more details are given. The pattern set by SPES is thus found in its continuation within HCM and within ACE. However, projects/networks have become larger over time (partners from more countries were required in HCM). Conference support has adopted the

Euroconference model used within HCM for other scientific disciplines. The most significant development as SPES was superseded by HCM has been the increase in support for fellowships. All three programmes have in fact been able to support a number of Ph.D. students and Ph.D. programmes in addition to post-doctoral fellowships.

Figure 1 and Table 3 show more precisely that the main support has been given to research projects



	SPES 1989-91	HCM 1992-94	ACE 1990-91	ACE 1992-94
Research projects and networks	80 joint projects and networks	55 networks	70 joint projects	110 joint projects
34.1 MECU	7 MECU	12.5 MECU	4.5 MECU	10.1 MECU
Research training	63 fellowships	44 individual and 40 institutional fellowships	77 fellowships and 1 Ph.D. programme	184 fellowships/scholarships and 4 Ph.D. programmes
19.6 MECU	3.4 MECU	11.5 MECU	1.2 MECU	3.5 MECU
Conferences	7 workshops	24 Euroconferences	33 conference grants and 8 seminars	116 conference grants
2.5 MECU	0.3 MECU	1.0 MECU	0.2 MECU	1 MECU
<b>Total economics</b>				
56.2 MECU	10.7 MECU	25 MECU	5.9 MECU	14.6 MECU
Success rate as pct. of proposals	10 - 20 pct. for research projects and 30 - 40 pct. for fellowships			
Sources: Re. SPES: Schneider et al., (1992); re.: HCM: European Commission (1994); re.: ACE: Kolodko et al. (1993) and own estimates				

and networks. The size of each grant is partly a function of the number of participants and of the length of the project, both of which vary greatly. More than half of the total finance has been allocated to this type of grants. It is indicative of the trend in policy that the distinction between 'projects' and 'networks', which existed in the early phase of SPES, gradually disappeared and in HCM only 'networks' is used as label. This matter will be commented upon again in section 5.

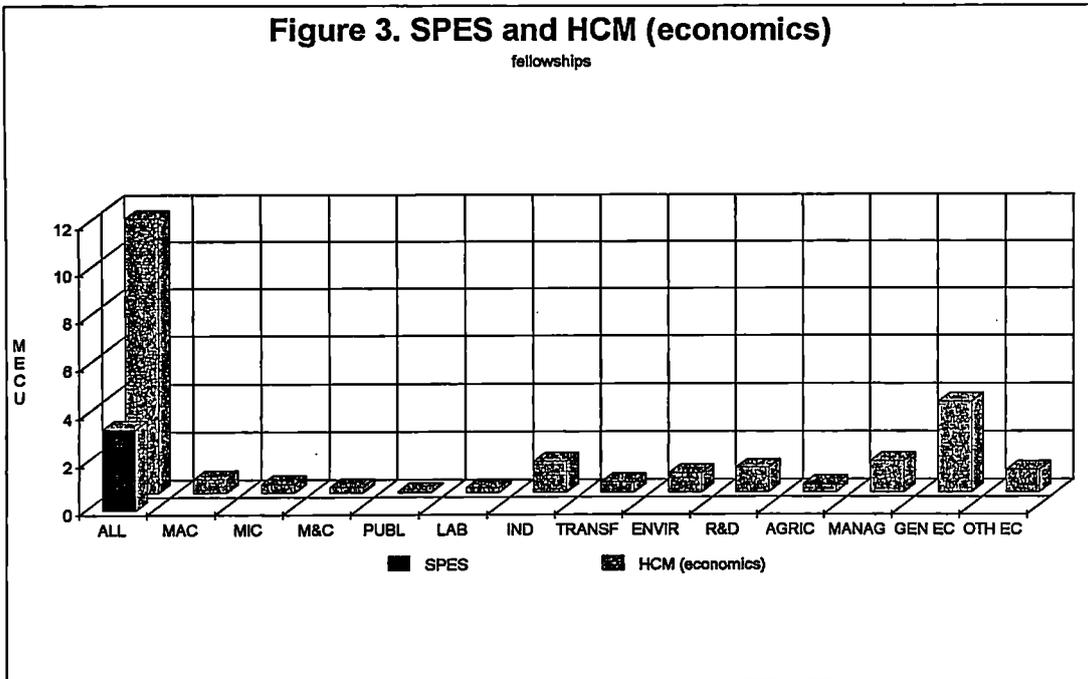
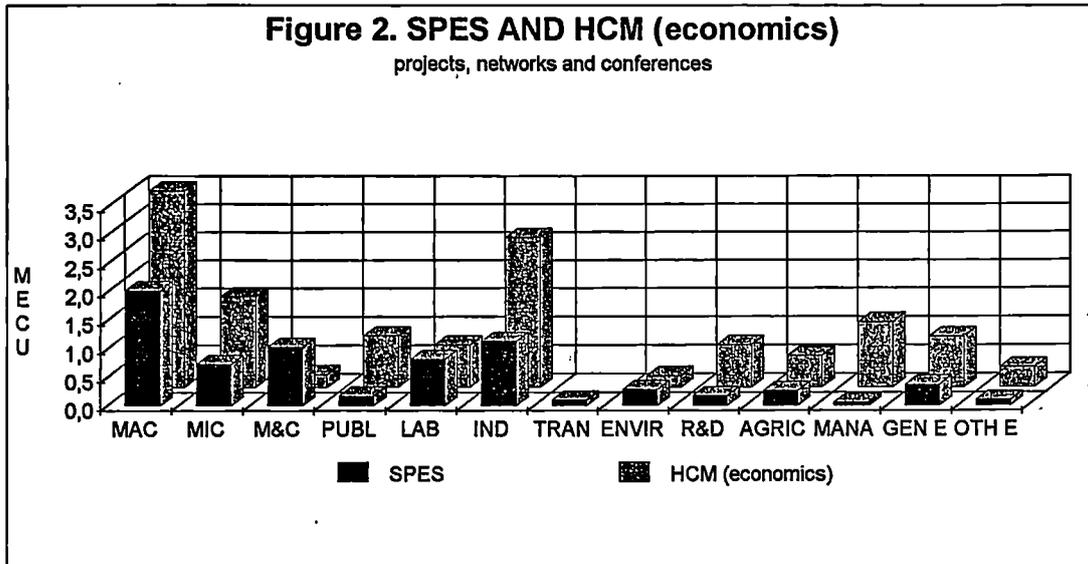
A little less money has gone to training (at post-doctoral level and for doctoral students); but block grants of HCM, allowing host institutions in the EU to receive several fellows under the same grant, and ACE support for Ph.D. programmes in Central and Eastern European Countries, underline the weight given to research training.

So far conference participants have received about 5% of the support from SPES, HCM and ACE, with a trend towards block grants to organisers rather than to individual beneficiaries. It must be noted however that project and network grants often give ample opportunities for workshops, seminars and conferences attracting young researchers.

Evaluations of the first years of SPES (Schneider et al., 1992) and of ACE (Kolodko et al., 1993 and Adam et al., 1995) suggest that these programmes started out on the right lines. With the more recent statistics for HCM and ACE we are able to see the development of structure and volume in a wider context to which we will return in sections 4 and 5.

It is not surprising that all programmes were widely over-subscribed, but it is noteworthy that fellowship applications had a higher success rate than research project proposals. (ACE 1994 had however the same success rate for all types of grants and this was around 25 pct.) Whether European funding will meet future demand to the same degree is more difficult to say. Certainly, demands from the scientific community are likely to increase, not least because the next generation of university candidates will have benefited from national and European actions for inter-university co-operation and mobility of students, especially in the field of economics, management and business studies which were well represented in both ERASMUS<sup>6</sup> and TEMPUS.<sup>7</sup>

<sup>6</sup> ERASMUS - European Action Scheme for the Mobility of University Students - has operated since 1987. A comprehensive external appraisal was carried out in 1991-93 and the pilot phase of the course credit transfer system,



**4. RESEARCH FIELDS OF SPES AND HCM**

Turning to the question of *which fields of research have been supported* we limit the analysis in this section to SPES and its continuation in HCM, i.e. the

launched in 1989/90, has been evaluated. ERASMUS Inter-university Co-operation Programmes numbered 197 in business administration and 202 in social sciences out of a total of 1924 in 1991/92 (European Commission 1993d and ERASMUS Newsletter 1993/17).

7 TEMPUS - Co-operation and mobility in higher education between Central/Eastern Europe and the EU - began in 1990 and has reached an annual budget volume of around 100 Mio. ECU, which is similar to the size of ERASMUS. Applications in business and management studies, and in social science subjects relevant to restructuring, were of particular high quality and accounted for 40 of a total of 234 supported projects in 1991/92 (European Commission 1993e and f)

left part of figure 1 and the two first columns of table 3 above. Our classification is ad hoc for the purpose of this report, and reproduced in the Statistical Appendix. It is based upon the final reports from (most of) the 87 SPES projects (but not fellowships) while HCM grants, including fellowships, could only be classified on the basis of proposal titles/abstracts since they were in general not completed at the time of writing.

Figures 2 and 3 summarise the distribution of SPES and HCM funds across the classification fields of **MACRO-ECONOMICS, MICRO-ECONOMICS, MONEY AND CAPITAL, PUBLIC ECONOMICS, LABOUR ECONOMICS, INDUSTRIAL ECONOMICS, TRANSFORMATION OF POST-COMMUNIST ECONOMIES** (those are approximations of the areas of economics covered in the rest of this report), **ENVIRONMENT, ECONOMICS OF R&D,**

AGRICULTURAL ECONOMICS, MANAGEMENT, GENERAL ECONOMICS (which includes grants related to more than one of the previous fields), and OTHER ECONOMICS (which covers grants that belong to other fields). Table 4 gives the details of number of grants and the percentage distribution of funds.

Such a classification of 'project titles' is one-dimensional and too rough for interpretation. That complex research projects cannot be classified in this grid in a unique way is obvious. As subsequent chapters show there are fluid boundaries. We use it for a broad description first of projects, networks and conferences, and then of fellowships.

*Projects, networks and conferences*

As far as the 87 SPES and 79 HCM projects, networks and conferences are concerned, the first six fields (MACRO-ECONOMICS, MICRO-ECONOMICS, MONEY AND CAPITAL, PUBLIC ECONOMICS, LABOUR ECONOMICS and INDUSTRIAL ECONOMICS) account for about 3/4 of SPES+HCM funds. One field (TRANSFORMATION) received almost nothing but is covered by the parallel ACE programme.

- Approximately 1/3 of the grants and of the funding went to the fields of MACRO- and MICRO-ECONOMICS, which in our classification are

taken broadly. In particular it must be noted that econometrics straddles those two fields and we have considered most econometrics projects as related to macro-economics. The trend is that MICRO-ECONOMICS has grown while MACRO-ECONOMICS has maintained its dominant position.

- MONEY AND CAPITAL appears to have received much less from HCM than from SPES; much macro-economic research however include monetary policy issues.
- LABOUR ECONOMICS was also quite visible in SPES but seems to have fared less well under HCM.
- By contrast PUBLIC ECONOMICS, INDUSTRIAL ECONOMICS, ECONOMICS OF R&D and MANAGEMENT are better represented in HCM than in SPES. ENVIRONMENT and AGRICULTURAL ECONOMICS remain with small or somewhat reduced shares of the HCM funds.

*Fellowships*

Data on grants devoted to fellowships are more ambiguous. Firstly, we have not classified the SPES fellowships for lack of relevant information. Secondly, the 84 HCM grants are differently distributed among fields, and 17 of them are block

**Table 4**

**SPES and HCM (economics)  
Number of grants and % of funds**

Field	Projects, networks and conferences				Fellowships	
	SPES		HCM (econ.)		HCM only	
	Grants	% of funds	Grants	% of funds	Grants	% of funds
MACRO-ECONOMICS	22	28%	19	26%	6	5%
MICRO-ECONOMICS	11	10%	7	12%	3	3%
MONEY AND CAPITAL	9	14%	2	2%	4	2%
PUBLIC ECONOMICS	2	2%	5	7%	2	0%
LABOUR ECONOMICS	11	11%	4	6%	3	2%
INDUSTRIAL ECONOMICS	7	16%	14	20%	12	11%
TRANSFORMATION	2	1%			2	4%
ENVIRONMENT	7	4%	2	2%	10	7%
ECONOMICS OF R&D	2	2%	4	6%	9	9%
AGRICULTURAL ECONOMICS	3	4%	3	4%	4	3%
MANAGEMENT	1	1%	6	8%	7	12%
GENERAL ECONOMICS	8	5%	8	7%	17	33%
OTHER ECONOMICS	2	1%	5	3%	5	8%
<b>ALL FIELDS</b>	<b>87</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>84</b>	<b>100%</b>
<b>ALL FIELDS</b>	<b>KECU</b>	<b>7,303</b>	<b>13,525</b>	<b>11,540</b>		
<b>SPES fellowships</b>	<b>KECU</b>				<b>3,380</b>	

Sources: Own classification based upon Schneider H.K. et al. (1992) and European Commission (1993 g)

grants which allow each host institution to receive several fellows probably in several fields.

- Of the about 60 HCM fellowship grants which could be classified most are in the fields of **INDUSTRIAL ECONOMICS, ENVIRONMENT, ECONOMICS OF R&D and MANAGEMENT.**
- Browsing through the titles of the 17 block grants classified under **GENERAL ECONOMICS** lead to the feeling that many are heavily oriented towards **MACRO- and MICRO-ECONOMICS.**

Research training has received a large share of funding throughout the two programmes. Here one should probably add some of the network funding in order to get a full count of research training support. Because of the volume of this funding and because it reaches out to many young researchers in quite different situations it would be useful to have more geographical information about mobility. We return to this matter in section 5.2 below.

## 5. TYPES OF GRANTS

### 5.1. Research projects and networks

In this section on *how much has been given to research projects, training of researchers, and conferences*, we will include comments on ACE because this programme complements HCM in important fields. We look first at projects and networks under SPES, HCM and ACE. Fellowships and conferences will be described later.

SPES and HCM allocated about 7 Mio. ECU and 12.5 Mio. ECU respectively to economic research projects and networks (see table 3). Novelty and excellence of the proposed work were the main criteria for obtaining a grant. The major share of finance is used for co-ordination and co-operation costs of research teams in networks spanning several countries. As already mentioned, HCM support has been given only under the heading of 'networks', thus emphasising co-ordination rather than infrastructure. Indeed, the general rule under HCM became to support networks involving at least 5 teams from 3 different countries. But also the SPES reports show how grants are predominantly used for the organisation of workshops and seminars involving project partners and local researchers. The finance is thus both additional to other sources and has the impact of making more proposals oriented towards topics which are capable of attracting the involvement of research (groups) from several countries.

In ACE the objective of linking East and West is paramount and each project must involve partners

from at least two EU countries and one in the East. Many projects include activities to improve data material for international comparative analysis.

SPES and HCM projects usually run over several years, whereas ACE projects have been limited to two years at the most. Partial statistics from SPES projects (in Lund & Dahl (1992)) show that 86 grants involved 454 partners and co-ordinators and that 40% of the money was spent on travel, 25% on salaries and a further 25% on data, computing and printing. The breakdown of costs in later grants is not yet available but the above figures show how important travel funds are to the beneficiaries. As to the number of researchers involved in HCM, some of whom also benefited from SPES, we can make a proportional extrapolation of the SPES average and this gives a figure of some 800 participants. These participants (whose active involvement varies from marginal to full time) are people who are among our estimated total 'population' of 20000 professors and researchers and to whom short term and flexible funds are also available from many other sources.

In the previous section we could observe (in table 4) that many SPES and HCM (economics) research grants are on micro- and macro-economic topics, often related with econometrics, and on topics focusing on industrial sectors, finance and employment. This is also true for ACE projects which have a general orientation towards transformation and systemic changes.

Macro-economic projects deal with trade, the internal market, convergence and modelling, whereas typical micro-economic key words are households and mathematical economics. Many projects study competitiveness, integration and growth. ACE projects in particular include many sector-specific subjects such as agriculture, textile, SMEs, etc. Finally, it may be observed that the two fields of economics of R&D and management sciences were given a fairly small support from SPES but considerably more from HCM.

This overview of content, based upon final reports from SPES and titles or project abstracts from the more recent HCM projects, confirms that support is mainly aimed at economic theory and the application of that theory to European macro-economic and industrial issues. ACE projects have often a sectoral orientation typically connected to tasks of collection and analysis of data.

The fact that the European programmes provide only a fraction of total support, although not negligible, and the trend towards networking among larger groups of researchers limit the value of isolated

analysis of individual programmes. Comments on the content of the research need to be about more homogeneous sub-fields and also take into account other research than that financed by the EU. Such analysis is provided in other chapters of this report.

## 5.2. Training

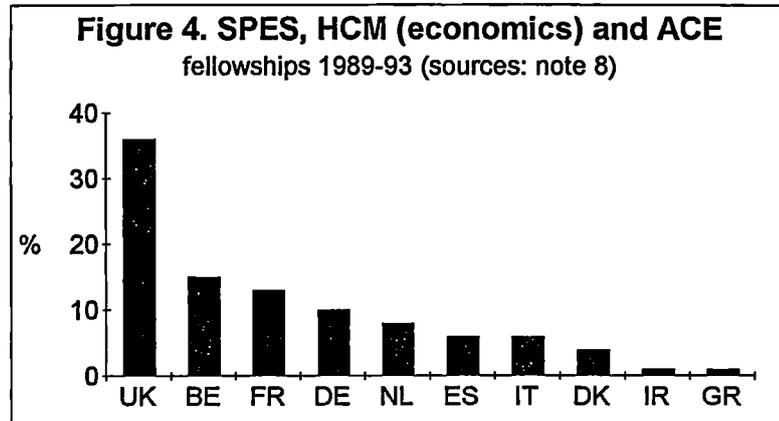
Table 3 summarised our material on SPES, HCM and ACE grants to *research training*. Some further overall description can be given along four lines: volume of funding in relation to demand; geographical aspects; differences between programmes; and global trends.

*Funding* for fellowships in economics (and management) tripled from 4.6 Mio. ECU in SPES (1989-91) and ACE (1990-91) to 14.7 Mio. ECU in HCM (1992-94) and ACE (1992-94). It is possible to evaluate the support in terms of manpower represented by the 63 individual SPES fellowships, 44 individual HCM fellowships and 40 institutional HCM fellowships. Allowing for some uncertainty about average duration and coverage of tuition fees we translate the 40 institutional fellowships to equal approximately 100 2-year fellowships. We are therefore probably not making any significant error in assuming that the total number of beneficiaries is around 200 people, or around 400 man-years of research work. This is for the full 6-year period; for the last three years (HCM 1992-94) the total would be around 150 2-year fellowships or 50 new fellowships per year. ACE has supported a similar number of fellowships of more varied duration and almost exclusively for Central and Eastern European economists to study in the EU.

Relating such figures to a total 'population' would need to take age distribution into consideration recognising that most fellowships are at post-doctoral level - and some at pre-doctoral level. A more relevant comparison might be to see the annual 'offer' of about 50 fellowships against an annual output of new doctoral degrees in Europe, which we think is in the order of 2000. This first global comparison distinguishes neither between disciplines nor countries.

Crude data as presented here are not enough but we will, nevertheless, give another illustration related to the *geographical* distribution of host institutes which received the first some 300 fellows supported by SPES, HCM and ACE in the three years of 1989-90. About 35% are located in the UK whilst Belgium,

France and Germany receive almost 40% of the fellows; The Netherlands, Spain and Italy together attract about 20%.<sup>8</sup> The overall picture is shown in Figure 4. It is not surprising, of course, that the UK should remain the main pole of attraction but it would be revealing to see further interpretation of



the location of some of the other popular host institutes in other countries, such as Leuven and C.O.R.E. in Belgium, D.E.L.T.A. in Paris, or E.U.I. in Florence. There is undoubtedly a reflection of the development of joint European doctoral programmes on the continent which are attractive to applicants for European fellowships as well. Another impact is likely to come from the emerging specialisation among the most prestigious centres of excellence.

It will always be interesting to follow how demand develops in geographical terms - and in comparison with the mobility towards the USA. Grants to British and Belgian researchers to study elsewhere in Europe were remarkably few in the very first years of SPES and ACE, for example. Many local factors influence the supply/demand equation, such as national schemes for mobility, emerging output of candidates with experience from ERASMUS and TEMPUS mobility grants, etc. In the former communist countries new legislation bringing university teaching and research institutes closer to each other were introduced during the first years of reform.<sup>9</sup>

<sup>8</sup> Figure 4 shows the distribution of host institutes in the EU who received 63 SPES fellows (1989-91), 13 HCM (1992) individual fellows, 22 HCM (1992) block grants for grouped fellowships and 178 ACE fellows and Ph.D. students (1990-1993): UK: 36%, BE: 15%, FR: 13%, DE: 10%, NL: 8%, ES: 6%, IT: 6%, DK: 4%, IR: 1%, GR: 1%. HCM block grants are weighted so as to correspond to average individual grants. A few ACE fellows from EU countries are not counted. Sources: Schneider H.K. et al. (1992), Kolodko G. et al. (1993) and European Commission (1993) a and b.

<sup>9</sup> See, for example, Amsterdamska (1991) who reports on the new legislation.

These factors are important to take into consideration when designing future support for research training of young graduates. Special attention needs to be directed towards management science where there has been a proliferation of MBA programmes in both East and West.<sup>10</sup>

*Differences* exist between the programmes because of their specific objectives. Post-doctoral fellowships from SPES and HCM are part of the European Union's research policy to increase mobility among young researchers within the EU. Ph.D. scholarships also became a possibility. EFTA countries became associated to the programmes during these years but did not take a very active part in the fellowship grants for economics and management.

Fellowships in ACE serve to forge links to the EU for post-doctoral researchers from Poland and Hungary (since 1990); the Czech Republic, Slovakia, Rumania, Bulgaria (since 1991), Yugoslavia (in 1991); and Slovenia, Albania, Estonia, Latvia and Lithuania (since 1992). Most fellowships are for short periods but Ph.D. scholarships of longer duration have also been awarded, the first ACE grants to economists from Russia and the Ukraine were Ph.D. scholarships.

Equally important are the Ph.D. programmes in Prague and Warsaw co-financed by ACE. The few ACE grants awarded to senior economists from the EU to work for short periods at institutes in Central and Eastern Europe serve similar objectives. Also in support of education, several textbooks have been translated with the help from ACE grants.

Finally it must be noted that some *common developments* continued their impact upon the pattern of research education in Europe. For many decades the orientation of Europeans who seek part of their doctoral training abroad has been towards the USA and the UK rather than towards continental European countries. The American Ph.D. system with relatively more course work than individual research has had an effect in Europe where reforms of doctoral programmes have also accentuated the value of mobility which is a feature in the U.S., thus increasing the demand for fellowships in general. On the other hand, the attractiveness of salaries and career options in non-academic work is of significant influence in some fields of economics, and this accounts for a tendency towards wider acceptance of the idea of Ph.D. in economics as providing a thorough general advanced training in methods as well as a capacity for research.

The above fragments of the picture of supply and demand for research training leave the impression that fundamental factors have been and are still changing more rapidly than in previous decades while opportunities for young economists still vary greatly between different countries. In addition, career possibilities outside the academic field, the availability of scholarships as well as formal structures of curricula and degrees all have their bearing upon how attractive it is to apply for studies abroad.

A thorough analysis of the barriers to mobility, which are here just indicated, is called for in order to assure optimal targeting of scholarships and training grants.

### 5.3. Conferences

SPES, HCM and ACE have supported conferences in different ways. Initially, SPES gave very few funds for genuine conferences although many workshops and seminars received support through projects. HCM has increased this by financing 24 Euroconferences in economics. ACE for its part has accepted applications from individual researchers but that has changed in later years towards the support for conference organisers as well.

Euroconferences is a concept taken from the American *Gordon Conference* tradition developed within natural sciences. The idea is that fruitful scientific interaction can be accelerated when young scientists are brought together with leaders from research or practice around a given subject. Less emphasis is placed on formal paper presentation and the number of participants should also be kept lower than usual at international conferences. On average about 40000 ECU has been allocated to conferences in economic disciplines, which sometimes have taken the form of series of meetings as well as summer school arrangements.

ACE allocations to conferences are more modest and are divided between travel costs for researchers from the East who wish to present research at conferences organised in the West and subsidies to conferences organised in the East.

In total, the finance is probably around 1 Mio. ECU per year and, with a rule-of-thumb average cost of 1000 ECU per person, this means that 1000 researchers in economics per year now benefit from the programmes. This is a relatively small but not an insignificant fraction of the total 'population'. EU travel funds are however not 'small' by comparison to the size of other travel funding schemes.

<sup>10</sup> Nioche (1992)

As mentioned, we lack proper statistics as to who these people are and how they utilise the support. Both monitoring of each grant and self evaluation by organisers are needed and there must also be sufficient material available to justify a more comprehensive analysis of the support and its interaction with other travel funds.

#### 5.4. Dissemination of results

Although programme objectives also include the dissemination of results and their transmission into industry- or public policy, direct financial support for immediate actions such as newsletters, seminars, publication of research reports and the like involving users of the research has, until now, been modest.<sup>11</sup> Naturally, those objectives are achieved indirectly by the researchers themselves, as discussed in other parts of this report.

### 6. EMERGING ISSUES

Above we have described the development of European programmes and seen their similarities and differences with regard to aim, scope and content. After six years of growth of European level support *research policy issues emerge and some need to be addressed by the funding authorities.*

#### *European programmes*

Reviews of the years 1989-1991 of SPES and 1990-91 of ACE were carried out in 1990/91 (Schneider H.K. et al., 1992, and Kolodko G. et al., 1993). They examined programme quality, relevance and effectiveness. It was not within their mandate to evaluate individual beneficiaries or research results but only each programme as a whole in relation to its objectives.<sup>12</sup>

The findings gave support to the decision to continue and enlarge the programmes. The programmes have retained their original bottom-up approach and focus on scientific quality and selection procedures dominated by peers from the economic profession.

Now, tangible research results are at hand for further assessment of scientific content. It is clear already that the European agenda has taken a visible place among the activities of the economic profession, as discussed in other chapters of this

report, with regard to the topics of research and the extent to which co-operation is extending across Europe. Also in pure quantitative terms, as analysed above, the funding at European level is evidently important.

The people to whom this support has reached out should by now be counted in thousands to which may be added economic researchers involved in other European studies. Still, of course, their numbers are only a fraction of all economic researchers. The hundreds of grants are probably taken up with different intensity in individual countries.

#### *General issues*

The trends that are illustrated in the development of the programmes point to issues already beginning to find ad hoc solutions:

- internationalisation of doctoral and post-doctoral programmes
- specialisation at European level among the best institutes
- European actions of more applied nature
- joint financing by national authorities
- remuneration and career patterns of academics

The European programmes have greatly increased the possibilities for co-operation on such issues between those responsible for the organisation and funding of research. Qualitative evaluations are needed of how well current experiments have succeeded in creating the basis for new structures.

#### *Evaluation of research*

The European Commission, national authorities and private foundations will continue to require periodical reviews of their specific actions in relation to objectives, policies and scientific contents.<sup>13</sup> The national models of global reviews of entire fields offer alternative perspectives because their main purpose is to carry forward the best groups and projects under long term re-allocation of national budgets.<sup>14</sup>

Neither national nor European evaluations have been able to fully incorporate the output side which always lags by several years.

One perspective that seems missing but should be worthwhile now is the one that singles out research

<sup>11</sup> ACE Quarterly newsletter has been published since early 1995 (Adam et al. 1995).

<sup>12</sup> The following round of ACE, 1992-94, was examined in a similar way in 1995 (Adam et al. 1995).

<sup>13</sup> CREST, the Scientific and Technical Research Committee which advises the Council and the Commission, has added its approval to the Commission's current policy of combining annual monitoring and evaluation of Community research programme (CREST 1995).

<sup>14</sup> See for example (Engwall 1992) for a detailed, nation wide evaluation of Swedish research in economics.

topics or sub-disciplines which have been forerunners from an economic policy point of view or from a scientific one. Probably not all sub-disciplines develop at the same speed and prospects for their future might be quite diverse.

Certain key areas may have matured to qualify for European wide review. For instance monetary policy, financial markets, convergence, systemic changes, (un)employment, price-wage theory, econometric modelling, behaviour of firms and consumer attitudes would all be headings under which a sufficient number of research institutes and joint projects have worked and given tangible results.

Other areas will sooner rather than later deserve similar attention. Growth theory and the economics of R&D are examples of areas where European efforts have been increased lately, inter alia within the specific socio-economic research programme, and where theoretically working economists explore new avenues of linking technological progress to macro-economic modelling. The post-Maastricht economic policy agenda for the EU is reshaping European industrial policy and, for some years, co-operation among the Commission and Member States has promoted the creation of harmonised new data sets on industrial innovation and competitiveness. Linking of theoretical work with applied analysis for new industrial policies is an emerging item on the 'European agenda' for economic research.<sup>15</sup>

If the assumption is right that the multiplicity of European networking and mobility schemes can accelerate progress in substance and quality, it might be more feasible to review such separate areas not in the context of single programmes or budget responsibilities but rather at European level across different countries and funding sources.

### *Management science*

Management science and organisational sociology have a European heritage from the last century and the beginning of the present one. However it has been the successful American business schools which developed theory and application throughout most of this century. European management science is not small in size but not nearly as visible, and the support from HCM has begun recently. Our material on that field is therefore limited but it would probably be wrong to neglect the many specific European problems and the trends for research and education in this field.

## 7. CONCLUSIONS

European research programmes in economics have financed an increasing and, now, significant part of flexible and short term activities such as projects, networks and fellowships. Our rough estimates of European and national funds for economic research indicate that perhaps as much as one fifth of the flexible part is of EU origin. Many national initiatives have pulled in the same direction as SPES, HCM and ACE, although data are still too scattered to present a detailed overall picture.

The European agenda for the economics profession brings forward issues which need further consideration and support for sustainable solutions, for example with regard to doctoral programmes, specialisation among research institutes, actions of applied economic research, joint financing of a longer term nature and problems of career patterns.

National and European funding authorities publish reports and evaluations of what has been financed. Since research output should also be underway - lagging in time and often linked to multiple sources of finance - it might be relevant and feasible to review the state of economics throughout Europe within separate areas or sub-disciplines and to assess their contributions to the progress of economic science over the last 5-10 years.

The agenda might be more European in some areas than in others and among the first to be examined for their scientific merits in a European and wider international context should be those strongly supported by SPES, HCM and ACE, namely macro-economic policies, finance, trade and investment, econometrics, privatisation and reform, behaviour of firms and industrial economics.

<sup>15</sup> European Commission, DG XII (1994c) shows the present availability of data; Dahl (1995) reviews the first years of applied analytical reports using innovation statistics.

### III REAL MACROECONOMICS, CONVERGENCE AND APPLIED ECONOMETRICS

#### Recent Developments in Macroeconomics and EU Research

*Heinz König and Herbert S. Buscher*

##### 1. INTRODUCTION

Growing concern about the predominance of the United States in terms of science, the inadequate funding of research cooperation within Europe and the need for intensive research on European economic issues induced the Commission to install various programmes in order to stimulate research, improve training and intensify mobility of scientists. Although the number of activities in macroeconomics and econometrics is rather small so far an interim report may be useful to give a hint whether

- the funding of research projects contributed to the advancement in economics in general and to European economic problems in particular,
- the support of fellowships improved not only individual research performance but also reduced research gaps between institutions in different countries,
- networks and conferences enforced cooperation of universities and research institutes in European member countries.

Needless to say that this report will be incomplete since only six out of ten research projects in macroeconomics are finished yet, and that an evaluation based on such a small number of activities is an ambitious task.

The chapter is organized as follows. First we present a short overview of the funding activities in macroeconomics and related fields. In the next section we sketch the main strands of research in macroeconomics in order to have a framework for reference with respect to the projects supported by the Commission. Needless to stress that a detailed overview is far beyond our scope and space limits and that it is unnecessary because lots of excellent surveys exist to which we refer. In the last section we focus on problems and perspectives of research

strategy and conclude with some suggestions to improve efficient allocation of funding.

##### 2. A FORMAL OVERVIEW OF SPES-FUNDED ACTIVITIES

Due to the bottom-up approach of funding fields of research and other activities are widespread in topics addressed. 22 out of 86 research projects, networks and conferences, can be assigned to macroeconomics and related subjects. These 22 SPES projects were followed by an equal number of grants under HCM to macro-economics according to the ad hoc classification used in this report. The projects fall into the following fields of the general classification on the JEL-scheme:

- *Macroeconomics*  
(including general macroeconomics, consumption, saving, production, employment and investment, prices, business fluctuations, and cycles, macroeconomic aspects of public finance)
- *International Economics*  
(including general trade, internal factor movements and internal business, macroeconomic aspects of internal trade and finance)
- *Public Economics*  
(including structure and scope of government, taxation and subsidies, fiscal policy and behaviour of economic agents, publicly provided goods, national government expenditures, national budget, deficit and debt)
- *Economic Development, Technological Change, and Growth*
- *Econometric Modeling, Estimation, Testing, Forecasting, and Model Evaluation*

According to this classification scheme SPES-funded activities are distributed as follows: Five research projects belong to general macroeconomics, three to international economics, one relates to econometrics and one to other fields. Table 1 lists the titles and participating institutions of these SPES-funded research projects, as well as the funding period, and a comment on the current state of the research project under review. Workshops and conferences covered mainly international aspects.

Table 1 indicates that only six out of ten research projects are finished. Three are still in process,

whereas two other projects could not be finished within the funded period, one was running out of time with no final report available, and one project should also have been finished, here an interim report is available only.

This chapter will concentrate on those projects which are already finished and give a short description of the remaining projects on the basis of project abstracts and intentions expressed therein. Since the time of writing (June 1995) the projects which are commented as 'not finished' may have been completed.

**Table 1**  
**Titles and partners of selected SPES research projects**

		Period	Comment
1	Robust rules for European and G7 macro-economic policy Participating institutions: LONDON BUSINESS SCHOOL (coordinator) SCHOOL OF ECONOMICS AND BUSINESS SCIENCES	1989 - 1991	finished
2	Completing the European internal market: The consequences of '1992' for internal trade Participating institutions: CEPR (coordinator) INSTITUTE FOR INTERNATIONAL STUDIES NORWEGIAN SCHOOL OF ECONOMICS & BUSINESS STUDIES CENTRE ETUDES PROSPECTIVES & INFORMATIONS INTERNATIONALES COMMISSION OF THE EUROPEAN COMMUNITIES UNIVERSITY OF SOUTHAMPTON	1989 - 1992	finished
3	NIC-EC trade in manufactures: Performance and policy implications Participating institutions: UNIVERSITY OF GLASGOW (coordinator) UNIVERSITA CATOLICA DEL SACRO CUORE UNIVERSITA DE PARMA		not finished
4	Reversing the European brain drain Participating institutions: UNIVERSITA COMMERCIALE LUIGI BOCCONI (coordinator) UNIVERSITA DI BOLOGNA INNOCENZO GASPARINI INSTITUTE FOR ECONOMIC RESEARCH	1990 - 1993	finished
5	Modelling of interdependence between European economies Participating institutions: CENTRE ETUDES PROSPECTIVES & INFORMATIONS INTERNATIONALES (coordinator) NATIONAL INSTITUTE OF ECONOMIC AND SOCIAL RESEARCH O.F.C.E., PARIS	1990 - 1993	finished
6	The integration of countries in different stages of development: Greece in the EC Participating institutions: CENTRE FOR ECONOMIC RESEARCH (coordinator) UNIVERSITE CATHOLOQUE DE LOUVAIN	1992 - 1993	finished

*continues*

*Continued*

7	Monopolistic competition, disequilibrium and macro-economic modelling	1991 - 1994	finished
Participating institutions: C.E.P.R.E.M.A.P. (coordinator) UNIVERSITE CATHOLOQUE DE LOUVAIN			
8	Comparative applied econometrics using micro-data	1994	finished
Participating institutions: G.R.E.Q.E. E.H.E.S.S. (coordinator) UNIVERSITY COLLEGE LONDON UNIVERSITE CATHOLIQUE LOUVAIN			
9	Convergence of learning mechanisms in dynamic economic models	1994	not finished
Participating institutions: LONDON SCHOOL OF ECONOMICS (coordinator) UNIVERSITY OF HELSINKI			
10	Market structures, industrial organisation and competition policy in Europe	1994	not finished
Participating institutions: C.E.P.R. (coordinator) UNIVERSIDAD AUTONOMA DE BARCELONA CHURCHILL COLLEGE UNIVERSITY OF SUSSEX			

### 3. RECENT DEVELOPMENTS IN MACROECONOMICS

During the last two decades macroeconomic theory experienced a considerable change. The former consensus amongst economists about short-run macroeconomic aspects broke down, leading to different strands of research in explaining fluctuations in the aggregate level of economic activity on the one hand, and jointly to a microfoundation of macroeconomic relationships on the other. We will address these developments in the next subsection.

The second main event in macroeconomics was the revival of growth theories in the eighties. Instead of explaining the growth of productivity by exogenously determined technological progress as in the Solow (1957) model, these new growth theories emphasize the role of human capital, the endowment with public goods (e.g. infrastructure) and innovation activities to account for the lack of convergence.

The third mainstream in real macroeconomics stresses the inclusion of the public sector into macroeconomic models on the basis of optimizing behaviour. This allows for new insights into the effects of taxation and public debt on private agents' decisions. In addition to the theory of public choice an

alternative theory of the public sector is gaining ground. Since this research development is rather in the very beginning, a lot of problems have not been solved satisfactorily. It is still uncertain which of these competing theories serves best in explaining various public sector issues.

International trade theory experienced a new orientation by incorporating approaches from industrial organisation theory. Models of imperfect competition, for instance oligopolistic markets, are used to analyze problems of international trade specialization, means to improve competitiveness and, last but not least, strategic trade policy as an instrument to increase welfare. Although empirical results are rather ambiguous so far, these fields of research seem to be not only interesting from a theoretical viewpoint but also important when judging policy issues in the context of the triad.

Macroeconometric modeling in general fell behind the state of macroeconomics. Except for new developments in the implementation of rational expectations in real business cycle models and the explicit formulation of rationing aspects in disequilibrium approaches, large-scale econometric models still exhibit the traditional framework. New approaches like the concept of cointegration are still limited to the analysis of single equation models to explain investment behaviour, money demand,

consumer expenditures for durables and labour demand.

### 3.1. Old and new paradigms in macroeconomics

Until the end of the 60's a consensus existed amongst macroeconomists that (i) fluctuations in the aggregate level of economic activity, measured in terms of capacity utilization, gross domestic product or unemployment, are the results of demand shocks, (ii) money matters although monetary policy may be ineffective in some phases of the business cycle and that (iii) in some periods involuntary unemployment, i.e. an excess supply of labour at the prevailing level of real wages, exists not being resolved by market clearing processes due to wage and / or price stickiness. In these heydays of the Keynesian paradigm demand management by the government has been considered as the appropriate instrument to stabilize growth and employment. The business cycle was a historical phenomenon (Bronfenbrenner (1969)), and fine tuning on the basis of large-scale macroeconomic models seemed to allow a smoothing of economic development.<sup>1</sup>

Macroeconomic modeling was based on an equilibrium approach allowing for certain nominal rigidities, especially nominal wage stickiness, and linking the real and nominal sector of an economy together by the Phillips curve and, thus, being able to explain price adjustments. Due to the assumption of sticky nominal wages the classical dichotomy was broken and monetary policy, for example, was thought of being able to influence the development of real variables. In macroeconomic modeling expectations are treated in a rather cavalier way, in general their formation approximated by a simple partial adjustment mechanism.

Within this traditional view the research project on "Modeling the Interdependence Between European Economies", carried out by several national research institutes, analyzed the question whether a consensus amongst European modellers exists or not.

The idea behind this was finding out whether any important discrepancies occur when policymakers try to coordinate their macroeconomic policies when faced with common shocks. The second aspect taken into account related to the use of large-scale multi-country models for the design and organization of economic policies in Europe.

<sup>1</sup> As usual, German "exactness" framed the goals of economic policy - steady growth, full employment, price level stability, and balance of payments equilibrium - in a law.

Based on model specifications which are Keynesian in the short run but allow for medium-term adjustments of supply factors, comparisons of model results were made by simulating the different models due to common exogenous shocks as well as to single-country shocks. The main result of these exercises can be summarized by the statement that "although the models all tend to similar specifications across the different countries, differences in simulation responses still occur. There appears to be no real consensus across the models but the results do support some general qualitative conclusions", say the authors in their final report to the Commission.

The consensus in macroeconomic theory broke down at the beginning of the 70's when the missing microeconomic foundations were challenged by Friedman (1968) and Phelps (1968) and when demand management policy was unable to cope with supply shocks (the oil crises in the 70's), causing increased rates of unemployment and inflation. Both challenges together (see Mankiw (1990)) led to different developments in macroeconomics. Macroeconomists no longer have a clear-cut answer to the question in which way fluctuations in economic activity can be stabilized and high persistent rates of unemployment reduced. Different propositions about the Walrasian features of an economy on the one hand and the classical dichotomy on the other split mainstream macroeconomics into two schools of thought: New Classical economics (including real business cycles theory) and New Keynesian economics. While the former not only abandoned the premises of Keynesian macroeconomics and denied the existence of involuntary unemployment, the latter attempted to understand the microeconomics of price and wage rigidities and hence unemployment in a Keynesian framework.<sup>2</sup>

Research along the neoclassical tradition led to new business cycle theories that left no room for systematic monetary policy to influence the path of real economic variables. These theories are the New Classical Macroeconomics and the Real Business Cycle Theory. Research along a non-Walrasian approach proceeded to resurrect the consensus view and is labeled as the New Keynesian Macroeconomics. Common to proponents of this view of the business cycle is the belief that economic fluctuations reflect some sort of market failure, either in the labor or in the good market, rather than

<sup>2</sup> For a more elaborate introduction see Mankiw (1990), Barro (1989), the Symposium on Keynesian Economics Today in Journal of Economics Perspectives, 1993, Mankiw and Romer (1991) and Gordon (1991) and as far as modern growth theory is concerned see Sala-i-Martin (1990).

the Pareto-efficient response of the economy to changes in tastes and technology, as economists in the neoclassical tradition suggest.

Although in the General Theory Keynes stressed in various chapters the importance of expectations as factors determining investment, output and employment, textbook versions of IS-LM neglected them completely. A lot of research in the past two decades has been devoted to this issue. Based upon J. Muth's (1961) seminal article much of the work in macroeconomics is devoted to rational expectations. Since economists usually assume rational behaviour of economic agents, the presumption that individuals act rationally in forming their expectations is natural. At first sight this assumption seems trivial. However, in the context of the New Classical Approach which assumes model consistent expectations, this has serious implications. Then, rational expectations imply the irrelevance of macroeconomic policy because economic agents will take into account in their optimization behaviour the effects of policy changes. The critique of their approach that economic agents do not possess the analytical ability to consider complex economic systems and that they are unable to distinguish between "right" or "wrong" models is irrelevant. The central point has to be seen in their narrow definition of rational expectations: except for unexpected stochastic shocks (with known properties of the distribution) the future development of the economic system is determined and cannot be influenced by policy actions (Schelbert (1983)).

As far as macroeconometric modeling and testing is concerned, the crucial point with rational expectations relates to Robert E. Lucas (1976) who argued that most policy interventions change the way economic agents form their expectations about the future. Since this change in expectation formation is not incorporated in existing large-scale econometric models, these models are not useful in advising policy or in the evaluation of the impact of alternative policies.

Whether expectations are rational or not, however, has to be investigated empirically and much of work in theoretical and applied macroeconomics in recent years turned to the central role of expectations. The Euler equation became a prerequisite in many studies.

### 3.2. Business cycle theories based on a Walrasian general competitive equilibrium framework

When introduced into the macroeconomic framework as has been done first by Sargent and Wallace (1975)

along the lines with an expectations-augmented Phillips curve the conventional policy recommendations changed dramatically. These models predicted that systematic monetary policy was irrelevant to the path of output and employment. This important result was obtained by assuming a general Walrasian framework with continuously clearing markets and no imperfections. Given these pre-requisites the classical dichotomy was re-established in the sense that nominal magnitudes only influence nominal magnitudes and leave real variables unchanged. Therefore, this new theory of the business cycle was called "The New Classical Macroeconomics". Clearly, relaxing the assumption of frictionless markets and allowing for certain types of imperfections such as nominal wage rigidities or certain types of wage contracting, e.g. staggered wage contracts as analysed by Taylor (1980) and Fischer (1977), among others, left room for monetary policy to influence permanently real magnitudes, despite the fact that private agents form their expectations rationally.

Within this line of research two directions evolved: the first one was concerned with the implications of rational expectations on the formation of economic behaviour. This direction covers still a large area of recent economic research. The second direction addressed the more practical question of how public policy should be conducted. The key words here are rules versus discretion as well as the time inconsistency problem of optimal policy (Kydland and Prescott (1977) and Calvo (1978)) and credibility of political institutions in performing their policy actions (Cukierman and Meltzer (1982)).

With respect to the first point the basic problem is as follows: Let us think of a central bank that announces a policy of low inflation. This announcement is not credible, because once private agents' expectations are formed about this new policy, the central bank has an incentive to change its policy in order to exploit a short-term Phillips curve trade off by fooling private agents. Since private agents understand this incentive of secret policy switch they will, therefore, not believe in the bank's announcement at least in its very beginning. The second point put the analysis one step further and asked what authorities can do to install or to improve credibility for their policies. To overcome this time inconsistency problem the proposed solution was to give up discretionary in favour of fixed policy rules.

In case there is an agreement about the proposal of fixed rules the next question arises with respect to the robustness of the implemented rules. The SPES-funded research project on "Robust Rules for

European and G7 Macroeconomic Policy" fitted into this area of research. The researcher investigated empirically already existing or proposed rules for macroeconomic policy with newly suggested ones. The main theme was the derivation of robust fiscal and monetary rules for international policy coordination that could cope with various types of uncertainty.

The empirical analysis proceeded in three steps: Firstly, adequate modelling of uncertainty in the economy, and then evaluating the best rules for coping with each type of shock - an internal or external one. Secondly, linearising the model in order to apply it to direct policy analysis. And thirdly, assessing the performance of various types of fiscal and monetary rules for the economies under consideration, taking into account different types of uncertainty and different exchange rate targets.

For a policy rule to be manageable and simple they decided to use a linear feedback rule of the Williamson-Miller-type for an extended target zone approach. In this setting fiscal policy should be used to manage internal nominal demand growth, while monetary policy is aimed at external balance by holding exchange rates within wide bands defined around equilibrium levels. The ultimate targets chosen were output and inflation. Within the context of a rather Keynesian-type macro model in the sense that output is determined by aggregate demand, two sets of policy rules were investigated. In the first case fiscal and monetary instruments are directly assigned to the ultimate targets, whereas in the second case the policy rule allows for an extended target zone approach. Simulating their model the outcome of the investigation indicates that the extended target zone approach outperforms the alternative rule only when the cost associated with exchange rate variability enters explicitly into the welfare function. Furthermore, the researchers conclude that the performance of the extended target zone scheme does not remain particularly robust over different types of shocks.

A second research project, started in 1994 and therefore not finished yet, deals with the problem of rational expectations and is entitled "Convergence of Learning Mechanisms in Dynamic Economic Models". Dynamic economic models with forward looking expectations of agents are plagued by multiple solutions and possibly speculative bubbles at some of the equilibrium points. Using linear as well as nonlinear models the contractor and his collaborators will examine systematically the stability of these sunspot solutions as well as the fundamental solution in case that agents'

expectations evolve according to an econometric learning mechanism.

Up to the present state of research, the "New Classical Macroeconomics" attracted only a few adherents for reasons which are not quite clear. Although critics cast doubts that purely random expectational errors may cause large fluctuations in real variables and although the empirical evidence is rather mixed, "there is no completely compelling evidence that explains why this approach has been so widely abandoned." (Mankiw (1990)).

Also in the tradition of a general Walrasian equilibrium approach with frictionless markets and perfect competition, and thus absence of any market rigidities, a new business cycle theory emerged, putting emphasis on real rather than monetary shocks to explain observed business cycle behaviour, the so-called "Real Business Cycle Theory" or shorthand RBC. The main protagonists of this view are Long and Plosser (1983), Barro and King (1984), Prescott (1986), Plosser (1989), and Entorf (1989, 1991).

RBC-theorists view cycles as arising in frictionless, perfectly competitive economies with perfect markets subject to real shocks, such as random changes in technology or productivity. The distinguishing feature as compared with Keynesian-type models is its contribution of showing that fluctuations in economic activity are consistent with competitive general equilibrium environments and rationally maximizing agents. Stochastic fluctuations in factor productivity are regarded as the predominant source of fluctuations in economic activity. Large random fluctuations in the rate of technological change lead to fluctuations in relative prices causing private agents to alter their labour supply and consumption decisions. Two rather uncommon assumptions are the driving forces in RBC-models. The first is that the economy experiences large and sudden shocks in the available production technology as opposed to the more widespread view that technological progress occurs gradually. The second assumption concerns the presumed large intertemporal elasticity of substitution between labour and leisure.

Further implications of RBC-models which do not receive much empirical support, at least for the US, are the predicted procyclical movement of real wages, which is necessary to explain why agents "in a recession find it rational to increase the quantity of leisure they demand at the same time they decrease the quantity of goods they demand." (Mankiw (1989)). A final point not common to the profession is to posit that fluctuations in employment are voluntary and hence, no involuntary unemployment exists.

Other impulse mechanisms are judged as being of second order, but nevertheless the structure of these models allows to incorporate alternative shocks as well, (see Entorf (1989, 1991)). In case a neoclassical model of capital accumulation, augmented by random shocks to productivity, is included, long-run growth as well as short-term business cycle fluctuations can be explained within the context of a unique approach. Extensions of the basic RBC-model could be the inclusion of money or government activities.

The research project on "The Integration of Countries in Different Stages of Development: Greece in the EC" takes up the RBC approach. Based on certain characteristics of this theory several simple statistics for different economies were computed and compared with respect to some empirical regularities across countries. The outcome shows that strong similarities exist in the way individual EU-economies respond to shocks, even if the shocks impinging upon their economies are of different nature. Further research topics involved the identification and analysis of factors affecting productivity in each industrial sector with special emphasis on competitiveness, research intensity and technological opportunities.

An important weakness of the RBC- theory lies in the assumption that productivity shocks or shocks to production technologies are exogenous. This lack of explanation, however, may open a field of future research by combining RBC-models with parts of what we have learned from the "endogenous growth theory". We refer to this development below.

A comprehensive overview of the current state of the development of the Real Business Cycle Theory as well as extensions and empirical results, though referring only to the US economy, is given in Mullineux and Dickinson (1992).

### 3.3. Business cycle theories based on a non-Walrasian equilibrium framework

The consensus view of short-term macroeconomics in the sixties and the first half of the seventies was based on the presumption that either nominal wages or prices are sticky. This presumption led to the break-up of the classical dichotomy and room was left for monetary policy to influence the path of real magnitudes. Either one of the market imperfections or both are sufficient to assure that the corresponding markets do not clear at the equilibrium level.

A serious shortcoming of the assumption of sticky prices (nominal wages or the price level) was the missing foundation in microeconomic theory which explains, why economic agents accept voluntarily these imperfections instead of trying to get rid of them and to be better off as a whole. Attempts to explain the existence of market imperfections and to provide a sound microeconomic foundation proceeded in three directions. The first approach is due to Barro and Grossman (1971) who assumed fixed prices and constructed a general disequilibrium model to analyze how quantities adjust in the presence of sticky prices and how economic policies influence output and employment. This strand of research was further forced amongst European economists such as Benassy (1982) and Malinvaud (1977). The most important result coming out of this line of research was the ability to explain unemployment in a classical as well as in a Keynesian way, depending on the conditions in the single markets. In the case that given demand for goods is not a constraint in the good market, unemployment arises as a result of real wages being too high; and if demand for goods is binding, unemployment arises because firms cannot sell all the goods they want to at the prevailing price. In the "European Unemployment Programme", supported by the EU, this approach is studied intensively for some European countries and the United States (see J. Drèze and C. Bean (1990)). It is assumed that micromarkets are constrained by price rigidities resulting in a CES-type function of the aggregate labour and good market in such a way that one part of firms belong to the Classical Regime, another part to the Keynesian and the rest to the regime of suppressed inflation. Econometric implementation of this model indicates not only that regime shares shift in the course of the business cycle but also that the structural component of unemployment increases in time.

Instead of asking why prices do not adjust to clear markets, research concentrated efforts to the question how the price adjustment process could be modeled convincingly. For prices to adjust, however, it is necessary to allow for some market power to change prices, i.e. one had to give up the assumption of price takers in favour of the assumption of price setters. But this change led to an inconsistency in fixed price general equilibrium models.

Therefore, new emphasis was given to the labour market. Attempts to explain rigid nominal wages were provided by John Taylor (1980) and Fischer (1977) with nominal wage contract theories. The flaws of these approaches were the lack of a sound microfoundation as well as the implied

countercyclical behaviour of the real wage, which seemed inconsistent with observed facts.

These failures to explain sticky or rigid nominal wages due to labour market imperfections finally opened a completely new route of research by concentrating on the good market and explaining imperfections - nominal in the good market and real in the labor market - by monopolistic competition and sticky prices (D. Romer (1989, 1993), Mankiw (1985), Ball, Mankiw and Romer (1989)).

Interest focuses on the behaviour of monopolistically competitive firms who face small "menu costs" when changing their prices. Features of these kinds of models are their microeconomic foundation which explains that price setters fail to restore equilibrium. It is argued that monopolistically competitive firms do not have much incentive to reduce their prices when they are faced with a declining demand for their goods. As Mankiw (1990, p. 1657) explains: "Yet because of the preexisting distortion of monopoly pricing, the benefit to the society of a price cut may be large (..) even when the benefit to the firm is small (..). If firms face even a small menu cost, they might maintain their old prices, despite the substantial social loss from this price stickiness." Following this line of reasoning there exist nominal rigidities in the good market. In order to explain unemployment, these researchers use real rigidities which prevent the real wage to fall to equilibriate demand and supply in the labour market. The most prominent argument refers to the efficiency wage hypothesis. Although persistent unemployment exists, firms do not cut wages since it would lead to a lower productivity. The combination of these two effects leads to a new explanation for Keynesian disequilibrium.

Menu costs have been one factor Keynesian economists emphasized to explain price rigidities. Romer (1993), for instance, showed that small barriers to nominal price flexibility can have large macroeconomic effects. A different view is offered by Greenwald and Stiglitz (1993). They argue that the ultimate problem is not price rigidity but incomplete and costly information. Since firms usually finance their actions not by equity but by obligations or credits to be repaid they are risk averse and their perceptions about the future will have real consequences. Shifts of the firms' demand to the left in a recession will induce markedly upward shifts in the supply curve due to the increased risk of bankruptcy. Risk averse banks will magnify an initial negative shock and make recessions deeper and longer. Insider-Outsider or efficiency wage theories of the labour market are used to explain then the existence of persistent unemployment.

Given that serious objections can be made, at least for Europe, against the assumption of continuously clearing markets, certain types of rigidities or market imperfections have to be assumed to explain e.g. European unemployment. But this direction of research is too young to make already hard and far reaching conclusions about its realism. Therefore, further research efforts are required, theoretically as well empirically, to gain additional insights in this line of reasoning. Nevertheless, first attempts have already been made.

The research project on "Monopolistic Competition, Disequilibrium and Macroeconomic Modeling" directly fits into the last mentioned strand of research. For the French economy researchers developed different models with the common characteristic of imposing certain types of market imperfections such as liquidity constraints for private households, monopolistic competition among firms, agents confronted with different quantity constraint resulting from technological rigidities, microeconomic uncertainty as well as market segmentation or the imposition of demand uncertainty firms are faced with, resulting in a possibly quantity rationing equilibrium. Most of the research papers are still theoretically oriented, but future research will also try to obtain empirical results, at least for France.

### 3.4. Endogenous growth theories

This research area of macroeconomic theory developed in the second half of the eighties and is still of growing interest. The basic distinction to traditional neoclassical growth theories lays in the emphasis that economic growth is an endogenous outcome of an economic system, and not the result of forces hitting the economy from outside. (Paul M. Romer (1994)). Romer (1986, 1990), Lucas (1988), Rebelo (1991), Grossman and Helpman (1994) and Barro and Sala i Martin (1992), among many others, are the main protagonists of the new growth theory.

This theory tries to explain the private and public sector choices that cause total productivity growth to vary across countries and to describe how lower growth countries might catch-up to the leading ones. Although intrinsically macro in its nature, future research may attempt to combine this overall view with explanations of productivity growth at the firm or industry level, yet an unsolved issue.

A controversial issue of this theory relates to the problem of convergence of per capita income in different countries. As Romer (1994) points out, the central question is why poor countries as a group are

not catching up with the rich countries in the same way that the low income states in the USA have been catching up with the high income states.

Several sources for this divergence in growth are discussed in the literature. The key idea is to allow for different technology opportunities across countries and to build in knowledge spillovers from capital investment and to assume that capital investment also increases the level of technology for all firms in the economy. An alternative approach consists of augmenting the traditional two-factor growth model for the impact of human capital on growth. In this case, investments in human capital have spillover effects that increase the level of technology. Furthermore, the production function may also be specified by a variable that picks up the stock of knowledge from expenditures on R&D, distinguishing between firm-specific and economy-wide knowledge. In this way it is possible to analyse the role of spillovers; adaptation and protection mechanisms for patents and licences can be analyzed in their effect on the level of R&D spending, but also in their importance for economic growth. Issues like subsidies for stimulating innovative activity are closely related to this type of models and to questions raised in the White Paper of the Commission (1994).

None of the SPES-funded research projects is directed to this important area of macroeconomics. We stipulate future research along this line - either at a highly aggregated macro level or at a disaggregated industry or firm level - that would improve our understanding about the economic growth process and, hence, help to provide more insights to the problems addressed in the White Paper.

### 3.5. International trade and competitiveness

The discussion of this topic in detail is beyond the task of this paper. We mentioned at the beginning that a lot of work has been done under the heading of strategic trade policy. With respect to European integration research focused on the benefits and costs of a monetary union, their effects on the real economy, problems of fiscal federalism versus harmonization of tax and social security systems and, last but not least, convergence criteria as put forward by the Maastricht-Treaty (see, for instance, C. R. Bean (1992)).

Another line of research studied the consequences of completing the European Internal Market in 1992, e.g. H. Flam (1992), as well as the policy implications of international trade between the EU and the newly industrialized countries, especially in South East

Asia. This aspect mentioned last was the theme of a funded project whose final report is not available. However, another project is worth discussing. At the time the project started in 1989 the European Internal Market was still in its planning phase and the project tried to single out the consequences of an internal market for Europe itself as well as for third countries' trade. Research papers dealing with general equilibrium models conclude that all EU- as well as partly some trading countries will gain from the 1992 internal market. These conclusions result from model simulations by assuming a 2.5 % reduction in intra-EC trade costs and by full integration. They remain mostly unchanged when the model is extended to include the former EFTA-countries. Special case-studies considered the effects of 1992 on special branches such as the pharmaceutical industry and the European footwear-trade. In respect of the heavily segmented pharmaceutical market with price controls in the southern European countries and uncontrolled markets in the north, price increases are to be expected in the controlled markets given that the Commission's directives on pharmaceuticals are more likely to induce governments to reduce discriminatory price controls than to reduce impediments to arbitrage. Furthermore, harmonisation of certification procedures across EU markets should lead to reduced price discrimination.

A completely different aspect of improving European competitiveness was addressed by the project "Reversing the European Brain Drain". In a certain sense it may be interpreted as an attempt to improve European human capital by attracting European scientists working at universities and research institutes outside Europe by providing a research environment of high standard. Following the final report, during 1990 to 1992, nine fellows of a newly created Italian research institute accepted professorships at Italian universities.

### 3.6. Public sector economics<sup>3</sup>

In traditional textbook macroeconomics the public sector has been modelled in a very simplistic manner. Broadly speaking, public expenditures were taken as given - as the outcome of a political decision process - and interest focused on taxes and subsidies and their effects on private decision making. Public debt was analyzed extensively as well as the provision of public as opposed to private goods. With the exception of the public choice approach, however, no attempts have been undertaken to model the public sector "as if" it behaves as an optimizing individual.

<sup>3</sup> Pestieau, in chapter VI, gives a broad review of 'public economics'.

This ambitious attempt became manageable within the framework of an overlapping generation model and the re-interpretation of the Ricardian equivalence theorem, see Barro (1974), Seater (1993), Blanchard and Fischer (1989), among others.

David A. Aschauer (1988) presented a model with optimizing agents making decisions in a competitive equilibrium setting which allows to take various elements of a view of fiscal policy into account. Although the model does not give unique answers to all questions related to fiscal policy, it nevertheless emphasizes the important distinction between the real as opposed to the financial aspects of the government's decisions, as former analyses did. Stressing the financial aspect of public sector budgetary policy leads to the outcome of a near equivalence of debt and taxes in the financing of public expenditures. Instead of this, looking at the real aspects of fiscal policies gains considerably different insights. This view allows to look at the time profile and composition of public expenditure on goods and services as well as on the role of distortional taxation in affecting the decisions to consume and produce at the margin.

Whereas for monetary policy the major trade-off is between price and output stability, the trade-off for fiscal policy is between output stabilization and the distortions from tax and spending policies. This implies that fiscal policy has important effects on the macroeconomy, even in the absence of nominal rigidities or other imperfections. It is for these very effects that we are in need of a sound economic theory of the public sector. The usefulness of a public sector theory is twofold: it allows private agents to evaluate public actions properly in their decision processes, and enables public authorities to make their decisions on a sound economic base by considering desired and undesired effects of their policies. Furthermore, public authorities will also be able to decide optimally on the burden the next generation will inherit from the present one with respect to total public debt, future taxation and the like. In the presence of distortional taxes the overlapping generation framework allows for optimal taxation by minimizing the excess burden and, thus, for given expenditures, determines the optimal level of public debt.

Fiscal policy also provides a useful tool to influence the time path of optimal capital accumulation. If individuals have finite planning horizons, the economy may be inefficient since that it may have a capital stock that exceeds the golden rule level. The government can then use deficits and debt policy to reduce the capital stock and make all generations better off. A policy of that kind requires a sequence of

taxes that would support this path. This aspect relates to economic growth theory and takes a long-run view.

### 3.7. Some issues in applied econometrics

Until the middle of the 60's, econometrics mainly focused, from a methodological point of view, on macroeconomic modelling, estimation techniques for simultaneous equation systems, asymptotic and small sample properties of specific estimators, hypothesis testing and simulation methods for deterministic and stochastic systems. Since the 70's, however, microeconometrics have become increasingly important both in methodological and applied research. The availability of large data sets for households, firms, etc. on the one hand, as well as the generally felt need for the microeconomic foundation of macroeconomics on the other hand are the main reasons for this development, the extent of which has been made possible by the dramatic decrease of computational costs.

Until a decade ago the toolbox of microeconometricians contained mostly estimation methods developed for cross-section studies. Typically, they imply tight distributional assumptions on unobservable variables and are based more on fully parametric ML-estimation. However, since researchers became worried about the impact of distributional assumptions, sometimes difficult to justify, lots of specification tests have been developed for checking the validity of the chosen specification. In addition more flexible and more sophisticated models are used and, finally, some efficiency has been sacrificed since ML-estimation is too burdensome or even impossible to conduct, GMM methods or simulation methods are proposed for estimation and to avoid unnecessary overidentifying restrictions semi- and nonparametric methods are proposed. A lot of different models have been developed in the literature and applied to microeconomic analysis. Discussing their particular advantages and problems is far beyond our scope and space limits, and indeed not necessary because many excellent surveys are available (for a reference see König and Lechner (1994)).

The project on "Comparative Applied Econometrics Using Micro-Data" fits in this strand of research. The contractor's proposal concentrates on two main empirical questions - the analysis of firms' investment behaviour as well as the analysis of agents' behaviour on labour markets - with the aim of comparing specifications supported by micro-data available in three European countries (Belgium, France, and the United Kingdom). The empirical investigation should proceed in two ways, one using

panel data and the other applying econometrics of survival models. Since the project has only started in 1994, no interim or final report is available yet.

Another important development in the last years was the co-integrated approach as discussed by Engle and Granger (1987). While developed for a bivariate analysis, rapid progress has been made to extend this approach to the multivariate case (Johansen (1988) and Johansen and Juselius (1988)).

The concept of co-integration is based on the assumption that many economic time series are nonstationary and dominated by stochastic trends. Given that all series are integrated of the same order, it is then possible to estimate the long-run relationship directly with ordinary least squares in the levels. If co-integration cannot be rejected, these time series have an error-correction representation allowing to model short-run adjustments. The important issue here is the possibility to close the former gap between short-run modelling in detrended time series with no relationship to its long-run equilibrium level and long-run equilibrium modelling without being able to specify the adjustment process or the short-run dynamics.

As, to our knowledge with a few exceptions, this concept has been applied primarily to single-equation models, macroeconomic modeling is still lacking behind. Like in other econometric fields, however, the process from inventing new estimation methods to their routine use in empirical analysis is subject to considerable time lags. Nevertheless, even these time lags seem to get shorter as the number of econometricians increases.

#### 4. EU-RESEARCH FUNDING: PROBLEMS AND PERSPECTIVES

If one is willing to accept that the stimulation of researchers' mobility and the reduction of the scientific gap between US and European research in economics is the main scope of SPES (and HCM), the activities so far have contributed, in terms of quality of research, to this goal. Heterogeneity as regards the problems addressed corresponds to that mentioned in the international literature. In this context, however, two aspects seem worthwhile to be discussed more thoroughly: Firstly, the hitherto still strong British-oriented activities in research and networks and, secondly, the policy relevance of several projects.

The geographical distribution of research funds exhibits a strong concentration in favour of British

universities and research institutes. Given the fact that, traditionally, the links between American and British researchers in economics are very strong, this should not be considered as a disadvantage if EU-research policy aims to close the scientific gap between this and the other side of the Atlantic. Other reasons for this concentration may be added. Since English is the lingua franca in economics, the language barrier is easier to break down compared with other Continental languages. Furthermore, experience so far indicates that the flow of information in the United Kingdom seems better organized than in other member countries. In spite of all these advantages, however, it is desirable to strengthen the efforts to integrate other countries more intensively as main contractor in research and networks. Economic problems look quite different in the North and South as far as price stability, social security systems, debt management, etc. are concerned, which means that goals of economic policy are valued differently in member countries. Given different preferences and attitudes as well as factor endowments and institutional frameworks, efforts to encourage comparative studies should be fortified.

One way to achieve this by maintaining the successful bottom-up approach of funding could be the definition of narrower fields of research within this approach. This strategy would bring forth at least two additional advantages. Firstly, not only the primary aims of funding would be met, but also the EU or some of the member countries could gain from the results of the research in a more direct way. Secondly, this more specialized strategy of funding would avoid wasting scarce resources into research fields in which much work has already been spent. Economically speaking, the policy of funding could be improved with respect to the EU without worsening the position of the participating scientists.

In a slightly different sense, this statement was also put forward by Mogens Dahl in the introductory chapter of this report. He stresses that, in contrast to the fields which have already matured to qualify for European wide review, other research areas are still underdeveloped in Europe or - with respect to management science - research in this area is not nearly as visible as it is by American business schools. Furthermore, more emphasis should be given to topics or subdisciplines which are cornerstones from an economic policy point of view.

The above statement excludes explicitly the creation of a "European Economics" (as opposed to the predominant position of the US) but rather emphasizes the need for a more European-oriented view to overcome specific European problems which

are absent in the US economy. The importance of a more European-oriented economics becomes increasingly evident, especially after the constitution of an internal market. In a recently published special issue of "Kyklos" many European as well as non-European economists contribute to this topic.<sup>4</sup> Francesco Forte (1995), former Italian Minister of Finance, sketches a quite positive view of a *European led* scientific development. Going back to the end of the nineteenth century and to the first decade of the twentieth century, Europe was the dominating force in scientific developments, despite of the fact that cultural as well as linguistic differences across countries were present. Nowadays a similar development takes place. Increasing numbers of European meetings and European journals instead of national ones are indicative for this development. Nevertheless, this can only be the first step in the reconstruction of a European-oriented economics. Improvements in the exchange of scholars and students as well as a more efficient way of funding research activities are still outstanding issues on this way.

With respect to economic problems which are more European-like Forte (1995) suggested to direct research into the areas of the welfare state, of the labour market regulations and of the employment policies as one branch, and to differences in the behaviour of households' saving decisions and firms' investments. But also financial markets are worth analysing because due to different institutional settings the market participants act differently to those in the US.

Research agendas are at most tentative, incomplete, and rely on individual visions and prognoses. Since they are based upon individual proposals and reflections, preferences, interests or judgements, it would be a dubious task to pick out future fields of promising research in macroeconomic theory as a central theme. However, as far as applied research is concerned, some comments might be useful, especially with respect to the policy relevance of ongoing projects.

As for policy relevance, the ongoing research neglects to a high degree issues of European integration and problems the Union has to face today and in the future. The White Paper (1994) analyses carefully the present state, problems it is facing and some ways of solution. It states a decline in the potential growth rate of output from 4 to 2.5 per cent, a serious decrease in the investment ratios, and a deterioration in competitiveness against the major

trading partners USA and Japan, accompanied with a loss in export shares. Furthermore, R&D expenditure shares and innovation activities worsened, compared with Japan and the US. Several reasons are considered to be responsible for this development, the most important being the disregard of future markets in favour of traditional markets, the inadequacy of current social security systems, the lack of international competitiveness, and, last not least, the strong concentration on process instead of product innovations. To overcome these difficulties the Commission suggests strategies for a successful European growth policy, including necessary increases in the investment and savings ratios, low interest rate policies as well as the intensive use of international trade possibilities. And to improve European competitiveness in the world markets the White Paper calls for harmonization and standardization of networks within the Community, intra-European collaboration amongst firms, financial support for small and medium-sized firms as well as specific support in the development of new technologies. Provided that the competence to pursue these suggestions is at the national level, the community claims responsibility with respect to harmonization, standardisation, and coordination of national policies.

Even if one accepts this scenario, there is still much need for applied research. We know little about the relationship between innovation activity, growth and employment. If "too much" innovation in technological processes are considered as an obstacle to employment growth, this view posits labour saving technological progress at the firm level while innovations in products are viewed as a chance to create new markets, improve competitiveness and, hence, stimulate employment growth. Macroeconomic employment effects of process innovations, however, are still ambiguous yet. As the German innovation survey (1995) indicates, for instance, a considerable part of process innovations are not directed to cost reductions (especially labour costs) but related to the introduction of new products. On the contrary, product innovations are partly aimed to substitute old products with no employment effect whatsoever. In general, the research agenda should include not only the microeconomic effects of innovation activity - and translate these results by analogy to the macroeconomic level - but also pay much more attention to the aggregate effects. For instance, reducing efforts in process innovations might result in hindering the creation of new products if both are complementary.

First attempts in this direction have been undertaken e.g. by König, Buscher and Licht (1994).

<sup>4</sup> See *Kyklos*, Vol. 48, 1995, Fasc. 2, Special Issue: Is There a European Economics?

Capital market imperfections and risk averse behaviour of firms and banks are - as has been mentioned above - a main obstacle for investment and innovation activity. This is also considered as an important factor to impede new establishments. Recent studies (e.g. Hamermesh (1993)) indicate that roughly fifty percent of gross employment growth can be attributed to those new foundations of companies. Growth theories so far - old and new ones - neglect this aspect completely while from a political point of view it might be an important instrument to stimulate growth and, hence, employment. Capital market imperfections and risk adverse behaviour are mainly responsible for the considerable decline of investment ratios in almost all western countries. But investment in either physical or human capital is one of the most important driving forces behind growth and employment. Improving the condition for profitable investments, therefore, presents a necessary prerequisite for sustainable growth and high employment.

Especially investments in human capital are becoming increasingly important in technologically high developed countries. Even in the near future information highways and international networks in telecommunication as well as in other areas will be established. These huge investments require a highly qualified and mobile labour force. Therefore, being equipped for future needs and possessing a high standard of qualification investments in human capital are called for. Strategies to improve human capital mobility have to be developed, and collaboration among scientists across countries has to be established or, if already existing, to be improved and enlarged. Human capital mobility - given a sufficient amount of financial means for both the private and the public sector to finance investments - will then contribute to a more even and balanced development across European countries by knowledge spillovers.

But as usual in economics, there is no free lunch. Increased and improved human capital mobility may lead to serious problems in respect of different national social security systems and traditionally given family structures. Therefore, European researchers as well as politicians are forced to think about a possible rearrangement of the social security systems. The relevant questions and problems have been put forward in the Green Paper of the Commission (1993). This problem is more serious than attempts to harmonise tax systems, at least with respect to European labour markets, since substantial differences in expected social security receipts may induce large movements of the labour force to those countries which are most beneficial

from their point of view. As a consequence this may lead to increased social security contributions and labour costs, worsening the competitiveness of these countries relative to the other ones. Furthermore, movements will be induced from the relative poor to the relative rich countries and hence, enforce the already existing gap between the South and the North.

Until today economists have not reached unanimous agreement about whether national or a European-wide social system should be installed. Moreover, diverging opinions even exist with respect to alternative arrangements of a European social system.

The crucial point in this discussion relates to the question whether factor markets in Europe operate more or less frictionless and efficient or whether labor and capital markets are characterized by imperfections especially with respect to mobility, see Berthold (1993) and Meran and Prinz (1994). Three additional points deserve mentioning in this context. The first relates to the problem of "social dumping" within the EU. Here it is argued that poorer EU-countries have an incentive for social dumping which will lead to distortions in the competitive position in the good markets. Therefore, social activities have to be harmonized a priori. Whether this argument is true is still open to debate.

The second point refers to the "internal market" established in 1992. From a theoretical viewpoint we would expect that open goods and factor markets will converge by an international exchange of goods and services as well as capital and labour. This convergence in the living conditions will then allow to maintain national security systems. Most recent developments challenged this view. Due to 'learning by doing'-effects already existing regional or national disparities may even become enforced. Furthermore, it is presumed that external effects of technological knowledge basically operate in locally restricted areas, maintaining or even increasing existing disparities.

Convergence is a problem of its own. Our knowledge how convergence might be achieved is rather imperfect. There are two conflicting views about convergence. The first one, proposed by Barro and Sala-i-Martin (1992) among others, suggests that convergence will occur. This result is based on an empirical study of the different states of the US. Nevertheless, this process will take a long time. The opposite view, favoured by Myrdal (1957), states that convergence will not occur. Discrepancies across areas or nations will prevail or even increase. Dominant and/or leading regions will attract new

technologies, capital and labour, whereas less developed areas will lag behind this development. As a result existing discrepancies across areas will not vanish in the course of time.

But even if we have some rough ideas about convergence we are still left with the question "how quick will it be achieved?". This is an important question to be analysed. If convergence is rather slow disparities will exist for a long time leading possibly to unwanted labour or capital movements into higher developed areas and thus perpetuating the already existing local disparities.

The final point is associated with the subsidiarity principle which should serve as a correction of externalities between national fiscal policies. Budgetary interventions at the European level ought to be admitted only in the presence of cross-border externalities of economies of scale, which cannot be

properly alleviated by a simple coordination between concerned national governments (Bureau and Champsaur (1992)). This principle, conserving national characteristics, may conflict with growing transfers across countries as a means of European structural policy.

We think that all problems Europe faces and which are listed in the White Paper are broad enough to allow for further funding based on the bottom-up approach. Directing research activities into these fields will be compatible with the primary aims of the Commission to improve mobility among European economists as well as to enlarge training opportunities. Additionally, European as well as national policy institutions could also gain from this re-direction. This re-direction is in line with the primary objective of science - namely to improve our knowledge and our standard of living by solving problems we are confronted with in our daily life.

## IV MICROECONOMICS AND THE RELATIONSHIP BETWEEN MICRO AND MACRO PHENOMENA

*Alan Kirman*

### 1. INTRODUCTION

Although the general title of this survey is "microeconomics", the subject matter reflects the expansion that this field has seen recently and a number of the topics covered here would not traditionally have fallen under that heading. Furthermore some parts of other topics surveyed in other chapters of this report cover themes which can now be thought of as falling under the heading of microeconomic theory. Whilst it has long been the case that microeconomic models have been used as a basis for aggregate analysis in many fields of economics, the vogue in the applications of game theory has meant that the separation between pure micro-theory and industrial organisation, for example, has become much clearer. The problem here is not simply the perennial one of classification but reflects a real change in the nature of research in economic theory and a substantial shift in emphasis in certain fields.

Some years ago it would not have been difficult to specify the subject matter of microeconomics. It was essentially the study of the behaviour of the individual economic actors, whether consumers or producers, faced with the constraints provided by their technologies and those imposed by the markets typically through market signals such as prices. The aims of microeconomic theory are basically twofold.

On the one hand economists may wish to examine the reactions or choices of individuals in particular circumstances and in this case microeconomic models may have something to say directly about the behaviour of a specific type of economic agent in specific circumstances. This sort of analysis is often referred to as "partial equilibrium analysis" since it looks at a part of the economy taken in isolation and considers the state of the rest of the economy as given exogenously. Thus one might be interested in constructing a very "partial" model of a particular actor or of the actors in a particular single market and analysing the characteristics of their behaviour and their reaction to some change, such as a tax change, in the constraints that they face. Such partial models may be used to study the reaction of individuals to particular measures or to more general changes in their economic environment. From this point of view the microeconomist, like the molecular biologist, studies micro phenomena for their intrinsic interest.

However, the microeconomist shares with the molecular biologist a more ambitious agenda which is that of using models of individual behaviour as the basis from which a model of the economy, or organism, as a whole could be developed. Thus aggregate, that is, macroeconomic phenomena, could be derived directly from a model of a set of individual economic agents. Such models of agents were the building blocks of general equilibrium theory,

culminating in the "Arrow-Debreu" model which was and still is to a large extent the basic paradigm of modern economic theory. Where considerations such as "increasing returns to scale", "imperfect information" or the existence of individual market power were taken into account, these were typically regarded as imperfections or deviations from the norm which was this perfectly competitive model. The use of the term "imperfect competition" to describe situations in which firms can influence prices is indicative in this regard. Perhaps more important the "fundamental theorems of welfare economics", proved within the context of the perfectly competitive general equilibrium model, are at the heart of the idea that the market is "a socially efficient mechanism" for allocating resources. The drive to deregulate and to privatise is founded on this sort of result.

Yet what has become apparent over recent years is that the relationship between micro and macro economic behaviour is, in fact, more complex than it was previously held to be. The full general equilibrium model of the economy whilst being rigorously coherent gives little guide as to the behaviour of economic aggregates. The alternative "micro based" macroeconomic models widely used in macroeconomics are generally based on the behaviour of an average or "representative" agent and such models are unsatisfactory, for reasons to which I shall return. Much of the recent investment in microeconomic theory has been in modifying some of the basic hypotheses of the standard model and the consequences of this for understanding aggregate economic phenomena are still far from being fully understood. Nevertheless interest in the area of microeconomics and the micro foundations of macroeconomics is strong and there have been a number of interesting recent developments.

I will therefore, in this brief survey, first give some indication of the way in which the field of microeconomics is evolving and then identify particular areas of strength in Europe, the nature of the contributions made, those centres which have developed a concentration of talent, and lastly evaluate the contributions of European Commission financing to those developments through programmes such as SPES<sup>1</sup>, HCM, and ACE which were endowed with similar funds but rather different objectives. While SPES and HCM naturally included

microeconomic theory among the fields to be funded it seemed that most of the funds devoted to the ACE programme would go to studying the macroeconomic aspects of transition. Yet, in fact, a considerable part of the economic research funded under the ACE programme (some 24% of total ACE expenditure) was devoted to microeconomic questions. This is because the economists involved were seeking to answer the question as to how individuals in Eastern Europe and the former Soviet Union, both consumers and producers, would respond to the major structural changes which have occurred in these economies.

## 2. TRENDS

One clear direction of research has been to develop the general equilibrium approach and to construct models which incorporate some of the difficulties, or "imperfections" I have mentioned and to examine the resultant equilibria. I will come back to such models in the next section. However, doing this does not avoid a more fundamental problem which arises from the results of Sonnenschein, Mantel and Debreu. From these results it follows that the standard approach of making assumptions on individual characteristics cannot give either uniqueness or stability of equilibrium. This observation is far from being of only academic interest. It is of fundamental importance for the microfoundations of macroeconomics. The lack of stability is important since if it cannot be shown that under some reasonable adjustment process the economy tends to an equilibrium the very concept of equilibrium is of only abstract interest. Furthermore, if equilibria are not unique then the standard method used by macroeconomists to make policy recommendations, the "comparative statics" approach, cannot be used. If there are multiple equilibria then one cannot say what should be compared with what before and after a policy change.

The reaction of general equilibrium theorists has either been to accept that we must live with this fact and to continue to attempt to construct less idealistic models which gradually incorporate features of reality, or to develop alternative hypotheses, for example on the distribution of characteristics which will restore uniqueness. For the macroeconomist the easiest way out is simply to ignore the problem by treating the economy as though it acted like one representative or average agent. Thus, paradoxically, models which are still rooted in the study of the optimising behaviour of a single isolated individual are mostly to be found now in the macroeconomic literature where analysis in terms of the representative individual is still commonplace.

<sup>1</sup> A list of the SPES projects that are used, in this chapter, to assess the work funded from European sources, is given at the end of the chapter. SPES numbers are indicated in the text as a guide to which individuals and institutions mentioned have received support. It is not necessarily the case that every article from those individuals or groups cited in the text was directly produced for the contract in question.

For many economists and particularly those concerned with policy it is macrolevel phenomena which are of real importance and the purpose of microeconomic analysis is to provide a sound basis for the investigation of aggregate phenomena. Thus a simple approach is to assume that having developed what we consider to be a rigorous and self consistent model of the individual then we can analyse aggregate data as representing the choice of an average or representative individual. Put somewhat less simplistically, since economies are in the end no more than the aggregation of many individuals, understanding the behaviour of individuals well enough should suffice to explain the behaviour of aggregates. Elsewhere, in other disciplines ranging from physics and chemistry to sociology, the same discussion has developed.

In economics we are faced with the same problem as in these other fields and we have to accept that the relationship between micro and macro behaviour is far from simple and that the aggregate cannot be viewed simply as an enlarged version of the individual components.

It is this problem of the relationship between micro and macro phenomena that I will use as the leit motif for the examination of the various contributions that I study. For this reason some of the examples of research that I cite are taken from areas which would not normally have been considered as falling within the traditional, rather narrow, definition of economic theory.

I will start with the direct inheritance of general equilibrium theory and see how the incorporation of various features has modified the basic view of the functioning of the markets. I will then look at the increasing role of game theory, which takes the opposite view of the functioning of an economic system. The underlying idea of the standard general equilibrium model is that of a set of isolated individuals each of whom responds to market signals but not to each other. Thus individuals are viewed as optimising under constraints and no direct conscious interaction between agents is envisaged. On the other hand in the game theoretic approach, every individual is considered as taking account of the actions and reactions of every other individual, and what is more is aware that all the other individuals are behaving in this way. Such analysis, at the level of the whole economy, is hardly realistic but many insights into the nature of and evolution of organisations, of contractual arrangements and of the incentive compatibility of the latter have been obtained. In between the two extremes of full blown game theoretic rationality and economies viewed as

mechanisms in which individuals react to central signals lie many classes of models, particularly those described by such terms as "bounded rationality" and "evolutionary economics". Lastly I shall look briefly at some recent applications of the theory of individual behaviour in particular areas although, in general, many applications will be dealt with in the surveys of specialised areas provided in the other chapters of this report.

### 3. MICRO AND MACRO PHENOMENA

#### *General equilibrium theory*

General equilibrium theory as a basis for macroeconomic theory, it has been argued, is at an impasse. Firstly, as I have mentioned, thanks to earlier results it is known that this standard most basic model has, in general, neither unique nor stable equilibria. Without stability with respect to some reasonable adjustment process, the discussions of the properties of the equilibrium state lose much of their force. The assertion that the market leads through "the invisible hand" to an equilibrium situation which is efficient is undermined, for example. The typical "comparative statics" exercises conducted by economists to examine the consequences of some policy change are meaningless in the face of multiple equilibria, for example.

Early work by Hildenbrand (1983) in Bonn and more recently Grandmont (1992) in Paris has suggested that if we take specific account of the heterogeneity of agents then these problems may be alleviated. Thus, if we are prepared to make assumptions about the distribution of individuals' characteristics, we may recover uniqueness and stability of equilibrium. Hildenbrand in his original work focused on the distribution of income and showed that if that income distribution was declining, that is at each higher income level there were fewer individuals than in the previous one then demand curves for all commodities would be downward sloping and equilibrium would be unique and stable. Although this assumption as it stands is implausible, (it can, in fact, be weakened), the idea that heterogeneity of agents could restore the characteristics required of an economic model by macroeconomists pointed the way for further research in this direction which is the opposite of the standard representative individual approach. Grandmont, gives an elegant example of how increasing heterogeneity of individual's preferences can also generate a unique and stable equilibrium.

One observation that is perhaps worth making at this point is that the general equilibrium model in its fully

fledged form is too elaborate and detailed a description of an economy and the specification of the characteristics of all the individuals is too ambitious a way of arriving at conclusions about aggregate behaviour. It is akin to analysing thought processes by starting from a complete description of the network of neuronal connections in the brain.

The conceptual problems mentioned above have not prevented the development of a significant investment in computable general equilibrium models which are widely used by policy oriented institutions. The early approach to the calculation of such models was based on the computational algorithms developed by Scarf and others. These "simplistic" algorithms guarantee finding a solution in which markets clear and are therefore theoretically sounder than some of the gradient methods which are actually used for the solution of such models. However the speed of solution for practical purposes seems to be better with the latter. Work is still continuing on the simplicial approach and Van der Laan and Talman in Tilburg have used this approach to find a price adjustment process for economies which is globally stable. The question remains however as to whether their algorithm can really be thought of as corresponding to a plausible economic adjustment process.

A possible view of the role of general equilibrium theory is one of looking at the characteristics of the resource allocations which result from a full analysis of all markets simultaneously, rather than that of providing a basis for the study of aggregate phenomena. Thus the emphasis is on such problems as the efficiency or more generally the welfare implications of the existence of various "imperfections" in the standard model.

For example it has, as mentioned, frequently been suggested that the general equilibrium approach to economics is necessarily identified with the idea of the superiority of the market in allocating resources, but as work by Polemarchakis in Louvain (SPES 910057), together with Geneakoplos (Geneakoplos and Polemarchakis (1986)) and others has shown in the presence of incomplete asset markets the market solution will lead to a sub-optimal allocation of resources. Thus the general equilibrium approach, even though it involves fully rational optimising individuals, should not be thought of as an implicit plea for the superiority of market solutions but rather as a method for analysing the interdependence of markets within an economy. Although it is a powerful analytic framework, recent work has shown that its solutions are not robust in several respects. Donsimoni and Polemarchakis (1994) show that small changes in the distribution of

endowments of individuals may lead to major changes in prices and the level of individual welfare. Balasko in Geneva (SPES 910091), together with Cass (Balasko and Cass (1989)) has shown that an arbitrary number of equilibria may occur in models with incomplete asset markets and this makes drawing any conclusions from such a model highly problematic. A last remark in this context is that in an intertemporal model it is possible to explain the divergence of opinion between Keynesian and neo-classical argument as to the effectiveness of fiscal and monetary policy in terms of the multiplicity of equilibria (see Geneakoplos and Polemarchakis (1986)).

The meetings of the European Workshop on General Equilibrium Theory (SPES 910091) provide a good indication of the work in progress in this area. The preoccupation with incomplete markets is one of the major themes of modern general equilibrium analysis (for a general survey of the problem see e.g. Hahn (1991) and Guesnerie's (1991) comments). The reason is clear. Many of the standard welfare properties of equilibrium in the Arrow-Debreu model and the finiteness of the number of equilibria depend currently on the assumption that markets are complete. Once these properties are lost the question arises as to how they might be replaced at least in part. Different contributions suggest different approaches. In one case it is shown that a planner, by making appropriate transfers, can achieve a Pareto improvement. The planner is constrained, following an old idea of Tinbergen that the number of policy instruments should equal the number of policy objectives. Elsewhere the introduction of "market makers" or intermediaries and its effect on the welfare of the participants in an economy is studied. Centres which have focused on this sort of problem are Geneva, Copenhagen, Bonn and Paris, all of which participated in the organisation of the European workshops.

Another domain of particular interest is that of increasing returns to scale in production. In the presence of this phenomenon, which can hardly be described as unrealistic, the existence of equilibrium can no longer be guaranteed and even if it exists it may no longer be efficient. However imposing certain restrictions may restore efficiency. Cornet in Paris (SPES 910091), and a number of researchers in Louvain (SPES 910057) have been particularly active in this field.

Of particular interest is the emphasis on contributions from younger scholars. These reveal clearly that this area still has a healthy influx of contributors. This is important since economics, like other disciplines, is constantly subject to a tendency

to focus on some particular theme which is à la mode and then to switch attention almost randomly from one such theme to another. Such a tendency is self reinforcing and curiously enough this sort of behaviour is the subject of a number of theoretical papers mentioned in a later section. The arrival of new contributors may be able to upset this sort of "herd behaviour" and sustain or revive interest in areas that have fallen from favour. However, some have argued that considerations of promotion may lead to follower rather than leader behaviour from young scholars.

I shall now survey a number of specific areas where particular developments have occurred recently and it is of some interest to compare this with the review of rather similar topics from the macroeconomic viewpoint to be found in the chapter by König and Buscher.

### *Equilibrium dynamics*

One of the major problems for economic theory is the presence of cycles in the evolution of economies. Although the existence of cycles and their analysis is a very old one in economics, Grandmont (1985) was the first to give a systematic account of how a very simple economy can exhibit not only cycles but even chaotic behaviour. The lack of predictability intrinsic in chaotic systems, even though deterministic, has given rise to an extensive literature, particularly for financial markets where a small industry has grown up with the aim of detecting chaos in financial time series (see e.g. Brock (1993). The Financial Markets Group at the London School of Economics has provided a number of papers in this area, although some of them are devoted more to the characteristics of the price series rather than to the behaviour of the individuals that generated them. However the possibility of chaotic evolution in a system with "well behaved" optimising economic agents has important implications at the macroeconomic level. The inherent stability of financial systems is put in question by this analysis. Whether or not the simple standard models of deterministic chaos, usually one dimensional, are appropriate for general economic analysis is still an open question. Some progress has been made in generalising these models and Ghiglino and Tvede from the University of Geneva have shown that cycles may occur in overlapping generations models with many agents and many goods. There is, of course, an ongoing debate as to whether these models are a more plausible explanation of cycles than their stochastic counterparts to which I will return in a later section.

Another problem which has been widely studied in connection with intertemporal economics is that of uncertainty and expectations. The standard

approach has been to characterise the equilibrium time paths of economies in which individuals have "perfect foresight" or "rational expectations". Two developments are worth noting. Firstly, expectations must be formed, in general, from the previous history of prices. One can either simply study equilibrium paths given certain rules which determine the formation of expectations. Such paths for example in a sequence of "temporary equilibria" can be very complex. Alternatively one might want to adopt a more realistic approach and look at the formation of expectations as endogenous. One of the questions here is as to whether a simple learning rule will lead to individuals predicting the future evolution of prices correctly. Under some conditions this will occur but there is also a problem of "self confirming equilibria". In this connection a particularly interesting second problem has been extensively investigated. This is the phenomenon of "sun spots" equilibria. What can be shown, following on the original work of Cass and Shell (1983), is that if individuals believe that prices are correlated with some totally exogenous and irrelevant phenomenon (hence the appellation "sun spot") then such beliefs will be self-fulfilling and the prices will indeed be correlated with the exogenous events (see Guesnerie (1986)). Furthermore it can also be shown that individuals can actually learn to believe in the significance of "sun spots" and that their learning will lead them to correct beliefs (see Woodford (1990)).

### *Game theory*

At the opposite extreme to the isolated individual model is that proposed by non-cooperative game theory. In such models every agent takes account of what every other agent does and what is more, knows that the other agents are doing so. This type of analysis, which has distinctly European origins, has given rise to an enormous applied literature, particularly in industrial organisation, and it would not be exaggerating to say that it has produced a revolution in that field. I will confine myself here to those aspects of game theory which focus on microeconomic behaviour in a general rather than specific context. However, as evidence of the importance of game theory in microeconomics, it is worth noting in passing that half of Crepes' recent and widely used textbook on microeconomic theory is devoted to an exposition of game theory.

The first observation to make is that the theoretical foundations of non-cooperative game theory are still a subject for discussion and debate and this debate is very much alive in Europe. Notable contributions have been made amongst others by Van Damme and his group at the CentER for Economic Research in Tilburg (SPES 000004), by Mertens and Forges in Louvain (SPES 000004) all involved in a project

directed by D'Aspremont, by Selten (who was recently awarded the Nobel prize in economics for his contributions in game theory) and his group in Bonn (SPES 910057), by Binmore at University College London and by Tirole in Toulouse (SPES 910082).

The largest conference yet held in game theory was held in Florence in 1991 and attracted over 300 participants. It also marked the establishment of an inter-university centre for game theory in Italy, grouping together some 12 Italian universities. The output from that conference (see Binmore, Kirman and Tani (1993)) gives a fair view of the areas of interest to game theorists and provides a discussion of some of the tenets underlying many of the applied models.

Game theoretic models, as I have said, have been widely applied and an account of these applications will be found in the chapter on industrial organisation. However a number of specific areas and developments are worth noting. The standard equilibrium notion, that of a Nash equilibrium, has been refined (see Harsanyi and Selten (1988)) to allow one to select one amongst the many equilibria that may exist, and particular attention has been paid to a number of questions that are raised by such refinements. One objection has been that the refinements are too sophisticated and not sufficiently realistic to give a real indication of which of the potentially many Nash equilibria should be the focus of economists' attention. Another problem that has received a great deal of attention is that of what happens when a game is repeated. What is the appropriate solution and to what extent does it differ from the solution to the "one shot" game?

The answer to the latter question is provided by the "Folk Theorem" which basically says that anything which is better for the players than the solution to the one shot game can happen. This has been taken, in conjunction with the evidence from Axelrod's (1984) famous "Prisoner's Dilemma" tournament to mean that cooperation naturally emerges in such contexts. However a number of recent contributions have shown that this conclusion is far from robust to perturbations. Indeed Young and Foster (1991) have shown that with noise and a small amount of mutation it may well be non cooperative behaviour that prevails in the long run. Whilst it might be thought that these questions are of largely academic interest they have had a considerable impact on the business world and have led to a re-examination of the nature of collusion. If in a repeated game a non cooperative equilibrium provides oligopolists with the same payoffs as they would receive if they acted as joint monopolists how can an anti-trust authority establish the existence of illegal collusive

arrangements? Indeed of course it would be difficult to separate this sort of analysis from that of cooperative game theory in which coalitions would form when it is to their advantage to do so.

Although most of the interest in game theory in the recent past has been in non-cooperative game theory, the study of cooperative games has continued and many of the concepts which have been developed in that area continue to be widely used. Applications of the Shapley value as a solution of a cooperative game have been used in areas as far removed as those of determining allocations of costs in the petroleum industry, in attributing landing charges for airports, and for assigning telecommunications costs within institutions. (For an account of recent theoretical contributions see Krasa and Yannelis (1994)). The old problem of the equivalence between cooperative game theoretic solutions such as the core and competitive equilibrium is still a subject for investigation and Wooder's (1994) paper gives an account of recent developments. Another problem which is of considerable interest is the existence of stable coalition structures, and this is of course closely associated with many problems in social choice theory in which research is active in the University of Caen and the GREQAM in Aix and Marseille. A question which is also of continuing interest is that of the establishment of bargaining solutions and apart from the developments made by Rubinstein and others in Tel Aviv alternative solutions have been proposed recently, such as that by Blackorby et al. (1994).

Game theory has not only yielded research within the field as narrowly defined but has also changed the analysis in microeconomics in general. This has happened in two ways. Firstly economists now pay considerably more attention to the role of strategic behaviour and secondly the sort of reasoning used in game theory has raised a number of fundamental questions about microeconomic modelling. Some of these have been the subject of long-standing debate but interest in them has been heightened by the resurgence of game theory. However, one of the major preoccupations has been with the logical foundations of game theory. In many areas the reasoning attributed to individuals is so elaborate as to put its realism and its logical consistency into question (see Binmore (1990)) and this leads us naturally to the next topic.

### *Bounded rationality and learning*

The extent to which agents are rational is the source of an ongoing debate in economics. The notion of bounded rationality is one which while discussed by Simon (1982) has recently come back into the centre of attention as a result of some of the questions

posed in game theory, particularly that as to the capacity of agents to undertake the highly sophisticated reasoning frequently attributed to them in the analysis of even the simplest of games. Our capacity to provide answers to the question as to what will happen when agents have limited reasoning capacities has been enhanced with the application of analytical approaches derived from the development of artificial intelligence in computer science. One approach is to treat individuals as cellular automata having a fixed set of choices and rules for making those choices. This approach is one of those followed by a group organised by Wyatt (SPES 910065) in Edinburgh (see for example Wyatt et al. (1994a, b) and Scott et al. (1994)). The use of these methods to study a variety of models and to compare the results with those obtained by assuming completely optimising behaviour is of unquestionable interest. It is perhaps a little extreme to say, as Sargent (1993) does, that attributing bounded rationality to individuals consists of making them like the economists who model them. However the notion that there are simple, even mechanical rules being used to make choices and also to learn from experience does capture what is involved. Both the logical foundations and the pragmatic value of this approach have been the subject of considerable debate in Europe.

This leads naturally to a second question which is that of how learning enters into play. How do economic agents learn and does their learning have an impact on the state towards which the economy moves? This problem extends, of course, beyond game theory to the economic literature in general (a series of recent papers on this subject can be found in Kirman and Salmon (1995)). In many models with uncertainty the standard equilibrium approach is to look for a "rational expectations" equilibrium, a situation in which individuals' beliefs about the distribution of possible outcomes coincide with the true distribution of those outcomes. Yet a question that has been around for a long time (see Frydman and Phelps (1983)) is how do people learn to have these expectations? Various people in Europe have contributed in this area (e.g. Binmore in London, Evans in Edinburgh, (SPES 910055) Guesnerie in Paris, Honkapohja in Helsinki (SPES 910055), Brousseau, Kirman and Marimon in Florence (SPES 000009), Marcet in Barcelona (SPES 000009), Weibull in Stockholm). There are many natural questions. Do reasonable learning procedures converge to some equilibrium situation? Is this equilibrium unique? Is it possible that beliefs do not converge at all, or converge to some purely "self fulfilling" equilibrium? (see for example Grandmont and Laroque (1986) and Guesnerie and Woodford (1991)). A more fundamental question is one raised by Friedman amongst others.

Does Darwinian selection lead to the elimination of inefficient behaviour even without learning? Thus actors who choose inefficiently may not be capable of learning fast enough or at all and this will lead to their being pushed out of the market. Even if agents do learn, a further question remains. Are learning rules themselves subject to selection? These considerations lead naturally to the next question which is what role does evolutionary selection play?

### *Evolution*

Since Nelson and Winter's (1982) classic contribution, considerable attention has been paid to the role of evolutionary selection in economics. Friedman's rather simplistic neo-Darwinian approach has been surpassed by a more careful consideration of the nature and causes of evolution.

The basic approach in the game theoretical literature has been to consider individuals as being identified with strategies and then to let their reproduction rates be determined by their success. This leads to the so-called "replicator dynamics" and enables one to analyse in a simple way how strategies evolve over time. The basic and important assumption here is that the individual's "fitness" is synonymous with the payoffs received in the game. One of the most striking results in the recent theoretical literature is that obtained by Stadler and Happel in Vienna. They show that the number of species (strategies) that can survive is likely to be very small. In other words, if the replicator dynamics model were applicable and one chose the game matrix at random, the chance of finding a situation in which in the long run more than four or five species could survive together, is close to zero.

However, two things about this may be criticised. Firstly, the payoff matrices for games cannot be regarded as simply chosen randomly. Secondly, it is not obvious that the replicator dynamics approach is appropriate in economics. In many economic examples it is not at all clear that when individuals maximise their payoff they are also maximising their reproduction rate. Furthermore it is not natural, in an economic context, that individuals should be identified in a fixed and immutable way with strategies.

A further argument that has frequently been evoked against most analyses of evolutionary games is that the space of possible strategies is generally taken as given from the outset. However this is somewhat paradoxical in an evolutionary context since it corresponds in the biological world, for example, to listing all potential species at the beginning of the evolutionary process. Lindgren (1991) in Denmark has given an answer to this by allowing new strategies to

develop genetically in a repeated prisoners' dilemma setting over time. He observes interesting phenomena in his simulations with one strategy dominating for a period and then a new strategy emerging which overturns the previous hierarchy of strategies. Thus one observes what has been referred to elsewhere as "punctuated equilibria".

Hence this issue and many of the others mentioned have been addressed and there are a number of centres working actively on this sort of problem in Europe (e.g. the CentER in Tilburg (SPES 000004), GREMAQ in Toulouse (SPES 910082), the University of Bonn (SPES 910057), University College London and the Universities of Bielefeld and Alicante (SPES 910085). See, for example Carlsson and Van Damme (1993), Binmore and Samuelson (1990), Vega-Redondo (1994).

There are, of course, other approaches to the analysis of evolution in economics and a number of these can be thought of as being in the Schumpeterian tradition in which technical innovations play a dominant role. A number of institutions in Europe such as the SPRU at the University of Sussex (SPES 000048), the IIASA in Vienna and MERIT in Maastricht have focused on the microeconomic analysis of technical innovation. Various aspects are emphasised by different groups, some putting more weight on institutional factors, others on the more theoretical aspects of the sort of processes which correspond best to empirical facts (general surveys can be found in Dosi et al. (1988, 1992)). A common feature in all of this work has been the insistence on the importance of the historical evolution of an industry. A particularly interesting development has been the analysis of path dependent processes using as a basis the urn processes introduced by Arthur (1989). David at Oxford has been one of the major contributors in this area combining the sort of theory developed by Arthur and his former collaborators at the IIASA, (see Arthur et al. (1983) and Dosi and Kaniovski (1993)) with a more detailed historical account (see David (1985)). There is ample evidence, in particular the success of the recent Eunetics conference in Strasbourg (SPES 000048), that there is a flourishing activity in the evolutionary approach to economics and in particular to the explanation of technical progress in Europe.

### *Incentives and mechanism design*

One of the major uses to which game theory has been put is that of designing mechanisms to achieve certain allocational outcomes. Thus, in contrast with the earlier literature on mechanism design, which basically specified rules for reacting to messages and a mapping from messages to outcomes, the more recent mechanism literature takes into account the strategic component of individuals' reactions. This

does not mean that there is no interest in the earlier type of mechanism design, since this can itself be adapted to take account of strategic behaviour. However, most of the interest has switched to incentive compatibility away from informational efficiency. This does not, of course, mean that the preoccupation with efficiency has been abandoned but rather that the notion of efficiency itself has been redefined. Holmström and Myerson (1983) already gave six possible definitions of what it means for a mechanism to be efficient. One problem with the incentive compatibility criterion is that the result may turn out to be ex post inefficient and therefore may be subject to renegotiation, (see for example Aghion et al. (1994), and Forges (1993) for a discussion of re-negotiation proof mechanisms).

Before mentioning the groups which have concentrated on mechanism design in the incentive compatibility context, it is perhaps just worth mentioning that there are still a number of problems which have not been fully resolved in the case of informational considerations. For example a classic problem in the organisation of the firm is how to set up the informational structure in such a way as to minimise the cost of transmitting messages and it has recently been argued that this can be achieved in certain circumstances with hierarchical structures. In another context although we know that the competitive mechanism is the most informationally efficient way of achieving Pareto optimal allocations (see Jordan (1982)), an interesting question is whether this can be extended to other requirements such as attaining allocations which are both Pareto optimal and fair for example. A simple answer to this is provided by Calsamiglia and Kirman (1993) (SPES 000009).

The major focus of interest in recent problems of mechanism design has been that of how to achieve certain aims in a way which is compatible with the strategic incentives of the individuals who are participating in the particular economic activity considered. Thus for example one may want to design some contractual mechanism which will ensure that the individuals involved will have the appropriate incentives to fulfil their contractual obligations. Alternatively, one may be interested in regulating the activity of some economic entity such as a bank and one would like to design a mechanism for doing this which would lead the bank to provide the appropriate information and behave in the appropriate way for the desired outcome to be attained (see Laffont (1994)). Some of the most significant work in this area has been done in Brussels for example by Bolton and Dewatripont, and in Toulouse by Laffont and Tirole (SPES 910082). A group of researchers working on themes in this area

organised a project (SPES 000004) on "A Game Theoretic Approach to Markets and Organisation", and this involved the CORE at Louvain, the GREQAM in Marseille, Center in Tilburg and the Laboratoire d'Econométrie at the Ecole Polytechnique in Paris. This sort of detailed examination of the structure of contracts and mechanisms is becoming increasingly important as the number of institutions to be regulated increases and as we are faced with the problem of establishing new mechanisms in the Eastern European countries (an indication of the sort of problems involved in redesigning commercial and banking systems and their regulation in economies in transition can be found in Kolodko et al. (1993) and in the chapter on these economies).

Of particular interest in this area is the recent creation of a new journal "Economic Design" edited by Sertel in Istanbul who has been linked to a number of European projects and has been actively involved in the ASSET group mentioned previously.

### *Models of interaction*

A substantial microeconomic literature has developed recently in which one tries to model the interaction between agents directly and this has been used to study the microstructure of particular markets, see for example the project on European stock trading systems jointly organised by the LSE, University of Milan and University of Tilburg (SPES 910086). The models of interest here are those which lie between the full blown game theoretic one and that of perfect competition.

A first approach to analysing this sort of problem is to define a suitable sort of static equilibrium which takes account of interaction. The latter may be local or global that is in the first case agents will be limited as to whom they have contact with, in the second agents may meet any other agent. Many of the static search equilibria à la Diamond, for example, can be viewed in this way. The first contribution in which the problem of stochastic interaction was explicitly treated is that of Föllmer (1974). He showed that if the characteristics of agents are random but dependent on those of others, no price equilibrium may exist even though all the agents draw their characteristics in the same way. Thus even the existence of equilibrium may be undermined by interdependence.

The second idea is to look at the dynamic evolution of the economy resulting from the interaction between agents. In this case one is interested in knowing how the state of the system evolves over time and whether it settles down to what might be thought of as some sort of equilibrium.

There are various examples of this sort of analysis. One is the pioneering work on the diffusion of information done by Allen (1982). Another is the adoption of technological innovations as agents profit from the externalities of others having already adopted a particular technique (see Arthur (1989) and David (1985) and of course as has been mentioned this is closely related to the work pursued by the Eunetic group (SPES 000048). Yet another is the sort of herd behaviour that may arise as agents are influenced by what other agents do (see Banerjee (1992), Kirman (1993), Sharfstein and Stein (1990)) and indeed a number of phenomena corresponding to Keynes' "beauty queen" contest can arise.

Models with local interaction are interesting for they give much more concrete form to the idea that since agents are limited to a set of neighbours with whom they interact, changes will not affect all agents simultaneously but rather diffuse across the economy. Typically agents are thought of as being placed on a lattice and interacting with their neighbours (see Durlauf (1990), Benabou (1992), Blume (1993) and Ellison (1993)). Vega Redondo in Alicante has also been pursuing this line of research. In this case one is interested to know whether pockets or clusters with certain behaviour or characteristics may form. The spatial connotation is by no means necessary however and alternative structures of links can be considered (see Kirman, Oddou and Weber (1986) Ioannides (1990) and (1995) and Gilles and Ruys(199)).

This sort of model is now widely studied in Europe particularly by Orléan, Foray and Topol in Paris, Föllmer in Berlin, Anderlini in Cambridge (SPES 910057), and Kirman in Florence (SPES 000009) and Marseille and has achieved some success in the fields of growth theory, spatial economics and the study of the micro-structure of financial markets.

### *Micromodels as a basis for empirical work*

In this section I shall only mention those areas where recent theoretical developments have had an impact on empirical work and this leaves on one side a large amount of empirical microeconomic research which applies standard and widely used techniques.

The standard approach of analysing the consequences of policy measures by looking at the response of a single optimising agent clearly overlooks some of the major impacts of such changes. In particular redistributive effects are often of considerable importance when one is analysing changes in indirect taxes. These taxes may be used simply as revenue raising devices but may also be used to change consumption patterns in

a way which is considered to improve social welfare (increasing taxes on tobacco or alcohol or diminishing taxes on "necessity goods" which form a large part of the consumption bundle of those with lower incomes). In order to understand the consequences of such measures there has been a considerable investment in the construction of micromodels of individuals which are then simulated to assess the reactions of individuals with different characteristics (in particular, income) to assess the overall impact of tax changes. A group of economists from the U.K., France, Italy, Spain and Belgium, organised by Blundell at U.C.L. in the U.K (SPES 000001), has looked at the consequences for those countries of such measures as a European carbon tax or the "harmonisation of V.A.T." across the E.U. The area of research which has to take the most serious account of the distributional consequences of policy changes is surely that of indirect tax policy. Clearly the changes in indirect taxes will induce changes in consumption patterns and no conclusions can be made without taking this into account. To do so microsimulation models are constructed for different countries. Thus distributional issues are returned to the central position they should occupy (for some examples of this type of model see the report of the project organised by Blundell on "The indirect taxation of European households" (SPES 000001).

Another project which has involved extensive investigation of microeconomic panel data is that led by Meghir at the Institute for Fiscal Studies in London (SPES 910088) in which a number of specific questions as to microeconomic responses to changes in prices and expenditures on various types of goods were examined. In particular the idea was to see what the macroconsequences of these microresponses was.

This is but one of an increasing number of applications of micromodels to empirical problems and several of these will be described in the chapter on industrial economics where the recent introduction of non-cooperative game theory has led to a plethora of empirical applications.

Another approach which is worth noting is that developed by Hildenbrand (1994) and which corresponds to a methodology frequently used in other sciences but less commonly in economics. He shows that if a certain regularity holds empirically, in his case the increasing spread of expenditure patterns as income increases, then one can deduce the "Law of Demand" which, in particular, implies that aggregate demand curves are downward sloping for all goods. This approach requires that one tries to establish that the empirical regularity from which the deduction is made holds rather than trying

to test the conclusions derived from a conceptual model.

#### 4. CONCLUSIONS

The purpose of this survey was to identify any gaps that might be present in European research in microeconomics and to see whether resources had been directed to those who have demonstrated their capacity to use them well. As far as the first point is concerned the most obvious difficulty concerns the availability of microeconomic data. Two difficulties arise here and are also alluded to in the chapter on industrial economics. Although aggregate time series are available the complete data sets that underlie them are often not. For those who argue that, for example, distributions and not just their means are important this is a major handicap. Were such data to be made available the question of international compatibility would be raised again. A second point is that it is often very useful to construct a data set concerning a particular problem. This is time consuming but very useful for other economists who can acquire a library of data sets for particular questions. Unfortunately the profession does not value this activity very highly and although a number of such micro data sets have been collected the number is relatively unimportant when compared to the effort devoted to purely theoretical work. Encouragement should therefore be given to those who are prepared to collect and analyse data on a variety of markets.

As to the second question, this survey shows that microeconomic research in Europe is in a relatively satisfactory state and that European funds have been flowing to those groups which are most productive in terms of research output. Those SPES projects to which I have made references in the text are listed in table 1 with indication of participating institutions.

There is, as in all areas, a need to balance the reward to successful enterprise with aid to those groups which are less favoured geographically or financially. However, although the choice of topics covered here has necessarily been somewhat idiosyncratic, within those areas covered it would be difficult to find distinguished work undertaken in Europe which has not benefited, directly or indirectly, from European funds. The positive progress towards the creation of a highly trained cohort of professional economists and the continued production of such individuals will, of course, remain heavily dependent on adequate funding at the European level. There will always be a temptation to put financing, particularly

in times of scarcity, into areas which seem most likely to produce "relevant" results in the relatively short run. However to do so and thus to exclude funding for theoretical economics would be myopic and would jeopardise the production of well trained young economists. In particular the creation of a number of visiting chairs in economic theory would be invaluable in making the resources in this area more widely available. The assignment of funds has

reached some sort of stability in terms of those receiving them. Both networks and centres of excellence have been financed and very different approaches to economic theory have benefited from European funding. If we wish to continue to invest in human capital in economics it is vital that this sort of financing continue and expand in the future.

**Table 1**  
**Titles and partners of selected SPES research projects**

	Period	SPES N°
<b>1 Economic policy at equilibrium</b> Participating institutions: UNIVERSITE CATHOLIQUE DE LOUVAIN (coordinator) UNIVERSITÄT BONN UNIVERSITY OF COPENHAGEN UNIVERSITY OF CAMBRIDGE	1991-1994	910057
<b>2 Workshop in general equilibrium theory</b> Participating institutions: UNIVERSITE DE PARIS I (coordinator) EUROPEAN UNIVERSITY INSTITUTE C.O.R.E.	1991-1994	910091
<b>3 Markets and organisations: A game-theoretic approach</b> Participating institutions: UNIVERSITE CATHOLIQUE DE LOUVAIN (coordinator) G.R.E.Q.E. EHES CENTER FOR ECONOMIC RESEARCH ECOLE POLYTECHNIQUE	1989-1992	000004
<b>4 Seminars at GREMAQ (Toulouse) in econometrics and economic theory</b> Participating institutions: UNIVERSITE DE TOULOUSE (coordinator)	1992	910082
<b>5 Artificial intelligence approaches to economic modelling</b> Participating institutions: HERIOT-WATT UNIVERSITY (coordinator) UNIVERSITEIT TE TILBURG POLITECNICO DE MILANO UNIVERSITA DI MILANO ABN AMRO-BANK DIGITAL EQUIPMENT EUROPE	1992-1994	910065
<b>6 Convergence of learning mechanisms in dynamic economic models</b> Participating institutions: LONDON SCHOOL OF ECONOMICS (coordinator) UNIVERSITY OF HELSINKI	1991-1994	910055

*continues*

*continued*

7	Research network for university economists in Southern Europe <i>Participating institutions:</i> EUROPEAN UNIVERSITY INSTITUTE (coordinator) UNIVERSIDAD AUTONOMA DE BARCELONA UNIVERSITE DES SCIENCES SOCIALES G.R.E.Q.E. EHES	1989-1993	000009
8	European stock trading systems: An empirical investigation <i>Participating institutions:</i> LONDON SCHOOL OF ECONOMICS (coordinator) UNIVERSITA DI MILANO UNIVERSITEIT TE TILBURG		910086
9	Theoretical foundations of micro-economics <i>Participating institutions:</i> UNIVERSITÄT BIELEFELD (coordinator) UNIVERSIDAD DE ALICANTE	1992-1995	910085
10	EUNETIC - European Research Network on Economics of Technological Change <i>Participating institutions:</i> UNIVERSITE LOUIS PASTEUR (coordinator) UNIVERSITEIT LIMBURG UNIVERSITA DE ROMA UNIVERSITY OF AALBORG UNIVERSITY OF SUSSEX	1991-1993	000048
11	The indirect taxation of European households <i>Participating institutions:</i> INSTITUTE FOR FISCAL STUDIES (coordinator) UNIVERSITY OF KEELE UNIVERSITÄT HEIDELBERG UNIVERSITÄT FRANKFURT UNIVERSITY COLLEGE LONDON UNIVERSITA DI VENEZIA UNIVERSITEIT TE TILBURG UNIVERSITE CATHOLIQUE DE LOUVAIN	1989-1992	000001
12	Dynamic models of household behaviour <i>Participating institutions:</i> INSTITUTE FOR FISCAL STUDIES (coordinator) UNIVERSITY COLLEGE LONDON UNIVERSITA DI VENEZIA C.R.E.S. D.E.L.T.A. (CNRES-ENS-EHES) KATHOLIEKE UNIVERSITEIT LEUVEN C.E.P.R.	1992-1993	910088

## V MONEY AND CAPITAL

*K. Cuthbertson and M. P. Taylor*

### 1. INTRODUCTION

In this chapter we address key areas of research, in the context of projects conducted under the SPES programme, that may be said to come under the broad heading of "Money and Capital". The policy debate concerning economic and monetary union in Europe (EMU) is currently very much to the fore. A large part of this debate, moreover, is informed by the present and past behaviour of the exchange rate mechanism (ERM) of the European Monetary System (EMS), as well as by the theory and empirical evidence relating to optimal currency areas. It is in this context that a number of the SPES grants under this heading (see Table 1) have yielded timely insights into the nature of and prospects for European Monetary integration.

The work under SPES grant 000017, directed by Francesco Giavazzi, looked at many aspects of financial and monetary integration in Europe. Similarly, SPES grant 000016, directed by Frederick van der Ploeg, examined issues of macro-economic policy and European monetary integration. The

seminar series funded by SPES grant 000010, organised by Charles Wyplosz, also confronted a number of issues pertinent to this policy debate. Issues concerning money demand, wage-price behaviour (Tullio, SPES 00053) and the degree of real (Schatz, SPES 00023) and financial integration (Corbett, SPES 5005) are pertinent to an analysis of EMU and these have also been examined under specific SPES grants, for example under Goovaerts (SPES 0063) and Roell (SPES 0086).

The chapter is presented in five sections. In section 2 we discuss the EMS including target zones and the issue of an "EMS effect" on counter inflation policy. Section 3 covers the wide range of issues surrounding monetary union including, money demand, labour and capital mobility (both real and financial), trade and production and the role of the Central Bank. In section 4 we discuss the research that has taken place on the fiscal implications of EMU and in section 5 we briefly examine SPES projects in the area of financial services. Section 6 provides conclusions and recommendations.

Table 1

#### Titles and partners of selected SPES research projects

	Period	SPES N°
1 Financial and monetary integration in Europe Participating institutions: C.E.P.R., LONDON (coordinator) I.N.S.E.A.D., PARIS UNIVERSITY OF WARWICK UNIVERSITY OF ATHENS YALE UNIVERSITY, SCHOOL OF MEDICINE UNIVERSITA DI ROMA	1990-1991	000017
2 Macro-economic policy and monetary integration in Europe Participating institutions: CENTRE FOR ECONOMIC RESEARCH (coordinator) QUEEN MARY COLLEGE UNIVERSITÄT SIEGEN	1990-1993	000016

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*continued*

<b>3</b>	<b>International monetary seminar</b> Participating institutions: I.N.S.E.A.D., PARIS (coordinator)	1989-1991	000010
<b>4</b>	<b>The control of inflation in the EMS during the transition to monetary unification</b> Participating institutions: LIBERA UNIVERSITA INTERNAZIONALE DEGLI STUDI SOCIALI (coordinator) CENTRE FOR EUROPEAN POLICY STUDIES UNIVERSITEIT VAN AMSTERDAM UNIVERSITY OF MANCHESTER FREIE UNIVERSITÄT BERLIN KATHOLIEKE UNIVERSITEIT LEUVEN FUNDACION PARA LA INVESTIGACION ECONOMICA Y SOCIAL	1991-1992	910053
<b>5</b>	<b>Capital mobility in Europe after 1992</b> Participating institutions: KIEL INSTITUTE OF WORLD ECONOMICS (coordinator) UNIVERSITY OF LIVERPOOL UNIVERSIDAD DE ZARAGOZA CENTRE FOR EUROPEAN POLICY STUDIES	1990-1991	000023
<b>6</b>	<b>Testing international financial market integration</b> Participating institutions: UNIVERSITY OF STRATHCLYDE (coordinator) CENTRE HEC-ISA	1991-1992	150005
<b>7</b>	<b>Harmonization of reserving insurance by means of actuarial, econometrical and statistical methods</b> Participating institutions: KATHOLIEKE UNIVERSITEIT LEUVEN (coordinator) UNIVERSITEIT VAN AMSTERDAM INSTITUTO SUPERIOR DE ECONOMIA UNIVERSIDAD DE BARCELONA UNIVERSITA DE TRIESTE UNIVERSITY OF LONDON	1992-1994	910063
<b>8</b>	<b>European stock trading systems: An empirical investigation</b> Participating institutions: LONDON SCHOOL OF ECONOMICS (coordinator) UNIVERSITA DI MILANO UNIVERISTEIT TE TILBURG		910086
<b>9</b>	<b>Finance in Europe: Markets, instruments and institutions</b> CENTRE FOR ECONOMIC POLICY RESEARCH (coordinator)		941216
<b>10</b>	<b>European summer symposium in financial markets</b> CENTRE FOR ECONOMIC POLICY RESEARCH (coordinator)		934006

## 2. RESEARCH ON THE EUROPEAN MONETARY SYSTEM

The European Monetary System (EMS) has been the focus of much informative research by European researchers over the past few years. Recently, with the prospect of Economic and Monetary Union (EMU) being widely debated in policy circles, this issue has received widespread attention.

The perceived function of the ERM has clearly developed during its period of operation. As Giavazzi and Spaventa (1990 SPES-000017) have argued, the ERM considerably hardened after 1982, with fewer realignments implying that its prime function was seen more as a method of combating inflation than of protecting competitiveness.

Some of the work on the ERM has concentrated either theoretically or empirically on the target zone model. A "target zone" is a range within which the authorities are committed to keeping the nominal exchange rate. The Exchange Rate Mechanism of the European Monetary System is an example of a multilateral target zone, the theory of which has not yet been fully worked out. The best examples of unilateral target zones, to which much of existing target zone theory applies, are those pursued by the three Nordic countries outside of the ERM: Finland, Norway and Sweden. Following an original paper by Krugman, circulated since 1987 and published in 1991 (Krugman 1991), a substantial literature on this topic has appeared with remarkable speed. Whilst this model applies more directly to unilateral rather than multilateral target zones, this literature has nevertheless yielded useful insights into the nature of the ERM. Some studies, for example, have applied the target zone model to assess the credibility of the ERM (e.g. Svensson 1991 SPES-000017), while others have developed models of time-varying devaluation risk (e.g. Weber 1991 SPES-000017; Weber 1992 SPES 000016; Rose and Svensson 1991 SPES-000017) or to assess the optimal degree of monetary accommodation (e.g. Beetsma and van der Ploeg 1992 SPES 000016).

A number of these issues were discussed at the seminar series organised under SPES grant 000010; Weber (November 14 1989), for example, discussed the role of reputation and credibility of policy makers in the ERM context, while Dumas (April 16 1991) discussed the credibility and durability of target zones. Current work in progress by several major researchers on the theory and evidence relating to target zones was also discussed at a number of workshops within this seminar series (e.g. led by Laffargue May 14 1991, and by Wyplosz May 21 1991).

### 2.1. Credibility and inflation

There has been a substantial amount of empirical research (under SPES) on the important question of whether entry into the EMS/ERM has had favourable effects on inflationary expectations and the unemployment-inflation trade-off. The basic theoretical model is that of Barro-Gordon whereby a country entering the ERM gains a "credibility bonus" by fixing its exchange rate to the low inflation German economy. A fairly weak test of this hypothesis is to examine whether individual countries inflation rates are cointegrated with the German rate after accession to the EMS/ERM (but not cointegrated before entry) and Artis and Nachane (1990) provide evidence in support of this hypothesis, for a number of core-EU countries. The German leadership hypothesis has also been tested by examining EU country price equations and adding the German rate of inflation. The price equations may use actual rates or survey data on price expectations (e.g. DeJong 1994, SPES 0053). There are often difficulties in choosing appropriate "break points" but Artis and Ormerod (1994, SPES 0053) and De Jong report that some countries have experienced a favourable "credibility effect" but the evidence from recursive estimation (Jager 1994, SPES 0053) for Belgium and the Netherlands suggests no discernible effect. Giovazzi and Giovanni (1989) extend this approach to a VAR system and examine the ex-ante forecasting performance over the post-EMS period - again results are not clear cut - some countries have actual inflation rates below those predicted by the VAR indicating a "credibility effect", but others do not.

Tests for a structural breaks in wage equations after entry to the ERM are often bedevilled by the general instability of Phillips curve relationships. The Granger-Engle two step or single equation ECM approach is frequently used with the Phillips Curve being augmented by a real-wage resistance effect. Result here are rather inconclusive (Artis and Ormerod 1994, Artis and Salomon 1994 - SPES 0053) and suggest that apart from the reduction in inflation expectations noted above, there has been little discernible structural effect on wage equations. (In contrast, there does appear to be a change in the degree of real wage resistance in Germany after Unification - Tullio et al 1994 - SPES 0053).

## 3. RESEARCH ON EUROPEAN MONETARY UNION

Monetary, or exchange-rate unions, can be defined as areas within which exchange rates bear a

permanently fixed relationship to each other. In the absence of capital controls, there can exist only one monetary policy in such areas. In the limit, such areas of exchange rate stability might also involve the replacement of the currencies of member countries by a common currency, that is, the formation of a common currency area or currency union.

### 3.1. Monetary targets and the demand for money

Although monetary targets are no longer the centrepiece of macro-policy for most EU countries, there has been little diminution in applied work on the demand for money and the behaviour of bank advances and other credit aggregates. (Also, many theoretical models assume a stable demand for money function.) In a monetary union, the money supply will undoubtedly provide some input to policy and the stability of an EU money demand function will then become an important issue.

The demand for money appeared to become unstable in many European countries in the 1980's (or even earlier, in some cases such as the UK - see the survey in Goodhart 1989). Attempts to rescue the demand for money function by using variables to reflect financial innovation (Hall et al. 1990), using a systems approach (Barr and Cuthbertson 1991) or incorporating forward looking variables (Cuthbertson 1991, Cuthbertson and Taylor 1992) have achieved only limited success. This instability of course, has implications for monetary models of the inflation and the exchange rate. (MacDonald and Taylor 1991, MacDonald 1992).

Recent work has investigated a number of avenues: use of Divisia indexes, models based on P-star, an investigation of currency substitution and aggregation to produce a European money demand function. Part of the argument for the latter is that currency substitution renders national money demand function unstable.

Much of this literature has used the cointegration/error correction modelling approach. Usually the problem is made tractable by using the Johansen (1988) procedure to estimate (at least) one "sensible" long run cointegrating vector and then incorporating this as the error correction term in the dynamic model. A more thorough approach is to "test down" from the full VAR system (Hendry and Mizon 1992) but this assumes a correct structure for all the equations in the system. These econometric approaches have been widely adopted by European economists, in part, due to the SPES programme.

The P-star approach using cointegration is really an investigation of a long run money demand function and a test (in the VAR) of whether money causes prices and output or vice-versa. Hall and Milne (1991) and Funke and Hall (1992) who found that for the UK the causation was from output/prices to money whereas for Germany there is bi-directional causality. The difficulty here is that with a limited data set the stability of the cointegrating vector is difficult to ascertain.

In Europe much of the recent work on Divisia money has used UK data (Fisher et al 1993) but overall the conclusion would appear to be that "stability" is still illusive and a Divisia aggregate does not unambiguously outperform the conventional measures as a leading indicator of either inflation or real output. Using the Granger-Engle two step approach Crystal and MacDonald (1995) find some support (i.e. a priori signs, ex-ante forecasts) for the use of Divisia money in a simple monetary model of the exchange rate for the sterling-dollar rate but it is difficult to discern whether this is due to the dynamics or the long-run relationship in the error correction term.

In principle currency substitution (for a survey see Giovannini and Turtleboom 1993) between EU currencies may lead to instability in conventional estimated money demand equations but recent evidence suggests that intra-EU currency substitution is very low or non-existent (Mizen and Pentecost 1994). However, it is still the case that national money demand functions appear to be unstable (see for example Cassard et al 1994). This has led to an examination of the stability of a core - E.U demand for money function and whether this aggregate is a good predictor of EU inflation. There are many aggregation problems, but the results do suggest some support for the aforementioned hypotheses (e.g. Kremers and Lane 1990, Monticelli and Strauss-Khan 1992, Bayoumi and Kenan 1992, Artis et al. 1993, Tullio et al 1994 - SPES 0053) although one needs to be somewhat sceptical of the implications of these preliminary results, given Goodhart's Law and the Lucas critique.

Most of the above issues have been examined in the networking arrangements provided by SPES. Given the above research agenda it seems likely that there is further scope for empirical advances, concentrating on a core-EU money demand equation and its implications for ECU exchange rates. This work would provide a useful baseline of empirical evidence as one moves towards a common currency.

### 3.2. Factor mobility

The traditional criteria for a successful monetary union include factor mobility (Mundell, 1961) - labour, financial capital, and physical capital - the level of intra-union trade (McKinnon, 1963), the degree of industrial and portfolio diversification (Kenen, 1969), and the degree of wage and price flexibility.

With respect to labour mobility, a major difficulty is obtaining direct information on migration. Barriers to migration may include formal immigration restrictions, social services or pensions that are not immediately available to migrants, and language or cultural differences. If employment were the only motive for migration, then mobility should narrow differences among unemployment rates.

In Europe, national unemployment rates exhibit greater dispersion than in either the United States or Canada, at least since 1979 (European Commission 1990b). The greater dispersion in the EU may to some extent be attributed to the fact that migration among EC countries is clearly less substantial than within either the United States or Canada. A study cited by Eichengreen (1990 SPES-0017) concluded that mobility in the United States was roughly two to three times as high as mobility within European states, as measured by the proportion of the population that changed region of residence; migration between European states is no doubt much lower still. Similar evidence is reported by De Grauwe and Vanhaverbeke (1991 SPES-000017). Relatively low mobility of labour is thus a potential handicap for the EU as it progresses toward monetary union.

### 3.3 Capital market integration

When considering capital mobility, a distinction should be made between financial capital and physical capital. While expected rates of return on financial assets, such as bonds, tend to be equalised across countries, the same may not be true of expected returns on physical capital. If a claim on physical capital in one country or region is not a perfect substitute for such claims in another country or region, then arbitrage need not ensure that their expected returns are the same. In fact, lack of such arbitrage may explain the observed close correlation of savings and investment in individual countries (Dooley, Frankel, and Mathieson, 1987).

For industrial countries without exchange controls, mobility of financial capital is generally thought to be very high. Countries participating in the Exchange Rate Mechanism of the EMS, for instance, abolished any remaining exchange controls by July

1990, the date fixed by the Delors Report for passage to Stage 1 of economic and monetary union. High mobility of financial capital allows, in principle, for financing differences between national saving and investment. But if adjustment requires private sector investment, the issue of mobility of physical capital comes into play once again. The well-known result of Feldstein and Horioka (1980) points to the high correlation between national saving and investment ratios as evidence of relatively low international capital mobility.

There have been several approaches to assessing capital market integration. As noted above several studies have examined the cross-country savings-investment linkage. The idea here is that in an integrated capital market we would expect a low correlation between national saving and national investment rates, since there is an international pool of capital on which to draw. On balance the evidence appears to be that the national savings/investment correlation is high within core-EU countries (Bayoumi 1989, Sinn 1991 - SPES project 023), indicating low capital mobility. However, some evidence is provided by saving/investment correlation of countries within the EMS, which are substantially lower than those of non-EMS countries; this suggests that exchange rate stability tends to enhance capital mobility (Bhandari and Mayer, 1990). Obstfeld (1994) reports that on a global scale, although international capital movements are less than intra-national movements, the former has increased over the last ten years. Vandille (1991, SPES 023) takes a slightly different approach and examines the link between the rate of return on capital and flows of foreign direct investment: he provides evidence of an increasing positive relationship, as capital controls were relaxed.

One approach to quantifying financial market integration involves parity conditions. As one might expect, with the ending of exchange controls covered interest parity appears to hold (Taylor 1989). However, the evidence on uncovered interest parity and real interest parity are ambiguous and therefore do not help in an assessment of capital market integration.

On financial market integration, there has also been work on whether stock markets within the EU have become more integrated. Studies have examined the long run cointegration of stock prices, (e.g. Artis and Taylor 1990), the dependence of national stock returns on international variables (e.g. interest rates or returns in other countries) as in Frazer and MacDonald (1993). Campbell and Hamao (1989) test interdependence using a single latent factor model. Results for these approaches applied to the core-EU

countries appear to be mixed - there is some correlation between stock returns in different EU countries but this does not appear to be stronger than that between an EU country and the USA. In other words global factors predominate in determining returns in the EU countries.

In SPES project 5005, Solnik and Longin (1992) address the capital market integration question by focusing on the conditional correlation of international returns. Noting the instability in the unconditional returns matrix they seek to estimate conditional correlation using a GARCH framework (for bivariate EU returns against the dollar). They find against the hypothesis of a constant correlation and find weak evidence of an increase in the correlation over time. (Other hypotheses, for example that correlation rise in times of turbulence are also examined).

The evidence from the savings-investment relationship which indicates low capital market integration and that obtained using asset prices which indicates a higher level of integration, can be reconciled in part because the former would include capital emanating from banks. It is well documented that problems of asymmetric information and long term contractual arrangements may be important (particularly for all but the largest of companies) which would prevent some national companies from securing finance on a cross-border basis. In Europe most new external finance arises from banks rather than from the corporate bond or stock markets.

Mobility of physical capital is typically higher within than between countries, for a number of reasons: absence of exchange rate risk, uniformity of tax codes, similarity of regulations, common national characteristics (language, political goals, etc.).

Moreover, the liberalisation of trade in goods and financial services associated with the EU 1992 program should work to increase capital mobility further.

Capital accumulation may in principle substitute for labour mobility in accommodating some demand shifts and income shocks. However, given the lags involved in the installation of plant and equipment, capital mobility is likely to be helpful mainly for narrowing persistent regional disparities rather than for offsetting short-term shocks. A case in point is Germany, where one of the objectives of currency union was to encourage the capital flows needed to modernise the east German economy, and thereby stem massive migration to the west of the country.

Issues of financial and physical capital mobility in the European context were dealt with by a number of

researchers including Vandille (1991, SPES 000023) and Sinn (1991 - SPES 000023), while Keuzenkamp and van der Ploeg (1991 SPES-000016) looked at the nexus between savings, investment finance and the current account in the context of the Dutch experience, and papers by Bertola (1992 SPES-000017) and de Grauwe and Vanhaverbeke (1991-000017) and others also made substantial contributions in this area..

### 3.4. Trade flows and production

Since one benefit of extending the use of a common currency is the reduction in transactions costs, the greater is the volume of inter-regional trade within a common currency area, the greater is the cost saving, other things equal, from the currency union. McKinnon (1963) also showed that the usefulness of exchange rate flexibility to achieve external balance, without inducing large internal price level changes, is greater when an economy is relatively closed. In order to maintain external balance in the face of a fall in the real demand for the country's exports, resources in a fully employed economy must be shifted toward production of traded goods and away from non-traded goods sectors. The smaller the non-traded goods sector the larger the exchange rate change needed to transfer a given amount of resources, and the larger the movement in internal prices that would result. Given the objective of price stability, therefore, very open economies (in the sense of having a relatively large tradables sector) are good candidates for fixed exchange rates against their trading partners. This includes possibly joining with them in a currency union, provided that the policies of their neighbors are consistent with price stability.

A comparison of the degree of openness between countries inside and outside existing currency unions is hampered by a relative paucity of data on trade flows within currency unions. One can nevertheless examine the trade patterns of groups of countries, and calculate the proportion of their trade that is internal to the group. Illustrative evidence reported by Masson and Taylor (1992 SPES-000017), for example, shows that the twelve EU countries, taken as a group, have a high proportion of internal, relative to external trade. Moreover, while all individual EU economies have a high degree of openness, the European Union as a whole is relatively closed to the rest of the world - with about the same ratio of external trade to GDP as the United States or Japan. On this criterion, the EU would seem to have the makings of natural common currency area.

The likelihood that an adverse shock would have a major impact on an economy will depend to some extent on how diversified is the economy's production

structure. If a country exports a wide variety of goods, and if shocks are primarily either to supply (i.e., technology) or to consumers' preferences (affecting relative demands for different goods), then the effect of any shock on output in the whole economy will be less (even in absolute terms) than the effect on individual industries. Other things equal, a diversified economy, therefore, has less need to retain exchange rate flexibility in order to mitigate the effects of shocks.

For the most part, the EU includes countries with a well diversified structure of production. An interesting question is whether this diversification will continue with the abandonment of remaining trade barriers, making EU economies even more similar, or whether instead increased specialisation will result, making the countries more dissimilar. Which of the two occurs will depend in large part on whether increased trade takes the form of inter- or intra-industry trade. In the latter case, specialisation may occur, but with countries remaining diversified, so that shocks to the demand for a particular industry's product should not affect countries asymmetrically. The EC Commission (1990, p. 142) estimates that between 57 percent and 83 percent of intra-EU trade excluding Portugal and Greece was intra-industry. On the other hand, a comparison of regional output variability (within a given European country) with variability across European countries suggests that economic integration does not make the occurrence of asymmetric shocks less likely, and that divergence across countries may actually increase as a result of EMU (De Grauwe and Vanhaverbeke, 1991 SPES-0017; Eichengreen 1991 SPES-000017).

Another aspect to the issue is portfolio diversification. Adverse shocks to incomes in particular regions can be cushioned by holdings of assets which are claims to outside income streams. In principle, such diversification could provide insurance against purely regional shocks, and could make consumption independent of those shocks (Cochrane, 1988). Unfortunately, little is known about how widespread such portfolio diversification is in practice. There are likely to be great differences in the abilities of individuals and particular firms to hold diversified portfolios, due for instance to capital market imperfections (preventing borrowing against future income) or transactions costs.

Implicit in the early literature on "optimum currency areas," which considered the value of exchange rate adjustments for achieving internal and external balance, was the assumption that wages and domestic output prices were fixed, at least in the short run. It is now usual practice to regard wages

and prices as "sticky" rather than fixed and to expect this stickiness to recede in the long run. Short-run stickiness may differ across countries. In some countries the response of wages and prices to nominal exchange rate changes could be large enough to limit the usefulness of nominal exchange rate changes as an instrument of adjustment.

### 3.5. Wage and price flexibility

It is important to distinguish between two types of wage and price flexibility: real and nominal. Changes in a nominal price like the nominal exchange rate are a substitute for domestic price or wage changes, and may facilitate real adjustment. In the limiting case of real wage rigidity (for instance, due to complete indexation of wages), employment and net exports would however be unaffected by nominal exchange rate changes, because rigidity of the real wage is tantamount to rigidity of the real exchange rate. In the other limiting case of perfect flexibility of real wages, the freedom to modify the nominal exchange rate can be helpful if nominal wages are sticky but redundant if nominal wages or prices are themselves flexible enough to do the job of altering real exchange rates.

On the spectrum stretching from perfect rigidity to perfect flexibility, evidence presented in Bruno and Sachs (1985) suggests that Europe is closer than the United States to the real wage rigidity end, while the reverse obtains for nominal wage rigidity (see e.g., Eichengreen 1991 SPES-000017). This implies both that nominal exchange rate changes would be a more effective tool in North America, and that the existence of higher real wage rigidity in Europe places a premium on other instruments to counter real shocks and well as on measures to improve labour market flexibility. The problem of European real wage rigidity in the move towards EMU is highlighted in a number of studies (e.g. Weber 1990 SPES-0017), while other studies have provided evidence of wage claim moderation and possibly greater labour market flexibility in the wake of the loss of the exchange rate instrument (e.g., Artis and Ormerod 1991 SPES 000017).

The nature of the spillovers from national fiscal policies is likely to be different within a currency union than when countries are linked by flexible exchange rates. In the two-country Mundell-Fleming model with perfect capital mobility and flexible exchange rates, for example, a bond-financed increase in domestic government spending in the *home* country has positive transmission effects on output *abroad* because the domestic currency appreciates owing to a rise in domestic interest rates, leading to higher net exports of foreign

countries. In contrast, under fixed exchange rates and in the absence of other structural changes, transmission effects are likely to be negative, since a fiscal expansion raises world interest rates, crowding out investment both at home and abroad, while foreign countries are likely to benefit much less from higher exports.

Elaborations of the Mundell-Fleming model produce less clear-cut conclusions, as the channels of influence become more complicated (Frenkel and Razin 1987). However, the basic insights of the simpler model seem to be borne out by empirical estimates and simulations using multi-country econometric models such as the IMF's MULTIMOD (Masson and Taylor 1992 SPES 000017).

### 3.6. Credibility and the central bank

Another spillover associated with monetary union concerns possible effects on the credibility of the joint monetary policy. In a country with a separate currency, the inflation problems associated with undisciplined fiscal policies that lead to unsustainable debt accumulation and eventual monetization are borne within the country itself. In a currency union, there is an externality from unsustainable fiscal deficits if they induce fears of monetization, since threats to price stability have consequences for all the countries in the union. How important this possibility is, of course, depends on the institutional structure, and in particular on the status of the union's central bank and its vulnerability to pressures from individual governments. There is an extensive literature on national central banks that suggests that the greater their independence from their fiscal authorities, the more successful they are in achieving low inflation. The situation of a central bank in a monetary union is different, since it faces many national fiscal authorities: this may enhance its independence (Mélitz, 1991 SPES-000017). Such reasoning would suggest that a European central bank might have a similar relationship with national fiscal authorities as the Federal Reserve vis-à-vis U.S. state governments.

Unsustainable fiscal deficits in one country may however lead to pressures on other countries in the currency union to subsidise the errant government, either through monetary expansion, explicit fiscal transfers from other members, implicit interest subsidies, or loan guarantees. Monetary expansion may ensue, or at least be feared by the private sector, either because the profligate country may be able to exert pressure on the union's central bank, or because the objectives of the central bank may include employment and economic activity in member

countries, which would tend to be adversely affected by the debt-servicing difficulties of the profligate member or by high interest rates. Given that solidarity among member countries is likely to be associated with the formation of a currency union, the pressures on the central bank to assist a country in difficulty may be quite strong.

Ideally, the statutory position of the central bank would make it immune from such pressures. It has been argued that effective independence of a central bank from political authorities (including the personal independence of members of the governing bodies) is a necessary condition for monetary stability, and that in addition the central bank must be given the necessary instruments to achieve a monopoly over monetary creation (see e.g. van der Ploeg 1992 SPES 000016). However, it may be difficult to guarantee by statute alone that monetary policy is immune from pressures arising from lax budget discipline. A concern for other objectives in addition to price stability on the part of central bankers may lead them to respond to such pressures; this is the argument for making sure that central bankers are more "conservative" than other policy makers. That is, by choosing officials who emphasize the goal of price stability (more than does society as a whole), governments may help to ensure that the temptation to engage in self-defeating monetary expansion is minimised. Alternatively, a currency union may need to place some restrictions on the borrowing of member countries.

Many of the issues relating to the role of the central bank in the context of EMU were addressed at the conference organised jointly by the CEPR, Georgetown University and the IMF. Washington DC, April 29 - May 3 1991, partly funded under SPES 000017.

## 4. RESEARCH ON FISCAL POLICY AND MONETARY UNION

There is the danger, raised by the Delors Committee Report, that in the absence of supranational controls, fiscal deficits might be excessive, endangering monetary discipline. The tendency toward excessive deficits is modified by the formation of a currency union, in ways that are discussed below. However, it has also been argued that well-functioning capital markets should prevent such excessive borrowing. Well-informed investors in a free capital market impose discipline by raising the interest rates at which they are willing to lend, and by eventually cutting off lending to governments with unsustainable debt accumulation. This should occur

before the problem becomes unmanageable, so the argument goes.

Will the incentives to undertake unsustainable fiscal policies be modified in a currency union relative to a situation in which a country has its own currency? A number of factors come into play in addressing this question, some of which are hard to distinguish from those that result from greater integration generally, that is, from the creation of a common "economic space." First, a currency union, if it increases integration among member countries, may reduce the ability of countries to raise revenues. Factor mobility will make tax bases more mobile, and make it more difficult to levy non-benefit taxes, that is, taxes that are not linked to particular services. As a result, shocks to the budget are more likely to lead to unsustainable deficits. On the other hand, increased factor mobility makes adjustment less difficult, reducing the need for structural fiscal policies. Second, currency union will remove the freedom to use seignorage as a flexible revenue source; as a result, it may force countries to rely more on issuing government debt, with dangers of unsustainable borrowing. Third, if a country switches from borrowing in its own currency to borrowing in a common currency, debt-servicing costs may be affected. A larger capital market in the common currency may make interest costs less sensitive to the country's budgetary position; and nominal and real interest rates may also be lower if the common currency exhibits more price level stability. At the same time, the country concerned may no longer have the same captive market for its debt, for instance by issuing government securities to banks with high secondary reserve requirements or to individuals without access to other saving instruments. Fourth, by increasing the effectiveness of fiscal expansion at home (see above), it may also increase the tendency to resort to fiscal stimulus. Fifth, by removing the very visible sanction of exchange rate depreciation (though replacing it by the sanction of higher interest costs), currency union might decrease the political disincentives toward imprudent policies. A number of these issues were discussed under the various projects funded by SPES - see e.g., van der Ploeg (1992 SPES 000016), Wickens (1992 SPES 000016), Wyplosz (1991 SPES 000017), Giovannini and Spaventa (1991 SPES 000017), and the workshop led by Melitz (April 7 1992 SPES 000010), and the workshop held at the Banco de Espana (December 15 1990, SPES 000017).

Traditional analysis suggests a number of criteria that are helpful for the smooth functioning of currency unions, namely: labour mobility, industrial diversification, and wage and price flexibility (Masson and Taylor 1992 SPES 000017). If these

features are not present to a sufficient extent, then the fiscal instrument may be an especially important tool to cushion individual countries or regions from shocks, given the absence of the exchange rate instrument for that purpose. The use of fiscal flexibility is illustrated in the European context by Masson and Melitz (1990 SPES 000017). Such fiscal flexibility need not involve discretionary policy - often associated with the term "fine tuning" - but rather can be the result of the operation of automatic stabilisers. To the extent that fiscal policy is oriented toward medium-term objectives, however, the scope for fiscal flexibility is lessened.

#### 4.1. Taxes and transfers

An alternative (or possible complement) to larger national or regional deficits and surpluses for shock-absorbing purposes is a system of fiscal taxes and transfers between members of a currency union—a form of fiscal federalism. Such a mechanism is a feature of all political federations, to a lesser or greater extent. There is disagreement, however, on whether it is necessary for the successful operation of currency unions. Sachs and Sala-i-Martin and Sachs (1992 SPES 000017) show that in the United States, the federal tax and transfer system serves as an important shock absorber by increasing federal tax payments from, and lowering transfer payments to, those regions that are prospering relative to the national average, and conversely for those that are relatively depressed. The federal tax system and outright transfers to states are estimated to cushion over one-third of the effects of region-specific shocks on disposable income.

Sachs and Sala-i-Martin (1992 SPES 000017) conclude that the success of EMU requires a system of taxes and transfers on a similar scale in Europe. It is estimated that at present, Community taxes compensate for no more than one percent of an income loss from an unfavourable shock hitting any member country (see Eichengreen 1991 SPES 000017).

The basic rationale for policy co-ordination is that national policy actions have nontrivial "spillover" effects on other countries; policy co-ordination is a mechanism for internalising these externalities. Of course, policy spillovers exist among countries irrespective of whether they are members of a currency union. However, the nature of these spillovers is affected by the exchange rate regime in place; as pointed out above, for example, an expansionary fiscal policy may be negatively, not positively transmitted in a currency union. In addition, countries in a currency union may become more integrated economically, as well as more concerned about the welfare of their neighbours.

Masson and Méhitz (1990 SPES 000017) present a simulation of the response of two members of a currency union to an external oil price shock, which suggests that such a shock might lead to excessively tight policies in a currency union. Given a sufficient concern for negative effects on the trade balance or on inflation of higher oil prices, each country would tighten fiscal policy, exacerbating unfavourable effects on the other country (as captured by those targeted variables).

The question arises as to the form that policy co-ordination should take to reduce unfavourable spillover effects. Two sorts of spillovers were discussed above: (1) macroeconomic spillovers associated with stabilisation policy; and (2) externalities related to budget discipline and credibility of monetary policy. The latter externalities imply a persistent bias in the direction of excessive deficits. In contrast, externalities related to stabilisation policies in the face of shocks will depend on the sign of the shock: in one case a country's budget deficit will be excessive, while in another, the problem will be over-contractory fiscal policies (for instance, in the case of higher oil prices discussed above). Therefore, rules or institutionalized procedures that put ceilings on deficits may be the solution for the first case, but not the second. It may be very difficult to define rules that are appropriate to all situations. A procedure that enables fiscal policies to be co-ordinated in a flexible fashion to minimize the unfavourable effects of both types of externalities has its advantages, but to the extent that it relies on discretion rather than rules, it may itself build in suboptimal behaviour. Discretionary policy co-ordination may not be put in place sufficiently quickly, may be subject to misinterpretation, and may be difficult to monitor.

Most federations have a combination of rule-based and discretionary co-ordination. For example, Canada has rules for making equalisation payments to poorer regions, but they are renegotiated every five years. Coordination among federal and provincial governments also occurs through annual conferences of first ministers. Such discretionary co-ordination has the drawback, compared to clear rules defining respective powers and responsibilities, that it is subject to the vagaries of successive renegotiation.

A reading of the literature on this issue suggests that currency unions cannot ignore the effects of fiscal policies on the exchange rate mechanism. It seems clear that in order to discipline fiscal policies and reduce unfavourable regional effects, mechanisms for achieving both fiscal transfers and enhanced fiscal policy co-ordination are helpful. However, the

decision to set up the institutions of fiscal federalism is essentially a political choice that balances loss of sovereignty against shared goals among members.

## 5. RESEARCH ON FINANCIAL SERVICES IN THE EUROPEAN UNION

The SPES/HCM programmes we have examined do not appear to have resulted in a widespread investigation of the financial services industry. Capital adequacy for banks and securities dealers has been extensively covered by the Commission and the BIS. However there would still seem to be major questions of harmonisation and competition in the European financial services industry to be considered. Theoretical work on financial intermediation has increased in recent years but detailed studies of more practical concerns has not been much in evidence (but see for example, Mayer and Vives 1993, Edwards and Fischer 1994).

The SPES project under Goovaerts (SPES 0063) provides some preliminary work on reserving and solvency procedures in the insurance industries of Spain, Belgium, UK, Denmark, Portugal and Italy. A questionnaire sent to the national supervisory authorities provided the basic information on the actuarial methods used in life, non-life and pension funds (see Wolthius and Goovaerts 1993). This provides an informative factual account and it is clear that practice differs widely across different countries. However, the study did not suggest any positive guidance on policy issues and the way forward over the next few years. (SPES 0063 : Goovaerts, in addition provided an extensive network of scholars at which technical statistic papers on reserving and a wide range of other insurance related issues were presented).

In recent years there have been a large number of theoretical and empirical studies dealing with issues of market microstructure. Empirical regularities using high frequency ('tick'/transactions) data for FOREX and stock markets have been examined. A comparison of auction and dealership markets (Pagano and Roell 1992), the cost of trading stocks under alternative systems (e.g. UK versus the Paris Bourse - De Jong, Nijman and Roell 1993), the determinants of the bid-ask spread and the price response to block trades (Gemmill 1993) have all been active research themes under this heading. In Europe, (as opposed to the US) empirical analysis of issues of market microstructure is in its infancy but the availability of data is increasing rapidly and this work has been supported under SPES (910086, Roell) and dissemination of a wide body of research has

been facilitated by the Financial Markets Group at the LSE and CEPR in London.

There are a wide range of issues which have important policy implications in the area of financial services in the EU. For example, the possibility of mergers and take-overs as a means to increase market share and to reap economies of scale and scope. The reactions to *bancassurance* and *allfinanz* by threatened institutions such as traditional insurance companies and regionally based 'building societies' needs further examination. The importance of I.T. and the electronic transmission of financial information (e.g. smart cards, internet) will become of increasing importance. The possibility of risk based deposit premia (U.S. Treasury 1991) and investor protection in general (e.g. self regulation versus statutory regulation, misleading advice in the selling of some pension schemes in the UK) need to be examined from an EU perspective. The use of portfolio theory (see for example, J. P. Morgan 1994) in forming capital adequacy rules for market based instruments, (e.g. for bond, FOREX and security portfolios) and the appropriate regulatory framework for derivatives are also important under-researched issues. On a wider front, the scope and form of increased private provision as the State withdraws from providing adequate pension, health and unemployment insurance needs examination, with the European dimension and issues of harmonisation being key elements.

## 6. CONCLUSIONS AND RECOMMENDATIONS

In the area of "Money and Capital" there has been a great deal of activity and collaboration amongst European economists. Key macroeconomic issues such as exchange rate behaviour, target zones such as the ERM, currency crises and the implications of EMU have been widely discussed. Our understanding of these issues has been considerably enhanced by the large amount of high quality research which has been undertaken by European researchers within the last five years. Much of this work has been funded under the SPES grants which have been the topic of this chapter.

Under the SPES programme much of the analysis has been directed to specific European issues and many

European economists are now internationally recognised as leaders in their respective fields. Much of the analysis has been of an applied nature and of immediate interest to non-academics including policy makers. The wide and speedy dissemination of results, in summary form (e.g. newsletters) and in discussion papers is clearly of value to all European economists. This is an area which clearly needs to be examined in the context of programmes following SPES/HCM namely, designated "resource/information centres" that could provide a summary of the output of all projects, which could then be provided on a timely basis to all interested EU economists (e.g. via newsletters, internet etc.)

In the period covered by this survey of SPES/HCM there has perhaps been some neglect of an analysis of issues connected with financial services within the EU. The emphasis (understandably) has been on behaviour in the FOREX market and too a less extent the stock market including issues of market microstructure. The role and future directions for the financial services industry, the impact on specific sectors and the provision of financial services to individuals (as opposed to corporations) have received relatively little attention under the SPES projects examined here. However, we note the recent HCM network programme on "Finance in Europe: Markets, Instruments and Institutions" (Mayer HCM-941216) and the Euroconferences in this area (Repullo, HCM-934006).

The SPES/HCM programme has also facilitated the widespread adoption of time series econometric techniques particularly in the areas of cointegration, error correction models and VAR analysis. Much of the recent theoretical innovations in this area have been due to European econometricians, many of whom have taken part in SPES/HCM programmes. There is a need to keep both young researchers and more established researchers up-to-date in such applied techniques and associated statistical software. Provision for short intensive training courses/workshops, including 'hands-on' practical sessions, and a network for the exchange of (non-standard) programmes (e.g. via the internet) should be encouraged. The latter, are fairly widespread in the US (e.g. via 'bulletin boards') but perhaps could be improved and developed at a European level.



# VI RECENT DEVELOPMENTS IN PUBLIC ECONOMICS

*Pierre Pestieau*

## 1. INTRODUCTION<sup>1</sup>

For a number of reasons, public finance and public economics represent a field of economics for which the scientific predominance of the United States is not as pervasive as elsewhere. Just to take an example, in the only international association of public finance (IIPF), the EU represents more than 60% of membership (as appears in Table 1).

Table 1  
EU Members in the International  
Institute of Public Finance 1995

Austria	15	Italy	55
Belgium	32	Luxembourg	2
Denmark	24	Netherlands	88
Finland	11	Portugal	20
France	36	Spain	43
Germany	127	Sweden	9
Greece	11	UK	25
Ireland	3		
<hr/>			
EU members			501
All members			918

Historically, most of the founders of modern public economics were European, coming from countries and more specifically from institutions still active in both research and teaching.<sup>2</sup> In that respect, one can mention the old Scandinavian school (Lindahl, Wicksell, Johansen), the more recent English school (Pigou, Mirrless, Atkinson), the French school of

engineers (Dupuit, Boiteux, Allais) and the more institutional German school (Wagner, Neumark, Schanz). The share of public expenditure in GNP and the importance of public employment are sizeably higher in Europe than in the U.S. Even though one observes a certain downturn in this pattern, it surely has an influence on the concern of economists for a theoretical and empirical study of the public sector. Finally, although most economists have changed their view of the public sector quite a lot over the last decades, they tend to be less critical in Europe and particularly in Northern Europe than in the USA.<sup>3</sup> Witness to that is the fact that the "Public Choice" school of thought is less popular in Europe than in North America.

In this chapter we present a short overview of the state of public economics in Europe. Then we sketch the main strand of research in public economics, emphasising those in which Europeans seem to excel. We need not stress that a detailed account is far beyond our scope and that the selection of topics reflects our view of what is important and what is not. In the concluding section, we relate those topics to the funding activities of the EU and focus on perspectives of research strategy.

## 2. THE STATE OF PUBLIC ECONOMICS IN EUROPE

In recent years, the field of public economics has been the subject of a number of studies on its future, its achievements, its methodology and its coverage. Quite interestingly, almost all these studies are by European public economists.<sup>4</sup> Among the issues raised, are whether the appropriate name is public

<sup>1</sup> I wish to thank Roger Guesnerie and Steve Slutsky for helpful comments

<sup>2</sup> Musgrave and Peacock (1958)

<sup>3</sup> See on this Sandmo (1991)

<sup>4</sup> Drèze (1995), Guesnerie (1995), Hammond (1990), Pestieau (1994) and Sandmo (1991).

economics or public finance, the implications of public economics being invaded by other fields, and the impact of Europeans being more theoretical than North American public economists.

### 2.1. Public finance or public economics

In a recent survey among a sample of scholars in public finance and public economics (Pestieau, 1994), it appears that the term *public economics* ought to be adopted, thus implying that it covers a different field than traditional public finance. Kolm (1987) claims to have used it for the first time in 1964.<sup>5</sup> He defines the purpose of public economics as "providing specific and scientific answers to the question of what must the government do" rather than leaving it to ideologies. For Hammond (1990), public economics "amalgamates the better parts of welfare economic theory and of (applied) public finance, making the first one less sterile and giving to the second better theoretical foundations."

Whereas Kolm (1987) was in charge of the definitions of *public economics* for the *New Palgrave*, Musgrave (1987) was responsible for the next item - *public finance* - and basically covers the same material as Kolm. Recently two books of readings in public finance have been published: the *Handbook in Public Economics*, edited by Auerbach and Feldstein (1985), and *Modern Public Finance*, edited by Atkinson (1991). Both selections cover about the same topics even though the first consists of original survey papers, whereas the second contains articles having opened up new avenues as well.

What can be concluded from this? There is clearly a distinction between traditional public finance on the one hand and either public economics, or modern public finance on the other hand.

The difference is in the concepts and the tools used to tackle theoretical and empirical problems. Still today in many countries, traditional public finance dominates the field for reasons pertaining to the state of economics teaching in general and to the close links between public finance and law. After all, in a number of countries, public finance chairs are still held by lawyers. Many local journals of public finance, such as *La Revue Française des Finances Publiques*, are still today very distant in content and in methodology from what is published in the *Journal*

of *Public Economics* or even in the less analytical *Public Finance*.

### 2.2. Public economics being invaded

Public economics suffers from a problem of recognition that in my view is the result of its success. The problem of recognition appears in various instances: in the SPES and HCM fields ad hoc taxonomy used in this report, there was little room for public economics (we return to this later); there are not many sessions explicitly devoted to public economics issues in the EEA and AEA annual congresses. The problem is that areas traditionally dealt with in traditional public finance have reached some autonomy: economics of education, health economics, environmental policy, macro-economic policy, economic regulation, public choice. Furthermore, on the taxation side, fiscal issues are often analysed outside the field of public economics by growth theorists, macro-economists or international economist.

In Table 2, one finds a selection of invited sessions devoted to public economics topics in the most recent congresses of the European Economic Association. In that selection of 7 sessions out of a total of about 70, very few dealt with what can be considered as the core of public economics: taxation and public expenditures.

Table 2  
Invited sessions of the last 6 EEA congresses devoted to public economics (out of 70)

European social security: Issues and prospects (1990)
Regulatory reform (1990)
Fiscal federalism and the theory of clubs (1991)
Privatisation in Eastern Europe: can theory help (1992)
Distribution (1995)
The organisation of government (1995)
Privatisation in transition economies (1995)

### 2.3. Theoretical versus applied public economics

Generally speaking, European public economists, at least the most visible ones, tend to be more theoretical and more normative than their North American counterparts. This can be easily explained. Empirical work is not terribly attractive for a young European economist; it is not only time consuming but also not very gratifying. One can publish in

<sup>5</sup> Drèze (1995) dates "the birth of public economics" at around 1950 and refers to three contributions: work on tariffs at Electricité de France, Samuelson's study of optimal pricing, and Vickrey's proposals on urban transit fare (see also Vickrey, 1994).

international journals a paper on tax reform in the US but not on a related subject applied to say Portugal or Belgium.

To put it another way, there may exist good empirical research on the public sector in most European countries but it does not receive international visibility. In fact, the type of applied research that is best known is of comparative nature.

Another reason for European public economics being relatively more theoretical can be found in the European tradition of research in general equilibrium and welfare economics with their extensions relying on the concept of second best optimality. As shown by Guesnerie (1995) and Drèze (1995) some of the most interesting contributions to theoretical public economics stem from that tradition.<sup>6</sup>

As to public economics being more normative in Europe than elsewhere, this is partly due to a more positive, less critical view of the objectives of the principal. The view of governments as a pure Leviathan and not a benevolent maximizer of their citizens' welfare is not widely shared by European public economists. In any case, the principal agent paradigm allows one to take into account some non-benevolence of governments.

### 3. RECENT DEVELOPMENTS

In surveying recent developments in public economics, one can choose to focus on techniques and methods: general equilibrium, asymmetric information, micro-econometrics or on topics: privatisation, public pricing, ... We have chosen the latter.

#### 3.1 Fiscal policy and mobility

The essence of the single market programme is an attempt to reduce substantially barriers to the mobility of both commodities and productive resources within the EU. Mobility may have serious implications for the efficiency and equity of both tax and public expenditure policy. Federal countries such as the US have grappled for decades with this issue; they are studied within the field of Fiscal Federalism. The main concept used in that literature is that of international fiscal externality, that is, a situation in

which the tax or spending policy decisions of one member state affect the interest of at least one other, whose interests are not directly taken into account in that decision. The significance of such externalities is that they are liable to result in an inefficient allocation of EU resources. Furthermore, they can make difficult, if not impossible, any attempt at redistributing resources within each country.

Over the last decade, a number of European public economists have studied the issue of efficient and equitable fiscal policy in an economic union.<sup>7</sup> They have progressively departed from the Fiscal Federalism setting because in an economic union unlike a federal state one cannot count on a central authority to centralise or at least co-ordinate decisions taken non co-operatively by each member state.

#### 3.2. Regulation of economic activities and public goods provision

Information theory and particularly the principal agent paradigm are at the heart of most public economics problems. In problems of regulation, income taxation, public good provision, tax evasion, procurement, fiscal federalism, ... one typically finds an agency relationship, that is a relationship between a controlling principal, the public authority, and the controlled agents, firms, taxpayers, ... in which neither the principal nor the agents have the same information or share the same objectives.

In the recent past, a number of techniques have been developed to fruitfully analyse such agency problems. Even though this strand of literature is often associated with the field of industrial organisation, one has to remember that it started with the formal study of optimal income taxation and that of mechanisms aimed at the revealing of preferences towards public goods. The literature on mechanism design is widely used in these two areas but also in the study of tax evasion, and audit policy.

Naturally, this approach is predominant in the study of public enterprises, procurement and regulation of economic activities.<sup>8</sup> Its contribution to public economics and in particular to the complex relation between authorities and citizens is unquestionable. The only reservation one can have is that this strand of work has not been backed up by good empirical work.

<sup>6</sup> Quite interestingly, the *Journal of Public Economics* which seems to be the best in this field has been headed for decades by two European editors. This may change as two new American editors are going to replace them.

<sup>7</sup> See, e.g., Kanbur and Keen (1993). In the survey by Pestieau (1994) already mentioned this issue of fiscal policy in an open economy is put first on the agenda of European public economists.

<sup>8</sup> See Laffont and Tirole (1994)

### 3.3. Optimal taxation and tax reform

It has long been recognised that optimal taxation and optimal public pricing have to be dealt with within a second-best setting. The theory of the second best is indeed concerned with the design of government policy in situations where the economy is characterised by some important distortions that cannot be removed. In particular it says that it might be desirable to have several distortions rather than just one.<sup>9</sup> Accordingly, it may be better to have a number of small taxes rather than a single large tax, or it may be better to tax both interest and wage income rather than just impose a tax on wage income, or it might be desirable to impose distortionary minimum consumption of some specific goods or services along with a distortionary tax structure rather than to just have that distortionary taxation.

In that line of research, one finds a wide variety of work on publicly provided private goods. The essence of it is that in a second-best world, social optimality may make desirable the uniform provision of private service such as education and health, even though some individuals would like to have more and some less of that service. The same argument can extend to the provision of social insurance.

As argued by Guesnerie (1995) [see also Drèze (1964)], the second best optimal taxation and public pricing are fundamental in public economics. The main objection addressed to this line of work is that it is too demanding from an informational viewpoint and too complex to implement. Two answers have been given to that objection. The first one is to go back to much simpler schemes: marginal cost pricing for public firms, uniform tax rates for indirect taxation. The second one is to restrict oneself to marginal Pareto moves.

Optimal taxation and tax evasion-tax avoidance analysis provide several guidelines for the reform of the tax system. They amount to adopting low marginal tax rates and simplifying the tax code. Unfortunately, most of these concrete recommendations run against the objective of equity in the tax system.

### 3.4. Income maintenance and social insurance

The study of income maintenance and social insurance have traditionally been high on the agenda

of European economists. This is hardly surprising in view of the importance of social expenditures in most European countries (25% of GDP on average). Research interest has shifted slightly in the recent years. Attention is now devoted to the following questions:

- general revenue or wage-based financing
- means-tested benefits or uniform allocation
- Bismarkian versus Beveridgian approach
- perverse redistributive effects (poverty trap)
- the choice of objectives: relief of poverty or decrease in income inequality
- cash versus in-kind redistribution

Along these topics of research, the main focus has been the viability of social insurance in open economies and in ageing societies. At the heart of this research, one finds two questions: What is the effect of social insurance and social protection - both their expenditure and their financing sides - on the operations of labour markets and competitiveness? (and) How can we save social security and health insurance that are financed on the basis of pay-as-you-go in societies with increasing dependency rate and declining employment? On these two questions economists tend to come out with rather theoretical solutions. One has the feeling that the political economy aspects of questions pertaining to social insurance and welfare programmes ought to be explored further.

### 3.5. Public enterprises economics

Public enterprises economics has changed quite a lot over the past decade. This is due to a number of factors: the move towards decentralisation both in Western and Eastern Europe and the development of the principal-agent theory. As an example of that change, one can mention Bös' textbook entitled "Public Enterprise Economics" in its first edition of 1986 and "Pricing and Price Regulation, An Economic Theory for Public Enterprises and Public Utilities" in its revised form of 1994. Among the most important revisions, one counts passages on privatisation in Western economies and in transition economies, on incentives schemes for public and regulated firms, on the use of simple pricing rules as an alternative to non linear formulae, on the debate on the relative efficiency of public versus private firms, and finally on the problems raised by mixed markets.

In previous sections we have already dealt with second-best pricing and incentive schemes, which are two important research topics in public enterprises economics. There are two other topics just as important that are worth mentioning and they both concern the mixed nature of modern economies. The first topic is empirical. Recent interest among policy

<sup>9</sup> As a perfect example of this tradition, see Guesnerie (1995b).

makers in performance indicators has coincided with a renewed interest on the part of academics in the problem of efficiency measurement. The result has been the development of a large number of new methods for measuring efficiency.<sup>10</sup> All of them have in common the concept of frontier: efficient organisations are those operating on the cost or production frontier, while inefficient organisations operate either below in the case of the production frontier or above in the case of the cost frontier. This approach has led to very interesting conclusions regarding the comparison between public and private sectors. These can be summarised by the following proposition: ownership does not matter; what really explains efficiency slacks is the lack of competition and the burden of regulation.

The second topic is theoretical. It concerns the problem raised by mixed markets in which public and private firms compete with each other but with different objectives, welfare maximisation for the first and profit maximisation for the second.<sup>11</sup> Given that it is the government which decides on privatisation or nationalisation, one can interpret those models as dealing with the issue of regulation through competition. Some interesting results have been obtained essentially concluding under some plausible assumptions the social desirability of keeping at least one public firm in oligopolistic markets.

### 3.6. Micro models for tax reform

To study the supply-side of taxation and public spending and their effects on income inequality and poverty rates, an increasing number of public economists use microsimulation models. One needs good data, ideally of panel type. Then, econometric models are estimated, which is the basis of policy simulations. This approach has been quite successfully used to analyse the distributional consequences of a number of policy changes such as the harmonisation of VAT across European countries, the introduction of environmental taxes or the reform of income taxation.

Dynamic microsimulation models have been recently developed to forecast the combined impact of demographic ageing and social security reforms on overall saving and income inequality. In the same vein, applied general equilibrium models using actual micro data are devised both in a static and in a dynamic framework to better understand the total effect of policy changes on both supply and demand

sides. Applied general equilibrium is particularly used to get a good grasp of tax incidence.<sup>12</sup>

## 4. CONCLUDING COMMENTS

This overview shows that public economics in Europe is in quite good shape. In conclusion, we discuss the issue of whether European funds have been flowing to those groups which are most innovative in terms of output and what should be done in the near future.

### 4.1. EU funded activities in public economics

Table 3 lists the SPES and HCM research activities in the field of public economics<sup>13</sup>.

The bulk of support has been given to micro-economic studies of individuals or households' reactions to tax or spending policy changes. The interest of this line of research is unquestionable. It is the only way to really assess the efficiency and equity implications of public policy. Further, by fostering comparative studies, it induces all involved to collect the same evidence and adopt the same methodology. In that respect, one can note the development of panel studies of households in an increasing number of countries. These studies have been in part supported by the EU through the Luxembourg Income Study and very recently Eurostat.

In Table 3, we list the research projects, networks and conferences that can be assigned to public economics and related subjects. Even though public economics is taken broadly, this list does not include research pertaining to macro-economic policy which belongs to traditional public finance but not modern public economics. Nor does it include research on transition economics in which public finance concepts are widely used.

The other research activities funded by the EU concern four issues already discussed and that are typical European: fiscal implications of European integration, welfare programmes, coexistence of public and private firms, and the regulation of network utilities.

It is noteworthy that a number of good quality applied research in public economics is sponsored by the EU through consultants' work. Even though this

<sup>10</sup> For a survey, see Pestieau and Tulkens (1993).

<sup>11</sup> See, e.g., Cremer et al. (1989).

<sup>12</sup> Among others, one can mention the work of Richard Blundell of the IPS, London and François Bourguignon of DELTA, Paris.

<sup>13</sup> See also statistical appendix

**Table 3**      **The EU-funded research activities  
in the field of public economics**

**Conferences and networks**

<i>Co-ordinator</i>	<i>Title</i>	<i>Grant number</i>
DILWORTH FRASER	Workshop on the economics of the public sector in a mixed economy UNIVERSITY OF WARWICK	SPES N° 910056
SUTHERLAND	Comparative socialpolicy and taxation modelling  <i>Participating institutions:</i> UNIVERSITY OF CAMBRIDGE (coordinator) CENTRO INTERDIPARTIMENTALE DI STUDI INTERNAZIONALI SULL'ECONOMIA E LO SVILUPPO, ROMA DELTA (CNRS-ENS-EHESS) ECONOMIC AND SOCIAL RESEARCH INSTITUTE, DUBLIN LONDON SCHOOL OF ECONOMICS OFCE, PARIS UNIVERSITE LIBRE DE BRUXELLES	HCM N° 920796
MARCHAND	Fiscal implications of European integration <i>Participating institutions:</i> COPENHAGEN BUSINESS SCHOOL ECONOMIC AND SOCIAL RESEARCH INSTITUTE, DUBLIN UNIVERSIDAD AUTONOMA DE BARCELONA UNIVERSITA DI BOLOGNA UNIVERSITÄT BONN UNIVERSITY OF ESSEX UNIVERSITY OF KEELE UNIVERSITE DE LIEGE UNIVERSITE SCIENCES SOCIALES TOULOUSE	HCM N° 21684
BLUNDELL	The indirect taxation of European households <i>Participating institutions:</i> INSTITUTE FOR FISCAL STUDIES (coordinator) UNIVERSITY OF KEELE UNIVERSITÄT HEIDELBERG UNIVERSITÄT FRANKFURT UNIVERSITY COLLEGE LONDON UNIVERSITA DI VENEZIA UNIVERSITEIT TE TILBURG UNIVERSITE CATHOLIQUE DE LOUVAIN	SPES N° 00001
WALKER (BLUNDELL)	Micro-economics of public policy <i>Participating institutions:</i> INSTITUTE FOR FISCAL STUDIES (coordinator) AARHUS SCHOOL OF BUSINESS KATHOLIEKE UNIVERSITEIT LEUVEN UNIVERSTY COLLEGE DUBLIN UNIVERSITEIT TE TILBURG UNIVERSITA DI VENEZIA ZENTRUM FÜR EUROPÄISCHE WIRTSCHAFTSFORSCHUNG, MANNHEIM	HCM N° 20281

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LEWIS	Gender and European welfare regimes <i>Participating institutions:</i> LONDON SCHOOL OF ECONOMICS (coordinator) UNIVERSITY OF AALBORG UNIVERSITÄT BREMEN UNIVERSITY COLLEGE DUBLIN UNIVERSITA DI PADOVA	HCM N° 20281
CAVE	The regulation of network utilities in Europe <i>Participating institutions:</i> BRUNEL UNIVERSITY (coordinator) CONSIGLIO NAZIONALE DELL RICERCA IST. RICERCA SULL'IMPRESA E LO SVILUPPO, TORINO DEUTSCHES INSTITUT FÜR WIRTSCHAFTSFORSCHUNG, BERLIN UNIVERSITA CATTOLICA DEL SACRO CUORE, MILANO UNIVERSIDADE DE LISBOA UNIVERSITY OF PIRAEUS	HCM N° 22173

**Fellowships**

<i>Fellow</i>	<i>Title</i>	<i>Grant number</i>
BINGLEY	Intra household distribution and the micro-economics of public policy	HCM N° 30459
TEIXEIRA	Corporation tax systems in the EC	HCM N° 22437

research is quite specific and very applied, it may end up in scientific journals. As examples of such research, one can include studies on tax harmonisation, public and private pensions, welfare programmes, public enterprises, ...

My feeling is that those studies are too confidential; it would be useful for the whole scientific community if they were made available more rapidly than is the case today. More visibility would also have an indirect effect of quality control. Some consultants would be more cautious in methods used and conclusions drawn if they knew that their work would be read not only by their sponsors but also by their colleagues.

To be clearer, there are many instances in which members of the EU funded networks or participants in a Euro-conference are at same time working independently for such and such DG. Indeed networks meetings and Euro-conferences are a good opportunity for experts and EU officials to see each other. Why not? The only problem is that there is no bilaterality. Very few people are informed of consultancy work even though it may draw heavily from EU funded research programmes. As stated above, confidentiality is the rule of expert work. Further, the fact that expert work is financially rewarded is an additional factor of confidentiality and even of secrecy.

**4.2. Poles of attraction and co-operation problems**

It is clear that modern public economics is not equally rooted in all European countries. The leading centres are found in the UK (LSE, Exeter, Essex, Warwick, IFS, York), in the Scandinavian countries (Stockholm, Upsala, Copenhagen, Bergen, Helsinki) and in scattered places in Germany (Bonn, Munich, Konstanz), Belgium (Louvain, Leuven), the Netherlands (Tilburg) and France (DELTA, Paris). France and Spain could also be mentioned for their contribution to the study of incentives and mechanism design that is at least at par of some of the most recent developments in public economics.

It remains that organisers of conferences, networks and collective research face the difficulty of finding relevant partners in about half of the EU member states. They end up filling what can be viewed as implicit quotas but it is not sure that this is the best way to encourage research and teaching in public economics in those countries.

**4.3. Ways of organising co-operation**

In my view, one should avoid adopting rigid regulations that lead to unproductive affirmative actions. A number of people believe that to increase the likelihood of their getting funded by the EU they

have to include in their project partners coming from, say, Portugal and Greece regardless of their contribution to the project. In my view, this is not a good procedure. I would like to suggest alternative approaches.

Firstly, one way to foster useful co-operation is to encourage the homogenisation of data bases across European countries. One of the reasons why good empirical work in public economics is missing in Europe is due to poor quality and the heterogeneous nature of national data bases. In that respect, it is important to encourage the already started effort of developing panel studies across European countries and to include in them more questions pertaining to economic choice, taxation and welfare programmes.

Second, it is important to develop a policy towards human capital mobility that takes into account the specificity of the European scientific institutions. In most European countries, the scientific career is quite rigid. It takes time to get recognition and when

obtained, one is overwhelmed by work and commitments. Nor is it easy to build a network with sufficiently young people. Related to that remark, few people are really mobile for sabbatical visits or even shorter visits. As soon as one has a rather steady position, it is hard to leave it without losing it or compromising future promotions. More senior people could move but then, they are too busy. A partial solution to this state of affairs would be to encourage exchanges of Ph.D. students. Another solution would be to induce academic institutions not to penalise post-graduates that take a leave of one or two years.

Third, there is an obvious lack of good Ph.D. programmes in Europe. There are several attempts at developing such programmes but in general they do not reach a sufficient scale in terms of graduate students. There is thus a need to increase the number of doctoral fellowships as well as supporting a limited number of doctoral programmes across Europe.

# VII EMPIRICAL MICROECONOMIC RESEARCH ON LABOUR MARKET BY RESEARCHERS IN THE EU

## A Review

*Costas Meghir*

### 1. INTRODUCTION

This chapter presents a brief overview of research in empirical labour economics with emphasis on studies that use individual, household or firm level data sets. We do not cover the vast macro labour literature nor do we cover the theoretical literature in labour economics. Moreover we do not claim to have constructed an exhaustive account of current research in EU countries. The chapter should be viewed as illustrating some aspects of labour economics research, identifying groups of researchers in this field and to point out some of the issues being investigated. The list of published material is too vast to compile a comprehensive reference list. We thus do not include references to specific papers but more general accounts of the type of work undertaken. We do include the names of the main researchers in each field making references to some important contributions. At the end of the report, in the common list of references, authors are cited together with their affiliation.

Empirical microeconomic research in labour economics has become an active area of research in Europe in the recent years as new micro data sets have become increasingly available. The main motivation for such research has been the increasing realisation that a number of relevant questions in public finance, regulation and structural labour market policies can only be studied by analysing the behaviour of individual agents and firms. Using micro data has two important advantages. First it is easier to argue that the results obtained are more

reliable and relate closely to the economic models used to motivate the research in the first place. Second it is possible to study the way that policies may affect particular groups of individuals or firms. For example studying the effects of benefits on the work decisions of single parents obviously requires data on single parents and not simply aggregate activity rates. A number of research centres can be identified where a large part of the European research in the field takes place or which co-ordinate such work. Funding for such research comes from various government agencies, charitable foundations, research councils and the EU. Some private funding is also available.

As an illustration of EU funding of labour economics research (more broadly than in this review) the statistical appendix of this report shows selected SPES projects that have been classified as 'labour economics'.

Below I have attempted to categorise the research into a number of areas, although it must be recognised that in many cases research does not fit neatly into one or the other category. I will attempt a link between topics where appropriate. Finally, within empirical labour economics research a number of issues are discussed relating to the appropriate econometric methods for identifying behavioural effects as well as for the best way to set up an empirical model. In this context a number of important econometric advances continuously take place as a direct result of such a debate. In a final section I will review briefly these results.

## 2. LABOUR SUPPLY AND PARTICIPATION

It is quite well understood that labour supply responses could underlie some of the reasons for observed unemployment and for reductions or fluctuations in the aggregate hours of work. In Britain for example male hours of work have fallen from around 46 per week in the late 60s to about 39 in the early 90s. Female hours of work have fluctuated quite considerably as well. On the other hand the proportion of men working has dropped very significantly from 96% to about 75%. Female participation increased, then dropped in the mid 1980's and then rose to unprecedented levels. Such important fluctuations are not confined to Britain. Changes in hours of work and in participation have been documented extensively for example in Sweden. Nevertheless it must be recognised that the institutional framework and labour market flexibility varies significantly from one country to another.

### 2.1. Hours of work

The research on labour supply has focused on the relationship between the tax system, the state benefit system and labour supply. The focus has been to identify the causal links of labour supply behaviour and such policy instruments as marginal tax rates, means tested benefits and childcare provision. The basic framework used in this type of research is the neo-classical model of labour supply where hours of work are explained as a function of hourly pay rates and income available from other sources than own earnings. Using this basic model researchers have analysed the labour supply behaviour of a number of different demographic groups, such as married men and women, single mothers and teenagers. The analysis has used various methods for identifying labour supply effects and for taking into account the effects of the tax system. The motivation for focusing on different demographic groups is usually related to the different institutional setting that each group faces in terms of means tested benefits and work incentives. In this context the work on single mothers has been particularly important since this is typically a very poor section of the population which faces high marginal tax rates induced by the workings of the benefit system. Although the debate among researchers has been at times heated, consensus has now more or less been achieved that the labour supply responses to changes in tax rates is small but positive for most groups of workers. Even the highest wage elasticities rarely exceed 0.5 and are usually close to 0.1. Nevertheless it seems to be the case that incentive effects are important for this group. These concerns have led to some important policy changes

to alleviate this poverty trap. An example is the reform to the Family Credit system in the UK.

Work on family labour supply has been extended recently to allow for the fact that the members of the household preserve their individuality, despite living within a family. In this context the theoretical framework for empirical analysis has been developed recently by Chiappori (DELTA - ENS) and empirical research on this issue has been carried out by Kooreman and Kapteyn (Tilburg Centre for Economic Research (CENTER)) and more recently by Blundell, Chiappori, Magnac (Centre de Recherche en Economie et Statistique (CREST) and Institut National de la Recherche en Agriculture (INRA)) and Meghir. Finally the issue of whether preferences are interdependent and hence labour supply determined as a "social equilibrium" has been researched by Kapteyn and Woittiez.

Some interesting work has taken place recently by Barmby (University of Newcastle) and Treble (Bangor University) on worker absenteeism. This research is interesting because absenteeism is one dimension of labour supply: Although contracted hours may seem quite rigid, workers may reduce the effective hours of work by simply not turning up. The authors analyse the incentive structure that leads to different rates of absenteeism with various sick pay regimes applicable in the company. Work on a similar topic has been undertaken by Palme and Johansen (Stockholm School of Economics). In a recent paper they show that the incentives of sick pay schemes are important determinants of absenteeism.

The main teams working on labour supply and the benefit system in Europe are the researchers at the Institute for Fiscal Studies (IFS) (Blundell, Duncan Giles and Meghir), Kapteyn and his team at Tilburg, Arronson at Umeå University, Palme at Stockholm University, Flood at Göttingen, Blomquist, Klevmarken and Ackum at Uppsala, Micklewright at the European University Institute (EUI), Niels Westergaard-Nielsen and Nina Smith at the Centre for Labour Studies (CLS) in Aarhus and Ian Walker at Keele University and the IFS.

In view of the inelastic nature of labour supply some work has investigated whether this is due to the presence of constraints in hours of work; the researchers have concluded that such constraints may be important; on the other hand it has to be recognised that the labour markets across Europe are quite different and identifying constraints in one country may not imply the same for another. In terms of work hours flexibility the UK stands out as possibly the most flexible labour market with jobs available at most hours of work. The principal researchers in

this field are Kapteyn in Tilburg, and Pudney in Leicester University.

Finally the importance of analysing incentives has been widely recognised. In Sweden in the wake of the recent major tax reforms an important evaluation exercise has taken place with researchers analysing labour supply effects using a number of different methodologies. The overall consensus from these evaluations is that the loss in revenue from reductions in marginal tax rates would not be offset by improved labour supply incentives. This does not of course mean that certain groups would not be induced to work more; simply that overall the incentive effects are not high. Important work in the area of tax evaluation has been undertaken separately by Blomquist, Klevmarken and Flood.

## 2.2. Transitions in and out of work and unemployment

The other component of labour supply is labour force participation. The most interesting models in this field are those which estimate transitions in and out of work, recognising the dynamics involved in this process. Broadly speaking, one can distinguish two class of models: *structural models of job search and reduced form models of transitions*. But also *job tenure, unemployment programmes, on the job search, and retirement* are approached in new research.

### *Structural models of job search*

The first of these models uses a very tight structural approach and estimates variants of a job search model, usually imposing assumptions of stationarity. The emphasis in these papers is to estimate preference parameters and reservation wages. Lately these models have been extended to analyse the effects of using different types of search methods. In particular such research asks whether government job centres are effective in placing unemployed workers (Bloemen). Structural models are also used to evaluate the effects of the duration and entitlement to unemployment benefits. An important paper in this class is the paper by Van den Berg (Free University of Amsterdam) who specifies and estimates a structural job search model with non-stationarity; this arises by the exhaustion of unemployment benefits. This research is particularly important for policy analysis since it is not just the level of benefits that are likely to affect the rate of return to work but their duration. In fact the duration of benefits has become a focus point in the debate about the causes of long term unemployment. This point is in line with the views of Layard (Centre for Economic Performance (CEP) - London School of

Economics (LSE)) Nickell (Oxford and CEP) and Jackman whose view is that the persistence of long term unemployment is linked to the duration of entitlement to benefits. Overall the teams working on structural models of labour market transitions are concentrated in the Free University of Amsterdam (Koning, Ridder and van den Berg) in Tilburg (Bloemen) and in France (Florens and his team in Toulouse and Fougère in the CREST - Institut National de la Statistique et des Etudes Economiques (INSEE)).

### *Reduced form models of transitions*

The second class of models estimates reduced forms of employment and unemployment duration. Without attempting to estimate parameters that can be given a direct preference interpretation researchers in this area have estimated the relevant exit rates as a function of individual characteristics, measures of earnings and benefits (often expressed as the replacement rate) and measures of current labour market conditions. Examples of researchers working on reduced form models are Stewart and Narendranathan in Warwick, UK, Meghir and Thomas at IFS - University College London (UCL), Wadsworth at the CEP and the National Institute for Economic Research (NIESR), Pudney and his team at the University of Leicester, Peter Dolton and his team at the University of Newcastle, Micklewright at the European University Institute, Pedersen and N. Smith at the CLS in Aarhus. The main difficulty with analysing the effects of economic incentives is that the real value of benefits does not vary a great deal since major reforms to the social security UI system are comparatively rare; hence the data particularly over short time periods does not always contain sufficient policy experiments. Nevertheless a number of studies have managed to identify a small but relatively significant negative effect of benefits on the exit rate from unemployment by judiciously using the little variation that does exist. Results by Meghir (IFS - UCL) and Whitehouse (OECD) based on 18 years of data and hence displaying quite a lot of variability show that increased benefits do not encourage individuals to drop out of work, while the earlier results of the sensitivity of unemployment duration to benefits has been confirmed. Work on unemployment dynamics using micro data in Germany has been carried out by Mavromaras (University of Newcastle) and van Ours (Tinbergen Institute - Amsterdam) while in the UK work on this topic has been undertaken by Burgess (Bristol).

### *Job tenure*

Some research has also started on the changing structures of the labour market. There is a notion that uncertainty has increased since the 1980s and that many individuals can not be said to hold secure



employment. The repercussions of this are very important. Effectively, individuals' life-cycle wealth has become more uncertain. Simon Burgess and Hedley Rees at the University of Bristol have analysed the changing job tenure in Britain from 1975 to 1992. Wadsworth of the NIESR and the CEP has also been working on this issue.

### *Policy towards unemployment*

A lot of the work reported above is designed to answer questions relating to ways of tackling unemployment. There is a large macro and micro literature on this and it is beyond the scope of this report to survey it. Nevertheless, in the UK important work on policy towards tackling unemployment has been undertaken from the macro perspective by Layard, Jackman, Nickell and Bean (all at the CEP), and from the micro perspective by Blundell, Dearden, Dilnot, Giles, Gosling and other at the IFS (design of the social security system, training, replacement rates) and by Dolton at the University of Newcastle to mention but a few. In particular, Dolton and colleagues at the University of Newcastle have worked on estimating the effect the "Restart" programme on the duration of unemployment. This is a programme that aimed to help the long term unemployed to re-enter the job market. Their results seem to indicate that the policy was successful. Nevertheless the knock on effects that the policy might have on those unemployed for a shorter period of time has not been investigated. This is potentially important work given the policy implications.

Finally work on the relationship of the design of the social security system and labour market participation has been undertaken at the IFS by Blundell, Gosling and Giles. They analysed effective replacement rates and found them to be very high for some groups. This further emphasises the need for social security reform. In Spain Arellano (CEMFI - Madrid) and Bover (Bank of Spain) have modelled the simultaneous rapid increase in female participation and the drop in fertility in Spain. They conclude that the dominant forces underlying both these changes were structural factors that shifted female earnings potential.

### *On the job search*

Unemployment dynamics are also related to whether workers search on the job; if on the job search is not too costly workers might move out of unemployment with a view to improving their labour market position by searching while working. Empirical analysis of on the job search activity has been based on the work of Burdett (University of Essex) and Mortensen (Northwestern University USA) as well as Pissarides (CEP and LSE) and has been carried out by Pissarides

and Wadsworth (CEP and LSE, NIESR) and Arellano (CEMFI - Madrid) and Meghir (IFS - UCL).

### *Retirement*

The dependency ratio in Europe, i.e. the proportion of people out of work relative to those working, is predicted to increase dramatically as a result of the ageing population. Analysing the determinants of exit rates to retirement is thus a particularly important issue. Some of the most important work in Europe on this issue has been done by Borsch-Supan in the University of Mannheim, Germany. He shows that a simple reorganisation of the German pension system to make it actuarially fair would reduce early retirement quite significantly.

## 3. TRAINING AND LABOUR MARKET OUTCOMES

Ever since long term unemployment became persistent and affected an increasing proportion of the workforce, economists and policy makers alike focused on the need for structural policies that would improve the productivity of those who seemed to be unable to find work. Such policies would also improve the flexibility of the labour market since displaced workers from declining industries would be able relatively easily to find work in new expanding sectors. There is a large body of literature in the US on the effects of training on labour market outcomes (employment duration, wages etc.) but the work in Europe is comparatively limited. This is mainly because of limited data sources. In the US a lot of the empirical research has relied on data from social experiments. In Europe the training programmes are often intimately linked to the administration of unemployment benefit or to benefit eligibility (e.g. Sweden) This creates important difficulties in controlling for the type of person who joins the programmes. In such a context, where individuals may join training programmes just to extend their eligibility to benefits, we may get the counter-intuitive result that training has little or no effect on the relevant labour market outcomes. Nevertheless there are a number of research programmes on these issues spread out throughout Europe, which exploit new and rich data sets. In the UK work on training is undertaken by researchers at the CEP - LSE (Jackman, Wadsworth and Layard) at the IFS (Blundell, Dearden, Meghir and Thomas), by a group lead by Peter Dolton at the University of Newcastle and John Treble at the University of Bangor, by researchers at the University of Warwick (M. Stewart and W. Narendranathan and P. Elias) and by researchers in the University of Leicester (Pudney). In

France the main research on these issues is led by Fougère at the CREST, the INSEE economics research centre. In Sweden Anders Björklund and Per-Anders Edin are leading researchers in that field while in Denmark the group led by Niels Westergaard Nielsen at the CLS in Aarhus is the main centre for such research.

It is hard to summarise in a few sentences the huge variety of research in this field. The outcomes of interest are both wages and employment, i.e. whether training raises productivity as well as the ability of an individual to hold on to a job. Training itself is a very diverse activity and researchers have looked at the effects of training the unemployed, youth training such the YTS program in the UK, of employer provided training, of government provided programmes etc. One important result that has emerged is that employer provided training seems to be the most effective, even when we control for selection by worker quality.

In an attempt to bring together the results from Europe and the US and to evaluate the state of knowledge on the effects of training a conference was organised in September 1993 at CEMFI, Madrid by Arellano and Meghir which brought together some of the best work in the US and the UK. It became clear at that meeting that although some of the European work was of top quality a lot more needs to be done in this area before we can confidently answer the questions relating to the effectiveness of training programmes in Europe. Relative to the state of research in the US the work in Europe is quite new and a number of advances should be expected in the future.

#### 4. INTERTEMPORAL SUBSTITUTION IN CONSUMPTION AND LABOUR SUPPLY

This important area of research links the labour market behaviour of individuals to their consumption behaviour. This link is very important since the ability of individuals to accommodate employment and income shocks crucially depends on the operations of financial and insurance markets as well as social insurance policies. In addition it has been long recognised that intertemporal substitution in labour supply may be one of the reasons underlying business cycles.

Some research has taken place looking at intertemporal substitution issues using micro data. In the UK the work by Blundell (IFS - UCL), Meghir (IFS - UCL) and Neves (Bank of Portugal) showed that women's labour supply over time was consistent with

the life-cycle model and displayed the predicted positive labour supply elasticities. Using a long panel of Swedish manufacturing workers, Ackum (Uppsala - Sweden) and Costas Meghir used the life-cycle model as a basis for assessing the labour supply incentives that could be produced by the tax reforms in Sweden. A small positive elasticity of around 0.1 was identified. Bover (Bank of Spain) has used the US PSID to analyse intertemporal labour supply in the US. Otherwise not much work has been done at the micro level on dynamic labour supply with a possible exception of research in Germany using the Socio-Economic Panel (Michael Lechner, François Laisney).

As mentioned above there is another side of this work which has considered the relationship of consumption to labour market status such as employment or hours of work. These studies have shown that once one allows for preferences to change with employment status there is little evidence that individuals are liquidity constrained. Leaders in this field are Attanasio (IFS and UCL) and Weber (University of Padova) and Blundell (IFS - UCL), Browning (MacMaster - Canada) and Meghir (IFS - UCL). Finally empirical work on the direct effects of income and labour market uncertainty on consumption behaviour has been undertaken by Brugiavini in the University of Padova and Blundell at IFS-UCL.

The issue of how labour market transitions relate to savings is a long standing one. In a recent paper Blundell (UCL and IFS), Meghir (UCL - IFS) and Magnac (CREST and INRA) have developed an empirical framework for this analysis. A model motivated by this has recently been estimated by Bloemen using Dutch data including both wealth and labour market transitions.

#### 5. LABOUR DEMAND

The availability of firm level data has allowed a recent growth of studies in labour demand. One of the first studies to be undertaken on micro data is the one by Nickell and Wadhwani which can be described as a reduced form model of firm level labour demand. The focus of the paper was sensitivity of labour demand to the financial structure of the firm; these variables were said to reflect the bankruptcy risk facing the firm. Following on from this is the work of Machin (CEP and UCL), Manning (CEP and LSE) and Meghir (IFS and UCL) who using more or less the same data estimated structural Euler equations for labour demand; their focus was on the impact of unionisation on labour demand and on the wage elasticity. They found that the long run elasticity of

labour demand with respect to wages was -1. Further studies by Manning and Machin also showed that a "shirking - efficiency wages" described well the behaviour of firms with low levels of unionisation. One important problem with these studies was the lack of variables reflecting the skill structure. The UK micro level data used only contains information on total employment. This does not allow precise measurement of marginal labour costs. Significant advances have been made by researchers in France (Kramarz, Abowd and others at the CREST - INSEE) who have exploited the rich French data sets including data on the skill mix. Further interesting advances are taking place by linking the French firm level data to individual worker data by the same team. This allows the study of the effects of firm specific characteristics and firm specific human capital on wages and profitability. It also allows testing of matching theories. Burdett and Hildreth (University of Essex and British Household Panel Survey (BHPS)) have recently started collecting data on firms and workers within these firms and hope to build a panel to study similar issues in the UK. This is ongoing work and will probably lead to important new results on both labour demand and on how firms and workers are matched.

On the issue of skill composition Machin (CEP and UCL) has documented that in the UK there has been a shift towards the use of more skilled labour. This result is important and carries two potential explanations: First, European unskilled labour is facing increased competition from developing countries, through the increased volume in trade. Second, technology is skill biased and reduces the demand of unskilled labour everywhere, including developing countries. This is the conclusion of recent research by Machin (CEP and UCL) with Berman (Boston University) and Bound (University of Michigan).

Important work on labour demand is also taking place at the Free University of Amsterdam where Gerard Pfann and his team have shown that asymmetric adjustment costs are an important feature of firm behaviour generating implications about the cyclical movements of employment. Some of this work has used aggregate data but it has obvious implications on micro data; some of these ideas have been applied to Spanish data by Alonso-Borego (University of Carlos III - Madrid). At the Free University of Amsterdam Hassink, van Ours and Ridder have worked on the role of internal labour markets and find the unexpected result that the internal mobility rate is smaller than the hiring rate of external workers, which is at odds with the existence of internal labour markets.

## 5.1. Job creation and job destruction

A major part of the work in labour demand uses stocks of labour rather than worker flows often for want of better data. Nevertheless some important work has recently taken place on worker flows. The main groups working on these issues are: Broesma and Gautier at the Free University in Amsterdam and the Tinbergen Institute on the rate of job creation and job destruction on different sized firms; Kramarz and colleagues at the CREST-INSEE and by Burgess at the University of Bristol and S. Nickell at Oxford and the CEP - LSE

Recently some interesting work has been carried out by Van Praag and his team in the University of Limburg where the focus has been on examining the attitudes of employers towards applicants. The novel aspect of this work consists of the fact that employers were presented with CV's of fictitious applicants where personal characteristics including education and experience had been randomly mixed. The researchers analysed the eventual choices of employers to discover which were the dominant characteristics of chosen or acceptable applicants. They also compared the preferences revealed in this way to what the employers said were the main characteristics they were looking for in an employee. This work is important because it may reveal potential bottlenecks in the labour market as well as prejudices and discrimination practices by employers

## 6. WAGE DETERMINATION

### 6.1. Compensating wage differentials

Researchers have attempted with little success to show that given observable characteristics there are no systematic differences in wages across sectors. But they are rarely in a position to adequately control for job characteristics and hence measure the extent of the compensating wage differentials. In a recent paper Kapteyn (CENTER - Tilburg) and Woittiez (University of Limburg) do just that and find that indeed jobs related to bad working conditions pay a premium.

### 6.2. The gender wage gap

Research on male/female wage differentials is an old area of research (e.g. see the early work of Stewart in Warwick) but continues to be an important research topic. Researchers have been "monitoring" the gender gap. In the UK (as in the US) the male female differential has been falling. N. Smith and her team at the GLS in Aarhus, Machin at UCL and CEP,

and Harkness (UCL and CEP) are but few examples of this large sub-field of research.

### 6.3. Wages and the business cycle and rent sharing

The issue of whether wages are cyclical or not has been the subject of debate for the entire century. There are good theoretical reasons as to why wages should be pro-cyclical or counter cyclical. Recently Blanchflower and Oswald (CEP-LSE) have published detailed work on the relationship of wages and unemployment using micro data. They consistently find a negative elasticity of -0.1 for a number of countries. Meghir and Whitehouse at the IFS find similar results in the UK using 19 years of repeated cross section data. In some recent work Hildreth (BHPS - University of Essex) and Oswald (CEP -LSE) have shown that changes in profitability significantly affect pay. Similar results are found on US data by Blanchflower, Oswald and Sanfey. They conclude that their results are not consistent with a competitive model of the labour market but are consistent with rent-sharing theory. Work on this issue has also been done by van Reenen at the IFS and UCL who also finds evidence of rent sharing and non-competitive behaviour. This is an interesting field of research and more work needs to be done in this field to confirm the results allowing for the effects of common macroeconomic shocks affecting wages and profits.

### 6.4. Directors' pay

The issue of directors' pay has been propelled into the public debate by the huge increases in the pay of top directors, particularly those of the privatised utilities. The determination of director's pay has been analysed in the UK by Gregg (NIESR) Machin (CEP and UCL) and Szymanski. They find the surprising result that after 1988 the link of directors' pay to the performance of their company disappeared. This is an area where more research is needed and good data including information on job tenure by directors could lead to important breakthroughs.

### 6.5. Wage inequality

After decades of stability in the income distribution it was observed in the 1980s that income inequality was rapidly increasing in some countries and most impressively in the US. Work on the UK distribution has been undertaken by Jenkins (BHPS - University of Essex) and by Goodman and Webb at the IFS. A report on "Income and Wealth" commissioned by the Rowntree Foundation and directed by John Hills (LSE) has brought a large part of this research together. Extensive cross country comparisons have taken

place since then and have revealed that the increase in income inequality in Europe has taken place principally in the UK, and in Sweden. Perhaps remarkably no such increase in dispersion has been noted in France (Kramarz) or in Germany (Laisney). Gregg (NIESR) and Machin (CEP and UCL) provide a comprehensive account of some cross country differences. This has generated an important body of research attempting to uncover the causes of this increase in inequality. A large part of this increase can be traced back to increases in earnings inequality and in particular to increases in the inequality of pay rates. Uncovering the reasons for this increase led to some excellent and controversial research: The focus turned to the collapse of unionisation (Gosling and Machin), to the effects of technological change (Van Reenen), to the changing returns to (and quality of) education, to the changing nature of the labour market for young entrants (cohort effects) and to globalisation of production (whereby unskilled labour from emerging economies competes with domestic unskilled labour via the increased trade links). It has been shown that increasing returns to skill have taken place and this underlies a small part of the increase in wage dispersion. Some researchers have also found increases in returns to experience (Schmitt, 1992) but these can be explained away as cohort effects. Most of the increase in the dispersion seems to be within the low skill group of workers. Some of the best work on this issue has been undertaken at the IFS, the CEP, the CREST and the Zentrum für Europäische Wirtschaftsforschung (ZEW). Atkinson (Nuffield College) in a recent paper brought together most results in the analysis of widening inequality in income and concluded that although we have learned a great deal about elements of the puzzle no unifying framework has yet been produced to bring together all the explanations into one coherent story. More theoretical and empirical research in this field will be necessary.

### 6.6. The returns to education

The returns to education have been an important issue and the empirical work has been plagued by the fact that individuals' educational choice is related to their overall productivity and ability. This can go both ways: Productive individuals may find it easier to obtain education which is valuable because of its signalling content or alternatively productive individuals may not obtain additional education since the opportunity cost for them is higher. The raw returns to education which have been found to be around 6% for one year of extra education may be misleading. Colm (University College Dublin) and Walker (University of Keele and IFS) have exploited the reforms to the education system to obtain

exogenous variation in the amount of education that individuals receive to resolve this issue. They find that education has substantial returns of around 15% in the UK.

Other work on education has been carried out by Peter Dolton (University of Newcastle) focusing on the work destination of graduates and by Pat Rice and D. McVicar (University of Southampton) on the participation in further education in England and Wales.

### **6.7. Equilibrium wage distributions**

Ever since search theory was introduced to explain unemployment the issue of whether each type of labour faces a unique market price or a dispersed distribution of wage offers has been at the centre of the debate. The issue is very difficult to resolve because even if we find that wage opportunities vary a great deal for a given skill group there are a number of unobservable characteristics such as motivation, interpersonal communication skills which are rewarded in the labour market but we do not observe. Nevertheless a number of theoretical models developed by Burdett (University of Essex) and Mortensen (Northwestern University, USA) as well as Pissarides (CEP and LSE) do imply that under sensible conditions more than one price will be offered for a particular type of worker. The result is based on informational asymmetries. Ridder (Free University Amsterdam) with his co-workers have been at the centre of deriving and estimating models of equilibrium wage distributions from actual data.

### **6.8. Labour contracts**

An empirical analysis of contract duration using data from large unions in the UK has been undertaken by Pudney (University of Leicester). Moreover Hartog and his team at the University of Amsterdam have worked on an empirical investigation of the structure of labour contracts and the different institutional structure in a number of countries.

## **7. EARNINGS AND OCCUPATIONAL MOBILITY**

Research into income and earnings mobility provides a crucial link between the static analysis of income distribution, human capital accumulation and the welfare consequences of poverty. The implications of inequality and its change is fundamentally different if the poor and low earners are always poor rather than low pay being a transitory state. The study of earnings mobility will be an important component in the design of labour market policies. This type of

work requires long panels of individuals and hence is quite difficult to undertake. Nevertheless Palme and Björklund (Stockholm School of Economics) have undertaken separate studies for Sweden. Some work has also started in the UK using the first two waves of the British Household Panel Study (Steve Webb University of Bath and IFS) and in Denmark researchers Benthzen and Schmidt-Sørensen at the CLS in Aarhus have also worked on this issue using a relatively long panel. On a related topic, Blundell (UCL and IFS) Walker (University of Keele and IFS) and Salaheen (UCL) have worked on occupational mobility. In France Magnac and Robin use a dynamic structural model to study the transition of individuals to self-employment. Finally, Evans and McCormick at the University of Southampton have studied the employment dynamics of men from ethnic minorities, finding that although their joblessness rates have increased the occupational attainment of those working has improved.

## **8. UNIONS, WAGES AND PRODUCTIVITY**

The field of the effects of unions on economic activity is vast and covers the fields of economics and industrial relations. A large body of research on these issues has taken place in Britain essentially because unionisation, after increasing dramatically in the '60s and '70s, declined rapidly during the '80s. In addition there was a huge body of legislation restricting the power of unions. Thus the closed shop was abolished, and as a result of the new legislation unions were frequently "de-recognised" for negotiation purposes. Finally union employer bargaining was effectively decentralised to firm level bargaining. These policy changes offered a real opportunity to study the effects of unions. The leading researchers in this field are Machin (CEP and UCL), Manning (CEP and LSE), Oswald (CEP-LSE), Nickell (Oxford and CEP), Stewart (University of Warwick), Walker (University of Keele and IFS). Researchers consider the effects of unions on wages, on organisational structure, on profitability on adoption of new technologies and on productivity.

## **9. LABOUR MARKET REGULATION AND UNEMPLOYMENT**

At the European level the introduction of the Social Chapter in the Maastricht treaty and the continuing European integration have brought the issue of labour market regulation to the forefront of the policy debate. Second currently the policies differ greatly between the various countries in the EU.

France for example recently increased its minimum wage, while in the UK the remaining minimum wage legislation was abolished (the abolition of the wages councils). These events have given rise to a number of studies on the effects of the minimum wage. In a number of papers Machin and Manning have argued that the minimum wage set at a reasonable level does not reduce employment and in certain circumstances may increase it by increasing the supply of labour. Using a similar theoretical framework, a team in the Free University of Amsterdam (Koning, Ridder and van den Berg) distinguish that minimum wages increase between structural and frictional unemployment and find that minimum wages have a substantial negative effect on unemployment in some groups. In the age group 39-61 for example unemployment in the Netherlands would increase from 10 % to 17 % if minimum wages were increased by 10%. The distinction between long run and short run effects of minimum wages is crucial in our understanding of the potential effects of such policies on employment. In France work on minimum wages has been undertaken by Lubrano (GREQAM - Marseilles) and by Bonnal and Fougère. The latter, using a structural search model and assuming that the minimum wage only affects the rate at which job offers arrive, find that the elasticity of mean duration of unemployment with respect to the minimum wage is larger than the elasticity with respect to unemployment insurance, while in Denmark studies have been undertaken at the CLS in Aarhus by the team of Niels Westergaard-Nielsen. Finally work on the role of employment protection legislation has taken place by Burgess (Bristol) in a number of recent papers and by Bentolila (CEMFI) and Gilles Saint-Paul (CERAS and DELTA - Paris). Using firm level data, they confirm the theoretical finding that the introduction of flexible labour contracts has increased the size of adjustments of employment to aggregate shocks and has reduced the persistence of aggregate shocks contracts.

## 10. MIGRATION

Empirical work on migration is very important and at the same time very hard because we often do not know the complete opportunity set that a migrant is facing. Yet migration in Europe may turn out to be one of the most important ways by which the European economies will counteract the ageing population. In the UK Hughes (University of Edinburgh) and B. McCormick (University of Southampton) have studied internal migration within the UK. They find the interesting result that relative wages are incentive for migration but not relative unemployment rates. Other work on internal

migration has been carried out by O. Bover at the bank of Spain who has analysed mobility within Spain. Her results imply that those receiving benefits are the least likely to move. The most mobile are those who are unemployed but not receiving benefits. C. Dustmann at UCL works on the migration decision of foreign workers in Germany and analyses the incentives to return to the home country (usually Turkey) as well as the effect of the intention to return on current labour market behaviour of secondary workers in migrant families. Intention to return increases labour market participation by secondary workers.

## 11. HISTORICAL STUDIES

Some interesting empirical work using historical data on miners' pay and contracts has been undertaken by J. Treble (University of Bangor). Other work using historical micro labour data has been undertaken by J. M. Robin (CREST - INSEE).

## 12. EMPIRICAL RESEARCH METHODS

The empirical research reported in the above sections has relied on a number of methodological developments in econometric techniques. On the econometric methods the main researchers that have influenced the field and who are actively working on issues relating to empirical microeconomics are Andrew Chesher (University of Bristol) and Geert Ridder (Free University of Amsterdam) have been at the forefront of developments in the area of duration models which are used for the analysis of transitions in and out of work. The former has worked on developing diagnostic test procedures while both have worked on the important issues of identifiability. Richard Smith (University of Bristol) has worked on a number of important topics. Recently with Jean Marc Robin (CREST - INSEE and INRA) they have developed tests of rank which are very useful when evaluating simultaneous equations models. Peter Robinson at the LSE has been at the forefront of research into non-parametric estimation and testing while Richard Blundell and Costas Meghir (UCL and IFS) have worked on diagnostic tests and on estimation techniques relating to linear and non-linear panel data models. Manuel Arellano (CEMFI Madrid) and Stephen Bond (IFS and Nuffield) have developed some of the most used techniques and diagnostic tests for linear panel data models. Manuel Arellano is also working on issues relating to non-linear panel data models. In France there are two very strong teams of econometric theorists whose

work has directly influenced the work in empirical economics. These include **Gourieroux and Monfort** both at **CREST - INSEE**, **Renault (Toulouse)** and **Trognon (ENSAE - INSEE)** who were instrumental in developing the techniques used with censored data. **Fougère (CREST and INSEE)** and **Florens (Toulouse)** have worked on duration models. **Gourieroux, Monfort and Renault** have developed the methods of indirect inference. This allows estimation of a complicated model to proceed using as a basis a misspecified model. In successive iterations the estimates based on estimating the misspecified model are corrected and consistent estimates of the true model are achieved. This technique has been applied by **Magnac and Robin** to study labour market transitions.

### **13. SPES FUNDING AND EMPIRICAL MICROECONOMIC RESEARCH IN LABOUR ECONOMICS**

The review above has made it clear that empirical labour economics is a thriving research field with active research centres in a number of European countries. The issues that these researchers analyse are very diverse and the techniques used are continuously being developed to suit the needs of the empirical investigations. EU funding has not been very abundant in this field, given its size but it has nevertheless supported some of the key research

groups in this field. Without being able to go into details I can confidently say that all projects I have seen have been very successful. Researchers in general find mobility type grants very useful in their quest for collaborative networks and in their attempt to combine skills that cannot be found at the same department or research group. On the other hand it might be more efficient to provide more funding for basic research including the hiring of research assistants and equipment. This is an efficient way of stimulating research if properly monitored. These grants could be combined with a mobility element to achieve maximum co-operation.

Finally a word on organisation: The bureaucracy involved in completing the forms for the grants is daunting and the work load seems to be independent of the size of the grant. This does put off applications from smaller groups without an organised institutional backing and may provide the wrong incentives. Other difficulties include the fact that not all research institutions hold decentralised budgets and accounts. Setting up collaborations with such groups, given the EU requirements has been difficult. A simpler system would be for the co-ordinating institution to fill in one set of forms and to handle all the budget. In general a drastic simplification of the bureaucratic mechanism and a greater emphasis on peer review will encourage a more efficient dissemination of funds.

## VIII RESEARCH IN INDUSTRIAL ECONOMICS IN EUROPE

*Stephen Martin*

### 1. INTRODUCTION

Industrial economics may well be the most imperialistic of all branches of economics. At its roots, it is essentially "the real-world theory of the firm." This in itself lays claim to one-half of microeconomics,<sup>1</sup> hence one-quarter of all economics (micro and macro). But in recent years industrial economics has cast its net wide. The application of models of firm behaviour under conditions of imperfect competition has revitalized international economics. Macroeconomists have drawn on industrial economics – neither wisely nor too well, I will argue below – to explain price inflexibility during recessions. Models of the internal structure of the firm are being developed in new directions, motivated by the desire to analyse restructuring in transition economies. Much of this work also ties together industrial economics and macroeconomics. A substantial literature concentrates on privatisation in established market economies. This work is akin to traditional studies of regulation, but draws on models of bargaining and of auctions that hold the promise of yielding new results.

Despite the pronounced theoretical bent of current research in industrial economics, it is difficult to find examples of such research that are not motivated, directly or indirectly, by a desire to shed light on policy questions. Pursuit of policy questions is usually explicit in recent empirical work.

It is convenient to think of such questions in terms of the traditional structure-conduct-performance framework.

Traditional questions concerning market structure include the causes and consequences of mergers - horizontal, vertical, and conglomerate. In the European context, the study of mergers involving firms based in different Member States assumes particular importance.

While economists have often paid lip service to the idea of studying firm structure – the internal organization of firms and the consequences of that

organisation for firm performance – it has proven difficult to fit such topics into the standard models of economic theory.<sup>2</sup>

Firm conduct may involve strategic behaviour in imperfectly competitive markets: behaviour that is profitable because it affects rivals' ability to compete, not primarily because it lowers cost or improves products in the eyes of consumers. Such strategic behaviour may be privately profitable, and may indeed yield some efficiency gains. Those gains may make European firms more competitive on world markets. But they may also create or reinforce barriers to entry, often barriers that have effect at national boundaries, a matter of fundamental importance for the development of the Single Market. Advertising, which generates both information and product differentiation, is also a consequence of firm conduct.<sup>3</sup> All else equal, the presence of more varieties on the market increases the probability that a consumer will find a satisfactory brand. But if incumbent firms occupy the most profitable niches of the market, the cost of entry may be increased, as an entrant is faced with the option of coming into the market with a full line of products or not coming in at all. So is investment in research and development, which leads to the development of new products and new production techniques.

Performance is a multidimensional variable. At the firm level, it includes not only the extent of economic profit, but also the extent to which firm come close to minimizing cost and the degree of technological progress. At the industry level, import and export flows are also a traditional element of market performance.

European industrial economists are active in world-wide research networks on such topics. Table 1 lists a selected number of SPES grants that have supported this research. In the last section I return to the question of the needs for continued support.

<sup>1</sup> The other half being the theory of the consumer.

<sup>2</sup> Perhaps for this reason, business historians have had more success with this topic; see Chandler (1962, 1977, 1982).

<sup>3</sup> Indeed, brand proliferation is an example of behaviour that has both strategic and efficiency aspects (Schmalensee, 1978).

**Table 1**  
**Titles and partners of selected SPES research projects**

	Period	SPES N°
<p><b>1 Analysis of industrial market shares in the EC</b></p> <p>Participating institutions:                      UNIVERSITY OF EAST ANGLIA (coordinator)                      CERIS                      UNIVERSIDAD DE NAVARRA                      INSEAD                      ERASMUS UNIVERSITEIT ROTTERDAM                      WISSENSCHAFTSZENTRUM BERLIN                      KATHOLIEKE UNIVERSITEIT LEUVEN</p>	1990-1993	00028
<p><b>2 Trade, specialisation and market structure in the EC after 1992</b></p> <p>Participating Institutions:                      UNIVERSITY OF NOTTINGHAM (coordinator)                      UNIVERSITE MONTPELIER I                      UNIVERSITA DI VERONA                      UNIVERSITÄT BAYREUTH                      TRINITY COLLEGE                      UNIVERSIDADE DE COIMBRA                      ERASMUS UNIVERSITEIT ROTTERDAM</p>	1991-1993	10058
<p><b>3 Multinational corporation activities in Europe and the completion of the European internal market in 1992</b></p> <p>Participating institutions:                      UNIVERSITY OF READING (coordinator)                      UNIVERSITA DI ROMA                      UNIVERSITEIT ANTWERPEN                      UNIVERSITE DES SCIENCES SOCIALES                      UNIVERSIDAD AUTONOMA DE MADRID                      UNIVERSIDADE TECNICA DE LISBOA</p>	1989-1992	00006
<p><b>4 The dynamics of industrial structural change and international integration in the European Community</b></p> <p>Participating institutions:                      UNIVERSITY OF CAMBRIDGE (coordinator)                      WISSENSCHAFTSZENTRUM BERLIN                      CEPREMAP                      INSTITUTE FOR THE STUDY OF THE DYNAMICS OF ECONOMIC SYSTEMS</p>	1989-1991	00005
<p><b>5 Panel on firms: A longitudinal inter-regional study on competitiveness</b></p> <p>Participating institutions:                      UNIVERSITY OF ESSEX (coordinator)                      SCHOOL OF ECONOMICS AND BUSINESS SCIENCES, ATHENS</p>	1992-1994	10074
<p><b>6 Comparative experience of economic growth in post-war Europe</b></p> <p>Participating institutions:                      CEPR, LONDON (coordinator)                      UNIVERSITY OF WARWICK                      UNIVERSITÄT DER BUNDESWEHR, MÜNCHEN                      UNIVERSITA DI VENEZIA</p>	1992-1993	10072

*continues*

continued

7	Industry dynamics and small firms: An international comparison study	1991-1993	00047
	Participating institutions:		
	WISSENSCHAFTSZENTRUM BERLIN (coordinator)		
	UNIVERSITA DI TORINO		
	SMALL BUSINESS RESEARCH CENTRE		
	ERASMUS UNIVERSITEIT ROTTERDAM		
	KATHOLIEKE UNIVERSITEIT LEUVEN		
	UNIVERSIDADE DO MINHO		
	COPENHAGEN BUSINESS SCHOOL		
	UNIVERSITY OF ATHENS		
	UNIVERSITE DE TOULOUSE		

## 2. STRUCTURE

### 2.1. Mergers & market structure

The economic advantages that are ascribed to the development of the Single Market are contingent on induced changes in market structure and in firm structure. If the elimination of economic barriers between Member States meant only that existing firms continued to operate as they had in the past in the markets they had served in the past, efficiency gains and enhanced competitiveness would not be realized. In particular, in order for firms to achieve the lower unit costs that are often thought to flow from economies of large scale production,<sup>4</sup> firms' outputs must increase after market enlargement. This implies a need for mergers and consolidation, and a reduction of the total number of firms supplying the enlarged market. A rigorous theoretical framework for the analysis of this sort of question, and exemplary case studies, appear in Sutton (1991).

Because of their role in generating new jobs, it is important to understand how market conditions and market failures influence the formation and survival of small firms.<sup>5</sup> Small firms apparently are able to finance investment on adverse terms, if at all, which places them at a competitive disadvantage compared with established larger firms.<sup>6</sup>

### 2.2. Market integration

Regular readers of the *Financial Times* will have noted a generic article on market integration, which is published every few months using updated data. The article reports a comparison of prices of

physically identical goods, or goods that are regarded as close substitutes, in different Member States. The comparison reveals that prices differ across Member States and sadly concludes that the Single Market is a long way off. That conclusion may or may not be correct, but the methodology applied to support it does not withstand scrutiny. Prices should not be the same in different submarkets if the costs of serving those markets differ.<sup>7</sup> Relative prices should not be the same across different submarkets if the structure of demand differs across markets.<sup>8</sup>

A promising area for research is to develop rigorous theoretical models of and empirical tests for market integration. This is related to work that appears mostly in law journals literature on the definition of markets for the purpose of competition policy.<sup>9</sup> Empirical work by economists, following Stigler and Sherwin (1985) has tended to look at the time path of relative prices, and this methodology has recently been extended by the use of cointegration techniques.

Another approach would be to employ the techniques of modern econometric studies of product-specific market power (for an example, see Feenstra and Levinsohn, 1995), which also produce statistics on the degree of substitutability between different products. Another is to directly study the pattern of trade flows between submarkets; this is taken up below in the section dealing with the overlap of industrial economics and international trade.

<sup>4</sup> For a study of such economies, see Szpiro and Cette (1994).

<sup>5</sup> For references to this literature, see Geroski (1991), Audretsch and Acs (1994), Audretsch and Mahmood (1994, 1995), and Audretsch and Vivarelli (1995).

<sup>6</sup> Among other things, this suggests that the theory of contestable markets is of limited application to real-world markets.

<sup>7</sup> In a perfectly competitive market, and in the absence of barriers to entry, arbitrage by consumers would ensure that price differences would equal cost differences, in long-run equilibrium. In an imperfectly competitive market, entry decisions would ensure that firms would earn the same rate of return in all submarkets (again in long-run equilibrium and abstracting from income effects).

<sup>8</sup> Compare, for example, the demand for beer relative to wine in in Northern Europe and in Southern Europe.

<sup>9</sup> For references, see Elzinga and Hogarty (1973, 1978) or Bruzzone (1995).

### 2.3. Firm structure

The principal-agent approach to the question of firm structure stems from the seminal work of Mirrlees (1976). There is an active theoretical literature (Sinclair-Desgagné, 1994; Bolton and Dewatripont, 1994; and generally, the *Oxford Review of Economic Policy* Volume 8, Number 3, Autumn 1992). Some of this formalizes insights about firm-capital market relations that were first highlighted by Oliver Williamson (see, for example, Holmström and Tirole, 1993; Gertner et al., 1994). This literature provides a useful framework for thinking about the internal organization of firms; it has been slow to yield empirically testable applications.

A topic that draws on the analysis of both market structure and firm structure concerns the impact of market structure on incentives for firms to operate efficiently. Recent theoretical contributions question the traditional presumption of the X-efficiency literature that greater product-market competition improves efficiency (Martin, 1993b), but the issue seems most likely to be settled by empirical studies.<sup>10</sup>

Of particular interest here is an examination of patterns of diversification of European firms across Member States. This has consequences for economic integration. It also has consequences for market performance. The possibility that firms which meet in many product or geographic markets may for that reason behave less competitively remains a topic of active debate in industrial economics (Edwards, 1955; Bernheim and Whinston, 1990). Hughes and Oughton (1992, 1993) are examples of the kinds of empirical studies that can shed light on this issue.

### 2.4. Privatisation in established market economies

A recent treatise is Laffont and Tirole (1993).<sup>11</sup> There is a large empirical literature, dealing with industries that have been the target of deregulation programmes and for which, consequently, there is an abundance of available data.

One such industry is the passenger airline industry. This began with studies of the U.S. airline industry, the post-deregulation behaviour of which revealed the intersection of contestability theory and the real world to be the null set.<sup>12</sup> As deregulation of

European passenger airlines goes forward, related studies are appearing using European data (Good et al., 1993; Nero, 1996).

The banking industry has also come in for its share of attention,<sup>13</sup> and the practical aspects of European monetary integration suggest that this literature is likely to grow. One may also mention the telecommunications industry (Neven et al., 1993; Crew, 1994; Muller, 1995; Stehmann, 1995). Of particular interest here is the application of game-theoretic auction models to the establishment of property rights over the spectrum rights (Milgrom, 1995).

### 2.5. Privatisation in transition economies

This is among the most active current literatures in industrial economics.<sup>14</sup> The theoretical models hold the promise of yielding the first real progress beyond the principal-agent approach.<sup>15</sup> Another debate, now largely overtaken by events, deals with whether restructuring should take place before or after privatization (Tirole, 1991). Of particular interest are bargaining models of the influence of workers in the privatisation of state-owned assets (Aghion and Blanchard, 1994). The French railway strike of late 1995 suggests that the issues highlighted by models of workers' role in the privatisation process may be important for analysis of the political economy of reform in established market economies. The empirical literature contains a wealth of case and country studies (Estrin, 1991; Frydman et al., 1993a, 1993b; Blanchard et al., 1994). There is also an emerging literature on the role of competition policy in transition economies (Joskow et al. 1994). The real world will produce much to study in this area, and the lessons that are drawn are likely to have relevance for the role of competition policy in established market economies as well as transition economies.

## 3. CONDUCT

### 3.1. Collusion

It is easy for the lay person – certainly, any lay person who waited in line to buy petrol in the early 1970s – to understand why the economics of collusion is a matter of practical and policy interest as well as

<sup>10</sup> See Button and Weyman-Jones (1993), Stennek (1994).

<sup>11</sup> For more recent contributions, see Dewatripont and Tirole (1994) and Laffont and Tirole (1995).

<sup>12</sup> For references to this literature, see Brander, J. A. and Zhang

(1990), Borenstein and Rose (1994).

<sup>13</sup> See Van Hoose (1988), Melitz and Bordes (1991), and Dewatripont and Tirole (1994) for references.

<sup>14</sup> For a comparison of privatization in established market economies and privatization in transition economies, see Bös (1993).

<sup>15</sup> For references to the principal-agent literature, see Martin (1993a, Chapter 8).

a matter of theoretical interest. In recent years, industrial economists have greatly elaborated theoretical models of noncooperative collusion—actions taken independently by legally independent firms in a legal environment in which collusive agreements are not enforceable at law but which result in the same outcomes, in the marketplace, as would legally binding collusion,<sup>16</sup> and indeed that tacit collusion will be an equilibrium if firms' rates of time preference are sufficiently low. This is not what is meant by collusion in the legal literature, although the distinction is little appreciated.<sup>17</sup>

The economics of collusion in the narrowest legal sense - firms meeting, jointly setting prices and/or other strategic variables - is little studied in industrial economics. This is perhaps natural. Such overt collusion occurs quite commonly in economies without an active antitrust policy. Typically, the most interesting and thoroughly documented cases are found in the early years of a transition from no or weak antitrust to strong antitrust.<sup>18</sup> Once a strong antitrust policy is in place, firms learn quickly not to engage in the kind of crude and obviously collusive behaviour that is captured by prohibitions of collusion in this sense.

There are sectors in which overt collusion is common: the traditional analysis highlights high levels of fixed cost and large cyclical fluctuations in demand as market characteristics (among others) that encourage such behaviour, and the frequency with which industries like cement, cardboard, and plywood attract the attention of competition authorities around the world suggests that this analysis remains valid.

What remains, however, is the vast majority of markets in modern economies, where market performance may be collusive in effect, even if firm behaviour is not collusive in the strict legal sense. Here the economist's notion of tacit collusion and the legal notion of a concerted practice come into play. Rees (1993) is a good recent case study of such a market, which illustrates the basic problem: public policy can make it difficult for firms to collude, but public policy cannot compel firms to compete. In particular, from the point of view of the development of the Single Market, public policy can make it difficult for firms in one Member State to impede rivalry from firms in other Member States, but public

policy cannot compel firms to cross national boundaries.

In this area, the goal of competition policy is to create an environment within which market performance can come as close as possible to the perfectly competitive ideal, recognizing that most real world markets, in which competition is imperfect, will fall short. A prominent item on the research agenda here should be the analysis of strategic behaviour - types of behaviour and business strategies that allow rivals to approach or obtain collusive outcomes without colluding in the legal sense.

### 3.2. Cooperation

It may be an exaggeration to say that modern industries have entered the age of the joint venture, but if so, it is only a modest exaggeration.

In industrial economics, the senior branch of this literature involves the study of research and development joint ventures. The theoretical branch of this literature is very large, stimulated in part by the search of policymakers (on both sides of the Atlantic) to find strategies that will promote technological advance and national competitiveness.<sup>19</sup> Much of this search has been a reaction to the perceived role of R&D cooperation in promoting Japanese industrial development,<sup>20</sup> and in this regard it must be noted that upon serious examination the importance of R&D cooperation for Japanese commercial success appears to be much smaller than is sometimes alleged.

Theoretical studies have focused on the impact of R&D cooperation on technological progress.<sup>21</sup> A large number of papers use the framework of d'Aspremont and Jacquemin (1988). Martin (1995a) uses a racing model of R&D cooperation. Recent extensions endogenize firms' decisions on the formation of R&D joint ventures (for example, Bloch, 1995). The results of these models tend to depend critically on the kinds of assumptions that are made about the ease or difficulty with which information about new products and technologies can be transmitted. It is common to assume that without patents, new knowledge will flow freely from one firm to another, but that patents can provide complete protection of intellectual property rights. This specification disregards empirical evidence that patents are neither important nor effective means of

<sup>16</sup> In game-theoretic terms, the Folk Theorem implies that such tacit collusion may be an equilibrium of an infinitely repeated game (and under some circumstances, of a finitely repeated game).

<sup>17</sup> See Martin, 1993c, Philips 1995.

<sup>18</sup> See, for example, Franco-Japanese Ballbearings Commission Decision of 29 November 1974 OJ L 343/19 21 December 1974 1778.

<sup>19</sup> Recall, however, Paul Krugman's arguments that the notion of national competitiveness is not well defined.

<sup>20</sup> For a particularly flagrant example, see Jessi Office (no date).

<sup>21</sup> See Vickers (1985).

safeguarding firms' investments in knowledge (Levin et al., 1988). Yet other recent extensions analyse the impact of R&D cooperation on product market performance (Martin, 1995b).

The empirical literature in this area is also quite large. As is often the case in industrial economics, the theoretical and the empirical literatures run on parallel tracks, but are largely independent one from the other. Many of these studies examine joint ventures in high-technology industries, in particular the semiconductor industry.<sup>22</sup> These studies document the great extent of R&D joint ventures.

Production joint ventures are an important real-world phenomenon,<sup>23</sup> and such forms of firm cooperation have also begun to attract theoretical attention (for example, Reitman, 1994). Such joint ventures pose a policy dilemma. On the one hand, they may enhance the likelihood of tacitly collusive behaviour.<sup>24</sup> However, a restrictive competition policy toward production joint ventures may simply encourage firms to merge, thus eliminating all rivalry between the combining firms.

### 3.3. Predation/entry deterrence

Some recent research examines European markets for evidence of predation (Beesley, 1990; Dodgson et al., 1993; Haskel and Martin, 1994). There is also analysis of behaviour that resembles predation in its effects but may simply reflect profit maximisation in a dynamic, intertemporal framework (Cabral and Riordan, 1994). A more active literature examines types of market strategies - loyalty discounts, most-favoured-nation clauses (Bulkley, 1992; Schnitzer, 1994; see generally Klemperer, 1992) that make it more costly for a customer to change suppliers than would otherwise be the case.

### 3.4. Vertical contracts, vertical integration

The idea that agreements between independent firms that are vertically related - one the supplier of the other - may enhance market power is an old one. The recent collapse of the net book agreement in the UK shows that this issue retains its policy relevance. Vertical contracts may also enhance efficiency, and the net welfare effect depends critical on the details of the market in question (see Rey and Tirole, 1986a, b; Rey and Stiglitz, 1988, 1994; Romano, 1994, and OECD 1994).

Vertical integration may create the possibility of strategic behaviour. Here the traditional concern has been foreclosure: the possibility that a vertically integrated firm would refuse to allow independent producers access to its retail outlets. There is also a possibility of raising-rival's-costs behaviour toward downstream producers - by purchasing suppliers from independent producers, integrated firms can raise the cost of inputs to independent firms and the downstream level (Martin and Schrader, 1995).

## 4. PERFORMANCE

### 4.1. Market power

Research here includes traditional cross-sectional studies of industrial profitability. While these have been subject to considerable criticism, when they are carried out using carefully formulated specifications, they may yield useful conclusions.<sup>25</sup> A more recent variation on this traditional approach uses data referring to single industries to directly test structural equations derived from formal oligopoly models.

Another innovative literature examines factors affecting the persistence, or lack of it, of profitability of dominant firms.<sup>26</sup>

### 4.2. Innovation

From Schumpeter onward, the relationship between market structure and technological performance is one of the central topics of industrial economics. Research questions have included whether or not leading firms are better innovators,<sup>27</sup> whether product-market rivalry stimulates innovation,<sup>28</sup> and whether or not dominant firms can use investments in innovation to maintain their leading positions. Studies of the determinants of technological performance in particular industries would be of great interest. Other critical questions are whether or not technological change has, on balance, tended to generate employment or unemployment and the role of innovation in maintaining overall competitiveness of an economy.

22 For references to this literature, see Roscam Abbing and Schakenraad (1991), Wassenberg (1991), and Hagedoorn and Schakenraad (1993).

23 Consider either the world petroleum industry or third-world automobile markets.

24 See Bresnahan and Salop (1986), Reynolds and Snapp (1986).

25 See, for example, Machin and Van Reenen (1990).

26 See Contini (1989), Geroski and Jacquemin (1989), and Geroski and Mueller (1990) for references.

27 Blundell et al. (no date), supported by SPES contract CT 00049 find that firms with higher market shares are more likely to innovate. See also Acs and Audretsch, 1994, and Acs et al., 1994.

28 Blundell et al. (no date), supported by SPES contract CT 91-00049 suggest that it does.

## 5. INDUSTRIAL ECONOMICS AND INTERNATIONAL TRADE

The topics that draw on international trade and on industrial economics are multiple, and they have ties to some of the areas mentioned above. They include strategic trade policy, the extent to which exchange rate fluctuations are passed on to domestic prices,<sup>29</sup> and the causes and consequences of direct foreign investment. Japanese direct foreign investment in Europe, in the automobile industry, in the semiconductor industry,<sup>30</sup> and in general, has evoked much concern.

The determinants and consequences of intra-industry trade is a topic that falls within this rubric; it is treated by the SPES-funded project on Trade Specialisation and Market Structure in the European Community After 1992. Studies supported by this project fall into two broad categories. Country studies describe changes in the nature of intra-industry trade over time for specific Member States. Among the striking findings are<sup>31</sup>

- in the European Community, industries with low scale economies record higher levels of intra-industry trade;
- factor endowments dominate the localisation process, implying that further inter-industry trade can be expected;
- technological spillovers do not appear to lead to a clustering of geographic industries in the core at the expense of the periphery;
- trade change has played only a minor role in explaining employment change.

The "new" theory of international trade emphasises scale economies and product differentiation, rather than relative factor endowments, as factors driving trade flows. The first and second conclusions listed above call the importance of scale economies into question. It may be noted here that the traditional view in industrial economics is that returns to scale are approximately constant over a large output range in most industries. The third factor above is not without importance for the management of the Structural Funds: the promotion of high technology

<sup>29</sup> For references, see Baniak and Philips, 1995; Martin and Philips, 1995.

<sup>30</sup> Servan-Schreiber (1976) raised the possibility that U.S. firms might take greater advantage of the Single Market than would European firms; this possibility is also related to the analysis of the relationship between firm efficiency and product-market competition. The debate also touches on the economics of innovation and the aforementioned economics of cooperation in R&D. See Flamm (1993).

<sup>31</sup> Executive Summary of Reports, SPES CT910058. This project is also noteworthy for the development of useful measures of changes in intra-industry trade.

sectors need not be seen as disadvantaging the developing regions of the Union. The final point deserves to be highlighted, in view of the ongoing importance of the problem of unemployment throughout the Union.

The individual country studies distinguished horizontal intra-industry trade and vertical intra-industry trade (driven by quality differentials; see Greenaway et al., 1995). Also of particular interest are industry studies (Burrattoni et al., 1994; Reker and Smeets, 1994) and an analysis of the impact of trade flows on employment problems.

## 6. INDUSTRIAL ECONOMICS AND MACROECONOMICS

The literature combining industrial economics and macroeconomics has become very active.<sup>32</sup> Much of the stimulus has come from the macroeconomics side, as macroeconomists search for economically respectable ways to rationalize the possibility that prices might be inflexible downward in recessions. They have produced innovative theoretical and empirical analyses of the determinants of price flexibility or its absence. The former (for example, Rotemberg and Saloner, 1986) tend to be marked by sensitivity of results to assumptions about the nature of oligopolistic interactions. That is a generic characteristic of formal oligopoly models, but one gets the feeling that this is better appreciated by students of industrial economics than by students of macroeconomics. Empirical tests, while showing in many ways a refreshing approach, are often carried out using data that are far too aggregated for the purposes to which they are put, even though they may seem quite disaggregated to one used to working with time series describing the economy or the manufacturing sector as a whole.<sup>33</sup>

## 7. METHODOLOGY

Advances in the application of game theory and of experimental methods to industrial economics go hand in hand. The former sharpens our ability to formulate hypotheses about structure-conduct-performance relationships. The latter gives us an additional tool with which to test such theories empirically. Both are extremely active research areas, and both are associated with the work of Reinhard Selten (for example, 1991).

<sup>32</sup> For one survey, see Dixon and Rankin (1992).

<sup>33</sup> See Hall (1986, 1988) and Waldmann (1991).

## 7.1. Game theory

The game-theoretic approach to the analysis of strategic behaviour has infused many branches of economics, including industrial economics. Models of noncooperative behavior by firms in imperfectly competitive markets have provided a common analytical framework, which has largely replaced the structure-conduct-performance paradigm, at least at the research level. The weaknesses of this approach are that such models often have multiple equilibria and produce results that seem to depend in a fragile way on assumptions that may appear to be arbitrary. They do not, however, generate strikingly new conclusions to the major research questions of industrial economics, but it has provided a methodology that obtains the major predictions of the structure-conduct-performance school using models that are extensions of neoclassical microeconomic analysis to conditions of imperfect information (Geroski, 1988).

The insights yielded by game theory have important implications for competition policy (Phlips, 1995), in particular that perfect competition is not a realistic target for most industries (Martin, 1993). Game-theoretic models of bargaining are finding an increasing number of applications, particularly in the analysis of restructuring in the transition economies.

## 7.2. Experimental economics

If economic theory cannot explain behaviour under tightly controlled laboratory conditions, there is little hope that it can explain behaviour in the real world. Experimental economics thus provides us with a valuable control on extent to which we should place our faith in the predictions of theoretical models. Neither industrial economists nor policymakers should ever rely entirely on experimental tests of theoretical models, but such tests certainly have a place in the industrial economist's toolbox.

## 8. DIRECTIONS FOR SUPPORT FOR EUROPEAN RESEARCH IN INDUSTRIAL ECONOMICS

Economics is a world discipline, and research in economics proceeds on a world-wide basis. Industrial economics is no exception to this rule, and European industrial economists play an active role in world-wide research networks. The great advantage of European industrial economists is to be located precisely where the most interesting changes in market and firm structure are taking place. These include not only the changes that are taking place within the European Union, but also the transformation of the formerly planned economies of Eastern Europe into market economies.

There is a continuing need for continued support for the building of databases with which empirical research on these changes can be carried out. While theoretical research is necessary to guide empirical research, only empirical tests can permit a triage among the range of predictions often produced by theoretical models. Public support is essential because the construction of appropriate databases is difficult,<sup>34</sup> little rewarded in academic circles, and yields the best results if carried out for relatively long time periods. In addition to supporting the creation of cross-section databases that describe the operations of leading firms across product and geographic markets in Europe, there is room for the creation of time-series data bases covering not only major manufacturing industries, but also the distributive trades.<sup>35</sup>

These suggestions are not intended to deny the need for continued support for theoretical research, and in this regard the further analysis of the implications of firm conduct (including but not limited to tacit collusion, entry-detering behaviour, and inter-firm cooperation) on market performance seem especially important.

<sup>34</sup> See, for example, Mulkey (1992).

<sup>35</sup> The latter often have a major impact on market performance in local and regional markets. There should also be support for the collection of databases describing the ongoing changes in Eastern Europe, difficult though this will be.

# IX THE TRANSFORMATION OF POST-COMMUNIST ECONOMIES

*Domenico Mario Nuti*

## 1. TABULA RASA\*

The massive transformation of central and eastern European economies and societies was both unprecedented and completely unexpected right up until mid-1989. The usual label of *transition* economies (e.g. "Partners in Transition", used by OECD) is somewhat misleading, as it suggests a one-stop move from A to B. On the contrary, it was a case of economies wondering off from a great variety of initial economic and institutional conditions, at different speeds and along different paths towards different target models, all sharing the main features of market economies but often quite distinct, sometimes even indeterminate to date. There were unintended spontaneous developments, such as assets appropriation by insiders, the rise and growth of payment arrears, disorderly economic and monetary dis-integration of trade areas, the almost universal diffusion of employee ownership. There were large scale new experiments, such as mass privatisation. There were and still are ethnic, civil and inter-national conflicts. Hence it is more appropriate to talk of a more complex and diversified process of *transformation*, rather than of a simple transition.

These characteristics made the transformation a rather special field of economic research: its analysis started from a veritable *tabula rasa*. There was of course - both east and west - a large body of relevant area studies and analysis of the old system, of its problems and continuous attempts at economic reform. There were also lessons to be drawn from similar experiences, e.g. from Latin-American stabilisation programmes; from post-War reconstruction; from de-regulation, privatisation and

trade liberalisation in other countries. But both the large scale and intensity of the phenomena, and their simultaneous occurrence were unprecedented.

For the study of the epoch-making transformation to take off it was necessary to mobilise and combine the efforts of researchers across the borders of disciplines, nations, institutions. Area specialists from the West were initially needed to obtain and absorb quickly information on prior developments, but - apart from a handful who also happened to be professional economists in their own right - could not fully cope with the challenge of the transformation. Specialists representing various economic expertise, with no prior experience of either the area or the old system, could not theorise on the basis of first principles and current observations. Social scientists from the area often - with a few notable exceptions especially in Hungary and Poland, supplemented by returning expatriates - needed further training or, worse, conversion from obsolete backgrounds; they also needed material resources for documentation, hardware and software, travel. Inter-disciplinary connections and language obstacles were more important than usual. In the study of transformation, as in any area but inordinately more so, progress required co-operative efforts and injection of funds. As a result, research in this new field had a much more international nature than any other field at any time.

This chapter reviews the role of international institutions (section 2), and of old and new research establishments east and west (section 3) in the study of transformation, thus placing in a context the EU promotion efforts especially through the SPES and ACE programmes (section 4). As a result new important contributions have been made to economic research on the transformation, as well as on the parallel processes on stabilisation, trade opening and re-direction, capacity restructuring. In this brief review we are forced to concentrate on general

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\* In drafting this contribution to the report I have canvassed the views of a number of colleagues but responsibility for any error, omission or opinion is exclusively my own.

aspects of the transformation and on macro-economic issues of stabilisation, fiscal and monetary policy, for example (sections 5-8), leaving aside a broader range of important topics such as unemployment, sectoral policies, privatisation and the development of financial markets, re-integration into the European and the world economy, European Union enlargement. All these are crucial to any account of research on central and eastern Europe but fall outside our much more limited scope of assessment of the SPES contribution to this research. In the last section we attempt (nevertheless) a general assessment of EU research funding achievements and further needs.

## 2. INTERNATIONAL INSTITUTIONS

International institutions had to play and indeed have played a major role in the monitoring and study of the transformation, especially initially. They had readier access to information than academic researchers, through statutory norms and agreements; had local delegations and sent 'missions', whose power was strengthened by the implied promise of economic assistance; they had or could acquire quickly financial resources and qualified personnel on a scale that academic competitors could not match.

The Bretton Woods institutions were in a particularly good position to contribute: they had made an earlier start ahead of transition (e.g. Poland, Hungary), in processing applications for membership and monitoring new members; had their own research departments and set up new ones; had a tradition of scholarly research, whose signed output was effectively disseminated through various channels (including new ones, such as the World Bank's *Transition*). Many of their officials have made important contributions, from Michael Bruno and Alan Gelb (on stabilisation) to Vito Tanzi (fiscal policy), from Inderjit Singh and Brian Pinto (on enterprise behaviour) to Simon Commander (unemployment), from Fabrizio Coricelli (macro-economics) to Tom Wolf (foreign trade) and many others. The World Bank's *1996 World Development Report*, specifically devoted to the transition, is undoubtedly the best, textbook-like treatment of the subject, because of its extensive coverage, genuinely comparative approach, analytical depth and wealth of empirical evidence.

The OECD set up in March 1990 a Centre for Co-operation with European Economies in Transition (later Partners in Transition) led by Salvatore Zecchini. It launched a copious and useful production,

from the proceedings of the first grand meeting on the transition (OECD, 1991) to the many volumes on the theory and practicalities of privatisation, from studies of foreign trade to periodical sector and country studies.

The European Commission was handicapped by the lack of a research department, by internal fragmentation of research capability and by a tradition of anonymous and/or unpublished output. Some of this internal output, though often fragmentary and ephemeral, would be worthy of broader circulation; one can only hope that EU Moscow Ambassador Michael Emerson's terse and perspective assessments of Russian economic affairs might one day be made available to a wider public.

The Commission produced in house one of the first two classic reports on the Soviet economy (December 1990; The other was by IMF / World Bank / OECD / EBRD). Further early contributions by the Commission were made in the form of quickly produced studies commissioned to outside academic consultants. Among these: a study of the first recipients of the PHARE programme - Hungary and Poland (European Commission, 1990a), extended to other central European countries (1991) and - after the collapse of the Soviet Union - to its former republics (1993). The same formula, which proved very successful in terms of speed, quality and cost-effectiveness, was repeated with several other studies, notably Portes (1993), Baldwin (1994), Winters (1995), Faini and Portes (1995). Two further volumes commissioned to CEPR are forthcoming.

The EBRD played a similar role for a short period until post-Attali expenditure cuts disposed of country economists, consultants and research output, leaving room only for compilatory overviews (such as EBRD, 1995); its new journal *The Economics of Transition* stands out as a high quality addition to the literature.

Other international institutions have also been making important contributions to the study of transition. The UN - Economic Commission for Europe in Geneva (especially for the efforts of the late Sasha Vacic, and of Josef van Brabant from the New York office) is another long-standing contributor, with many periodical surveys, Bulletins and special issues; it has been a particular outspoken critic of the costs of post-communist stabilisation programmes. UNICEF - from the Florence office led by Andrea Cornia - has been particularly active and effective in collecting the most alarming information on social conditions in the transforming countries. The International Labour Office, in Geneva and in the new Budapest based "East European Team for Labour Market Policies" (set up and organised by Guy

Standing) has played a major role in the collection of original data on large samples of enterprises and on unemployment. The NATO Economic Directorate has been organising - long before the transformation - yearly Colloquia on topical east European themes; all proceedings are published.

The transformation requires - among other things - standardisation of statistical conventions and a radical change in statistical methods (from universal compulsory reporting of planned variables to partial voluntary reporting of market determined variables), naturally leading to co-operation with major international bodies (from Eurostat to the US Ministry of Labor).

As a result of the role of international institutions, a greater internationalisation of research occurred through new contacts with and between academics hired as consultants. Some academic economists were "loaned" to international institutions; for instance Michael Marrese to OECD and then to IMF; Mario Nuti and André Sapir to the European Commission; Dariusz Rosati to UN-ECE; Alan Winters to World Bank - with mutual benefits by all accounts.

### 3. OTHER OLD AND NEW PROTAGONISTS

A number of national institutions, old and new, also made contributions to research on the transformation. Among old standing official institutions a prominent position is taken by the Joint Economic Committee at the Library of Congress, with the steady flow of its collections of reports and evidence - a major information source and research outlet, overseen by John Hardt. Major research on individual countries and on restructuring has been contributed by semi-public bodies such as NBER (see Blanchard and others, 1994) and the RIEA. A pioneering study of the Baltic economies has been undertaken and published by the Swedish Ministry of Foreign Affairs in 1992; the Bank of Finland has been very active in promoting and publishing research on the Russian economy.

A number of institutions have specialised in monitoring and reporting current trends, i.e. in what we could call *Konjunktur* rather than research: commercially, as Planecon (Washington), or Kopint-Datorg (a Hungarian former official research institute, gone private at the end of the 1980s), or the Moscow Centre of Economic Analysis and Forecasting. This kind of trends monitoring service is also provided by CEP at LSE for the Russian government with TACIS funds; their *Russian Trends* has come under criticism for its passive endorsement

of Russian government policies and lack of reference to sources, but has had a pedagogic spillover.

The quality of both policy and research has been enhanced by a two-way traffic between academia and government, with economists being called to high office or to advisory positions, to return to their places enriched by the experience. Among ministerial appointments we find (alphabetically) well known economists like Leszek Balcerowicz, Mircea Cosea, Marek Dabrowski, Vladimir Dlouhy, Karel Dyba, Yevsey Gaidar, Oli Havrylyshyn, Vaclav Klaus, Grzegorz Kolodko, Jerzy Osiatynski, E.G. Yasin, not to count Gyorgy Suranyi, twice Governor of the Hungarian Central Bank, or prominent politicians such as Marton Tardos.

Among their advisers, at some time or another, we find Anders Aslund, Gerard Duchene, Daniel Gros, Richard Layard, Judith Shapiro, as well as former Ministers Balcerowicz and Dabrowski (to the Russian government); Staszek Gomulka, Irena Grosfeld, Mario Nuti, Jacek Rostowski (to the Polish government); Paul Marer (Hungarian parties); Zdenek Drabek, Jan Svejnar (Czech government); Jeffrey Sachs (to the Polish, Russian and Ukrainian governments)

Some old specialised research institutions, acknowledged as centres of excellence in the study of the old system, were slow to adjust to the new requirements. Others have restructured themselves and adapted to the new circumstances (especially the German ones). New research institutions have mushroomed, with varying degrees of success.

Among the old institutions that have responded to the new stimuli we find the following. IIASA at Laxenburg (Vienna), strong of its international and interdisciplinary profile, with early contributions to Soviet reform (Peck and Richardson 1991, Gacs and Peck 1995) and continued research on international trade, led by Jan Gacs. In Paris CEPIL, already active with research in the area and its journal *Economie Internationale*, expanded into financial and international aspects of the transformation. From the ashes of earlier activities Vladimir Andreff set up ROSEs (Reforming and Opening Socialist Economies) in Grenoble and Paris, with teaching and research activities. In Brussels, ECARE with Gerard Roland and others (see references below) were particularly active. Other established research institutions simply extended their activities to include transformation economies, among these the Department of Applied Economics at Cambridge was particularly active with David Newbery and in connection with CEPR (SPES 000050).

By far a dominant role in Europe has been taken by CEPR - the largest European research network - under Richard Portes - a specialist in his own right (Birkbeck College, now at LBS). CEPR took an early major lead in raising funds and connecting specialists with diverse backgrounds, nationalities and approaches. Since 1990 it generated an incomparably higher volume of funding, seminars, conferences, publications, than any other institution. These activities are distinguished by both high quality and direct policy relevance, especially on questions of trade regimes and policies, European integration, sector policies.

A potential challenger, Centre for Economic Performance (CEP), in spite of substantial public British and EU funding for research partly channelled to this area, is severely handicapped by its format. Basically it is a service unit of LSE providing research assistance and other funding for staff - mostly from LSE with a few outsiders - not on CEP payroll. This is probably cost effective in the short period, as it replenishes - usefully - LSE resources depleted by government expenditure cuts. This format however reduces drastically the resources devoted to *additional* research (few distinguished overseas visitors and rare post-doctoral fellows such as Mark Schaffer are notable exceptions). CEP's most important contribution to the area under consideration is the organisation of conferences with Russian contributors and of teaching courses in Russia.

Many new institutions were set up in western Europe to focus on the transformation. In Vienna the multi-disciplinary Institut für die Wissenschaften vom Menschen (IWM) was established by Krzysztof Michalski on the very eve of transformation, which gave it an advantage when the process got under way. Janos M. Kovacs has been running its economics programme. The London Business School established its CIS and Middle Europe Centre (CIS-ME) under the direction of David Chambers and Saul Estrin; it is mostly devoted to teaching of management courses in the area, directly or through joint ventures with new local Business Schools (BUES in Budapest, the Business School at Warsaw Polytechnic, etcetera), but has displayed an increasing research capability (see the CIS-ME Working Paper Series, and Estrin 1994). In Edinburgh the Centre for Economic Reform and Transition (CERT) under Paul Hare's direction was set up, and launched the EBRD Journal *The Economics of Transition*. The Stockholm Institute of Soviet and East European Economics, under the direction of Anders Aslund, provided research facilities as well as conferences, exchange visits, a wealth of working

papers and publications. At Leuven University a new Institute for Central-Eastern Europe was set up under the direction of Marvin Jackson, and prospered in spite of early failure of pledged external funding.

A Swedish-based network, UCEMET - the University Council for Economic and Management Education Transfer - links academic institutions in ten countries (Latvia, Hungary, Bulgaria, Russia, Lithuania, Romania, Poland, Estonia, Sweden, Czech Republic). An attractive and well produced journal, EMERGO-Journal of Transforming Economies and Societies, with monographic issues, is published for UCEMET by the Cracow Academy of Economics; it also holds meetings and summer schools, issues a newsletter and a working paper series, and other publications (see for instance Pestoff 1995).

In central and eastern Europe there have been significant changes in the old teaching and research structures. These are visible in their significant name changes (Warsaw's Higher School of Commerce, formerly of Planning; Budapest Economics - formerly Karl Marx - University), privatisations (Kopint-Datort), mergers (e.g. between the Institute of Economics of the Czechoslovak Academy of Sciences and SERGE, under Jan Svejnar's leadership). In general, universities have not played a major role in research activities, at least partly because of their traditional (in the old system) specialisation in teaching, with a concentration of research activities in Academy of Sciences institutions.

Substantial funds for teaching and research were provided by the George Soros Foundation, which funded the Central European University in Prague and Budapest, with economic research undertaken both by its Centre for European Studies and its Department of Economics, where a large scale comparative project on privatisation has been run by Earle-Frydman-Rapaczynski (1992 and 1993). In Poland there have been many active centres, among whom Grzegorz Kolodko's Institute for Finance at the Ministry of Finance in Warsaw, Marek Belka's Institute of Economics, the Case Foundation Center for Economic and Social Research (Warsaw and Gdansk).

A focus was provided by the national and international associations, both for specialised area studies (NASEES/BASEES, AAASS, et cetera) and for comparative economics (ACES, the newly constituted Italian ACES and the European ACES), their annual conferences and other specialised seminars, their journals (whose often changing titles revealed the new focus; e.g. from *Soviet Studies* to *Europe-Asia Studies*).

#### 4. EU RESEARCH FUNDING

This review of the major old and new protagonists of research on the transformation should provide a perspective from which to judge the European Union's promotion and support for research in this area. At the same time this review reveals the immensity of the task, the strength of competition, and already some of the results of the EU efforts. In fact almost all of the eligible institutions and activities listed above - and more, sometimes also in co-operation with other grant-giving bodies or also non-European and even international institutions - have received support in one form or another, and many would not have seen the light without EU funding.

The European Union, beside research conducted "in house" (see above), or directly commissioned to consultants, funded economic research on the transformation on a major scale, first (marginally) through the SPES programme, then in 1990-94 through the ACE programme. Between the two, SPES was less rigidly constrained - in practice if not by design - by geographical considerations, and more closely scrutinised for quality of applications and actual implementation of projects.

Only the two projects shown in Table 1 were funded under SPES out of 73 grants for research completed in 1990-94, for a total of the order of 2 per cent of the entire SPES budget.

both in the collapse of the old system and in the transition to market economy. Without domestic and foreign competition the supply response expected of the transition may not be forthcoming at all. Domestically, competition was linked to privatisation; internationally, to trade opening on the part of the Community and to enlargement prospects.

The workshop gathered over thirty participants from twelve countries east and west and international organisations, with academic and operational backgrounds, who had been working in close contact in the preceding period. They include: the Directors of several countries' Competition Offices, Janos Gacs, Miroslav Hrnčir, Andreas Inotai, Karel Kouba, Kazimierz Laski, Dariusz Rosati, Christopher Saunders, John Williamson, Ruben Yevstigneev, and many others. Proceedings are published.

Within the intellectual/political range of approaches to the transition, the WIIW group leans towards a more "gradualist" standpoint than average, especially vis-à-vis trade liberalisation; thus funding the workshop the SPES programme exhibited a commendable even-handedness vis-à-vis alternative intellectual and political alternatives.

The CEPR programme on Economic Transformation in Eastern Europe, involved a set of linked projects focusing on medium term issues and in particular: external indebtedness, convertibility and exchange rate regimes, interest rate policy, fiscal imbalance and the development of a modern fiscal system, the

Table 1

#### Titles and partners of selected SPES research projects

	Period	SPES N°
1 Economic transformation in Eastern Europe Participating institutions: C.E.P.R., LONDON (coordinator) UNIVERSITY OF LONDON DELTA (CNRES-ENS-EHESS), PARIS	1991-1993	00050
2 Workshop on European economic interaction and integration, session 14, The role of competition in economic transition and integration Participating institutions: VIENNA INSTITUTE FOR COMPARATIVE ECONOMIC STUDIES (Coordinator)	1992	10092

The second was a workshop on the role of competition in economic transition and integration (Marienbad, April 1992) at the initiative of Dr. Frederick Levčík (an early Czech reformer from 1968) of the Vienna Institute (WIIW). This is a fundamental issue which recent theoretical reflections (see for instance Stiglitz, 1994) have identified as essential

development of financial markets and labour markets, capacity and financial restructuring of domestic industries, privatisation and competition, trade re-orientation. Additional finance was provided by the Ford Foundation and, for specific events, by various national financial institutions.

Among the researchers linked with this programme there are many east European economist, including quite a few official positions such as Karel Dyba, Daniel Daianu, Gabor Oblath, Dusan Triska, as well as many of the early western contributors to the theory of transition, such as Peter Bofinger, Irena Grosfeld, Michael Landesmann, David Newbery, Richard Portes, Gerard Roland, Alan Winters, Charles Wyplosz and many others. The first workshop in February 1990 was attended by 55 researchers from East and West; many other conferences and workshops followed.

Among the copious output of the programme one might single out the CEPR Discussion Papers by Paul Hare (Heriot-Watt University) and Gordon Hughes (Edinburgh) on industrial competitiveness, Irena Grosfeld and Paul Hare on privatisation, Daniel Cohen on debt, Peter Bofinger (Landeszentralbank, Stuttgart) on convertibility and Michael Burda (INSEAD) on labour markets. (For a fuller account of activities and research output see various issues of the CEPR Bulletin). Clearly the project was successful not only in itself but also in its subsequent multiplier effects in generating further research projects within the ACE programme by nearly all the researchers involved.

The ACE programme, which unlike SPES was specifically devoted to east-west co-operation in the field of economics, has an incomparably larger scope. The volume of support from ACE is shown in chapter III of this report, and first assessments of its results have been organised by the European Commission (Kolodko et al., 1993, and Adam et al., 1995). Now that research results from the first years appear as publications it would seem feasible to review the main research results in various areas of the transition, spelling out under each heading the contribution made by at least some among the major projects of the ACE programme. The following sections set the scene for such an exercise but without going into details of specific ACE projects.

## 5. ECONOMIC THEORY OF THE TRANSFORMATION

Systemic transformation towards the reconstruction of capitalism, as opposed to the reform of the old system, was first contemplated by Kornai (1990) - the first theoretical reflection on the subject. He regarded market socialism - defined as the co-existence of state ownership and market mechanisms - as a contradiction in terms; advocated privatisation but was highly critical of mass

privatisation; emphasised the importance of fiscal and monetary discipline and trade opening.

The outstanding and most comprehensive theoretical reflection on the transformation is provided by Stiglitz's book "Whither Socialism?" (1994). This is an expanded version of a set of lectures on information theory, grown under the stimuli of current events into a devastating criticism of the old communist system, of naive visions of what a market economy is and can or cannot do, of the mode of transformation process from one to the other. It is an iconoclastic work, likely to meet with disfavour in most academic and political circles, but it is also the most refreshing, inspiring and challenging theoretical work published on the transition in general and, more generally, on comparative economic systems. Among its strengths, the book shifts emphasis from privatisation to competition and corporate governance, from efficiency to innovation, bringing to the fore issues of information flows, uncertainty and other inter-temporal allocation of resources. Stiglitz takes the radical view that market socialism was doomed because of its reliance on *both* social ownership and the market. Some may argue that he is throwing away the bath bowl as well as the baby and the bathwater; others (Roemer, 1994) on the contrary have now redefined socialism as egalitarianism plus economic democracy, restoring both private ownership and the market to the socialist design. There is bound to be debate around these unsettled issues, but Stiglitz has set the stage and the framework for it. In other respects the economic theory of the transformation has somewhat lagged behind, perhaps naturally in view of the many surprises, twists and mutations that have characterised the transition. Useful building blocks for the eventual construction of a theory of transition have been provided, for instance, by Wojtek Charemza on macro-economic modelling (1993, 1994, 1995), Mathias Dewatripont and Gerard Roland (1993) on the design of reform packages under uncertainty, Philippe Aghion and Oliver Hart (1992) on the kind of bankruptcy rules that might favour the efficient re-deployment of productive capacity. For a review of the state of the arts, one could scan the last dozen issues of the Journal of Comparative Economics, Economics and Planning and the Journal of Economics of Transition.

One of the consequences of the transformation, and of the parallel collapse of the Yugoslav system, is the sudden obsolescence of one of the most hyper-grown and over-blown areas of economic literature in general and of comparative economic systems in particular, namely the economics of self-management (from Ward, 1958 to Vanek, 1970 to date). The almost universal diffusion (with the sole

excepting of the Czech Republic) of employee ownership may superficially appear to revamp it, but in fact raises totally different and new problems of potential conflicts of interest with other stakeholders, which are only just beginning to be explored (see Nuti, 1995).

## 6. MACRO-ECONOMIC STABILISATION

Traditionally macro-economic stabilisation takes pride of place in transition economics. It is important to distinguish between stabilisation in the limited sense of eliminating *repressed* inflation through open price rises, and in the broader sense of eliminating *all* excessive inflationary pressures on a liberalised price level, as well as all other macro-economic imbalance (budget deficits, balance of trade and payments, domestic and external debt).

The end of *repressed* inflation must be an absolute pre-condition for assigning to markets any role whatsoever in any economic system, including reformed incarnations of central planning and attempted versions of market socialism, let alone in a full-fledged market economy based on private ownership and enterprise such as the economy towards which the transition has been aiming. Earlier attempts at reforms and third ways failed precisely for the failure to undertake, or to implement for lack of legitimacy, even such limited notions of stabilisation.

It also goes without saying that macro-economic stabilisation in the broader sense given above is also a pre-condition, not of reform or transition but of their orderly, efficient, affordable implementation. Failure to stabilise will not necessarily affect the viability or even the speed of transition - but only primarily its cost. In particular, the experience of Russia and other FSU states can be taken as evidence of both the costs of repeated failed attempts at macro-economic stabilisation, and yet the considerable progress that transition can make in spite of severe macro-economic instability. Exclusive emphasis on macro-economic stabilisation - and therefore on the difficulties of achieving it - may lead to defeatism and inertia. In any case the scope for alternative policy choices is fairly narrow when macro-economic stabilisation is to be undertaken, while it is much enlarged after stabilisation and in the course of transition.

Rapid macro-economic stabilisation and the move to an open market economy with private ownership and enterprise - especially if speeded up by mass privatisation of state assets - were supposed to

restore equilibrium, sustain it through domestic discipline and international aid, reap early benefits of improved efficiency and rapidly resume growth and raise prosperity.

On the contrary, official statistics record a large scale recession of 1930' proportions, mass unemployment from zero to higher average rates than in OECD countries, persistent though falling inflation. Recovery followed, first in Poland (1992) then in other Visegrad countries, by 1996 only Belarus and Ukraine were forecast to continue their decline, but controversies have continued to be stimulated by the accumulation of changing empirical evidence and the uncertain predicament of laggards. In many ways, the initial performance of post-communist economies may have been understated by official statistics (exaggeration of earlier achieved levels, under-recording of private activities, cuts of loss-making output, informal employment); in some ways, it may have been overstated (for instance, former semi-legal activities will have surfaced, giving an illusion of growth). "True" macro-economic trends - inflation, unemployment, income, consumption - might require some correction but not on a scale such as to alter the basic picture. Early trade liberalisation appears to have been a costly investment which by and large has paid off. Delayed stabilisation has also delayed but not avoided recession and unemployment, while it actually has accelerated the pace of inflation; when inflation has slowed down it has done so more slowly than anticipated (see World Bank - EDI 1996).

## 7. GRADUALISM VERSUS SHOCK THERAPY

In the first years of the transition there has been a lively and often acrimonious debate between the supporters of gradualism (exemplified by Laski 1991 and 1993, or Gray 1994) and those of "shock therapy" (exemplified by Aslund 1992 or Sachs 1993).

The dilemma between "shock therapy" and gradualism perhaps has been overplayed. Post-communist economies faced three major tasks: stabilisation, institutional change, capacity restructuring. Shock therapy in a strict sense could only be applied to East Germany through re-unification; everywhere else stabilisation could be and should have been as fast as possible, whereas institution-building and restructuring would necessarily take time. A choice of low or high speed was available only within a very narrow scope: the elimination of subsidies, the reduction of trade barriers, the introduction of convertibility, privatisation of state enterprises. However here

there is a trade-off between speed and effectiveness of change: neither shock nor gradualism have built-in superiority. The true range of policy alternatives appears to be given by the choice and mix of instruments (both qualitative and quantitative) and of actual parameters: this is the approach adopted in the report prepared for the Social Democratic Forum for Democracy and Solidarity, of the European Parliament (Eatwell et al., 1995).

## 8. FISCAL AND MONETARY POLICY

Stabilisation packages everywhere - though sometimes not implemented - were aimed at monetary and fiscal restraint, in order to stop the initial price hike from activating an inflationary spiral. It is hard to challenge the wisdom of fiscal restraint during the transition: deficit spending is bound to raise interest rates and displace investment if funded by borrowing from the public, or raise prices if monetised, and - if sustained - set in motion the public debt trap. Nevertheless: (i) when taking steps to reduce the budget deficit the multiplier effects of expenditure cuts and tax increases must be taken into account, if Keynesian excess capacity is to be avoided, (ii) initially fiscal policy is likely to overperform anyway, due to subsidies cuts and to taxes on the inflated paper profits of state enterprises thanks to currency devaluation, capital gains on inventories, and falling real wages; (iii) it may be possible (it always is, barring countervailing action by trade unions) to raise output through a non-inflationary expansionary fiscal policy through balanced increases in the state budget; (iv) seignorage and a modest inflation tax are perfectly good sources of deficit finance; (v) the composition of government expenditure - and not just its balance - should be considered: government investments that lead to the accumulation of commercially valuable assets should not be counted as part of the deficit; (vi) the fiscal stance has to be assessed with reference to the phase of the cycle to which it refers. By and large these propositions have been neglected in central and eastern European stabilisations. (Kolodko 1992 or Laski 1993 are notable exceptions).

From a given fiscal and monetary stance, a tightening up of fiscal policy accompanied by a relaxing of monetary policy may well lead to non-inflationary higher output and employment levels, moreover with additional beneficial effects on public debt through lower interest charges; otherwise, by itself on the contrary, it may be recessionary if the monetary stance is not eased. In the actual experience of central and eastern European economies this has often been a major factor in the

recession. (For an excellent discussion of the true extent of the initial recession, and of the various contributory factors, see Mundell 1995).

## 9. EU RESEARCH FUNDING: ACHIEVEMENTS AND NEEDS

There can be no doubt that EU research funds channelled through the SPES programme have provided a timely and most effective contribution to the development of this almost entirely new branch of economic investigation - that of post-communist transformations. The research output out of the two SPES projects in this area, and above all the much more substantial later injections of the ACE programme, has been copious, relevant, and of considerable high average quality. Genuine co-operation in economic research has been established, both within and across the eastern and western areas of Europe.

EU research grants came with strings attached: on the division of funds between eastern and western partners; on the particular uses to which funds could be put - whether seminars, fellowships, courses, conferences; on the minimum number of partners. These constraints have encouraged precisely the kind of international, multi-disciplinary if not interdisciplinary, policy oriented research, with important spillovers for both teaching and policy formulation. At the same time, these constraints have certainly reduced the overall effectiveness of available funds from the viewpoint of research results. Over five years into the transformation, the time has come for eliminating the protection enjoyed by research on the transformation and its "infant" stage and for incorporating it into the general framework of provision for research in economics.

The gap between central-eastern and western standards of economic research, informally measured for instance by differential access to journals, edited collections of papers and proceedings, books, has been reduced but remains very significant. Its quantification seems worth additional enquiries. At first sight there does not seem to be yet a new generation of well qualified researchers in central-eastern Europe. If so, there seems to be a case for shifting emphasis from east-west collaborative research to training, especially of graduate but probably also at undergraduate levels. These are longer term investments with respect to quicker-yielding investment in collaborative research (which also has spillover effects), but are bound to a greater present value.

**EC funded research in economic science  
SPES 1989 - 91 and HCM 1992 - 94**

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This appendix summarises all SPES grants, except fellowships, and all HCM grants to economic research between 1989 and 1994, classified in 13 fields of research. The grants are identified by the name of the co-ordinator, project title and number. Funding is shown for aggregates within each field. Fields are defined ad hoc for this report. The fields I Macro-economics to VII Transformation correspond to the coverage of different parts of this report. Some grants are discussed in more than one place of the report, thus reflecting the ambiguity of this (as well as any other) classification method.

Sources: Schneider (1992), European Commission (1994d), and proposals abstracts

STATISTICAL APPENDIX

<b>I MACRO-ECONOMICS</b>		
<b>Modelling, real convergence, applied econometrics</b>		<b>FUNDING (ECU)</b>
22	SPES grants	11.845.972
12	HCM networks	11.148.010
6	HCM Euroconferences 1992 - 94	5.573.738
1	HCM other 1992 - 94	240.000
3	HCM institutional fellowships 1992 - 94	357.000
3	HCM individual fellowships 1992 - 94	222.000 (est.)
47	SPES and HCM grants	29.386.720

Individual grants

MACRO-ECONOMICS

22	SPES grants 1989 - 91	11.845.972 ECU
<i>Co-ordinator</i>	<i>Title</i>	<i>SPES N°</i>
ALOGOSKOUFIS	The integration of countries in different stages of development: Greece in the EC	910066
MONTET	European workshop on international trade - ERWIT 1990	000030
BOLTON	European workshop on international trade - ERWIT 1991	915049
CORADO	European workshop on international trade - ERWIT 1992	910077
LAMBERT	European Economic Association summer schools 1991(Bologna)	000038
LAMBERT	European Economic Association summer schools 1992 (Florence)	910093
LAMBERT	European Economic Association summer schools 1993	910075
MONTI	Reversing the European brain drain - Research project on 'macro-economic policies and their institutional framework at the national and Community level	000018
MONTI	Reversing the European brain drain - Research project on 'macro-economic policies and their institutional framework at the national and Community level	910078
DE MENIL	Economic Policy Panel	000019
DE MENIL	Economic Policy Panel	915003
WINTERS	Completing the European internal market: The consequences of '1992' for internal trade	000003
COLLIER	Economics of francophone and anglophone Africa	910062
CURRIE	Robust rules for European and G7 macro-economic policy	000008
LE DEM	Macro-economic analysis and modelling of interdependence between REuropean economies	000029
VINES	NIC-EC trade in manufactures: Performance and policy implications	000007
LEHMENT	Advanced studies programmes in international economic policy	915002
SMITH	Market structures, industrial organisation and competition policy in Europe	910071
MALGRANGE	Monopolistic competition, disequilibrium and macro-economic modelling	910076
EVANS	Convergence of learning mechanisms in dynamic economic models	910055
GERARD-VARET	Comparative applied econometrics using micro-data	000049
HEY	A European experimental economic network	910064

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MACRO-ECONOMICS

12		HCM networks 1992 - 94	11.148.010 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
PADOAN	Structural competitiveness in four EC countries - macro-economic, sectoral and regional aspects		920031
GIAVAZZI	Frontiers in institutional economics		920339
PUNZO	The economic analysis of institutional and structural change as an integrated dynamic process. A computable economics approach		921029
COHEN	Macro-economics, politics and growth in Europe		921897
LEONARDI	What makes peripheral countries converge?		922123
SARTORE	A comparison of econometric techniques for inference based on financial data: theory and applications		922150
POLEMARCHAKIS	Dynamic economics: Information, fluctuation and growth		932131
FOSSATI	Economic modelling for policy evaluations in the EEC: An age approach		932246
VAN DIJK	Econometric inference using simulation techniques		932304
MOYES	The distribution and redistribution of income		941185
MALGRANGE	Imperfect competition in inter-temporal general equilibrium macro-models		941235
GIAVAZZI	Frontiers in institutional economics		941340

MACRO-ECONOMICS

6		HCM Euroconferences 1992 - 94	5.573.738 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
GRODAL	Winter symposia of the Econometric Society 1993-1997		920253
KIVIET	European conferences of the econometric community		920968
GATSIOS	European research workshop on international trade		932144
DE MENIL	Economic Policy Panel conferences		932154
WEIL	European summer symposium in macro-economics		934015
HENDEKOVIC	ESF line 68 The political economy of economic polic		934204

MACRO-ECONOMICS

1		HCM other 1992 - 94	240.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
WALLIS	Comparative research in macro-economic modelling		940250

MACRO-ECONOMICS

3		HCM institutional fellowships 1992 - 94	2.781.593 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SIEBERT	Advanced studies in economic policy research		920249
VOSGERAU	Internationalisation of economics		920800
BLASKO	Public policy and general equilibrium		940544

MACRO-ECONOMICS

3		HCM individual fellowships 1992 - 94	222.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
VENTURA	Assets and allocations in general equilibrium models with uncertainty and incomplete markets		921426
SAIDOUN	The European Community and the Maghreb: Trade and investment perspectives for co-operation ...		930303
PAYNE	Policy networks and decision-making in the EC		930914

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<b>II MICRO-ECONOMICS</b>		
<b>Behaviour of households and firms, mathematical economics, econometrics</b>		
		<b>FUNDING (ECU)</b>
11	SPES grants	7.280.670
5	HCM networks	4.628.975
2	HCM Euroconferences 1992 - 94	1.860.563
2	HCM institutional fellowships 1992 - 94	1.843.494
1	HCM individual fellowships 1992 - 94	79.000 (est.)
21	SPES and HCM grants	15.692.702

Individual grants

MICRO-ECONOMICS

11		SPES grants 1989 - 91	7.280.670 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
KIRMAN	European workshop: Application of recent developments in econometrics and economic theory		000022
KIRMAN	Research network for university economists in Southern Europe		000009
D'ASPREMONT	Markets and organisations: A game-theoretic approach		000004
MOREAUX	Seminars at GREMAQ (Toulouse) in econometrics and economic theory		910082
KAST	Summer school on mathematical economics and econometrics		910087
SALMON	European workshops in recent developments in econometrics and economic theory		910080
MEGHIB	Dynamic models of household behaviour		910088
WYATT	Artificial intelligence approaches to economic modelling		910065
TROCKEL	Theoretical foundations of micro-economics		910085
POLEMARCHAKIS	Economic policy at equilibrium		910057
BALASKO	Workshop in general equilibrium theory		910091

MICRO-ECONOMICS

5		HCM networks 1992 - 94	4.628.975 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SCHABER	European network on longitudinal household panel studies meeting technology requirements for comparative research		920997
D'ASPREMONT	Organisation and market as a game		921681
SCHURER	Mapping European family and household patterns		921912
GERARD - VARET	Association sud-européenne d'économie théorique		932158
BESTER	Games and markets		932227

MICRO-ECONOMICS

2		HCM Euroconferences 1992 - 94	1.860.563 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
LICANDRO	International conference on economic theory		930254
DAVIDSON	Summer school in mathematical economics and econometrics		930309

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**MICRO-ECONOMICS**

<b>2</b>	<b>HCM institutional fellowships 1992 - 94</b>	<b>1.843.494 ECU</b>
<i><b>Co-ordinator</b></i>	<i><b>Title</b></i>	<b>HCM N°</b>
<b>HENIN</b>	<b>Accueil post doctoral au CEPREMAP</b>	<b>921768</b>
<b>GERARD - VARET</b>	<b>Fellowships at GREQE-EHESS in econometrics, public economy and insurance and risk economy</b>	<b>921728</b>

**MICRO-ECONOMICS**

<b>2</b>	<b>HCM individual fellowships 1992 - 94</b>	<b>119.000 ECU (est.)</b>
<i><b>Fellow</b></i>	<i><b>Title</b></i>	<b>HCM N°</b>
<b>BINGLEY</b>	<b>Intra household distribution and the micro-economics of public policy</b>	<b>930459</b>
<b>SEMPERE - MONERRIS</b>	<b>Signalling entry deterrence and incomplete information: A non-co-operative study of co-ordination</b>	<b>930848</b>

<b>III MONEY AND CAPITAL</b>		
Nominal convergence, regulation and harmonisation, applied econometrics		
		<b>FUNDING (ECU)</b>
9	SPES grants	12.790.362
1	HCM networks	130.000
1	HCM Euroconferences 1992 - 94	97.000
4	HCM individual fellowships 1992 - 94	253.000 (est.)
15	SPES and HCM grants	13.270.362

**Individual grants**

**MONEY AND CAPITAL**

9	SPES grants 1989 - 91	12.790.362 ECU
<i>Co-ordinator</i>	<i>Title</i>	SPES N°
WYPLOSZ	International monetary seminar	000010
GIAVAZZI	Financial and monetary integration in Europe	000017
SCHATZ	Capital mobility in Europe after 1992	000023
CORBETT	Testing international financial market integration	150005
VAN DER PLOEG	Macro-economic policy and monetary integration in Europe	000016
TULLIO	The control of inflation in the EMS during the transition to monetary unification	910053
GOOVAERTS	Harmonization of reserving insurance by means of actuarial, econometrical and statistical methods	910063
ROELL	European stock trading systems: An empirical investigation	910086
DELBAEN	Financial risk in insurance - an integrated treatment of liability and assets uncertainty	910089

**MONEY AND CAPITAL**

1	HCM networks 1992 - 94	130.000 ECU
<i>Co-ordinator</i>	<i>Title</i>	HCM N°
MAYER	Finance in Europe: Markets, instruments and institutions	941216

**MONEY AND CAPITAL**

1	HCM Euroconferences 1992 - 94	97.000 ECU
<i>Co-ordinator</i>	<i>Title</i>	HCM N°
REPULLO	European summer symposium in financial markets	934006

**MONEY AND CAPITAL**

4	HCM individual fellowships 1992 - 94	253.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>	HCM N°
HARTMANN	International money and the role of the ECU	921175
NEYMEYER	General equilibrium with incomplete markets: The analysis of monetary issues	922436
KARAFOLAS	The role of emigration in the internationalisation of banks	930160
PASCAO MIRANDA GOMES	Incomplete financial markets and defaults: An analysis of real determinacy of general equilibrium	930747

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IV LABOUR ECONOMICS		FUNDING (ECU)
Labour supply and demand, wages, (un)employment, demographic economics, welfare		
11	SPES grants	4.555.382
4	HCM networks	3.696.640
3	HCM individual fellowships 1992 - 94	228.000 (est.)
18	SPES and HCM grants	8.480.022

Individual grants

LABOUR ECONOMICS

11		SPES grants 1989 - 91	4.555.382 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
PESTIEAU	Epargne, patrimoine et phénomène démographiques		000002
SCHMID	Demographic processes, occupation and technological change		000012
MARGINSON	Centralisation and decentralisation in the Euro-company: Management and labour		000026
PFANN	Asymmetric long run dynamic employment decisions		910059
HARTOG	Comparing labour markets or: Which countries' labour markets are most efficient		915001
GILBERT	Micro-econometric analysis of European labour market problems		000015
ANDERSEN	Price and wage formation and unemployment persistence		000024
LAYARD	European unemployment programme (phase II)		000025
WESTERGAARD	The labour force and welfare participation of single parents: Denmark, France, FRG and UK		910051
NIELSEN			
FONTVIEILLE	Education et croissance économique: evolution de longue période et prospective France-Espagne		910073
FAINI	The economics of European migration		910094

LABOUR ECONOMICS

4		HCM networks 1992 - 94	3.696.640 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
ROSE	Female labour force research network		920996
ZIMMERMAN	European migration from economic analysis to policy response		932306
LEWIS	Virtual mobility and distribute laboratories		922333
RAINWATER	Luxembourg income and employment study		921005

LABOUR ECONOMICS

3		HCM individual fellowships 1992 - 94	228.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
HATZIUS	The labour market effects of EC immigration		920636
BIANCHI	Hysteresis in GDP and unemployment rate series		920724
ZAVATTARO	International migration and the bio-demographic dynamics of integrati		920755

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<b>V PUBLIC ECONOMICS</b>		
<b>Taxation, social insurance, public enterprises</b>		
		<b>FUNDING (ECU)</b>
2	SPES grants	910.057
5	HCM networks	4.605.215
2	HCM individual fellowships 1992 - 94	56.000 (est.)
9	SPES and HCM grants	5.571.272

Individual grants

PUBLIC ECONOMICS

2		SPES grants 1989 - 91	910.057 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
DILWORTH	Workshop on the economics of the public sector in a mixed economy		910056
FRASER			
BLUNDELL	The indirect taxation of European households		000001

PUBLIC ECONOMICS

5		HCM networks 1992 - 94	4.605.215 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SUTHERLAND	Comparative social policy and taxation modelling		920796
MARCHAND	Fiscal implications of European integration		921684
WALKER	Micro-economics of public policy		920281
(BLUNDELL)			
LEWIS	Gender and European welfare regimes		920281
CAVE	The regulation of network utilities in Europe		922173

PUBLIC ECONOMICS

2		HCM individual fellowships 1992 - 94	56.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
TELXEIRA	Corporation tax systems in the EC		922437
BINGLEY	Intra household distribution and the micro-economics of public policy		930459

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<b>VI INDUSTRIAL ECONOMICS</b>		
<b>Competitiveness, market structure, specialisation</b>		
		<b>FUNDING (ECU)</b>
7	SPES grants	2.730.290
11	HCM networks	10.225.231
3	HCM Euroconferences 1992 - 94	125.000
3	HCM institutional fellowships 1992 - 94	2.773.215
9	HCM individual fellowships 1992 - 94	567.000 (est.)
33	SPES and HCM grants	16.420.736

Individual grants

INDUSTRIAL ECONOMICS

7		SPES grants 1989 - 91	2.730.290 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
LYONS	Analysis of industrial market shares in the EC		000028
GREENAWAY	Trade, specialisation and market structure in the EC after 1992		910058
CANTWELL	Multinational corporation activities in Europe and the completion of the European internal market in 1992		000006
LANDESMANN	The dynamics of industrial structural change and international integration in the European Community		000005
BURDETT	Panel on firms: A longitudinal inter-regional study on competitiveness		910074
TONIOLO	Comparative experience of economic growth in post-war Europe		910072
SCHWALBACH	Industry dynamics and small firms: An international comparison study		000047

INDUSTRIAL ECONOMICS

11		HCM networks 1992 - 94	2.730.290 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SISSON	IREC international comparison network		920831
MERCER	European competitiveness in a knowledge society		921336
SNOWER	Product market integration, labour market imperfections and European competitiveness		921899
ATAMER	The dynamics of international competition in Europe		930196
FREYSSINET	Emergence of new industrial models		930244
VEUGELERS	Inter firm relationships: Market structure and competition policy		930320
SUGDEN	Industrial economic strategies for Europe: Preparing for the turn of the century		932107
THISSE	The new economic geography of Europe: Market integration, regional convergence and the location of economic activity		932307
GODDARD	The European network on industry, innovation and territory		932338
ABELL	The impact of profit-sharing in Europe		932383
NEVEN	Market structure and competition policy		941270

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**INDUSTRIAL ECONOMICS**

3		HCM Euroconferences 1992-94	2.786.908 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SISSON	European Community industrial relations conference		921783
SUGDEN	Industrial economic strategies for Europe: Preparing for the turn of the century		932109
DE BANDT	Ecole d'été méditerranéenne d'économie industrielle		933016

**INDUSTRIAL ECONOMICS**

3		HCM institutional fellowships 1992-94	2.773.215 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
TIOLE	Advances in industrial relations fellows		920330
SISSON	European Community industrial relations fellows		921782
ROCHE	Strategies for competitive success from the European periphery		931103

**INDUSTRIAL ECONOMICS**

9		HCM individual fellowships 1992-94	567.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
MOSSIALOS	The impact of the single market on the pharmaceutical industry		920951
SANTA CLARA GOMES	Ownership and valuation of firms, security benefits and private benefits		921416
MARINI	Internal organisation of the firm and bargaining in an oligopolistic market		921425
KOHLER	Production models in the industry of Andalusia		922400
BARDET	Joint companies, competition and European anti-trust rules		930126
HUTH	Industrial financing in countries of the EEC...		930165
SURLEMONT	Multinational corporations transformation: The emergence of centres of excellence networks inside MNCs		930649
KASTELLI	Greek industry dynamics in the context of European integration: Agro-food and chemical industries		930873
KENELLOU	Technology and competitiveness in services: Information and communication technology in Greek tourism industry		930907

STATISTICAL APPENDIX

<b>VII TRANSFORMATION OF POST-COMMUNIST ECONOMIES</b>		
<b>Systemic changes in central and eastern Europe</b>		
		<b>FUNDING (ECU)</b>
<b>2</b>	<b>SPES grants</b>	<b>100.000</b>
<b>1</b>	<b>HCM institutional fellowship 1992-94</b>	<b>200.000</b>
<b>3</b>	<b>SPES and HCM grants</b>	<b>300.000</b>

**Individual grants**

**TRANSFORMATION**

<b>2</b>	<b>SPES grants 1989-91</b>	<b>910.142 ECU</b>
<i>Co-ordinator</i>	<i>Title</i>	<b>SPES N°</b>
<b>NEWBERY</b>	<b>Economic transformation in eastern Europe</b>	<b>50</b>
<b>LEVCIK</b>	<b>Workshop on European economic interaction and integration, session 14, The role of competition in economic transition and integration</b>	<b>910092</b>

**TRANSFORMATION**

<b>1</b>	<b>HCM institutional fellowship 1992-94</b>	<b>200.000 ECU</b>
<i>Co-ordinator</i>	<i>Title</i>	<b>HCM N°</b>
<b>DEWATRIPONT</b>	<b>Fellowships at ECARE: European integration, East and West</b>	<b>930348</b>

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VIII ENVIRONMENT		FUNDING (ECU)
7	SPES grants	4.550.402
1	HCM networks	150.000
1	HCM Euroconferences 1992 - 94	59.000
2	HCM institutional fellowships 1992 - 94	200.000
8	HCM individual fellowships 1992 - 94	617.000 (est.)
19	SPES and HCM grants	5.576.402

Individual grants

ENVIRONMENT

7		SPES grants 1989 - 91	4.550.402 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
PROOPS	The green house effect and European economic growth		000013
GOTTINGER	An economic analysis for waste charges and deposit-refund systems		910061
KARMAN	Workshop "Environmental systems and economics"		910081
SKOURTOS	Transaction costs of economic instruments in air pollution abatement: A comparative study		900054
SKOURTOS	Transaction costs of economic instruments in air pollution abatement: A comparative study		920095
PEARCE	European Association of Environmental Economists		000014
BLUM	An environmental impact of transportation in the process of European integration		910084

ENVIRONMENT

1		HCM networks 1992 - 94	150.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
XEPAPADEAS	Designing economic policy for management of natural resources and the environment		920950

ENVIRONMENT

1		HCM Euroconferences 1992 - 94	59.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
MARTIN	Erfolgsfalle von Umweltschutz im internationalen Vergleich die Wirksamkeit von Instrumenten aus der Sicht von europäischen Unternehmen		930165

ENVIRONMENT

2		HCM institutional fellowships 1992 - 94	1.841.116 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
BALL	Risk management in the work place in pursuance of EC directive 89/391/EEC		920414
CONVERY	Environment and development in the European periphery		920702

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ENVIRONMENT

		8	HCM individual fellowships 1992 - 94	617.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>			HCM N°
FAVRAT	Transfer or development: The case of 'environmentally-sound' technologies in the energy sector			921650
OCCHIUTO	Apprehension de l'environnement visuel - détermination des moyens d'intervention et de contrôle dans le cadres des études de planification et d'aménagement du territoire			922404
CABRAL MARQUES	Urban regeneration: New directions in conservation studies			930195
SIMON	Sustainability, national accounting and the environment			930425
FREIHERR VON SCHLOTHEIM	Reducing of global carbon dioxide emissions: An input-output assessment for several countries			930750
HONDRAKI	The integration of European policy agendas for energy, agriculture and the environment			930757
SCHROEDER	Integration of neo-Austrian capital theory with input-output analysis and the environment			930790
MISSFELDT	A European game on the risk of accidents in nuclear power stations			930882

STATISTICAL APPENDIX

IX ECONOMICS OF R&D		FUNDING (ECU)
2	SPES grants	178.591
3	HCM networks	715.000
1	HCM Euroconferences 1992 - 94	32.000
4	HCM institutional fellowships 1992 - 94	697.550
5	HCM individual fellowships 1992 - 94	349.000 (est.)
15	SPES and HCM grants	1.972.141

Individual grants

ECONOMICS OF R&D

2		SPES grants 1989 - 91	910.108 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
COHENDET	EUNETIC - European Research Network on Economics of Technological Change		000048
FORAY	Comparative economics of R&D		910060

ECONOMICS OF R&D

3		HCM networks 1992 - 94	2.772.904 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SECCHI	The economics of scientific and technological change in Europe		920205
GEORGHIOU	The evaluation of science and technology policy in Europe		922248
PAGANETTO	Endogenous growth, technological change and interdependence		930451

ECONOMICS OF R&D

1		HCM Euroconferences 1992 - 94	32.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
MICHIE	The globalisation of technology: Lessons for the public and business sectors		934023

ECONOMICS OF R&D

4		HCM institutional fellowships 1992 - 94	3.722.585 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
SHARP	Science technology and innovation - needs and structures for the 1990's		920488
GODDARD	Post-doctoral training on regional aspects of research and technological development policy		931337
BLUME	Knowledge and professional practices		940287
COOPER	International dimensions of the impact of the new technologies		930473

ECONOMICS OF R&D

5		HCM individual fellowships 1992 - 94	349.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
BLATTEL-MINK	The institutional dimension of scientific and technical innovation in Europe		921008
EVANGELISTA	Technological change and industrial organisation in the Italian innovation system		911921
BARTZOKAS	New technologies and R&D institutions in Southern Europe		930235
GIRARDI	European integration, technological change and regional disequilibria. The case study of Italy		930300
KNIGHT	Mapping the knowledge base and knowledge culture of the Genoa region		930332

STATISTICAL APPENDIX

X	AGRICULTURAL ECONOMICS	FUNDING (ECU)
3	SPES grants	270.253
2	HCM networks	525.000
1	HCM Euroconferences 1992 - 94	30.000
4	HCM individual fellowships 1992 - 94	351.000 (est.)
10	SPES and HCM grants	1.178.253

Individual grants

AGRICULTURAL ECONOMICS

3	SPES grants 1989 - 91	1.820.164 ECU
<i>Co-ordinator</i>	<i>Title</i>	<i>SPES N°</i>
FANFANI	Technical change and restructuring of European agro-food industry	000027
FENNELL	Economic analysis and new dimensions to the common agricultural policy of the European Community	910068
KEYZER	Pilot study for the agricultural economics data base service	910069

AGRICULTURAL ECONOMICS

2	HCM networks 1992 - 94	1.861.071 ECU
<i>Co-ordinator</i>	<i>Title</i>	<i>HCM N°</i>
VENZI	The economics of marginal and mountainous areas and forest-timber environment systems	930442
RYAN	Co-operation network in economic and social aspects of rural change and development	930629

AGRICULTURAL ECONOMICS

1	HCM Euroconferences 1992 - 94	30.000 ECU
<i>Co-ordinator</i>	<i>Title</i>	<i>HCM N°</i>
AMBROSO	Science and technology transefer among regional agro-food systems in wider continental Europe/ European Community, Mediterranean and Baltic	933028

AGRICULTURAL ECONOMICS

4	HCM individual fellowships 1992 - 94	351.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>	<i>HCM N°</i>
GOMEZ Y PALOMA	Science and technology transefer among regional agro-food systems in wider continental Europe/ European Community, Mediterranean and Baltic	921044
LANINI	Les processus d'innovation en arte dans l'industrie agro-alimentaire en Europe: Le cas de l'industrie de la viande	921274
JOERGENSEN	The European agricultural miracle: Comparisons on patterns of development in rural societies within Asia and Europe	922209
BOSMANS	Les implications des accords commercieaux regioneaux sur le commerce internationale des produits agricoles et sur la politique agricole commune	930369

STATISTICAL APPENDIX

XI MANAGEMENT		FUNDING (ECU)
1	SPES grant	60.000
3	HCM networks	880.000
1	HCM Euroconference 1992 - 94	40.000
2	HCM other 1992 - 94	228.000
4	HCM institutional fellowships 1992 - 94	1.119.000
3	HCM individual fellowships 1992 - 94	214.000 (est.)
14	SPES and HCM grants	2.541.000

Individual grants

MANAGEMENT

1		SPES grants 1989 - 91	60.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
JENSEN	European doctoral programme in management and business studies		910070

MANAGEMENT

3		HCM networks 1992 - 94	2.793.919 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
BULTEZ (FLOWER)	The European Universities accounting network		931361
VAN DER DUYN	Decision support for maintenance management and quality support		930200
SCHOUTEN			
ZAMAGNI	The development of business schools in Europe		932358

MANAGEMENT

1		HCM Euroconferences 1992 - 94	40.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
JENSEN	European research paradigms in business studies		922363

MANAGEMENT

2		HCM other 1992 - 94	1.880.944 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
GRONROOS	Research and relationship marketing and service management		940425
SCHOLTZ	European business analysis		940519

MANAGEMENT

4		HCM institutional fellowships 1992 - 94	3.714.826 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
JENSEN	European doctoral programme in management and business studies		921358
STONEMAN	Research training fellowships in industrial and business studies		921955
SCHAEFER	Business and management post-doctoral fellowships at London Business School		930990
STONEMAN	Doctoral research training fellowships in business studies		940523

MANAGEMENT

3		HCM individual fellowships 1992 - 94	214.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
REEKERS	The impact of electronic data interchange on European companies from an organisational and management perspective		921219
PEPPARD	Business re-engineering		922488
LABROUKOS	Planning, structure, strategy and effectiveness relationships in enterprises operating in less development economies		930284

STATISTICAL APPENDIX

XII GENERAL ECONOMICS		FUNDING (ECU)
Grants for several fields - or not specified		
8	SPES grants	374.000
2	HCM networks	475.000
5	HCM Euroconferences 1992 - 94	276.000
1	HCM other 1992 - 94	140.000
18	HCM institutional fellowships 1992 - 94	<u>4.034.982</u>
34	SPES and HCM grants	5.299.982

Individual grants

GENERAL ECONOMICS

8		SPES grants 1989 - 91	4.570.375 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
BUZZONETTI	Symposium for the dissemination of results of SPES projects		910083
RESS	Colloquium on 'Intergovernmental financial relations in selected federal states and in the EC'		920096
BOURGIGNON	Financing of foreign researchers at DELTA		000011
FRADERA	Economics seminar		915004
YEO	Abstracts of European research in economic science		000020
COWELL	ST/ICERD European visitors scheme		000021
FRADERA	Economics seminar		915050
GIRAL	Network for the development of doctoral programme		910090

GENERAL ECONOMICS

2		HCM networks 1992 - 94	1.871.815 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
BARBERA	ENTER European Network for Training Economics Research		930627
SANCHEZ			
POLEMARCHAKIS	European doctoral programmes in quantitative economics		941188

GENERAL ECONOMICS

5		HCM Euroconferences 1992 - 94	4.650.084 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
MILLER	Summer research workshop in economics		922153
PERSSON	Young scholars' conference on European growth and productivity convergence		930411
TIROLE	European summer symposium in economic theory		931260
HENDEKOVIC	ESF line 63: Migration and development		933052
HENDEKOVIC	ESF line 64: Economic growth		933208

GENERAL ECONOMICS

1		HCM other 1992 - 94	140.000 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
DEHEZ	Employment, international competitiveness and financial markets		940629

STATISTICAL APPENDIX

**GENERAL ECONOMICS**

18	HCM institutional fellowships 1992 - 94	16.741.509 ECU
<i>Fellow</i>	<i>Title</i>	HCM N°
<b>TORRENTS</b>	Consolidating research excellency in Southern Europe	920116
<b>BOURGIGNON</b>	Bourses accueil DELTA	920142
<b>MARTINEZ</b>	Fellowships for research in economic analysis	920219
<b>GIRALT</b>		
<b>MACHIN</b>	LSE European institute post-doctoral inter-disciplinary research framework in economic management and public policy	920280
<b>MONTI</b>	European post-doctoral fellowships in economics at IGIEER	920335
<b>VAN DER PLOEG</b>	Fellowships within the research programme of TRACE	920378
<b>POLEMARCHAKIS</b>	Fellowships in quantitative approaches in economics and management science	921682
<b>KAPTEYN</b>	Post-doc.s at the centre for economic theory at Tilburg University	930028
<b>DAVID ULPH</b>	University College London advanced research in economics	931076
<b>ALISTAIR ULPH</b>	Host institution: Department of economics, University of Southampton	931090
<b>CALSAMIGLIA</b>	Finance, international trade and welfare in a growing economy	931133
<b>FORGES</b>	Quantitative approches in economics and management science	931381
<b>TORRENTS</b>	Consolidating research excellency in Southern Europe	940304
<b>DEWATRIPONT</b>	Fellowships at ECARE (2): Next step of European integration	940414
<b>VAN DER PLOEG</b>	Fellowships with the research programme af TRACE30	940487
<b>MARTINEZ</b>	Fellowships for research in economic analysis	940707
<b>GIRALT</b>		
<b>GIAVAZZI</b>	European post-doctoral fellowships in economics at IGIEER	940851
<b>DANTHINE</b>	Fellowship in econometrics, macro-economics, finance and industrial organisation of the University of Lausanne	940886

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<b>XIII OTHER ECONOMICS</b>		
<b>Fields other than I-XI</b>		
		<b>FUNDING (ECU)</b>
2	SPES grants	1.820.143
2	HCM networks	10.346.682
3	HCM Euroconferences 1992 - 94	2.773.623
3	HCM institutional fellowships 1992 - 94	2.774.027
2	HCM individual fellowships 1992 - 94	126.000 (est.)
12	SPES and HCM grants	17.840.475

Individual grants

OTHER ECONOMICS

2		SPES grants 1989 - 91	1.820.143 ECU
<i>Co-ordinator</i>	<i>Title</i>		SPES N°
JONES	European workshop on economic modelling, numerical methods and applied econometrics in health economics		910076
FOREMAN PECK	European historical economics network		910067

OTHER ECONOMICS

2		HCM networks 1992 - 94	10.346.682 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
DE CASABIANCA	Suds européens: de l'assistance a l'initiative		932256
HUTTIN	An evaluation team on controls of drugs expenditure in Europe		9414426

OTHER ECONOMICS

3		HCM Euroconferences 1992 - 94	2.773.623 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
NLJKAMP	European transport and communication networks		921281
HANUSCH	Evolutionary economics		921969
JONES	European workshops on econometrics and health economics		930373

OTHER ECONOMICS

3		HCM institutional fellowships 1992 - 94	2.774.027 ECU
<i>Co-ordinator</i>	<i>Title</i>		HCM N°
NLJKAMP	Strategic infrastructure networks in Europe		921279
GADREY	European comparative approaches in economics of informational activities, services, organisations and in administration law		921548
STOCKDALE	LSE European gender research laboratory gendered aspects of economic restructuring and population ageing		931200

OTHER ECONOMICS

2		HCM individual fellowships 1992 - 94	126.000 ECU (est.)
<i>Fellow</i>	<i>Title</i>		HCM N°
QUAST	Organisation et réglementation des industries de gaz naturel		921293
GUILLOTREAU	Optimisation des relations entre les OP et les industries de transformation des produits de la mer: le cas de l'Angleterre		922408



## Literature and names of individuals cited

- Abowd, J., Cornell Univeristy, USA.
- Ackum, S., University of Uppsala.
- Acs, Z. J., Audretsch, B. David (1994), "R&D spillovers and innovative activity," Managerial and Decision Economics Volume 15, Number 2, 131-138, March-April
- Acs, Z. J., Audretsch, B. David, and P.M. Feldman, (1994), "R&D spillovers and recipient firm size," Review of Economics and Statistics Volume 76, Number 2, 336-340, May.
- Adam, M., C., T. Bauer, R. Fañi and E. Rădulescu (1995), Evaluation of the ACE Programme 1992-1994, Report for the European Commission, (July) un-published.
- Aghion, P. and O.J. Blanchard (1994), "On the speed of transition in Central Europe," NBER Macroeconomics Annual, 283-320.
- Aghion P., M. Dewatripont and P. Rey (1994), "Renegotiation design with unverifiable information", Econometrica, 62, 2, pp. 257-282.
- Aghion, P. and J. Tirole (1994), "The management of innovation" Quarterly Journal of Economics Volume 109, Number 4, 1185-1209, November
- Aghion, P. and J. Tirole (1995), "Some implications of growth for organizational form and ownership structure," European Economic Review Volume 39, 440-55, April.
- Allen B. (1982), "Some stochastic processes of interdependent demand and technological diffusion of an innovation exhibiting externalities among adopters", International Economic Review, Vol. 23, n. 3, October, pp. 595-608.
- Alonso-Borego, C., University of Carlos III, Madrid.
- Amsterdamska O. (1991), "Recent developments in East/West co-operation in research and higher education" in De Wied et al., Post-graduate Training Today: Emerging Structures for a Changing Europe, Netherlands Ministry of Education and Research, The Hague.
- Arellano, M., CEMFI - Madrid.
- Arronson, T., University of Umeå
- Arthur, W.B., (1989), "Competing technologies, increasing returns and lock-in by historical events", Economic Journal, IC, 116-31.
- Arthur, W.B., Y. Ermoliev and Y. Kaniovski (1983), "Generalised urn-problems and its applications", Kibernetika, vol. 1, 49-56.
- Artis, M. and D.M. Nachane,(1990), "Wages and prices in Europe: A test of the German leadership hypothesis", Weltwirtschaftliches Archiv, vol. 126, 59-77.
- Artis, M.J. and P. Ormerod (1991), "Is there an EMS effect in European Labour markets?", CEPR Discussion paper, no. 598, (SPES 000017).
- Artis, M. and M.P. Taylor (1990), "International financial stability and the regulation of capital flows" in G. Bird (ed.), The International Financial Regime, Surrey University.
- Artis, M. and M.P. Taylor (1989), "Some issues concerning the long run credibility of the European Monetary System" in R. MacDonald and M.P. Taylor (eds.), Exchange Rates and Open Economy Macroeconomics, Basil Blackwell, Oxford.
- Artis, M., R. Bladen-Howell and W. Zhang (1993), "A European demand for money function" in P. Masson and M. Taylor (eds.), Policy Issues in the Operation of Currency Unions, Cambridge University Press.
- Artis, P. and R. Salomon (1994), "The EMS, credibility and disinflation, the French case", Caisse des Depots et Consignation, (SPES 0053).
- Aschauer, D.A. (1988), "The equilibrium approach to fiscal policy", Journal of Money, Credit, and Banking, vol. 20,1, 41-62.
- Aslund, A. (1992), "The post communist economic revolution: how big a bang?" CSIS, Washington DC.
- Atkinson, A.B., Nuffield College, Oxford
- Atkinson, A.B. (ed.) (1991), Modern Public Finance, vol. I and II, E. Elgar, Aldershot.
- Atkinson, A.B. and J. Stiglitz, (1980), Lectures in Public Economics, Mc Graw Hill, New York.
- Attanasio, O., Institute for Fiscal Studies and University College London.
- Audretsch, D. B. and Z.J. Acs (1994), "New-firm startups, technology, and macroeconomic fluctuations" Small Business Economics Volume 6, 439-49, December .
- Audretsch, D. B. and T. Mahmood, (1994) "Firm selection and industry evolution: The post-entry performance of new firms," Journal of Evolutionary Economics Volume 4, Number 3, 243-60, September.
- Audretsch, D. B. and T. Mahmood, (1995) "New firm survival: New results using a hazard function", Review of Economics and Statistics, Volume 77, Number 1, 97-103, February.
- Audretsch, D. and M. Vivarelli (1995), "New-firm formation in Italy: A first report" Economics Letters Volume 48, Number 1, 77-81, April.
- Auerbach, A. and M. Feldstein (eds.) (1985), Handbook of Public Finance, vol. I and II, North Holland, Amsterdam.
- Axelrod, R., (1984), The Evolution of Cooperation, Basic Books, New York.
- Balasko, Y. and D. Cass, (1989), "The structure of financial equilibrium with exogenous yield", Econometrica, 57, 135-62.
- R. Baldwin (1992), "An Eastern enlargement of EFTA: why the East Europeans should join and the EFTAs should want them", CEPR Occasional Paper no. 1, London.

## REFERENCES

- R. Baldwin (1994), Pan-European Trade Arrangements beyond the year 2000, CEPR, London.
- Ball, L., G.N. Mankiw and D. Romer (1989), "The new Keynesian economics and the input-inflation tradeoff", Brookings Paper of Economic Activity, I, 1-65.
- Banerjee (1992), "A simple model of herd behaviour", Quarterly Journal of Economics, vol. 108, 797-817.
- Barmby, T., University of Newcastle.
- Baniak, A and L. Philips (1995), "La Pleiade and exchange rate pass-through", International Journal of Industrial Organization Volume 13, Number 2, 195-211.
- Barr, D.G. and K. Cuthbertson (1991), "Neo-classical consumer demand theory and the demand for money", Economic Journal, vol.101,407, 855-76.
- Barr, N. (ed.) (1994), Labor Markets and Social Policy in Central and Eastern Europe, World Bank and LSE, Oxford University Press.
- Barro, R.J. (1974), "Are government bonds net wealth?", Journal of Political Economy, vol. 82,6, 1095-1117.
- Barro, R.J. (1989), Modern Business Cycle Theory, Harvard University Press, Cambridge, Mass.
- Barro, R.J. and H.L. Grossman (1971), "A general disequilibrium model of income and employment", American Economic Review, vol. 61,1, 82-93.
- Barro, R.J. and R.G. King (1984), "Time-separable preferences and intertemporal-substitution models of business cycles", Quarterly Journal of Economics, vol. 99,4, 817-39.
- Barro, R.J. and X. Sala i Martin (1992) "Convergence", Journal of Political Economy, vol. 100,2, 223-51.
- Bayoumi, T. (1989), "Savings-investment correlations: immobile capital, government policy or endogenous behaviour ?", International Monetary Fund.
- Bayoumi, T. and P. Kenen (1992), "Using an EC-wide monetary aggregate in stage two of EMU", mimeo, Bank of England.
- Bean, C. London School of Economics - Centre for Economic Performance.
- Bean, C.R. (1992), "Economic and monetary union in Europe", Journal of Economic Perspectives, vol. 6,4, 31-52.
- Beesley, M.E. (1990), "Collusion, predation and merger in the UK bus industry", Journal of Transport Economics and Policy Volume 24, Number 3, 295-310, September.
- Beetsma, R. and F. Van der Ploeg (1992), "Exchange rate bands and optimal monetary accomodation under a Dirty Float", Discussion Paper, Tilburg University (SPES 000016).
- Benabou, R. (1990), Essays on the Foundations of Game Theory, Basil Blackwell, Cambridge Mass and Oxford.
- Benabou, R. (1992), "Heteronegneity, Stratification and Growth", mimeo, MIT, Cambridge, Mass.
- Benassy, J.-P. (1982), The Economics of Market Disequilibrium, Academic Press, New York.
- Bentolila, S., CEMFI - Madrid.
- Berman, Boston University, USA
- Bernheim, B. D. and M.D. Whinston (1990), "Multimarket contact and collusive behavior", Rand Journal of Economics Volume 21, Number 1, 1-26, Spring.
- Berthold, N. (1993), Sozialunion in Europa. Integrationsfaktor oder Sprengsatz einer europäischen Wirtschafts- und Währungsunion?, Mohr, Tübingen.
- Bertola, G. (1992), "Models of economic integration and localized growth", CEPR Discussion Paper 651 (SPES-000017).
- Bhandari, J. and T. Mayer (1990), "A note on saving-investment correlations in the EMS", International Monetary Fund (Washington), Working Paper no. WP/90/97, October.
- Binmore K. (1990), Essays on the Foundations of Game Theory, Basil Blackwell, Cambridge Mass and Oxford.
- Binmore, K., A.P. Kirman and P. Tani (eds.) (1993), Frontiers of Game Theory, MIT Press, Cambridge Mass.
- Binmore, K. and L. Samuelson, (1990), "Evolutionary stability in repeated games played by finite automata", Mimeo, University of Michigan.
- Björklund, A., Stockholm School of Economics.
- Blackorby, C., W. Bossert and D. Donaldson, (1994), "Generalized Gini and cooperative behaviour solutions", Econometrica, 62,5, 1161-78.
- Blanchard, O.J., A.K. Froot and J. D. Sachs (eds.) (1994), The Transition in Eastern Europe. Vol. 1:Country Studies. Vol. 2: Restructuring, NBER, University of Chicago Press.
- Blanchard, O.J. and S. Fischer (1989), Lectures in Macroeconomics, M.I.T. Press, Cambridge, Mass.
- Blanchflower, D., Dartmouth College, USA.
- Bloch, F. (1995), "Endogenous structures of association in oligopolies", Rand Journal of Economics Volume 26, Number 2, 537-56, Autumn.
- Bloomen, H., Tilburg University - CENTER
- Blomquist, S., University of Uppsala.
- Blume L. (1993), "The statistical mechanics of strategic interaction", Games and Economic Behaviour, 5, pp. 387-424.
- Blundell, R., Institute for Fiscal Studies and University College London.
- Blundell, R., Griffith, R. and Van Reenen, J. "Knowledge stocks, persistent innovation and market dominance: evidence from a panel of British manufacturing firms," no date.
- Bofinger, P. (1991), Options for the payments and exchange rate system in Eastern Europe", CEPR Discussion Paper N° 545, April.
- Bolton, P. and M. Dewatripont (1994), "The firm as a communication network," Quarterly Journal of Economics Volume 109, Issue 4, No. 439, 809-839, November.

REFERENCES

- Bond, S., Institute for Fiscal Studies and Nuffield College, Oxford.
- Bonnal, CREST -INSEE, France.
- Borenstein, S. and N.L. Rose (1994), "Competition and price dispersion in the U.S. airline industry"; Journal of Political Economy Volume 102, Number 4, 653-683, August.
- Borsch-Supan, A., University of Mannheim.
- Boskin, M. and J. Stiglitz (1977), "Some lessons from the new public finance", American Economic Review 67 295-302.
- Bound, J., University of Michigan, USA.
- Bover, O., Bank of Spain.
- Bös, D. (1993), "Privatization in Europe: a comparison of approaches", Oxford Review of Economic Policy Volume 9, Number 1, 95-111, Spring.
- Bös, D., (1994), Pricing and Price Regulation, North Holland, Amsterdam.
- Brander, J.A. and A. Zhang (1990), "Market conduct in the airline industry: an empirical investigation", Rand Journal of Economics Volume 21, Number 4, 567-583, Winter.
- Bresnahan, T.F. and S.C. Salop (1986), "Quantifying the competitive effects of production joint ventures", International Journal of Industrial Organization Volume 4, Number 2, 155-75, June.
- Brock, W.A., (1993), "Pathways to randomness in the economy: emergent non-linearity and chaos in economics and finance", Working Paper 93-02-006, Santa Fe Institute, Santa Fe, NM.
- Broesma, Free University of Amsterdam and Tinbergen Institute.
- Bronfenbrenner, M. (1969), Is the Business Cycle Obsolete?, Wiley, New York.
- Browning, M., MacMaster University, Canada.
- Brugiavini, A., University of Venice.
- Bruzzone, G. (1995), "L'individuazione del mercato rilevante nella tutela della concorrenza", June.
- Bulkley, G. (1992), "The role of loyalty discounts when consumers are uncertain of the value of repeat purchases", International Journal of Industrial Organization Volume 10, Number 1, 91-101, March.
- Burattoni, M., L. Lambertini, and G. Rossini, (1994), "The chemical sector in Europe: productive structure and trade specialisation", December.
- Burda, M.C. (1994), "Structural change and unemployment in central and eastern Europe: some key issues", CEPR Discussion Paper N° 977, June.
- Burdett, K., University of Essex.
- Bureau, D. and P. Champsaur (1992), "Fiscal federalism and European economic unification", American Economic Review, vol. 82,2, 88-92.
- Burgess, S., Bristol.
- Button, K. and T. Weyman-Jones (1993), "X-inefficiency and regulatory regime shift in the UK", Journal of Evolutionary Economics Volume 3, Number 4, 269-84, December.
- Cabral, L. M. B. and M.H. Riordan (1994), "The learning curve, market dominance, and predatory pricing." Econometrica Volume 62, Number 5, 1115-1140, September.
- Calsamiglia, X. and A.P. Kirman (1993), "A unique informationally efficient and decentralized mechanism with fair outcomes", Econometrica, vol. 61,5, 1147-72, September.
- Calvo, G.A. (1978), "On time consistency of optimal policy in a monetary economy", Econometrica, vol. 46,6, 1411-28.
- Campbell, J.Y. and Y. Hamao (1992), "Predictable stock returns in the US and Japan: a study of long term capital market integration" Journal of Finance, vol. XLVII, 1 43-69.
- Carlsson, H. and E. Van Damme (1993), "Equilibrium selection in stag hunt games", in Binmore, K., A.P. Kirman and P. Tani (eds.) (1993), Frontiers of Game Theory, MIT Press, Cambridge Mass.
- Cass, D. and K. Shell (1983), "Do sunspots matter?", Journal of Political Economy, 91, 193-227.
- Cassard, M., T. Lane and P. Masson (1994), "Core-ERM money demand and effects on inflation", IMF Discussion Paper, forthcoming in The Manchester School.
- Centre of Economic Analysis and Forecasting, Russia - 1992 Economic Situation, Moscow.
- Chandler, A.D., Jr. (1962), Strategy and structure: chapters in the history of industrial enterprise, MIT Press, Cambridge, Massachusetts.
- Chandler, A.D., Jr. (1977), The Visible Hand: The Managerial Revolution in American Business, Harvard University Press, Cambridge, Massachusetts.
- Chandler, A.D., Jr. (1982) "The M-form: industrial groups, American style", European Economic Review Volume 19, 3-23.
- Chesher, A., University of Bristol.
- Chiappori, P.A., DELTA-ENS, Paris.
- Cochrane, J.H. (1988), "Test of consumption insurance", NBER Working Paper no. 2642. July.
- Cohen, D. (1991), "The solvency of Eastern Europe", CEPR Discussion Paper N° 539, March.
- Colm, University College Dublin.
- Commander, S. and F. Coricelli (1994), Unemployment, restructuring, and the labour market in Eastern Europe and Russia, EDI-World Bank, Washington.
- Contini, B. (1989), "Organization, markets and persistence of profits in Italian industry", Journal of Economic Behavior and Organization Volume 12, Number 2, 181-95, October.

## REFERENCES

- Conyon, M. and S. Machin (1991), "Market structure and the empirical specification of profit margins", Economics Letters Volume 35, 2, 227-31, February.
- Cremer, H., M. Marchand and J.-F. Thisse (1989), "The public firm as an instrument for regulating an oligopolistic market", Oxford Economic Papers, 41, 283-301.
- CREST (1995), CREST advice to the Council and the Commission on the monitoring and evaluation procedures for Community research programmes, CREST/1208/95, CREST Secretariat, Brussels, 19 May
- Crew, M.A.(ed.) (1994), Incentive regulation for public utilities, Kluwer Academic, Boston.
- Crystal, A. and R. MacDonald (1995), "Exchange rates, financial innovation and Divisia money: the Sterling Dollar rate 1972-1990", Centre for Financial Research, Department of Economics, University of Strathclyde, Discussion Paper no. 1.
- Cukierman, A. and A.H. Meltzer (1982), "A positive theory of credibility", Working Paper, Carnegie-Mellon University, December.
- Cuthbertson, K. (1991), "The encompassing implications of feedforward versus feedback mechanisms: a reply to Professor Hendry", Oxford Economic Papers, vol. 43,2, 344-50, April.
- Cuthbertson, K. and M.P. Taylor (1992), "A comparison of the rational expectations and the general to specific approach to modelling the demand for M1", The Manchester School, vol. LX,1, 1-22.
- Dahl, M. (1995), "European surveys of innovation in manufacturing industries - review and selected finding from studies of the *Community Innovation Survey* and other innovation surveys in Europe", European Innovation Monitoring System, Working Paper, Luxembourg.
- d'Aspremont, C. and A. Jacquemin (1988), "Cooperative and noncooperative R&D in duopoly with spillovers", American Economic Review Volume 78, Number 5, 1133-7, December.
- David, P., (1985), "Clio and the economics of QWERTY", American Economic Review, proc. 75, 332-7.
- Dearden, L., Institute for Fiscal Studies, London.
- De Grauwe, P. and W. Vanhaverbeke (1991), "Is Europe an optimum currency area? evidence from regional data", CEPR Discussion Paper, 555, (SPES-000017).
- DeJong, E. (1994), "Expectations of selling prices in the European Monetary System", Department of Economics, University of Amsterdam, (SPES-0053).
- De Jong, F., Nijman, T. and Roell, A. (1993), "A comparison of the cost of trading French shares on the Paris Bourse and on SEAQ International", LSE Financial Markets Group, D.P. 169, forthcoming, European Economic Review.
- Dewatripont, M. and G. Roland (1992), "The virtues of gradualism and legitimacy in the transition to a market economy", Economic Journal.
- Dewatripont, M. and G. Roland (1993), "The design of reform packages under uncertainty", CEPR Discussion paper 860 (November).
- Dewatripont, M. and J. Tirole (1994), "The prudential regulation of banks," Translation, Walras-Pareto Lectures, vol. 1. xii, 262 MIT Press, Cambridge and London.
- Dewatripont, M. and J. Tirole (1994), "A Theory of Debt and Equity: Diversity of Securities and Manager-Shareholder Congruence", Quarterly Journal of Economics Volume 109, Number 4, 1027-54, November.
- Diamond, P. and J. Mirrless, (1971), "Optimal taxation and public production: I and II", American Economic Review, 61, 8-27 and 261-78.
- Dilnot, A., Institute for Fiscal Studies, London.
- Dixon, H. and N. Rankin (1992), "Imperfect competition and macroeconomics: a survey", CEPR Discussion Paper: 636, May.
- Dodgson, J. S., Y. Katsoulacos, and C.R. Newton (1993), "An application of the economic modelling approach to the investigation of predation", Journal of Transport Economics and Policy, Volume 27, Number 2, 153-70, May.
- Dolton, P., University of Newcastle.
- Donsimoni, M.P. and H.M. Polemarchakis (1994), "Redistribution and welfare", Journal of Mathematical Economics.
- Dooley, M., J. Frankel. and D.J. Mathieson (1987), "International capital mobility: what do saving-investment correlations tell us?", International Monetary Fund (Washington). Staff Papers, vol. 24, 503-30, September.
- Dosi, G., C. Freeman, R. Nelson, G. Silverberg and L. Soete (eds.) (1988), Technical Change and Economic Theory, Pinter Publishers, London and New York.
- Dosi, G., R. Gianetti and P.A. Toninelli (eds.) (1992), Technology and Enterprise in a Historical Perspective, Clarendon Press, Oxford.
- Dosi G. and Y. Kaniovski (1993), "The method of generalized urn scheme in the analysis of technological and economic dynamics", IIASA Working Paper 93-17.
- Drèze, J.H. (1964), "Some postwar contributions of French economists to theory and public policy with special emphasis on problems of resource allocation", American Economic Review, 54 (sup.), 1-64.
- Drèze, J.H. (1995), "40 years of public economics", Journal of Economic Perspectives, 9, 111-130.
- Drèze, J.H. and C.H. Bean (eds.), (1990), Europe's Unemployment Problem, M.I.T. Press, Cambridge, Mass.
- Duncan, A., University of York: and Institute for Fiscal Studies.
- Durlauf, S. (1990), "Locally interacting systems, coordination failure, and the behaviour of Aggregate Activity", Working Paper, Stanford University.
- Dustmann, C., University College London

## REFERENCES

- Earle, J.S., R. Frydman, A. Rapaczinski (1992), The Privatisation Process in Central Europe, Central European University Press, Budapest, London, New York.
- Earle, J.S., R. Frydman, A. Rapaczinski (1993), The Privatisation Process in Russia, Ukraine and the Baltic States, Central European University Press, Budapest, London, New York.
- Edin, P.-A., University of Uppsala.
- Eatwell, J., M. Ellman, M. Karlsson, D.M. Nuti and J. Shapiro (1995), Transformation and integration: Shaping the future of Central Eastern Europe, IPPR, London.
- Economic Commission for Europe (1994), "The ECE economies in 1994" Economic Bulletin for Europe, vol 46, United Nations, New York and Geneva.
- Edwards, C. D. (1955), "Conglomerate bigness as a source of power", in National Bureau of Economic Research conference report, Business Concentration and Price Policy, 331-59, Princeton University Press, Princeton.
- Edwards, J. and K. Fischer (1994), Banks, Finance and Investment in Germany, Cambridge University Press.
- Eichengreen, B. (1991), "Is Europe an optimum currence area?", CEPR Discussion Paper 478, (SPES-000017).
- Elias, P., University of Warwick.
- Ellison, G. (1993), "Learning, local interaction and coordination", Econometrica, vol. 61, 1047-72, September.
- Elzinga, K. G. and T.F. Hogarty (1973), "The problem of geographic market definition in antimerger suits", Antitrust Bulletin Volume 18, Number 1, 45-81, Spring.
- Elzinga, K. G. and T.F. Hogarty (1978), "The Problem of geographic market delineation revisited: The case of coal," Antitrust Bulletin Volume 23, Number 1, 1-18, Spring.
- Engle, R.F. and C.W.J. Granger (1987), "Cointegration and error correction: representation, estimation, testing", Econometrica, vol. 55, 251-76.
- Engwall L., (Ed.) (1992), Economics in Sweden. An evaluation of Swedish Research in Economics, Routledge, London.
- Entorf, H. (1989), "Multisektorale Konjunkturanalyse. Theorie, Empirie und Frühindikatoren "realer Konjunkturzyklen"" Frankfurt a. M. (Campus)
- Entorf, H. (1991), "Real business cycles under test", European Economic Review, vol. 35,4, 933-60.
- ERASMUS Newsletter (1993), "ERASMUS Evaluation", vol. 1993-17", ERASMUS Bureau, Brussels.
- Estrin, S. (1991), "Yugoslavia: the case of self-managing market socialism", Journal of Economic Perspectives vol 5, Number 4, 187-194, Fall.
- Estrin, S. (ed.) (1994), Privatisation in Central and Eastern Europe, Longman Group UK, London.
- European Bank for Reconstruction and Development, Working Paper Series (from March 1993 - )
- European Bank for Reconstruction and Development (1994), Transition Report, October, London.
- European Commission (1990a), "Economic transformation in Hungary and Poland", European Economy, no. 43, March.
- European Commission (1990b), "One market, one money: an evaluation of the potential benefits and costs of forming an Economic and Monetary Union", European Economy, no. 44, October.
- European Commission (1990c), "Stabilisation, liberalisation and devolution: assessment of the economic situation and reform process in the Soviet Union", European Economy, no. 45 (December).
- European Commission (1991), "The path of reform in central and eastern Europe", European Economy, Special Edition No. 2.
- European Commission (1993a), Human Capital and Mobility. Annual Report 1992, Brussels.
- European Commission (1993b), ACE Book of Winners, Brussels.
- European Commission (1993d), ERASMUS Programme 1992. Annual Report, Brussels.
- European Commission (1993e), "Annual report from the Commission to the Council, the European Parliament and the Economic and Social Committee 1991/92 on TEMPUS", COM(93) 30 final, Brussels.
- European Commission (1993f), "Evaluation of the TEMPUS programme" (COM(93) 29 final)", (May) Brussels.
- European Commission (1993g), Human Capital and Mobility. Annual Report 1993, Brussels.
- European Commission (1993h), "509 projects of scientific cooperation with the former Soviet Union launched", Press-release, 22 December, Brussels.
- European Commission (1993i), European Social Policy. Options for the Union, Green Paper, Luxembourg.
- European Commission (1993g), "Reform issues in the former Soviet Union", European Economy, no. 49.
- European Commission (1994a), Wachstum, Wettbewerbsfähigkeit, Beschäftigung: Herausforderungen der Gegenwart und Wege ins 21. Jahrhundert, Weißbuch, Luxembourg
- European Commission (1994b), "COPERNICUS Information Package".
- European Commission, DG XII (1994c) European Report on Science and Technology Indicators, Brussels.
- European Commission (1994d) Human Capital and Mobility. Annual Report 1993, Report EUR 15915 EN, Brussels
- Faini, R. and R. Portes (1995), European Union trade with eastern Europe: adjustment and opportunities, CEPR, London.
- Feenstra, R.C. and J.A. Levinsohn (1995), "Estimating markups and market conduct with multidimensional product attributes", Review of Economic Studies Volume 62(1), No. 210, 19-52, January.

## REFERENCES

- Feldstein, M. and C. Horioka (1980), "Domestic saving and international capital flows", Economic Journal, vol. 90 (June), 314-29.
- Fischer, S. (1977), "Long-term contracts, rational expectations, and the optimal money supply rule", Journal of Political Economy, vol. 85,1, 191-205.
- Flam, H. (1992), Product markets and 1992. Full integration, large gains?" Journal of Economic Perspectives, vol. 6,4, 7-30.
- Flamm, K. (1993), "Semiconductor dependency and strategic trade policy", Brookings Papers on Economic Activity Microeconomics, pp. 249-333.
- Flood, L. Göttingen University.
- Florens, J.P., Toulouse.
- Forges, F. (1993), "Some thoughts on efficiency and information", in Binmore, K., A.P. Kirman and P. Tani (eds.) (1993), Frontiers of Game Theory, MIT Press, Cambridge Mass.
- Forte, F. (1995), "European economics: A tiny creature under tutorship", Kyklos, vol. 48, fasc. 2, 211-18.
- Fougere, D., CREST - INSEE, Paris.
- Föllmer, F. (1974), "Random economies with many interacting agents", Journal of Mathematical Economics, vol. 1 (March), 51-62.
- Fraser, P. and R. MacDonald (1993), "European excess stock returns and capital market integration: an empirical perspective", in P. R. Masson and M. Taylor (eds.), Policy Issues in the Operation of Currency Unions, Cambridge University Press.
- Free, G., University of Amsterdam and Tinbergen Institute.
- Frenkel, J.A. and A. Razin (1987), "The Mundell-Fleming model a quarter century later: a unified exposition", International Monetary Fund (Washington) Staff Papers, vol. 34, 203-39, December.
- Frey, B., V. Ginsburgh, P. Pestieau, W. Pommerehne and F. Schneider (1983), "Consensus, discussion and ideology among economists in various European countries", European Economic Review, 23, 59-69.
- Friedman, M. (1968) "The role of monetary policy", American Economic Review, vol. 58,1, 1-17.
- Frydman, R. and E.S. Phelps (eds.) (1983), Individual Forecasting and Aggregate Outcomes, Cambridge University Press.
- Frydman, R., A. Rapaczynski, J.S. Earle, et al. (1993a), The privatization process in Central Europe, Central European University Press, Budapest.
- Frydman, R., A. Rapaczynski, J.S. Earle, et al. (1993b), The privatization process in Russia, Ukraine and the Baltic States, Central European University Press, Budapest.
- Funke, M. and S. Hall (1992), "Is the Bundesbank different from other Central Banks", London Business School, Discussion Paper, 11-92.
- Gacs, J. and M.J. Peck (eds.) (1995), International trade issues of the Russian Federation, IIASA, Laxenburg.
- Gautier, Free University of Amsterdam and the Tinbergen Institute
- Gemmil, G. (1993), "The price impact of large trades under different publication rules: Evidence from the London Stock Exchange", City University Business School, London, mimeo.
- Geneakoplos, J.D. and H.M. Polomarchakis (1986), "Walrasian indeterminacy and Keynesian macroeconomics", Review of Economic Studies, 53, 755-79.
- Geneakoplos, J.D. and H.M. Polomarchakis (1986), "Existence, regularity and constrained suboptimality of competitive allocations when the asset market is incomplete", in Uncertainty, Information and Communication: Essays in Honor of K.J. Arrow, vol. III, W.P. Heller, R.M. Starr and D.A. Starrett (eds.), Cambridge University Press, 65-95.
- Geroski, P.A. (1988), "Book review", International Journal of Industrial Organization Volume 6, Number 2, 275-77, June.
- Geroski, P.A. (1991), Market Dynamics and Entry, Basil Blackwell, London.
- Geroski, P.A. and A. Jacquemin (1988), "The persistence of profits: a European comparison", Economic Journal Volume 98, 375-89, June.
- Geroski, P.A. and D.C. Mueller (1990), "The persistence of profits in perspective", in Mueller, D.C., (ed.) The dynamics of company profits: an international comparison, Cambridge University Press, Cambridge.
- Gertner, R. H., D.S. Scharfstein, and J. Stein (1994), "Internal versus external capital markets", Quarterly Journal of Economics Volume 109, Issue 4, No. 439,1211-1230, November.
- Giavazzi, F. and A. Giovannini (1988), "The Role of the Exchange Rate regime in a Disinflation: Empirical Evidence on the European Monetary System", in F. Giavazzi et al. (eds), The European Monetary System, Cambridge University Press.
- Giavazzi, F. and S. Luigi (1990), The new EMS, CEPR Discussion Paper 369, (SPES-000017).
- Giles, C., Institute for Fiscal Studies, London.
- Gilles, R.P. and P.H.M. Ruys (1989), "Relational constraints in coalition formation", Department of Economics Research Memorandum, FEW 371, Tilburg University.
- Giovanni, A. and B. Turtleboom (1993), "Currency substitution", CEPR Discussion Paper 759.
- Good, D.H., L.-H. Röller, and R.S. Sickles (1993), "US airline deregulation: implications for European transport," Economic Journal Volume 103, No. 419, 1028-1041, July.
- Goodhart, C.A.E. (1989) "The conduct of monetary policy", Economic Journal, vol. 99, 293-316.
- Goodman, A., Institute for Fiscal Studies, London.

## REFERENCES

- Gourieroux, C., CREST - INSEE, Paris.
- Gordon, R. (1991), "The 'New Macroeconomic' a decade later", European Economic Review, vol.35,4.
- Gosling, A., Institute for Fiscal Studies, London.
- Government of the Russian Federation (various issues, 1992-95), Russian Economic Trends, Quarterly issues and monthly updates with the assistance of CEP-LSE under the TACIS programme. Whurr Publishers.
- Grandmont, J.-M. (1985), "On endogenous competitive business cycles", Econometrica, vol. 53, 995-1045.
- Grandmont, J.-M. (1992), "Transformation of the commodity space, behavioural homogeneity and the aggregation problem", Journal of Economic Theory, 57, 1-35.
- Grandmont, J.-M. and G. Laroque (1986), "Stability, expectations and predetermined variables, in Essays in Honour of Edmond Malinvaud, vol. I, edited by P. Champsaur et al., M.I.T. Press, Cambridge, Mass.
- Gray, J. (1994), Post-communist societies in transition: a social market perspective, The Social Market Foundation, London.
- Greenaway, D., R.C., Hine, and C.R. Milner (1995), "Vertical and horizontal intra-industry trade: a cross industry analysis for the UK", forthcoming, Economic Journal, March.
- Gregg, P., National Institute for Economic and Social Research, London.
- Greenwald, B. and J. Stiglitz (1993), "New and old Keynesians", Journal of Economic Perspectives, vol. 8, Number 1, 23-44.
- Grosfeld I. and P. Hare (1991), "Privatisation in Hungary, Poland and Czechoslovakia", CEPR Discussion Paper N° 544, April.
- Grossman, G.M. and E. Helpman (1994), "Endogenous innovation in the theory of growth", Journal of Economic Perspectives, vol. 8,1, 23-44.
- Guesnerie, R. (1986), "Stationary sunspot equilibria in an N-commodity world", Journal of Economic Theory, 40(1), 103-27.
- Guesnerie, R. and M. Woodford (1991), "Stability of cycles with adaptive learning rules", in Equilibrium Theory and Applications, ed. W.A. Barnett et al., Cambridge University Press, 111-34.
- Guesnerie, R. (1995a), "The genealogy of modern theoretical public economics: from the first best to second best", forthcoming in European Economic Review.
- Guesnerie, R. (1995b), A contribution to the pure theory of taxation, Econometric Society Monographs, Cambridge University Press, Cambridge.
- Hagedoorn, J. and J. Schakenraad (1993), "A comparison of private and subsidized R&D partnerships in the European information technology industry", Journal of Common Market Studies Volume 31, Number 3, 373-390, September.
- Hall, S., S.G.B. Henry and J.B. Wilcox (1990), "The long run determination of UK monetary aggregates" in S.G.B. Henry and K.D. Patterson, Economic Modelling at the Bank of England, Chapman and Hall.
- Hall, S. and A. Milne (1991), "The relevance of P-star analysis to UK M4", London Business School, Discussion paper no. 21.
- Hall, R.E. (1986) "Market structure and macroeconomic fluctuations," Brookings Papers on Economic Activity, 285-322, Fall.
- Hall, R.E. (1988) "The relation between price and marginal cost in U.S. industry", Journal of Political Economy Volume 96, Number 5, 921-947, October.
- Hamermesh, D.S. (1993), Labour Demand, Princeton.
- Hammond, P.J. (1990), "Theoretical progress in public economics: a provocative assessment", Oxford Economic Papers, 42, 6-33.
- Hare, P. and G. Hughes (1991), "Competitiveness and industrial restructuring in Czechoslovakia, Hungary and Poland" CEPR Discussion Paper N° 543, April.
- Harhoff, D. and H. König (1993), "Neuere Ansätze der Industrieökonomik - Konsequenzen für eine Industrie- und Technologiepolitik" in Meyer-Kramer (ed.) Innovationsökonomik und Technologiepolitik, 47-67, Physika Verlag, Heidelberg.
- Harkness, S., University College London and Centre for Economic Performance.
- Harsanyi, J. and R. Selten (1988), A General Theory of Equilibrium Selection in Games, M.I.T. Press, Cambridge, Mass.
- Hartog, J., University of Amsterdam.
- Haskel, J. and C. Martin (1994), "Capacity and competition: empirical evidence on UK panel data", Journal of Industrial Economics Volume 42, Number 1, 23-44, March.
- Hassink, Free University of Amsterdam.
- Hendry, D.F. and G. Mizon (1992), "Evaluating dynamic econometric models by encompassing the VAR" in P.C.B. Phillips (ed.), Models, Methods and Applications in Econometrics, Basil Blackwell, Oxford.
- Hildenbrand, W. (1983), "On the law of demand", Econometrica, 51, 997-1019.
- Hildenbrand, W. (1994), Market Demand, Princeton University Press.
- Hildreth, A., University of Essex.
- Hills, J., London School of Economics.
- Hine, R.C. "Inter- and intra-industry employment effects of trade expansion: does inter-industry trade growth cause more adjustment problems than intra-industry trade expansion?"

## REFERENCES

- Holmström, B. and R. Myerson (1983), "Efficient and durable decision rules with incomplete information", *Econometrica*, 51, 1799-1819.
- Holmström, B. and J. Tirole (1993), "Market liquidity and performance monitoring", *Journal of Political Economy* Volume 101, Number 4, 678-709, August.
- Hughes, G., University of Edinburgh.
- Hughes, K. and C. Oughton, (1992), "Foreign and Domestic Multinational Presence in the UK", *Applied Economics* Volume 24, Number 7, 745-49, July.
- Hughes, K. and C. Oughton, (1993) "Diversification, Multi-market Contact and Profitability", *Economica* Volume 60, 203-24, May.
- IMF, World Bank, OECD, EBRD (1990), *The Economy of the USSR*, Washington.
- Ioannides, Y.M. (1990), "Trading uncertainty and market form", *International Economic Review*, vol. 31,3 (August), 619-38.
- Ioannides Y.M. (1995), "Evolution of Trading Structures", Mimeo, Dept. of Economics, Tufts University, Medford, MA.
- Jackman, R., Centre for Economic Performance and London School of Economics.
- Jager, H. (1994), "Inflation control in small EMS countries: the case of Belgium and the Netherlands", Tinbergen Institute, University of Amsterdam, (SPES-0053).
- Jenkins, P., British Household Panel Study, University of Essex.
- JESSI Office, *Why JESSI?* Elektrastraße 6a, D-8000 Munich 81, Germany, no date.
- Johansen, P., University of Umeå.
- Johansen, S. (1988), "Statistical analysis of cointegration vectors", *Journal of Economic Dynamics and Control*, vol.12, 231-54.
- Johansen, S. and K. Juselius (1988), "Hypothesis testing for cointegration vectors with an application to the demand for money in Denmark and Finland", Working Paper no. 88-05, University of Copenhagen.
- Joint Economic Committee, Congress of the United States (1993), *The former Soviet Union in Transition*, 2 vol., Washington.
- Jordan, J.S. (1982), "The competitive allocation process is informationally efficient uniquely", *Journal of Economic Theory*, 28, 1-18.
- Joskow, P.L., R. Schmalensee, and N. Tsukanova (1994), "Competition policy in Russia during and after privatization," *Brookings Papers on Economic Activity Microeconomics*, pp. 301-381.
- Kapteyn, A., Tilburg University - CENTER
- Kanbur, R. and M. Keen, (1993), "Jeux sans frontières: tax competition and tax coordination when countries differ in size", *American Economic Review*, 83, 877-92.
- Karp, L. and S. Stefanou (1993), "Domestic and trade policy for central and east European agriculture", CEPR Working Paper 814 (November).
- Kenen, P. (1969), "The theory of optimum currency areas: an eclectic view" in R. Mundell and A. Swoboda (eds.), *Monetary Problems in the International Economy*, University of Chicago Press, Chicago.
- Keuzenkamp, H. and F. Van der Ploeg (1991), "Savings, investments, government finance and the current account: the Dutch experience" in G. Alogoskoufis, L. Pademos and R. Portes (eds.), *External Constraints on Macroeconomic Policy: The European Experience*, Cambridge University Press, (SPES-000016).
- Kirman, A.P. (1993), "Ants, rationality and recruitment", *Quarterly Journal of Economics*, (February), 137-56.
- Kirman A. and M. Dahl (1996), *(The Financing of) Economic Research in Europe*, European Commission and European University Institute, Florence.
- Kirman, A.P., C. Oddou and S. Weber (1986), "Stochastic communication and coalition formation", *Econometrica*, (January).
- Kirman, A.P. and M. Salmon (eds.) (1995), *Learning and Rationality in Economics*, Basil Blackwell, Oxford.
- Klemperer, P. (1992), "Competition when consumers have switching costs: an overview", Oxford Applied Economics Discussion Paper Series No. 142, November.
- Klevmarken, A., Uppsala University.
- Koning, R., Tinbergen Institute, Amsterdam.
- Kolm, S.Ch. (1987), "Public economics" in J. Eatwell, N. Milgate and P. Newman, (eds.), *The New Palgrave: A Dictionary of Economics*, London, MacMillan.
- Kolodko, G. (1992), "From output collapse to sustainable growth in transition economies. The fiscal implications", International Monetary Fund (December).
- Kolodko, G., J. Pisany-Ferry, T. Bauer and M. Cuddy (1993), *Evaluation of the ACE Programme (1990-1992)*, Commission of the European Communities, Research evaluation, Report no. 55, EUR 15093 EN.
- Kooreman, P., The Netherlands.
- Kornai, J. (1990), *The road to a free economy. Shifting from a socialist system: the example of Hungary*, W.W. Norton, New York.
- Kornai, J. (1990), *The road to a free economy. Shifting from a socialist system: the example of Hungary*, W.W. Norton, New York.
- Kornai, J. (1994), *Highways and Byways - Studies in Reform and Post-Communist Transition*, MIT Press.
- König, H. H.S. Buscher and G. Licht (1994) "Employment, investment and innovation at a micro level", forthcoming as part an OECD publication on Employment, Investment and Savings, Paris.

## REFERENCES

- König, H. and M. Lechner (1994), "Some recent developments in macroeconometrics - a survey", Swiss Journal of Economics and Statistics vol. 130,3, 299-331.
- Krasa, S. and N.C. Yannelis (1994), "The value allocation of an economy with differential information", Econometrica, 62,4, 881-900.
- Kramarz, F., CREST - INSEE, Paris.
- Kremers, J. and T. Lane (1990), "Economic and monetary integration and the aggregate demand for money in the EMS" International Monetary Fund (Washington). Staff Papers, vol. 37, 777-805.
- Krugman, P. (1991), "Target zones and exchange rate dynamics,2", Quarterly Journal of Economics, 669-82.
- Kydland, F. and E.C. Prescott (1977), "Rules rather than discretion: the inconsistency of optimal plans", Journal of Political Economy, vol. 85,3, 473-91.
- Laffont, J.J. (1994), "The new economics of regulation 10 yrs after", Econometrica, 62,3, 507-37.
- Laffont, J.J. and J. Tirole, (1994), A Theory of Incentives in Procurement and Regulations, Cambridge, Ma., MIT Press.
- Laffont, J.J. and J. Tirole, (1994), "Access pricing and competition", European Economic Review Volume 38, Number 9, 1673-1710, December.
- Laisney, F., University of Strasbourg and Zentrum für Europäische Wirtschaftsforschung, Mannheim.
- Laski, K. (1991), "Transition from command to market economies in central and eastern Europe: first experience and questions", WIIW, Vienna.
- Laski, K. et al. (1993), "Transition from the command to the market system: what went wrong and what do we do now?", WIIW, Vienna.
- Layard, R., Centre for Economic Performance and London School of Economics.
- Levin, R. C., A.K. Klevorick, R.R. Nelson, and S.G. Winter (1988), "Appropriating the returns from industrial R & D", Brookings Papers on Economic Activity, 783-820.
- Lindgren K. (1991), "Evolutionary Phenomena in Simple Dynamics", in Artificial Life II, C.G.Langton, C. Taylor, J.D. Farmer, & S. Rasmussen (eds), Addison-Wesley, Redwood City, CA.
- Lindgren, K. and M.G. Nordahl (1994), "Evolutionary dynamics in spatial games", Physics D, 75, 292-309.
- Long, J.B. and C.I. Plosser (1983), "Real business cycles", Journal of Political Economy, vol. 91,1, 39-69.
- Lubrano, M., GREQAM, Marseille.
- Lucas, R.E. (1976), "Econometric policy evaluation: a critique", Journal of Monetary Economics, Suppl. Series, I, 19-46.
- Lucas, R.E. (1988), "On the mechanics of economic development", Journal of Monetary Economics, vol. 22,1, 3-42.
- Lund J. and M. Dahl (1992), Survey among the Researchers in the Stimulation Plan for Economic Science - SPES, Commission of the European Communities, Research evaluation, EUR 14580 EN, Brussels.
- MacDonald, R. (1992), "Echange rate economics, a survey", International Monetary Fund (Washington). Staff Papers, vol. 39, 1-57.
- MacDonald, R. and M.P. Taylor (1991), "The monetary approach to the exchange rate: long run relationships and coefficient restrictions", Economics Letters, vol. 37, 179-85.
- Machin, S., Centre for Economic Performance and University College London.
- Machin, S. and J. Van Reenen (1990), "Profit margins, conjectures and collusive behavior in U. K. manufacturing firms", mimeo, December.
- Magnac, T., CREST - INRA, Paris.
- Malinvaud, E. (1977) The Theory of Unemployment Reconsidered, Blackwell, Oxford.
- Mankiw, N.G. (1993), "Symposium on Keynesian economics today", The Journal Economic Perspectives, vol. 7,1, 3-4, Winter.
- Mankiw, N.G. (1990), "A quick refresher course in macroeconomics", Journal of Economic Literature, vol. 28,4, 1645-60.
- Mankiw, N.G. (1989), "Real business cycles: a Keynesian perspective" Journal of Economic Literature, vol. 3,3, 79-90.
- Mankiw, N.G. (1985) "Small menu costs and large business cycles: a macroeconomic model", Quarterly Journal of Economics, vol. 100,2, 529-38.
- Manning, A., Centre for Economic Performance and London School of Economics.
- Martin, S. (1993a), Advanced Industrial Economics, Blackwell, Oxford.
- Martin, S. (1993b), "Endogenous firm efficiency in a Cournot principal-agent model", Journal of Economic Theory, Volume 59, Number 2, 445-50, April.
- Martin, S. (1993c), "On the divergence between the legal and economic meanings of collusion", mimeo, November.
- Martin, S. (1995a), "Public policies toward cooperation in research and development: the European Union, Japan, the United States," in W. Comanor, G. Akira and L. Waverman, (editors), Competition Policy in a Global Economy, Routledge, forthcoming.
- Martin, S. (1995b), "R&D Joint Ventures and Tacit Product Market Collusion", European Journal of Political Economy, forthcoming.
- Martin, S. and L. Philips (1995), "Product differentiation and the passthrough of exchange rates to domestic prices," in Market Evolution: Competition and cooperation, A. van Witteloostuijn, (ed.), 147-161, Kluwer Academic Publishers, Dordrecht.

## REFERENCES

- Martin, S. and A. Schrader (1995), "Vertical market participation", mimeo, November.
- Masson, P. and J. Méhitz (1990), "Fiscal policy independence and in a monetary union", CEPR Discussion paper 414, (SPES-000017).
- Masson, P. and M.P. Taylor (1992), "Common currency areas and currency unions: an analysis of issues", CEPR Discussion paper 617, (SPES-000017).
- Mavromaras, K., University of Newcastle
- Mayer, J. and X. Vives (1993), Capital Markets and Financial Intermediation, Cambridge University Press.
- McCormick, B., University of Southampton.
- McKinnon, R.L. (1963), "Optimum currency areas", American Economic Review, vol. 53, 717-25.
- McVicar, D., University of Southampton.
- Meghir, C., University College London and Institute for Fiscal Studies.
- Méhitz, J. (1991), "A suggested reformulation of the theory of optimal currency areas", CEPR Discussion Paper 590, (SPES-000017).
- Méhitz, J. and C. Bordes (1991), "The Macroeconomic Implications of Financial Deregulation", European Economic Review Volume 35, Number 1, 155-78, January.
- Meran G. and A. Prinz (1994), "National oder gemeinsame Mindestsicherung in Europa?", Freie Universität Berlin, Discussion Paper, Institut für Weltwirtschaftstheorie.
- Micklewright, J., European University Institute, Florence.
- Milgrom, P. (1995), "Putting game theory to work," 1995 Churchill Lecture, mimeo, March.
- Mirrlees, J.A. (1976), "The optimal structure of incentives and authority within an organization", Bell Journal of Economics Volume 7, Number 1, 105-31, Spring.
- Mizen, P. and E. Pentecost (1994), "Evaluating the empirical evidence for currency substitution: a case of the demand for Sterling in Europe", Economic Journal, vol. 104, Number 426, 1070-86.
- Monfort, A., CREST - INSEE, Paris
- Monticelli, C. and M.O. Strauss-Kahn (1992), "European integration and the demand for broad money", BIS Working Paper no. 18, Basle.
- Mortensen, D., North Western University, USA.
- Morgan, J.P. (1994), Risk metrics - technical document, 2nd ed. (November), New York.
- Mulkay, B. (1992), "Database on Belgian firms", September
- Muller, J. (1995), "Competition and Regulation in Telecommunications: Conference Report", Telecommunications Policy, Volume 19, Number 2, 161-64, March.
- Mullineux, A.W. and D.G. Dickinson (1992), "Equilibrium business cycles: theory and evidence", Journal of Economic Surveys, vol. 6, 4, 321-58.
- Mundell, R.A. (1961), "A theory of optimum currency areas", American Economic Review, vol. 51, 657-65, September.
- Mundell, R. (1995), "Great contractions in transition economies", Conference paper, Dubrovnik.
- Musgrave, R., (1987), "Public finance" in J. Eatwell, N. Milgate and P. Newman, (eds.), The New Palgrave: A Dictionary of Economics, Macmillan, London.
- Musgrave, R., and A. Peacock (eds.) (1958), Classics in the Theory of Public Finance, MacMillan, London.
- Muth, J.F. "Rational expectations and the theory of price movements", Econometrica, vol. 29,3, 315-35.
- Myrdal, G. (1957), Economic Theory and Underdeveloped Regions, Duckworth, London.
- Narendranathan, W. University of Warwick.
- NATO Economics Directorate (1993), Economic development in cooperation partner countries from a sectoral perspective, Brussels.
- NATO Economics Directorate (1994), Privatisation in NACC [North Atlantic Cooperation Council] Countries, Brussels.
- Nelson, R. and S. Winter (1982), An Evolutionary Theory of Economic Change, Harvard University Press, Cambridge, Mass.
- Nero, G. (1996), Intra-European airline competition: a theoretical and empirical analysis, Dissertation to be submitted to the Department of Economics, European University Institute.
- Neven, D., L.-H. Röller, and L. Waverman (1993), "Sunk in space: the economics of the European satellite industry and prospects for liberalization", Economic Policy: A European Forum Volume 8, 401-24, October.
- Neves, P., Bank of Portugal.
- Nickell, S., Oxford and Centre for Economic Performance.
- Nioche, J.-P. (1992), "The war of degrees in European management education", EFDM Forum, no. 1, 21-24.
- Nuti, D.M. (1995), "Corporate governance et actionariat des salariés" Economie Internationale, N° 62.
- Obstfeld, M. (1994), "International capital mobility in the 1990s", CEPR Discussion Paper 902.
- OECD (1991), The Transition to a Market Economy. Vol. 1: The Broad Issues. Vol. 2: Special Issues, Paris.
- OECD (1994), Competition policy and vertical restraints: franchising agreements, Paris.
- Oswald, A., Centre for Economic Performance and London School of Economics.
- Oxford Review of Economic Policy Volume 8, Number 3, Autumn 1992: "Corporate governance and corporate control".

## REFERENCES

- Pagano, M. and Roell, A. (1992), "Transparency and Liquidity : A Comparison of Auction and Dealer Markets with Informed Trading", LSE, Financial Markets Group, D.P. 150.
- Palme, M., Stockholm School of Economics.
- Peck, M.J. and T.J. Richardson (eds.) (1991), What is to be done? Proposals for the Soviet transition to the market, Yale University Press, New Haven and London.
- Pedersen, P., Centre for Labour Studies, Aarhus.
- Pestieau, P., (1994), "The current state and future directions of public finance", International Taxation and Public Finance.
- Pestieau, P., and H. Tulkens (1993), "Assessing and explaining the performance of public sector activities", FinanzArchiv, 50, 293-323.
- Pestoff, V.A. (1995), Institutional changes in basic social services in central and eastern Europe - an eleven nation overview, F. Ebert Stiftung and Cracow Academy of Economics, Cracow.
- Pfann, G., University of Amsterdam.
- Phelps, E.S. (1968), "Money-wage dynamics and labor market equilibrium", Journal of Political Economy, vol. 76,4, 687-711.
- Philips, L. (1995), Competition policy: a game-theoretic perspective, Cambridge University Press, Cambridge.
- Pissarides, C., Centre for Economic Performance and London School of Economics.
- Plosser, C. (1989), "Understanding real business cycles", Journal of Economic Perspectives, vol. 3,3, 51-78.
- Portes, R. (ed.) (1993), Economic Transformation in Central Europe: A Progress Report, CEPR and the European Commission, London and Brussels.
- Prescott, E. (1986), "Theory ahead of business cycle measurement", Carnegie-Rochester Conference Series on Public Policy, vol. 25, 11-44, Autumn.
- Pudney, S., Leicester University.
- Rebelo, S. (1991), "Long run policy analysis and long run growth", Journal of Political Economy, vol.99,3, 500-21.
- Rees, H., University of Bristol.
- Rees, R. (1993), "Collusive equilibrium in the great salt duopoly", Economic Journal Volume 103, No. 419, 833-848, July.
- Reitman, D. (1994) "Partial ownership arrangements and the potential for collusion", Journal of Industrial Economics Volume 42, Number 3, 313-322, September.
- Reker, C. and H.-D. Smeets (1994), "Adjustment pressures and adjustment processes in the machine tool industry: the role of intra-industry trade", October.
- Reneault, E., Toulouse.
- Rey, P. and J. Tirole (1986a), "Contraintes verticales: l'approche principal-agent", Annales d'Economie et de Statistique, 175-201, Jan./Mar.
- Rey, P. and J. Tirole (1986b), "The Logic of Vertical Restraints", American Economic Review Volume 76, Number 5, 921-39, December.
- Rey, P. and J.E. Stiglitz (1988), "Vertical restraints and producers' competition", European Economic Review Volume 32, Numbers 2-3, 561-68, March.
- Rey, P. and J.E. Stiglitz (1994), "The Role of Exclusive Territories in Producers' Competition", NBER Working Paper 4618, January.
- Reynolds, R.J. and B.R. Snapp (1986), "The competitive effects of partial equity interests and joint ventures", International Journal of Industrial Organization Volume 4, Number 2, 141-53, June.
- Rice, P., University of Southampton.
- Ridder, G., Tinbergen Institute and Free University of Amsterdam.
- Robin, J.M., CREST - INSEE and INRA, Paris.
- Robinson, P., London School of Economics.
- Roemer, J. (1994), A future for Socialism, Verso, London.
- Romano, R.E. (1994), "Double moral hazard and resale price maintenance", Rand Journal of Economics Volume 25, Number 3, 455-466, Autumn.
- Romer, D.C. (1989), "Staggered price setting with endogenous frequency of adjustment", NBER Working Paper Series, 992, Cambridge, Mass.
- Romer, D.C. (1993), "The new Keynesian synthesis", Journal of Economic Perspectives, vol. 7,1, 5-22.
- Romer, P.M. (1986), "Increasing returns and long-run growth", Journal of Political Economy, vol. 94,5, 1002-37.
- Romer, P.M. (1990), "Endogenous technical change", Journal of Political Economy, vol. 98,1, 71-102.
- Romer, P.M. (1994), "The origins of endogenous growth", Journal of Economic Perspectives, vol. 7,1, 5-22.
- Roscam Abbing, M. and J. Schakenraad (1991), "The European case of joint R&D activities in core technologies", in Rugman, A. M. and A. Verbeke, (editors), Global competition and the European Community, JAI Press, 203-37 Greenwich.
- Rose, A. and L. Svensson (1991), "Expected and predicted realignments: the FF/DM exchange rate during the EMS", CEPR Discussion paper 552, (SPES-000017).
- Rotemberg, J.J. and G. Saloner (1986), "A supergame-theoretic model of price wars during booms", American Economic Review Volume 76, Number 3, 390-407, June.
- Sachs, J. (1993), Poland's jump to the market economy, MIT Press, Cambridge mass.
- Saint-Paul, G., CERAS and DELTA, Paris.
- Sala-i-Martin, X. (1990), On Growth and States, Cambridge, Mass.

## REFERENCES

- Sala-i-Martin, X. and J. Sachs (1992), "Fiscal federalism and optimum currency areas: evidence for Europe and the United States", CEPR Discussion Paper 632, (SPES-000017).
- Salaheen, J., student, University College London.
- Sandmo, A., (1991), "Economists and the welfare state", European Economic Review, 35, 213-40.
- Sanfey, Centre for Economic Performance and London School of Economics.
- Sargent, T.J. (1993), Bounded Rationality in Economics, Clarendon Press, Oxford.
- Sargent, T. and N. Wallace (1975), "Rational expectations, the optimal monetary instrument, and the optimal money supply rule", Journal of Political Economy, vol. 83,2, 241-54.
- Saunders, C.T. (1994), The role of competition in economic transition and integration, WIIW, Vienna Macmillan, London.
- Schelbert, H. (1983), "Neue makroökonomik: Gegensätze und Gemeinsames" in Bombach, Gottfried et al. (Hrsg.), "Makroökonomik heute - Gemeinsamkeiten und Gegensätze", Schriftenreihe des Wirtschaftswissenschaftlichen Seminars Ottobeuren, Band 12, 83-107, Mohr, Tübingen.
- Schmalensee, R.C. (1978) "Entry deterrence in the ready-to-eat cereal industry", Bell Journal of Economics Volume 9, 305-27, Autumn.
- Schmidt-Søensen, Centre for Labour Studies, Aarhus.
- Schmitt, J., Centre for Economic Performance, London.
- Schneider H.K. et al. (1992) Evaluation of the Stimulation Plan for Economic Science - SPES (1989-92), Commission of the European Communities, Research evaluation, Report no. 50, EUR 14583 EN, Brussels.
- Schnitzer, M. (1994), "Dynamic duopoly with best-price clauses", Rand Journal of Economics Volume 25, Number 1, 186-196, Spring.
- Scott, J.A., R. Leicht and G. Wyatt (1994), "Reducing precision to achieve accurate economic models", Discussion Paper in Economics no. 94/10, Heriot-Watt University
- Seater, J. (1993), "Ricardian equivalence", Journal of Economic Literature, vol. 31,1, 142-90.
- Selten, R. (ed.) (1991), Game equilibrium models I. Evolution and game dynamics. II. Methods, morals, and markets. III. Strategic bargaining, Springer, Berlin; London and Tokyo.
- Servan-Schreiber, J.-J. (1967), Le défi américain, de Noë, Paris.
- Sharfstein, D.S. and J.C. Stein (1990), "Herd behaviour and investment", American Economic Review, 80,3, 465-79.
- Simon, H. (1982), Models of Bounded rationality, M.I.T. Press, Cambridge, Mass.
- Sinclair-Desgagné, B. (1994), "The first-order approach to multi-signal principal agent problems", Econometrica Volume 62, Number 2, 459-65, March.
- Sinn, S. (1991), "Measuring international capital mobility - a critical assessment of the use of saving and investment correlations", Institut für Weltwirtschaft, Kiel.
- Smith, N. Centre for Labour Studies, Aarhus.
- Smith, R., University of Bristol.
- Solnik, B. and F. Longin (1992), "Conditional correlation and integration of international financial returns", HEC-School of Management, CEPR, ESF Networking Paper, no. 37, (SPES-5005).
- Solow, R.M. (1957), "Technical change and the aggregate production function", Review of Economics and Statistics, vol. 39, 312-20.
- Stehmann, O. (1995), Network competition for European Telecommunications, Oxford University Press, Oxford.
- Stennek, J. (1994), "Does competition make firms more flexible? A study of limited managerial cognition", Journal of Economics & Management Strategy Volume 3, Number 2, 279-300, Summer.
- Stewart, M., University of Warwick.
- Stigler, G.J. and R.A. Sherwin (1985), "The extent of the market", Journal of Law and Economics Volume 28, Number 3, 555-585, October.
- Stiglitz, J. (1994), Whither Socialism?, Harvard University Press, Cambridge, Mass.
- Svensson, L. (1991), "Assessing target zone credibility: Mean reversion and devaluation expectations in the EMS", CEPR Discussion Paper 580, (SPES-000017).
- Szpiro, D. and G. Cette (1994), "Returns to scale in the French manufacturing industry," European Economic Review, Volume 38. No. 7, August, pp. 1493-1504.
- Sutton, J. (1991), Sunk costs and market structure, Massachusetts: MIT Press, Cambridge.
- Taylor, M.P. (1989), "Covered interest arbitrage and market turbulence: an empirical analysis", Economic Journal, vol. 99, 376-91.
- Taylor, J. (1980), "Aggregate dynamics and staggered contracts", Journal of Political Economy, vol. 88,1, 1-23.
- Thomas, J., University College, London.
- Tirole, J. (1991), "Privatization in Eastern Europe: incentives and the economics of transition", NBER Macroeconomics Annual MIT Press, 1991, 221-59, Massachusetts Cambridge.
- Treble, J., University of Bangor.
- Trognon, A., ENSAE - INSEE, Paris.

## REFERENCES

- Tullio, G., E. De Souza and P. Giucca (1994), "The demand for money functions in Europe and in Germany before and after the fall of the Berlin Wall" forthcoming in P. DeGrauwe, S. Micossi and G. Tullio (eds.), Inflation and Wage Behaviour in the EMS, Oxford University Press, forthcoming.
- Tullio, G., A. Steinherr and H. Buscher (1994), "German wage and price inflation before and after unification", (SPES-0053).
- United Nations-ECE (various years), Economic Survey of Europe, Geneva.
- United Nations-ECE (various issues), Economic Bulletin for Europe, Geneva.
- United States Treasury (1991), Modernising the Financial System, Commerce Clearing House Inc., Chicago.
- van den Berg, G., Tinbergen Institute and Free University of Amsterdam.
- van der Ploeg, F. (1992), "Unanticipated inflation and government finance: the case for an independent common central bank", Tilburg University Discussion paper, (SPES-000016).
- Vandille, G. (1991), "Foreign direct investment and capital movement liberalisation", CEPS, Brussels.
- Vanek, J (1970), The general theory of labor-managed market economies, Cornell University Press, Itacha, NY.
- van Hoose, D.D. (1988), "Deregulation and oligopolistic rivalry in bank deposit markets", Journal of Banking and Finance Volume 12, Number 3, 379-88, September.
- van Praag, B., University of Amsterdam.
- van Reenen, J., University College London, and Institute for Fiscal Studies.
- van Ours, J., Tinbergen Institute and University of Rotterdam.
- Vega-Redondo, F. (1994), "Expectations, drift, and volatility in evolutionary games" mimeo, Alicante.
- Venables, A.J. (1995), "Economic Integration and the Location of Firms", American Economic Review Volume 85, Number 2, 296-300, May.
- Vickers, J. (1985), "Pre-emptive patenting, joint ventures, and the persistence of oligopoly," International Journal of Industrial Organization Volume 3, Number 3, September , pp. 261-73.
- Vickrey, W., (1994), Public Economics, edited by R. Arnott, K. Arrow, A.B. Atkinson and J.H. Drèze, Cambridge, Cambridge University Press.
- Wadsworth, J., Centre for Economic Performance and National Institute for Economic and Social Research, London.
- Wadwhani, S., UK.
- Waldmann, R.J. (1991), "Implausible results or implausible data? Anomalies in the construction of value-added data and implications for estimates of price-cost markups", Journal of Political Economy Volume 99, Number 6, 1315-28, December.
- Walker, I., Keele University and Institute for Fiscal Studies, London.
- Ward, B.M. (1958), "The firm in Illyria: market syndicalism", American Economic Review, vol 48, 566-89.
- Wassenberg, A.F.P. (1991), "Strategic alliances and public policy in the European Community: the case of information technology" in Rugman, A. M. and A. Verbeke, (editors), Global competition and the European Community, 151-201, JAI Press, Greenwich.
- Webb, S., Institute for Fiscal Studies and University of Bath.
- Weber, A. (1991), "Time varying devaluation risk, interest differentials and exchange rates in target zones: empirical evidence from the EMS", CEPR Discussion paper 611, (SPES-000017).
- Weber, A. (1992), "EMS credibility", Economic Policy, (SPES-000016).
- Weber, G., University of Padova.
- Westergård-Nielsen, N., Centre for Labour Studies, Aarhus.
- Whitehouse, E., OECD, Paris.
- Wickens, M. (1992), "Fiscal policy and the Maastricht Conference", Tilburg University Working Paper, (SPES-000016).
- Winters, L.A. (ed.) (1995), Foundations of an Open Economy - Trade Laws and Institutions for eastern Europe, CEPR, London.
- Woittiez, I., University of Leiden.
- Wolthuis, H. and M.J. Goovaerts (1993), Reserving and Solvency in Insurance in the E.C., CAIRE, Catholic University of Leuven, Belgium.
- Wooders, M. (1990), "Equivalence of games and markets", Econometrica, 62, 1141-60.
- Woodford, M. (1990), "Learning to believe in sunspots", Econometrica, 58, 277-307.
- Wyatt, G.J., R.R. Leicht and A. Steele (1994a), "Qualitative and quantitative simulation of interacting markets", Discussion Paper in Economics no. 94/6, Heriot-Watt University
- Wyatt, G.J., R.R. Leicht and Allan Scott (1994b), "Qualitative modelling in Economics" Discussion Paper in Economics no. 94/11, Heriot-Watt University.
- Wyplosz, C. (1991), "Monetary Union and fiscal policy discipline", European Economy, (SPES-000017).
- Young, H.P. and D. Foster (1991), "Cooperation in the short and in the long run", Games and Economic Behaviour, 3, 145-56.
- Zentrum für Europäische Wirtschaftsforschung (ZEW) (1995), Innovationsverhalten der deutschen Wirtschaft. Ergebnisse der Innovationserhebung, Mannheim.



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