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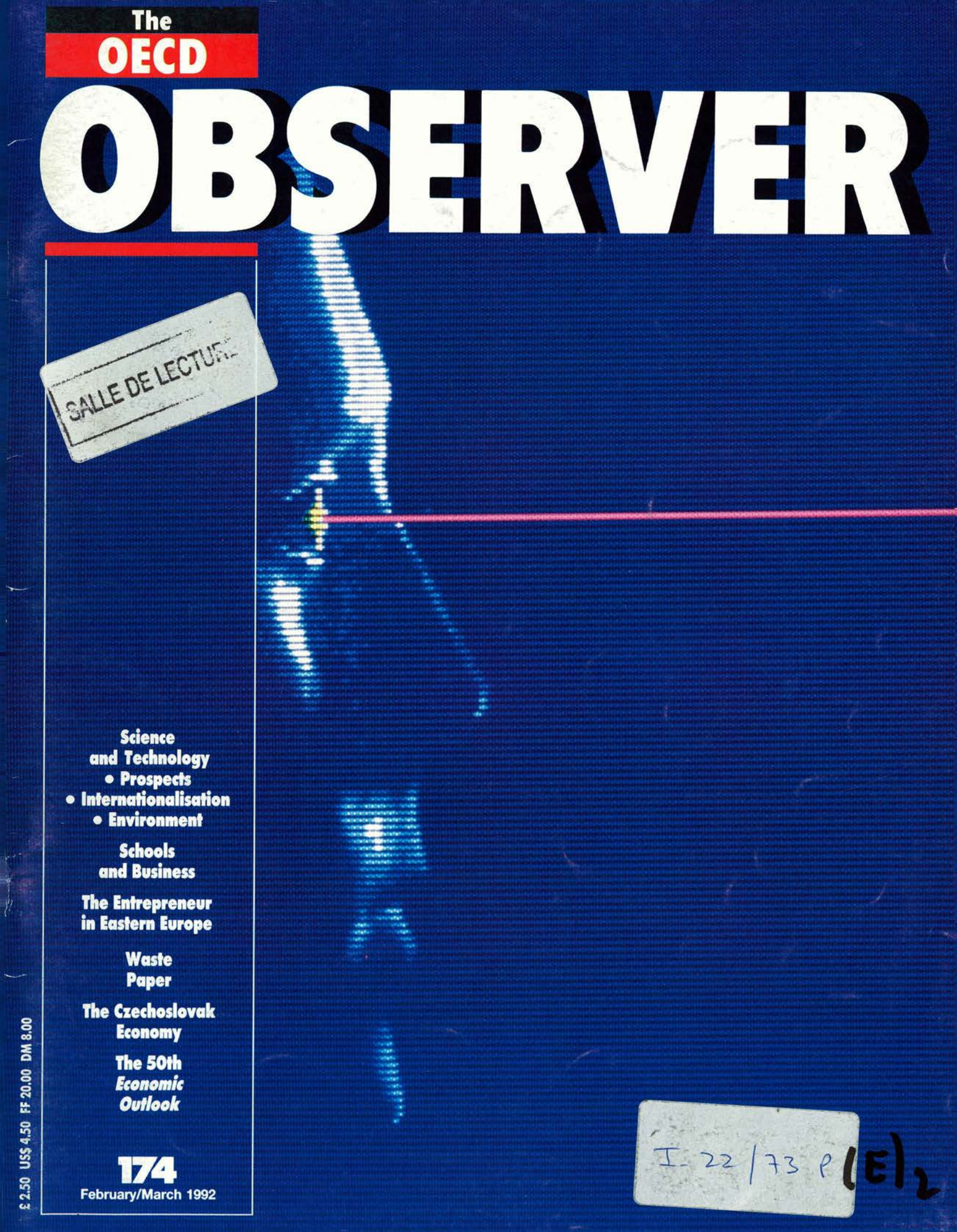

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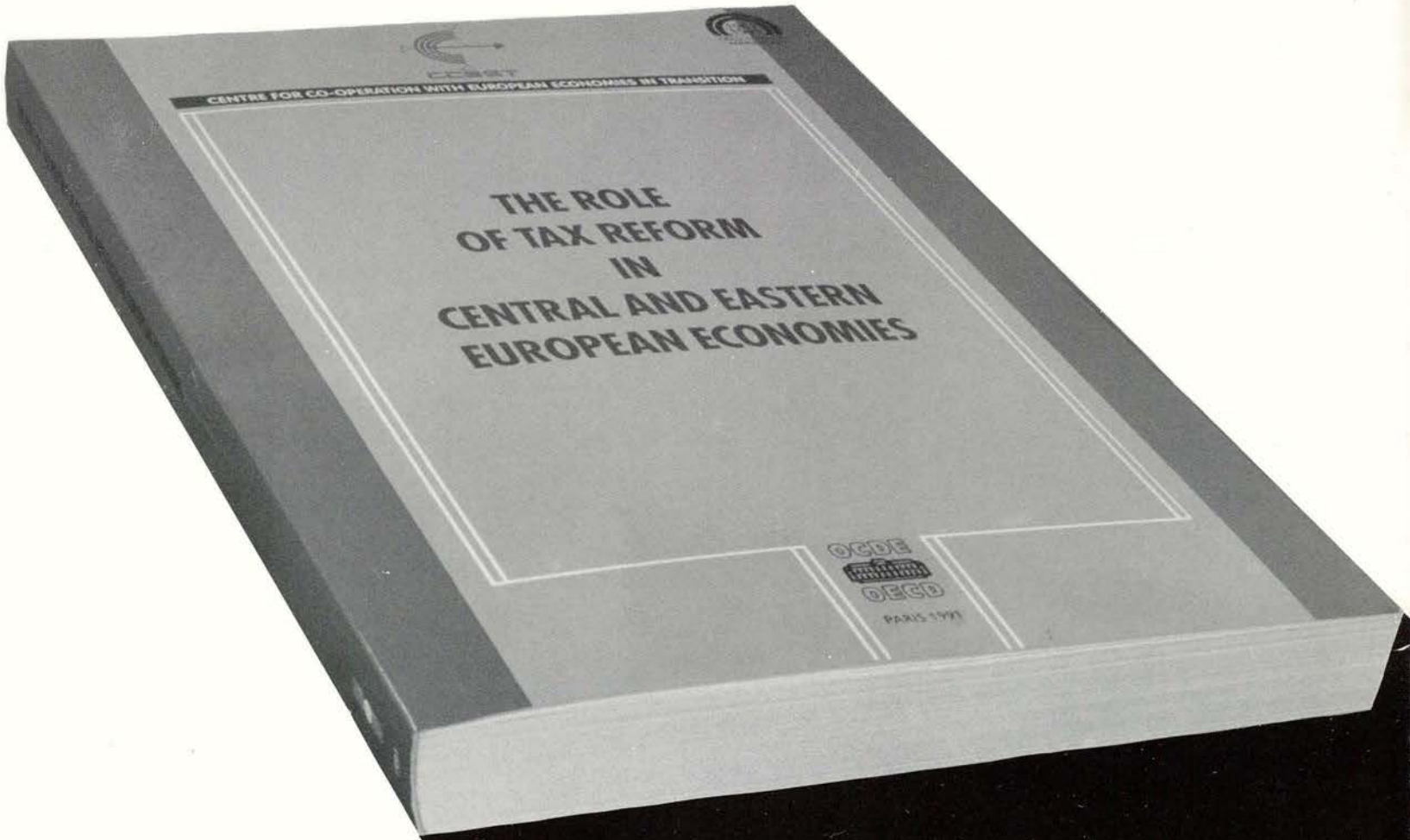

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The OECD OBSERVER

Published every two months in English and French by the ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT.

Editorial Address:
OECD Publications Service
Château de la Muette
2, rue André-Pascal
F 75775 PARIS CEDEX 16
Tel. (1) 45-24-82-00
Fax (33-1) 45 24 85 00

Single copies
£2.50 US$4.50 FF20.00 DM8.00

Annual Subscription Rates
£11.70 US$22.00 FF100.00 DM43.00
Tel. (1) 45-24-81-66

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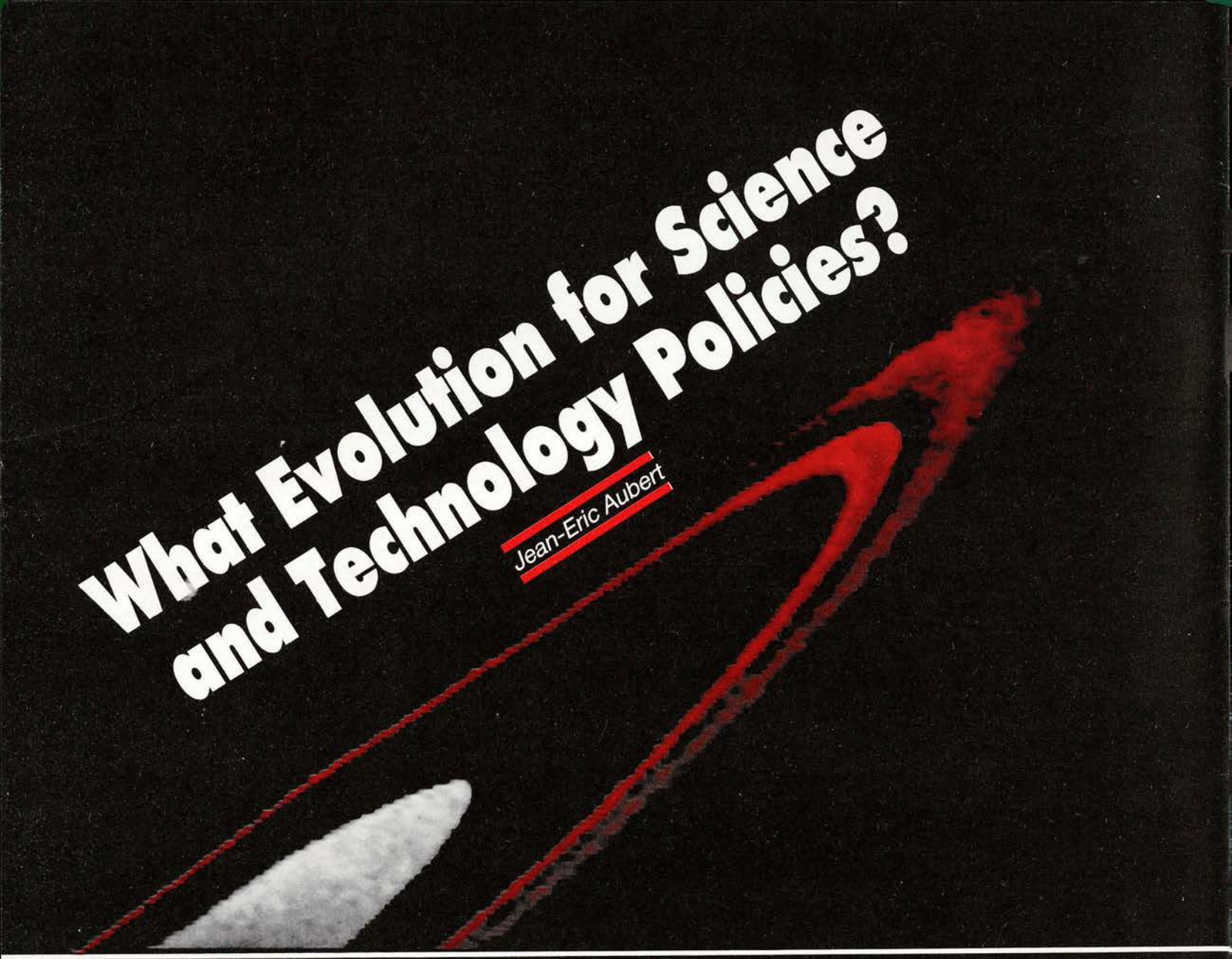
The third 'age' of science and technology policies has seen considerable advance in the understanding of how the processes of research and development work.



What Evolution for Science and Technology Policies?

Jean-Eric Aubert

***What are the present – and future – trends influencing the development of scientific and technical systems? What are the problems facing governments as a result, for instance, of their countries' particular characteristics? These issues are examined in the OECD's forthcoming* Science and Technology Policy Outlook.[1]**

Science and technology policies were shaped, broadly speaking, over two major periods. The 1950s and '60s were a sort of 'golden age' of science policy, when science was at the top of the agenda. Governments spared no expense, and research structures proliferated. Next came two decades of economic disruption, with keener competition between countries, and governments asking research and innovation to serve the interests of economic and industrial development first. Increasing weight was given to the technology side of policy.

Now, in the early 1990s, a third age seems to be beginning, with policies undergoing 'structural adjustment' in a radically changing world. This impression stems from many factors.

First of all, the resources that governments invest in research and development (R&D) are not growing – indeed, they are even decreasing in some countries as a proportion of overall spending. Other priorities – such as health, the environment or education – are coming to the fore. Consequently, in most OECD countries the private sector has substantially increased its share in both funding and conducting of research. While this development presents undeniable advantages, such as increased emphasis on the economic relevance of a project, it also raises problems when, for example, research becomes too application-oriented and fails to ensure adequate renewal of the knowledge base in the longer term. In many countries with a poor business climate, moreover, the private sector has stabilised or decreased its share of funding in absolute terms. Economic austerity,

Jean-Eric Aubert co-ordinated the preparation of the *Science and Technology Policy Outlook* in the OECD Directorate for Science, Technology and Industry.

at a time when research costs are constantly rising, makes the setting of priorities increasingly difficult for governments.[2]

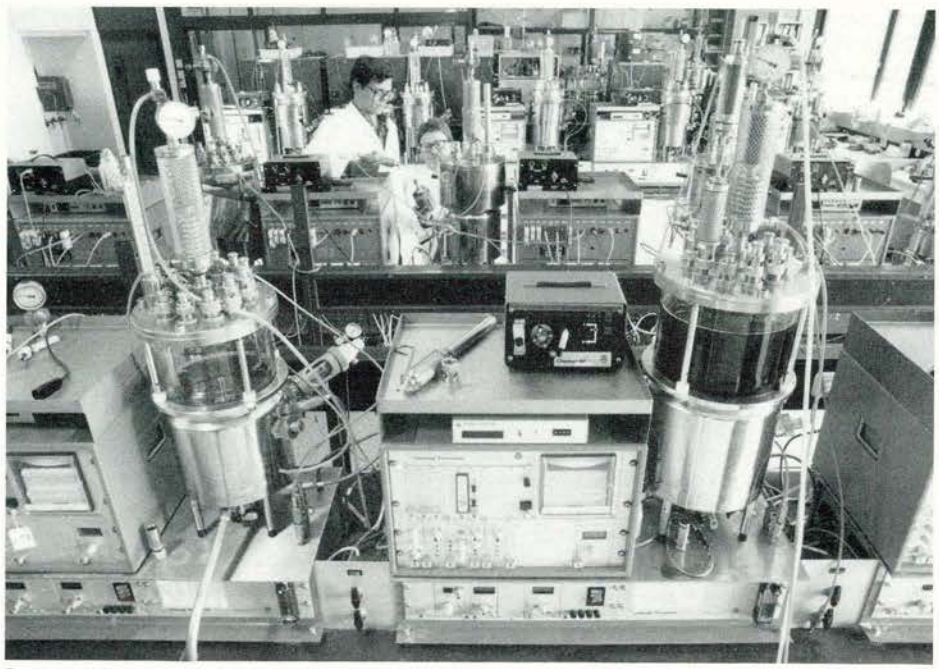
R&D Systems

Meanwhile, there has been noticeable headway in the understanding of how the processes of research and innovation work. Advances in science and technology appear to occur when different types of research – basic, applied or technological – are blended or when disciplines are combined, as in optoelectronics or bionics. Innovation depends on the interaction of a range of actors, such as researchers, industrialists and financiers. This insight has induced governments to take further steps towards facilitating the blending of abilities and promoting structural networking. There has been a proliferation of interdisciplinary research centres, technology transfer centres, centres of excellence, and the like. This remarkable trend, which is noteworthy in all countries, raises questions about the underlying rigidity of established public and academic research structures, which seem unable to adjust themselves to the changes taking place.

Another problem looming large on the horizon concerns the number of researchers and engineers. Incipient shortages are expected to worsen in a number of countries. General demographic trends mean that new generations of scientists will fail to replace the growing number who are retiring. As the gap widens, governments are having to take decisions on training and career management, and pay closer attention to the science and engineering 'brain drain' from developing countries and economies in transition.

Along with a general globalisation of the world's economies, the internationalisation of R&D is another major trend that governments are having to take into account.[3] In research, 'bibliometric' indicators for international publications show that internationalisation is growing continuously, becoming a major factor not only in smaller countries. Technological development is also following the same trend, which is transforming conditions for innovation everywhere. These tendencies, which will continue to grow, should lead to new approaches to the management of policy, where the focus is all too often exclusively domestic. Mechanisms for closer collaboration in R&D between countries have to be reinforced, and thought should be given to rules of the game to ensure the appropriate diffusion and distribution of knowledge and technologies across countries.

Finally, upheaval in eastern Europe and the Soviet Union is expected to have a major impact on science and technology policy in OECD countries, particularly through aid and co-operation schemes now being set up under both bilateral and multilateral agreements (with the European Community, for example). This support is important for the transformation of R&D systems, where whole sections are ill-suited to a market economy and there is a cruel lack of resources. Indirectly, there might be complex and unpredictable repercussions from any reduction in military R&D in OECD countries, where it forms a considerable share of the total R&D effort.



BASF

Demographic trends could lead to a shortfall in the number of researchers.

NASA

Environment and Society

Science and technology policy could not, of course, fail to acknowledge environmental concerns. Research institutions in most countries have been relatively slow in responding to such issues.[4] Government spending on environmental R&D did not rise significantly until the second half of the 1980s. There is still some ground to be made up, particularly in understanding global issues (climate change and the depletion of the ozone layer, for example) and coping with their implications in terms of adapting existing technologies. Promoting environmental research also means extending international co-operation, putting interdisciplinarity into practice and improving the image of this kind of research in terms of resource allocation and the careers of research staff. Similarly, the big technologies that affect everyday life – urban,

1. **Science and Technology Policy Outlook**, OECD Publications, Paris, forthcoming 1992.

2. **Choosing Priorities in Science and Technology**, OECD Publications, Paris, 1991; see also Gabriel Drilhon, 'Choosing Priorities in Science and Technology', **The OECD Observer**, No. 170, June/July 1991.

3. See pp. 7–11.

4. See pp. 12–15.

transport and energy systems – are likely to benefit from a larger R&D effort than the current low activity in most countries.

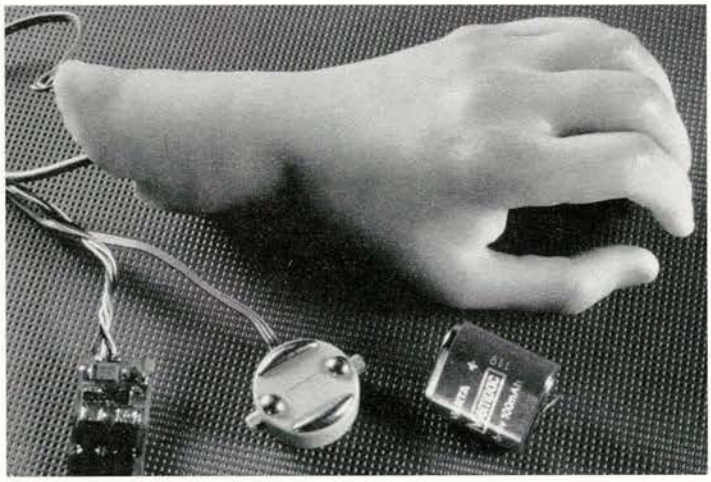
By and large, public opinion in OECD countries would prefer R&D to be directed more towards improving living conditions, health and education. People also appear to be more and more worried about the threats to man and nature alike from many modern technological developments. This concern raises the question of how to make the social assessment of technology more effective than at present. Marked progress has been made in areas like health and medicine, where many countries have set up mechanisms such as ethical committees to monitor the use of genetic engineering and other techniques (such as artificial methods of conception).

Competitiveness and Governments

What can government do to help a country effectively hold its own in the technological and industrial race now being run in the international arena?

How far should governments monitor the use of genetic engineering?

James Holmes/Science Photo Library



Bionic engineering offers examples of the kind of advance that can occur when different scientific disciplines are combined.

Science Photo Library

Some countries are enjoying sustained success whereas others are struggling to keep up with the leaders. This imbalance can readily be seen in long-term changes in the balance of trade for 'high-tech' products. Certain disparities in 'structural competitiveness' appear to be hard to remove. They stem from differences in the 'national innovation systems' governing how research, industry, education, finance and so on operate and interconnect.[5]

The countries with the best performance over the past ten or twenty years, achieving rapid technical change in a poor economic climate and keen competition, have the following features in common:

- a well-developed technical culture throughout society, and in particular in industry, with the emphasis not confined to developing scientific skills or training an elite
- a strong community ethos that manifests itself in corporate management, industrial co-operation and the involvement of various actors (unions, professional groups, and the like) in policy-making
- less openness to foreign penetration in the domestic economy (in business attitudes, for foreign capital, and so on) but nonetheless a receptivity to scientific and technical contributions from other countries
- a government that is well integrated in society, ensuring that community concerns are taken into account without changing the rules on markets or competition, and shouldering its full responsibilities in research, education and the environment.

These structural differences and their impact on competitive strengths are the focus of growing concern in OECD countries. There is also a growing interest in the possibility of closer harmonisation of practices and policies in OECD member countries in activities where potential sources of friction (subsidies, standards and patent systems, for example) could be minimised.

□ □

Science and technology policy has to be related both to national contexts and to global change. Governments must place their action more carefully in the social and institutional setting of their own countries and simultaneously make better use of science and technology policies to help solve the problems emerging in a rapidly changing world. ■

5. **Technology and the Economy – The Key Relationship**, OECD Publications, Paris, forthcoming 1992.

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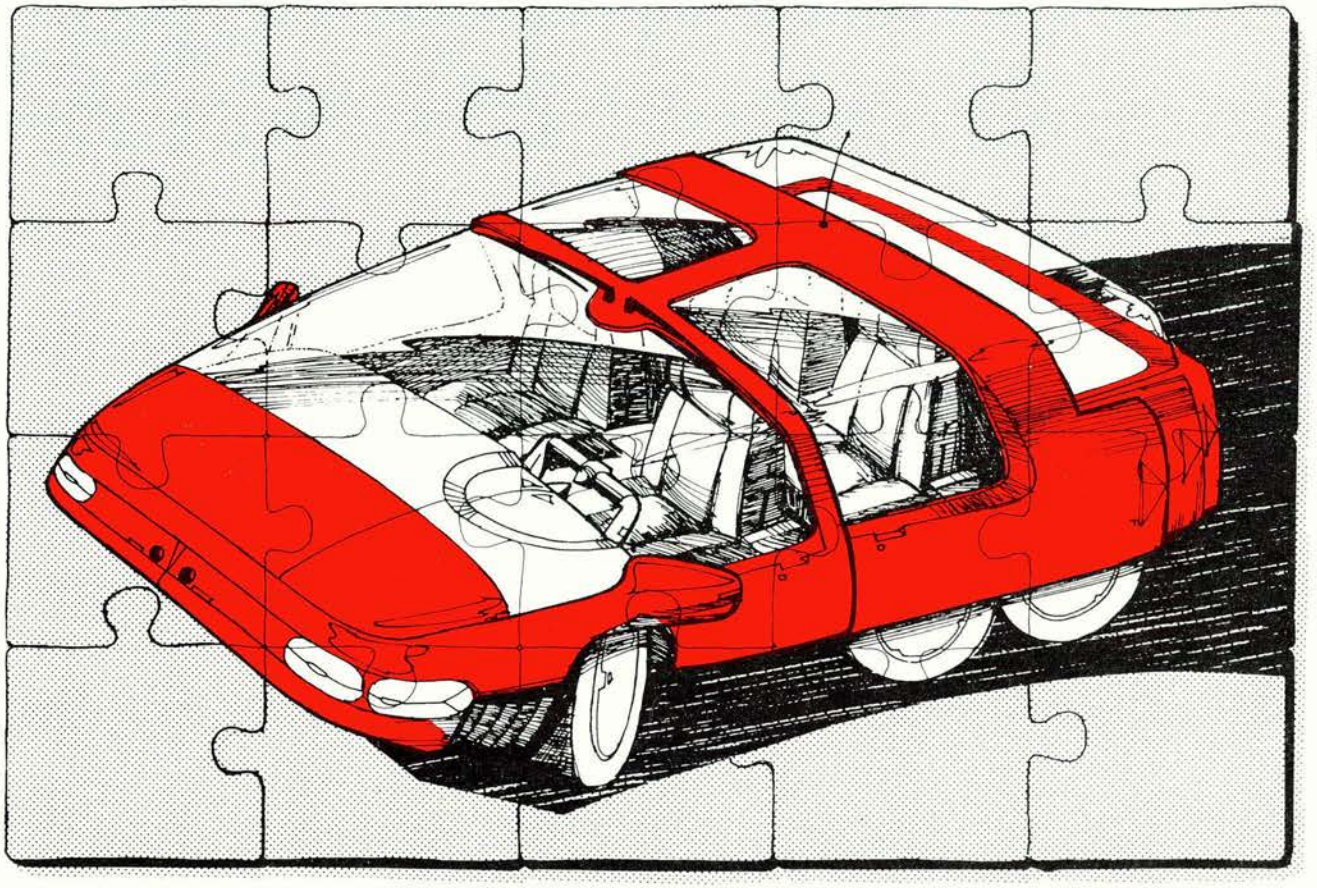
Internationalising R&D

Robert Brainard



Gérard Baldrati

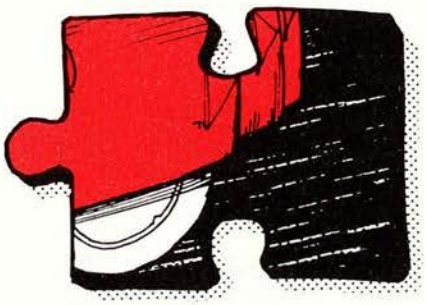
The internationalisation of research and development is an integral part of the globalisation of industrial activity in general. By sharing resources and expertise and spreading the costs and risks of R&D, companies can achieve a higher rate of technological progress working together than operating individually. Governments must ensure that their domestic policies and practices encourage this process rather than impede it.[1]

The growing internationalisation of industrial research and development is the product of a variety of corporate strategies. Multinational corporations that have traditionally dispersed their manufacturing operations amongst the different countries in which they operate were the first to start spreading their R&D effort around the world. Now more and more companies are finding it advantageous to locate R&D centres in foreign countries, collaborate with research organisations or academic institutions elsewhere, as well as pool their R&D resources in joint ventures with others, developing new products and processes in co-operation with firms that are in many cases their competitors. As a result, a rising volume of R&D is carried out in OECD countries by foreign companies. And in a more 'arm's-length' manner, firms are also exchanging and sharing technology with them.

The new corporate strategies that companies have adopted to compete in an increasingly technology-driven marketplace are only one facet of the wider movement towards economic and industrial globalisation. Just as fierce international competition has led multinational corporations to locate production facilities in countries where there are cost advantages, so the high costs of research and development are now leading companies to seek better

Robert Brainard is an economist in the Industry Division of the OECD Directorate for Science, Technology and Industry.

1. **Science and Technology Policy Outlook – 1991**, OECD Publications, Paris, forthcoming 1992.



returns from their R&D outlays by sharing and decentralising the burden. To that end they are now taking advantage of the particular expertise available in different countries, securing strategic benefits from spreading their R&D effort around the world, and deriving economic and technical gains from co-operating with other companies both at home and abroad.

Traditionally, companies, like governments, have not only been highly possessive about their technology, often having to defend themselves against pirates who make unauthorised use of it, but have also tended to concentrate R&D activity in their home country. There is a marked shift in firm strategy in the 1980s , as suggested by the growing proportion of industrial spending financed by foreign sources (Table 1).

Table 1
INDUSTRIAL R&D EXPENDITURES FROM FOREIGN SOURCES IN SELECTED OECD COUNTRIES
1978/79=1.0

	1981/82	*1984/85*	*1987/88*	*As % of National Expenditures 1988*
Italy	4.1	10.1	18.0	9.6
Canada	2.3	5.2	8.5	26.3
Norway	2.8	4.3	5.2	2.7
Sweden	1.9	3.0	4.7	2.1
United Kingdom	n.a.	3.1	4.4	16.9
Denmark	1.9	2.8	3.9	2.8
France	1.3	2.4	3.2	10.3
Japan	2.1	2.6	2.7	0.1
Germany[1]	0.7	1.0	1.2	1.5

n.a. not available
1. 1981/83, 1985, 1987
Source: STIID data bank, OECD

The main industries that are distributing their R&D budgets around the world are technology-intensive ones like chemicals, computers and office equipment and electronics. Much of the foreign R&D spending in Europe is being financed by US companies, which have allocated a growing proportion of their R&D budgets to other countries in recent years, especially since 1985. In 1988 they spent an estimated $6.2 billion on R&D in foreign countries, equivalent to 10.5% of their domestic R&D outlays (compared to 7.6% in 1985). But the traffic is not all one-way: by 1986 foreign companies were spending as much on R&D in the United States as American firms were spending abroad.

More and more companies now have research laboratories abroad, following the long-standing example of large multinationals like Hoechst, IBM and Philips. The decentralisation of R&D accelerated in the 1980s as part of the upsurge in foreign investment and acquisitions; much of the dispersion of research spending followed from the take-over of foreign companies with R&D laboratories. That was reinforced by the desire of parent companies to draw on the particular scientific and technological fortes of different countries and to exploit the special talents of local scientists and engineers.

One notable example of that trend is the internationalisation of the R&D effort of the UK pharmaceutical industry. Some 28% of the R&D workforce of British drug companies was employed abroad in 1988, compared to 14% in 1978, and for Glaxo in particular the proportion more than tripled, from 11% to 37%, during those ten years.

The Japanese electronics industry has followed a similar path, establishing 33 new R&D centres abroad between 1987 and 1990 – 21 in the United States, six in Europe and six in Asia. A score of different companies have pursued this strategy, with a few of the biggest ones (such as Matsushita and Sony) now having foreign centres in all three continents. Some American corporations, especially in the information technology sector, have established R&D centres outside the OECD area, mainly in Asia.

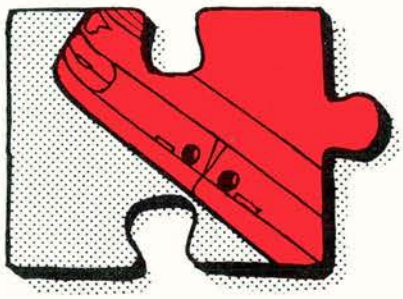
Cross-border links between industry and academic institutions also took root during the 1980s and seem to be growing. The nature of this collaboration ranges from the provision of consultancy services to the implementation of specific research programmes by universities for their corporate clients. In particular, companies in Japan, the United Kingdom, Germany and Canada commission a growing amount of research from the many large and well-equipped laboratories of US universities, although foreign funding of university research in the United States remains small when compared with funding from domestic sources. European universities are also developing a more commercial frame of mind and foreign companies are now seeking to take advantage of their skills. Japanese companies, for example, are creating new basic research laboratories close to universities in the United Kingdom;

IMPEDIMENTS TO INTERNATIONALISATION

Several broad areas of policy currently combine to impede the internationalisation of R&D programmes. Chief among these are:

- industrial policies aimed at protecting and supporting domestic firms engaged in 'strategically important' sectors[1]
- inadequate protection of intellectual property, especially in computer software and biotechnology
- technical standards and certification procedures, combined with the preference given to home-grown technology which can hamper innovation, raise costs and lead to damaging international rivalry (as high-definition television illustrates)
- constraints on foreign investment in the form of 'local-content' requirements, 'rules of origin', restrictions on foreign ownership in specific sectors, and above all the 'asymmetry of access' which is the principal cause of conflict in this area
- discrepancies between national competition policies, where harmonisation is required to prevent internationalisation reducing competition and increasing industrial concentration and ultimately collusion among firms. That could lead to the creation of 'technological cartels' controlling the supply and price of new technology, thereby slowing the pace of innovation.

1. See Barrie Stevens, 'Strategic Industries: What Policies for the 1990s?', **The OECD Observer**, No. 172, October/November 1991.



Hitachi and Toshiba have established facilities around Cambridge, while Sharp is planning to set up a large centre in the Oxford Science Park in 1992.

Co-operation among Competitors

In the past technology transfer between companies was essentially limited to licensing and sub-contracting. Closer inter-firm technological collaboration started to develop in the 1980s. Technological self-sufficiency has been displaced by technological interdependence, in which resources are shared to spread the rising costs and risks of innovation and assemble the growing array of knowledge and skills required for the development of new products and processes. Inter-firm linkages quickly spread across national borders, resulting in dense networks of international collaboration, especially in pre-commercial R&D.

Table 2
INTER-FIRM AGREEMENTS BY MODES OF CO-OPERATION

	Number of New Agreements			
	1973–76	*1977–80*	*1981–84*	*1985–88*
Joint ventures	64	112	254	345
Joint R&D	22	65	255	653
Technology exchange	4	33	152	165
Direct investment	29	168	170	237
Customer-supplier relations	19	47	133	265
One-directional technology flow	15	71	259	271
Total	153	496	1,223	1,936

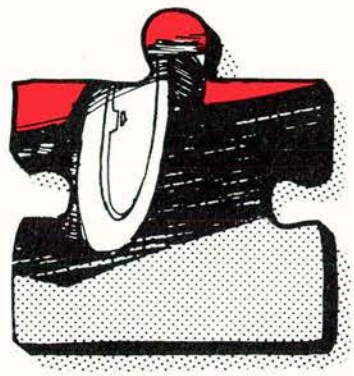
Source: John Hagedoorn,'Organisational Modes of Inter-firm Co-operation and Technology Transfer', *Technovation*, Vol. 10, No. 1, 1990, pp. 17–30.

This process took place at a time when international competition was intensifying and technology was becoming a crucial factor in competitiveness. Corporate strategies have succeeded in accommodating the apparent paradox of co-operation between competitors. Companies are able to derive the economic benefits of pooling resources in research and technology, but competing in applications and markets. Sets of companies are also able to co-operate within alliances or networks and compete against other alliances. This type of operation has become common in some high-technology sectors like telecommunications and aircraft engines, where the costs of developing a new generation of technology have become prohibitive for any individual corporation, however large.

Table 2 gives an indication of the growth in the different patterns of co-operation between 1973 and 1988 (although the total numbers of agreements concluded are far larger than the figures given). It shows that over 85% of agreements were concluded in the 1980s, and that joint ventures and jointly conducted R&D – the two modes involving the largest degree of interdependence – now represent over half the current instances of inter-firm co-operation.

Collaboration in R&D started with co-operation among companies within the same country before spreading across national boundaries, but cross-border linkages are now more numerous. A breakdown of national and international agreements in three central areas of advanced technology – information technology, biotechnology and new materials – is given in Table 3 for US, European and Japanese companies. It reveals that companies from all three regions have concluded more agreements with foreign firms than with companies in their home countries (although the number of intra-Japanese agreements is probably underestimated) and that there is a particularly high proportion of international agreements in information technology and new materials.

US firms are involved in some 85% of the nearly 1,900 international agreements, compared to 65% for European companies and 40% for the Japanese. US-



Europe links are the most numerous, followed by US-Japan and Europe-Japan partnerships, which suggests that US industry plays the leading role in the internationalisation of R&D activities and is the main source and disseminator of new technology. (Table 3 excludes a further 350 national and international agreements involving enterprises in other countries, a large proportion of which are between companies in the three main regions – the United States, Japan and Europe – and firms in the Newly Industrialising Economies of the Far East.)

Co-operation amongst companies from different European countries has increased substantially in recent years, partly on account of the European Community's JESSI, ESPRIT and EUREKA programmes of scientific and industrial research. The 'pre-competitive' R&D projects spawned by these programmes or initiated separately by the EC have brought together mainly European companies, academic institutions and public research establishments that would not have collaborated otherwise, funding basic research in sectors such as information technology, biotechnology and new materials that might have been uneconomic for the private sector to undertake alone. The creation of these frameworks for co-operation has also led companies to establish independent linkages with other firms.

The most developed, intricate and international structure of collaborative networks has emerged in information technology. The density of these linkages increased considerably during the 1980s; the number of companies with five or

more agreements rose from eight in the first half of the decade to 44 in the second half, while the ten firms with the most agreements in 1980–84 had concluded an average of 45 then and nearly 100 in 1985–89. During the decade many US and European companies expanded and diversified their technological co-operation from a predominantly regional association to a more international dimension. There was also an increase in alliances involving three or more companies from different countries or regions.

In biotechnology, corporate co-operation is less internationalised; collaboration is more regional in nature, inter-firm linkages are less dense, and at an international level they tend to put small biotechnology firms into bed with large multinational chemical groups.

Implications for Government Policy

This internationalisation of technology is expected to continue in the coming years, bringing smaller companies into the game alongside the big players as the opportunities narrow for those which have already established a wide range of co-operative R&D arrangements. Apart from the inherent constraint of diminishing possibilities, there is another major impediment to the process in the shape of the panoply of national policies and practices designed to protect domestic markets and shield domestic producers from international competition. These measures range from country-specific technical standards, certification procedures and public procurement practices to 'managed trade', foreign investment restrictions and incentives for the development of 'strategic' technologies by domestic companies.

Table 3
NUMBER OF NATIONAL AND INTERNATIONAL INTER-FIRM AGREEMENTS

	Information Technology	*Bio-technology*	*New Materials*
International agreements			
United States-Western Europe	599	245	133
Japan-United States	406	155	94
Western Europe-Japan	177	38	49
United States	1,005	400	227
Western Europe	776	283	182
Japan	583	193	143
National agreements			
United States	707	428	139
Western Europe	509	233	118
Japan	95	58	88

Source: John Hagedoorn and Jos Schakenraad, *New Explorations in the Economics of Technical Change*, Pinter Publishers, London, 1990

But the internationalisation of technology is something to be encouraged, since it is widely regarded as potentially a 'positive sum' development. That is not only because it increases the opportunities for innovation and improves the diffusion of new technologies; it also generates cost savings and improves allocation of human and financial resources both nationally and internationally. Yet there are costs, such as diminished technological and economic independence for countries through the international integration of the corporate sector.

To formulate policies for exploiting the potential technological and economic gains of internationalisation, governments have to determine where 'national interest' lies in an era of transnational integration of industrial and economic activities. It is significant that there is an apparent divergence between the global strategies of companies and the national policies of governments; indeed, they frequently seem to be at cross-purposes. Yet the respective objectives of the nation-state and multinational industry can be reconciled.

□ □

The science and technology policies of OECD countries at present tend to have an intrinsic insular bias. To offset it, priority should be given to developing international collaboration in pre-commercial R&D and to promoting technological activities that combine resources and complementary technical capabilities, with particular emphasis on 'generic technologies'. Governments should also monitor R&D activities and technological progress in other countries and facilitate technology and data transfer through reciprocal agreements. They could also play a leading role as 'clearing houses' for disseminating foreign scientific and technical information to domestic users.

Indeed, as well as actively promoting the process of internationalisation, governments must ensure that they are not at the same time pursuing policies which impede it. That calls, above all, for the further international harmonisation of national policies and practices. ■

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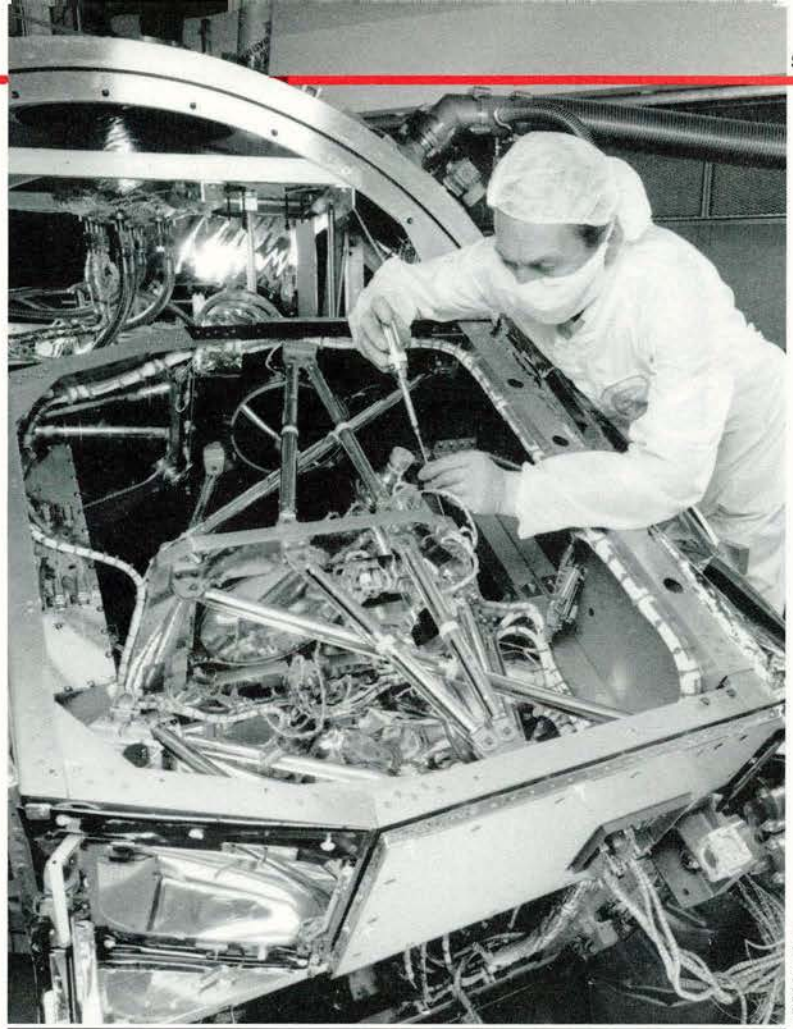


COI London

This satellite-mounted sounder will allow an analysis of the ozone layer.

Science, Technology and the Environment

Martin Brown

Science and technology have played a central part in the shift towards environmental concerns over the past two decades. Yet there is widespread public ambivalence to its role. And although OECD governments have come to see a considerably larger role for research and development in their emerging environmental policies – which in turn raises problems of organisation – this shift of views has so far not been fully reflected in the financing of environmental R&D.[1]

Several separate issues can be identified in emerging environmental concerns. First, the rapid growth of population and economic activity of the past five decades has enormously swollen quantities of pollutants, while the growth of the chemical and nuclear industries has produced the new phenomenon of micro-toxicity (through dioxin and radio-active nuclear waste, for example). Moreover, the focus on local problems has shifted to regional, cross-border and, more and more, to global ones. More generally, government policy is concentrating on prevention rather than cleaning-up and, increasingly, on the notion of 'sustainable development'.

Martin Brown works on science, technology and environment issues in the OECD Directorate for Science, Technology and Industry.

1. **Environmental Change and S&T Institutions**, OECD Publications, Paris, forthcoming 1992.

These trends pose problems for environmental research. First, despite massive long-term uncertainties and the possibility of irreversible ecological disequilibria, advice on the direction of research and development (R&D) is required now. Second, no set of criteria has emerged (for sustainable development, for example) which would allow the co-ordination of priorities. Third, divergent attitudes to technology – 'optimism' versus 'pessimism' – are not easily resolved between the science and technology (S&T) 'community', public opinion, business and governments. Fourth, governmental contributions to environmental research are low, particularly in relation to its accepted aims and to the enormous amount contributed by business. And lastly, the R&D required is increasingly international, yet hitherto it has mostly been national.

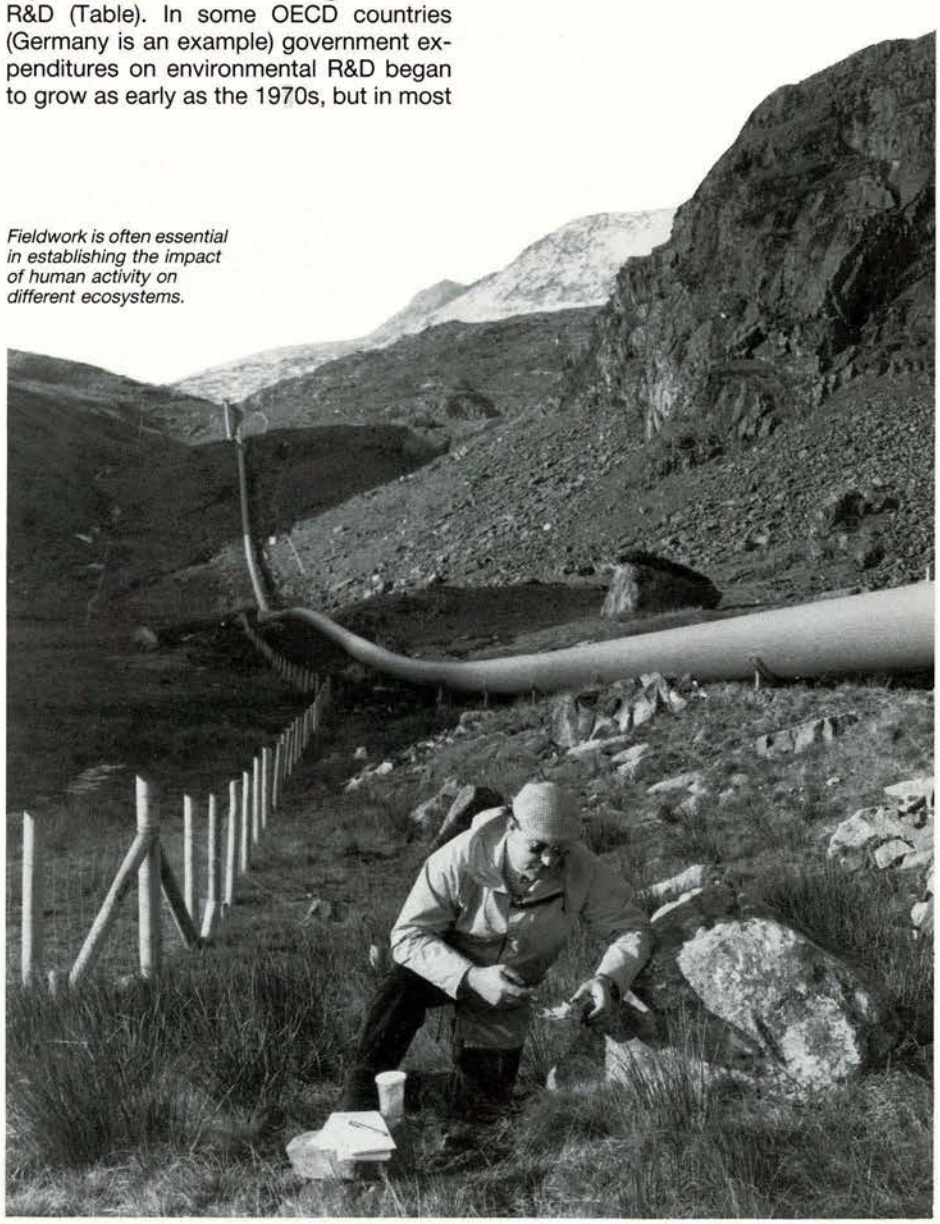
Research Patterns

Official funding remains very low, generally not more than 3% of total government R&D (Table). In some OECD countries (Germany is an example) government expenditures on environmental R&D began to grow as early as the 1970s, but in most

Table
SHARE OF ENVIRONMENTAL RESEARCH IN TOTAL GOVERNMENT R&D APPROPRIATIONS
%

	1980	1983	1986	1989[1]	1990[1]
Australia[2]	2.3[1]	2.1[5]	2.0[1]	2.8	2.8
Austria[2]	0.5	0.4	1.0	0.9	0.9
Belgium	2.8	2.6	2.3	1.2[5]	1.2
Canada[2]	1.6	1.6	2.0	1.6	1.8
Denmark	2.1[4]	1.2[5]	1.0	3.0	3.0
Finland	0.8	1.0	1.6	1.7	1.5
France	1.1	0.3	0.4	0.7	n.a.
Germany	2.0	2.8[5]	3.2	3.4	4.2
Greece	2.6	3.2[5]	2.7	3.1	n.a.
Iceland[1]	n.a.	0.1	0.6	n.a.	n.a.
Ireland	0.6	0.9	0.9	0.9	0.8
Italy	1.0	2.1	0.9	1.9	n.a.
Japan	n.a.	n.a.	0.5[1]	0.4	n.a.
Netherlands	n.a.	n.a.	2.9	3.8[5]	4.0
New Zealand	n.a.	n.a.	n.a.	n.a.	3.6
Norway	3.0	2.7	2.3	2.7	2.9
Portugal	n.a.	n.a.	2.9	n.a.	n.a.
Spain	0.6	0.9	0.4	2.1	n.a.
Sweden	1.7	1.6	1.6	3.3	3.2
Switzerland[2]	n.a.	n.a.	4.5	1.4	n.a.
United Kingdom	0.7	1.1	1.1	1.3	1.4
United States[2,3]	0.8	0.5	0.5	0.5	0.6

n.a. = not available.
1. Provisional OECD estimates based on national sources.
2. Federal government only.
3. Excludes most or all capital expenditures.
4. Also includes environmental R&D financed via university block grants.
5. Discontinuity in series from preceding year.
Source: OECD/STIID database, January 1991



Fieldwork is often essential in establishing the impact of human activity on different ecosystems.

COI London

In one EC project electromagnetic emissions are beamed to earth from a satellite; they are then reflected back to the satellite, where they are recorded, to reveal the state of plant cover.

Rudolf Förster/Siemens

the response came in the 1980s, especially in the second half of the decade. Recent government declarations suggest that funding may grow considerably in the future.

There are substantial differences in the organisation of government funding of environmental R&D. Four broad patterns emerge from eight member countries studied by the OECD (Austria, Finland, Germany, Italy, the Netherlands, Norway, Sweden and the United Kingdom), which volunteered to participate in an OECD examination of national policies and structures. In some, a dominant role is played by a ministry of research and technology. This is the case with Austria and Germany and to some extent, Norway. Where no clearly identified ministry is responsible for both research and technology (including environmental matters), an environment ministry may carry considerable weight. In the Netherlands, the Ministry of the Environment, Urban Affairs and Housing distributes some 50% of the total public funds for environmental R&D. In Italy, an important role is played by the ministries of Industry, Health, and Environment. In other cases (the United Kingdom, for example), there is a dominant research council dedicated to the environment with complementary support from various ministries, or (as in Finland) an agency with a marked orientation towards technological development but not primarily dedicated to the environment.

An important factor has been a shift in government-funded R&D from institutional to direct or contract funding, which is especially important for environmental research because the subject areas are recent and not institutionally well-established. In some countries, this move has favoured the 'government' institutions, which have adapted themselves better to the requirements of *ad hoc* contract funding. But in others, such as the United Kingdom, it is the universities that have been relatively successful in competing for contract funding.

The financing of environmental research by the enterprise sector presents a major paradox. Much of the growing concern about the environment – and the policy response – has been directed against business and the technologies that it has introduced. Yet the best estimates suggest that, in the OECD countries, the share of business in environmental R&D is higher than its share in total R&D (including military): as much as 80% of total OECD environment research may be financed by enterprise, compared with 50–60% for total OECD R&D. This partly reflects the response of business to two decades of environmental regulation. And there is no reason to expect this share to decline during the coming decade.

There is, moreover, a fast-growing 'environment industry', largely offering 'cleaning up' equipment and services.

WHAT DATA ON GOVERNMENT ENVIRONMENTAL R&D?

The analysis of environmental R&D efforts is hampered by insufficiencies in the available statistics. One can identify five types of problem:

- the only internationally comparable published data are on government R&D; it is collected or estimated by the OECD and the EC
- most published data use the restrictive environmental notions of 'pollution control' and have hitherto excluded broader notions of pollution prevention or sustainable development
- official statistics do not readily record environmentally related R&D which is not part of a clearly dedicated environment budget
- it is not clear which R&D activities should be relabelled as environmental. R&D previously conducted under other headings becomes classified as environmental in response to financial or administrative changes. But, to avoid double-counting, R&D must be classified by its primary objective. Disaggregation between multiple objectives is difficult and, for environment research, goes against the trend towards integration
- some government-funded R&D, essentially through general university funding, is not allocated by objective.

There are, also, enterprises new to environmental activities and which, now with the shifting perceptions of threats, are emerging as very important to the development of 'clean' processes and products; this group does not necessarily see itself as involved in environmental activities or research. Biotechnology firms, for example, are developing organisms to supplement traditional (heavily polluting) metallurgical processes of ore treatment and plant varieties which are pest-resistant (reducing the demand for heavy applications of polluting chemical pesticides).

Most of the quantitative data available concerns only the 'cleaning up' activities. A recent OECD study of the 'environment industry' estimated that its global turnover is around $200 bn, with a projected rise to $300 bn by 2000.[2] This would make it comparable in turnover to the pharmaceutical and aerospace industries, but with a higher prospective growth rate. A very rough estimate would put their corresponding current expenditures on environmental R&D at around $10 bn. These estimates are unreliable, largely because of definition problems. But they may well be too conservative, because they fail to include some of the environmental R&D both of polluting firms and of 'newcomers'.

Dedication or Integration?

Governments have to choose between 'dedicated' and 'integrated' approaches. Institutions dedicated to environment research are important for some activities, especially monitoring and assessment of pollution levels and trends, where an environmental focus is essential. But they may lack flexibility, since they are constrained by the conditions which define their areas of activity. Moreover, they must retain their credibility as impartial, in the face of a dedicated mandate and dedicated sources of funding, whether from government, business or NGOs.

The second approach – integrating environmental concerns into all areas of R&D – is part of the general shift from reactive to preventitive environmental policies. But there are institutional constraints: interdisciplinary programmes are difficult to set up, and in any event environmental research has hitherto been accorded low status, partly because it is linked to sometimes controversial policy considerations and, more generally, because it lacks well-established academic institutional bases.

Where clear choices in general policy have been made, they are mostly in favour of integration, in, for example, Austria, Norway and Finland. In Finland, indeed, the idea of an explicit 'Environment Technology Programme' has been rejected in favour of integration in normal, established research institutions, particularly through programmes sponsored by the Academy of Finland.

What Kinds of Research?

The character of environmental research is changing. Earlier approaches were oriented to problem-solving (for example, lowering pollution levels in the effluent streams of large, identifiable sources of pollution from chemical or forest products). There is now more emphasis on ecosystems which are recognised to be both complex and sometimes fragile – some of the potential man-made changes may be irreversible.

Indeed, some of the emerging concerns – especially about global climate trends – are so large and long-term that their implications for research are unclear. While there is some scientific and, now, policy consensus that global-warming processes are at work, there is much less agreement on how they work and on what time-scale, and very little certainty about what the effects will be – except that they will not be felt soon and will not have direct repercussions before the middle of the next century. So most related research is either about trying to chart the possible climatic and related trends or about how to mitigate possible impacts over the very long term.

There is thus little certainty about what specific research will prove relevant. Nevertheless, because the social and economic risks are very high (and, perhaps, catastrophic), there is general agreement that a massive investment in research now is a valuable insurance policy. However, with R&D budgets under pressure and an increasing emphasis on cost-efficiency, this (undoubted) priority does not yield clear research criteria. To some extent, moreover, such research on very long-term topics competes with other environment research where risks are better defined and the return is more visible.

There is no reliable evidence on the breakdown of R&D between basic research, applied R&D, on how these different types of research are related, or on what the future balance should be. Stratospheric ozone depletion and global-warming both mean that an enormous commitment both to basic research and to technological innovation will be required. It seems probable that most environment R&D (whether funded by government or enterprise) has so far involved the development, even pre-competitive, stage, with the introduction of technology to meet specific threats (as in catalytic converters for automobiles to reduce emissions,

ENVIRONMENTAL R&D AND THE DEVELOPING WORLD

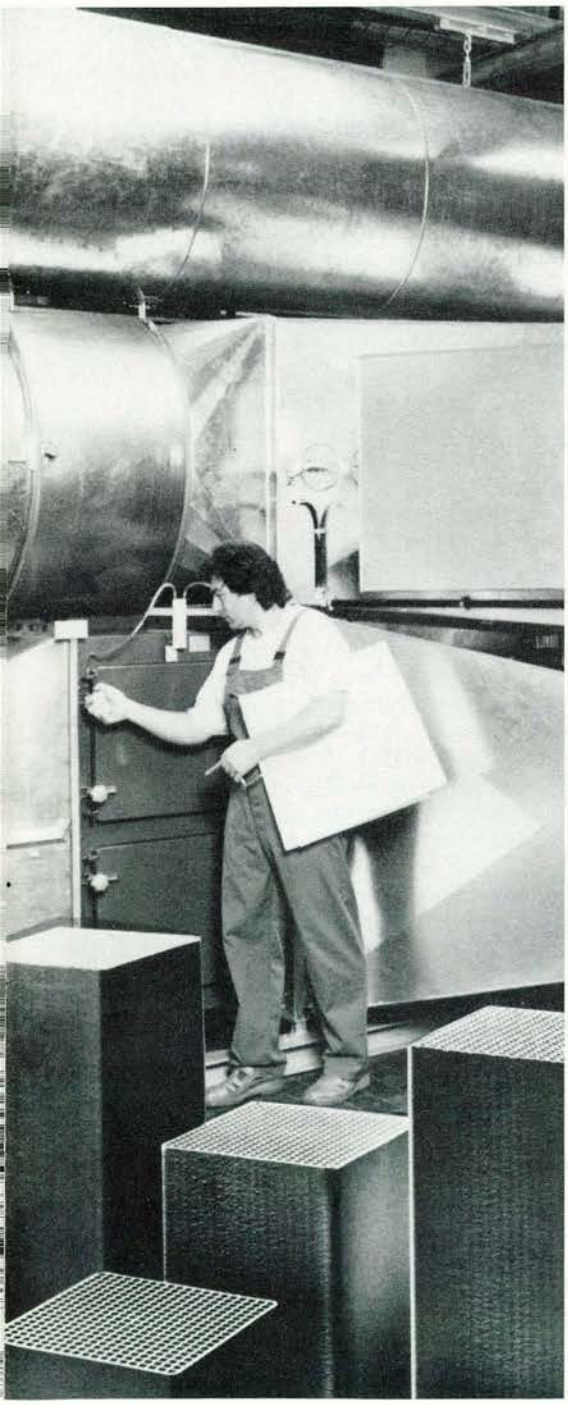
Developing countries present a special problem for co-operation in environmental research. Their difficulties are much more serious, and the conflicts in objectives are more acute. Moreover, they are beginning to produce substantial amounts of global pollution, although at present the OECD countries and the economies in transition are the major sources. Yet their S&T institutions are generally very weak and, in the short term, it is not clear how much co-operation will be necessary.

The re-appraisal of development co-operation programmes in most OECD countries and in their development agencies towards environmental objectives has involved an important S&T component, especially in the assessment of the environmental impact of financially assisted projects and programmes. For some member countries, this trend has brought together development and environment agencies in common programmes (SAREC in Sweden, for example). The reluctance of many environment researchers and environment NGOs to embrace official development co-operation programmes is still a substantial barrier.

Martin Siebert/Siemens

2. **International Conferences Organised within the Framework of the Technology/Economy Programme (TEP)**, OECD Publications, Paris, 1991.

Industry can keep itself clean. This newly developed catalytic converter permits simultaneously a cost-effective reduction in stack pollution and heat-recovery that allows the system almost to run itself.



or the 'scrubbing' of waste gases in coal-fired electricity generation).

It is now widely felt that more basic research should be emphasised and better integrated into environmental policy analysis. In Germany, for instance, a major official goal is now the establishment of 'limit values' for designated pollutants, through research into ecological relationships and causal networks, as guidelines for future technology. But in other countries (Finland and the Netherlands are examples) specific research goals remain primarily technological: increasing energy-efficiency, exploiting renewable energy sources, improving the quality of products and production processes.

The increased recognition of complexity in the scope of analysis suggests an interdisciplinary approach, further integrating the social sciences – chiefly economics, sociology and social anthropology – into what has hitherto been primarily natural science research. More ambitiously, Norway has launched a five-year programme – 'Economics and Ecology: Managerial Tools for Sustainable Development' – as a joint venture of all five national research councils. Nonetheless, interdisciplinary programmes can pose institutional and career problems.

Global Solutions for Global Problems?

International co-operation in environmental research seems increasingly essential, yet it is only partially reflected in institutional and funding priorities. Research into acid rain since the 1970s provides an important example of such collaboration. More recently, there has been another instance in work on global climate concerns (for example, in the International Panel on Climate Change (IPCC), which involved some 400 scientists from about 30 countries). Most of these have been characterised by informal co-operation, relatively frail institutional arrangements and chronic funding shortfalls.

This state of affairs has perhaps been inevitable, even desirable, given the shifting, uncertain perceptions of environmental threats and the low overall volume of funding. Reconsideration of these problems is now on the agenda.

The EC has established various programmes (STEP, EPOCH and JOULE, including research on environmental protection, oceanography and energy), using its own research budget and established institutional mechanisms to promote wider co-operation. EC environmental research averaged almost $43 million annually over the 1981–88 period (in 1985 $), some 7.6% of its total research budget. And the promotion of research into sustainable development may well prove to be the most successful short-term outcome of the UNCED meeting in Brazil in June of this year.

□ □

The outlook for the rest of the 1990s is uncertain. The size of the potential danger suggests that there should be large increases both in government funding and in enterprise funding, but here there is a problematic shift from pollution control to the introduction of 'clean' technologies. And, as the perceptions of environment threats shift, so too do the priorities for the structure and organisation of environment research. Environment priorities require multidisciplinary studies (including research in the social sciences); and the international dimension of the problems will require much more international research co-operation. But the mechanisms through which the goals can be attained have still to be developed. ■

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The Schools/Business Partnership

Business involvement with schools is a growing fashion. But can it have a real, rather than a merely symbolic, effect on schools and their pupils? And can it avoid distorting the broader, non-economic goals of education?[1]

Donald Hirsch

There are two reasons for being sceptical about the recent explosion of contacts between private businesses and publicly run schools in OECD countries. The first is that they will achieve too little. Companies concerned about education standards may 'adopt' schools, buy them computers or give pupils work experience, without in any way improving the way children are taught. The second is that they will achieve too much. Business feels it must get more involved with education largely because it is allegedly failing to 'produce workers with the right skills'. Educators understandably fear that schools themselves are in danger of being turned into factories, devoted to producing skilled labour rather than educated citizens.

The practical experience of links between education and business has shown this second worry to be much exaggerated. That is because the first worry – that cooperation will prove ineffective – proves valid except under certain conditions. The main condition is that business involvement should take place in the context of a genuine partnership with the education system, working towards commonly defined goals. Quite simply, private companies have neither the capacity nor in practice the inclination to mount a hostile 'takeover' of education. Their influence tends to be strongest when they are working with the grain of public education reform rather than against it.

This kind of partnership is helped by the fact that the long-standing divide between 'humanistic' and 'instrumentalist' views of education does not need to be as deep as it once was. Every recent analysis of the skills required in modern industry has identified a set of general competences that workers now require: the ability to formulate and solve problems, to communicate effectively, to interact well with others, to take initiatives and so on. In other words, workers no longer have merely to be able to take orders and execute certain routine tasks: they must be able to think and learn for themselves. Such requirements are in broad terms compatible with the desire of humanistic educators to nurture the general intellectual development of individual learners.

Partnerships with business, then, can play a constructive role in education. But what, precisely, do they achieve, and how? The OECD has undertaken the first substantial international study of a phenomenon hitherto analysed mainly within national boundaries, discovering that there is no single formula. Its 24 case studies indeed illustrate the wide variety of approaches: each partnership is in some way unique. Nevertheless, it is possible to distinguish certain common trends.

First, 'glasnost precedes perestroika'. A high proportion of links between schools and businesses have a largely symbolic impact. Businesses with little experience of education are inclined initially to see such links in terms of, for example, donating equipment or organising an open day at the factory. The immediate beneficiaries may be the company's public image and the managing director's social conscience. Such links have been dubbed 'feel-good partnerships', and rightly cause scepticism when they fail to develop into something more sophisticated. Yet their importance should not be underrated in the context of the fairly icy relations that have often existed between business and education in the past. Schools and businesses have to make friends – to start talking to each other, in a new spirit of openness – before they can devise any common strategy for reform.

The second trend is that schools now have to educate for new skills. Schools based purely on the traditional model of a classroom, where a teacher lectures pupils and then tests each of them on their ability to repeat what they have learned, will not produce the general skills now required – teamwork, problem-solving, initiative-taking and so on. Neither is it straightforward for teachers or for companies to design new ways of acquiring such skills. But working together they have come up with innovative approaches, some of which are helping to change learning styles in the main school system.

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Table
RECRUITMENT AND SCHOOL LINKS – TWO EXAMPLES

Carpentry shop with 70–80 employees, with work-experience programme and management keen to promote good student and school contacts.

Staff hiring through student and school contacts	*Cost (Skr)*	*Traditional staff hiring*	*Cost (Skr)*
Management's student and school contacts (160 hours)	48,000	Advertising costs	20,000
Work experience programme (lower-secondary school) – including supervision, food and clothes	25,000	Telephone interviews: 70 applicants (12 hours)	3,000
		Interviews with 10 selected applicants (10 hours)	2,000
Administrative costs for work experience programme	7,000	Wage costs for five new employees – who failed on job and quit	81,000
		Supervision for these five (736 hours × 20% × Skr 110)	16,000
Result: more students apply to woodwork programme in upper-secondary school. Of these, the company hires four per year.		Result: three employees stay on	
Total: four recruits	80,000	Total: three recruits	122,000
On-the-job training: 25% × annual wage cost	198,000	On-the-job training: 50% × annual wage cost	297,000
Supervision costs	66,000	Supervision costs	50,000
Total hiring cost	344,000	Total hiring cost	469,000
Hiring cost per new employee	86,000	Hiring cost per new employee	156,000
Result: Skr 70,000 per new employee saved through good student contacts.			

Manufacturing company with approximately 700 employees, running work experience for lower-secondary pupils and an experimental in-house vocational training programme at upper-secondary school level.

Staff hiring through student and school contacts	*Cost: Skr*	*Traditional staff hiring*	*Cost: Skr*
Work experience programme (lower-secondary school) – including administration, supervision and clothes	50,000	Open house: advertisements, overtime compensation and refreshments	63,000
Result: more students apply to company's upper-secondary training programme (for 10 students over 32 weeks)		Result: 50 applicants, with interviews	6,000
Planning (64 hours)	8,000		
Training of supervisors	32,000		
Reduced productivity: 10% per supervisor	290,000		
Vocational studies teacher	123,000		
Student costs: food, personal safety equipment, clothing	75,000		
Government cost compensation for training supervisors	–5,000		
Government compensation of Skr 15 per student per hour	–192,000		
Result: all ten students hired			
Total: 10 recruits	381,000	Total: 20 recruits	69,000
On-the-job training: six months at 25% of annual wage cost	276,000	On-the-job training: six months at 50% of annual wage cost	1,104,000
Supervision	0	Supervision: 15% reduced productivity per student, for six months	1,296,000
Total hiring cost	657,000	Total hiring cost	2,469,000
Hiring cost per new employee	65,700	Hiring cost per new employee	123,000
Result: Skr 57,300 per new employee saved through good student contacts.			

Source: *Good School Contacts Pay Off*, Swedish Employers' Confederation, Stockholm, 1991

One British scheme involved a number of teachers spending time in a cake and chocolate factory to experience how various skills were applied in the working world. They then went back to their schools where, assisted by some of the factory's employees, they involved pupils in a project to design and make a new chocolate product. The project involved teachers in as many subject disciplines as possible – including English, maths, home economics, business studies, art and languages. Each had a role – for example, the final objective of the project, overseen by language teachers, was to send the chocolates, along with covering letters (written by 11-year-olds) to a group of French pupils who had been their hosts on an exchange visit. The teachers tried to incorporate what they had learned from the project into their everyday teaching practices. In Britain, such initiatives are more integrated into a general reform movement than in many countries, as they are supported by national initiatives. The most important, the 'Technical and Vocational Education Initiative', has been trying to nurture new core skills in secondary schools, in partnership with business, since 1983.

How Vocational?

The third trend involves relevant vocational preparation. Most continental European countries have well-developed systems of preparing pupils for specific occupations through vocational education at the end of secondary school. Other OECD countries, such as the United Kingdom, the United States and Canada, are wondering whether they should be adopting a similar model.

But even where vocational schools exist, they are not always good at keeping abreast of the rapidly changing demand for skills in each industry; partnerships can help them keep more closely in touch. Thus, for example, an expensive workshop near Paris, run jointly by Renault and the French education authorities, gives a taste of state-of-the-art roboticised technology to vocational students who would otherwise have to rely on blackboards for learning about modern production methods.

The importance of ensuring that vocational education maintains close links with

1. **Partners in Education**, OECD Publications, Paris, forthcoming 1992.

Harrogate Rossett High School/Prospect Foods

The pupils of one British school, in Harrogate, spent time in the chocolate department of a local factory to experience how various skills were applied in the working world.

the work-place is reflected in world-wide admiration for the German 'dual' system, where apprentices based in firms are released for vocational schooling for one or two days a week. But relevance is not the only issue. A potentially competing priority stems from the desirability of a high degree of general skills – mathematical and linguistic ability, for example – in a growing number of occupations. The world can no longer be neatly divided into the 'academic' class destined for university and the 'vocational' class learning mainly practical skills after the age of 16. A few partnerships are helping to develop new schooling styles which combine high-level technical preparation with advanced academic studies for the same pupils.

As the pool of unskilled jobs diminishes, less-qualified school leavers have been finding it increasingly difficult to enter the workforce – especially, though not exclusively, in countries with less-developed vocational education. One response has been partnerships that attempt to create direct links between the end of school and the start of work. In 1982, Boston employers struck a deal with the city's school department, promising to hire specified numbers of high-school graduates in exchange for a pledge to reduce drop-out and absentee rates by 5% a year and to enforce requirements on academic standards. The 'Boston Compact' has been copied in many other cities in the United States and Europe.

Have such compacts succeeded? In terms of meeting specified targets of improved student performance, their record has been decidedly mixed. But as vehicles for mobilising a coalition of interests around educational improvement, they have been highly successful. This generalisation applies broadly to all education partnerships. They have found it hard to demonstrate quantitative results, largely because they are not the only influence on educational achievement. Their success over the longer term will depend on their ability to bring together new forces to achieve qualitative changes in the education process.

A Two-sided Deal

Companies too might benefit from such partnership and possibly change their behaviour, as a result of contact with schools. The most obvious gain comes from cultivating a direct source of future youth labour – at a time when demographic factors are making it increasingly scarce. Partnerships can pay for themselves several times over by reducing recruitment costs, as the example of two Swedish companies shows (Table). Companies that get closer to education might also adapt the way they judge young job applicants. For example, in a number of countries qualifications based mainly on exam results are being replaced by more qualitative 'student profiles' or 'records of achievement'. For these to be of value in the labour market, employers have to understand what they mean, and the educational philosophy that lies behind them.

Some visionaries would like to go further, and use partnerships to instill some of the higher-minded values of education into the corporate world. Although it will be a long time before teachers start lecturing on compassion to classes of chief executives, there are some areas where progress could be made. An OECD code of 'Guidelines for Multinational Enterprises' recommends environmental education for employees. Companies could draw much from school practice in this area.

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For the moment, most partnerships concentrate on the not insignificant task of reforming education, as opposed to enlightening business. Progress varies considerably among countries. An important variable is the degree to which education ministries and local governments are open to change. In addition, a partnership 'culture' has emerged in some countries faster than in others. Here, the OECD's bird's-eye view might be helpful. A glimpse of how other nationalities do it might help teachers, business employees and policy-makers to see how far partnerships can go. Their ability to bring fresh and useful ideas into education is proving more effective than many thought possible. ■

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Encouraging the Entrepreneur

Sergio Arzeni

A strategy for the promotion of entrepreneurship and job creation in central and eastern Europe has now become urgent. Why is this micro-economic approach a necessary complement to the macro-economic policies currently being implemented? The answer lies in the experience of the West, and is underlined by the requirements of the East.[1]

Between 1975 and 1985, every one of the OECD countries underwent a major industrial restructuring, accompanied by high unemployment. Several basic lessons were learnt in this process.

The first is that large companies and large plants have tended to shed jobs, and that it is small firms, particularly new ones and self-employed businesses, that are the principal source of new jobs. The second lesson is that one of the micro-economic keys to improving economic performance lies in a shift from a managerial to an entrepreneurial society – that is, from one in which innovation stems largely from corporations run by managers to one in which the sources of creativity lie in new, fast-growing, small firms run by innovative entrepreneurs. Third, one of the ways to confront mass unemployment is by approaching it on a local basis – that is, in smaller groups – and by designing policies for local development; national labour policies have been reshaped over the past 10–15 years in order to foster local responses to high unemployment. These local employment initiatives and active labour-market policies have been created because traditional, national welfare policies have proved unable to deal with the problems faced today.

But what works in the West will not necessarily be enough, on its own, to solve the problems in the central and eastern European economies in transition. Their move to dynamic, market economies will require structural change to:

- expand employment in the service sector, which is still small, to offset redundancies in manufacturing and farming
- develop a sizable base of small firms which, in the OECD countries, provide most of the jobs in the economy
- encourage the emergence of a new productive class of the population built around a new class of businessmen, which will strengthen the social pluralism that is the essence of democracies
- restore the values of merit, profit, risk-taking, innovation and hard work which are the driving forces of a market economy and which had been discredited by previous regimes.

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What Prospects for New Firms?

Assessing the economic and social situation in central and eastern Europe is very difficult. But one of the best indicators of improvement is undoubtedly the rate of incorporation of new firms. Over the last two years, for instance, more than 400,000 new firms have emerged in the Czech and Slovak Federal Republic and more than 300,000 new firms have been registered in the former GDR in only one year.

Throughout central and eastern Europe as soon as the setting up of free enterprise was authorised, hundreds of thousands of people became involved in independent businesses. But the legacy of the past continues to weigh heavily since the Marxist identification of the entrepreneur with the 'speculator' has linked licit economic activity in the popular understanding with the wealth of 'illegal entrepreneurs'.

But in central and eastern Europe it is difficult, if not impossible, to draw a line between 'good' and 'bad' entrepreneurs. The first difficulty arises because, paradoxically, the central direction of the

1. An OECD publication on this subject is in preparation. This article draws on work carried out within the framework of the Centre for Co-operation with European Economies in Transition, particularly its conferences, seminars and workshops.

economy brought it to the very early stages of capitalism, where the absence of defensible property rights allows 'rampant accumulation'.

So it is hardly surprising that the social attitude towards individual enrichment and success – an essential attraction for the entrepreneur, even though most enterprises fail – is ambiguous and can cause resentment as well as political tensions.

The Prime Mover of Progress

Historically, it is the flowering of entrepreneurship, or the lack of it, which is critical to the economic success or decline of nations. Every society, in every period of history, has always had its supply of entrepreneurs. But there are a variety of roles among which their efforts can be reallocated, and some of these do not follow the constructive and innovative function that the Austrian economist Joseph Schumpeter attributed to them in the 1930s. The role of the entrepreneur in a given society therefore depends largely on the reward structure in the economy and its value system. If it is biased only towards achievement or only towards profit, it can pervert a potentially virtuous cycle.

A case in point is the underground economy, and the emergence of self-employment as a second job there. Should such jobs be tolerated, encouraged or banned? Is it surprising that employees who collect low salaries should try to complement their income through extra economic activity? The debate on entrepreneurship in central and eastern Europe, in effect, turns on how much should be allowed. Shouldn't governments try to capture the massive spin-off that a liberal policy would bring instead of the covert lay-offs that a more restrictive attitude could provoke? And will these societies accept such an open approach?

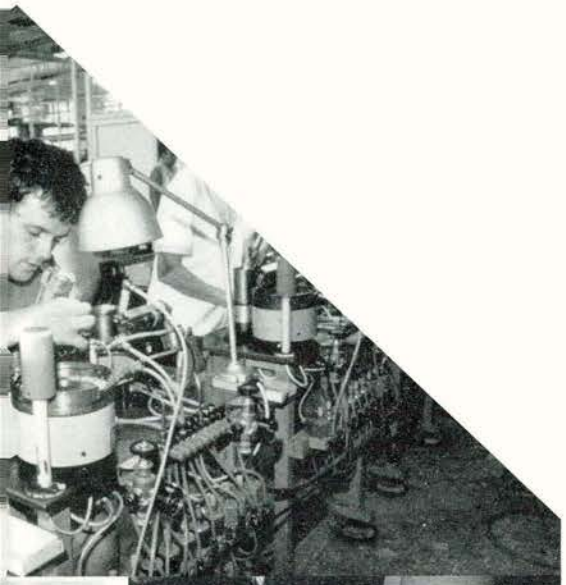
Values First

Building entrepreneurial capacities is to a significant extent a matter of techniques and disciplines – teaching would-be entrepreneurs how to write a business plan, manage people, export, keep self-confidence high and a thousand other skills that have to be learned – but the overall cultural environment is often decisive. This is clear in central and eastern Europe, where the importance of fostering domestic capital accumulation, essential to finance new investments (since inward foreign investment will inevitably be limited), is hampered by a social resistance to accept individual enrichment. The rising of social differences based on the financial capacity of the individual stirs social and political tensions which run the risk of slowing down an entrepreneurial dynamic that, from an economic standpoint, ought to be accelerated.

One key to the creation of jobs and the development of a sustainable policy of local development is to harness more efficiently the unexploited human capital of a region and channel it towards innovation and the creation of enterprises. One of the most common forms of such policies in OECD countries is through private-public partnerships. But in a society where the private sector is almost non-existent it is difficult to build this sort of arrangement. It is not merely a financial, or a technical, matter. It calls for a long-term cultural revolution, which itself requires a fundamental change in the regional system of allocating rewards and prestige.

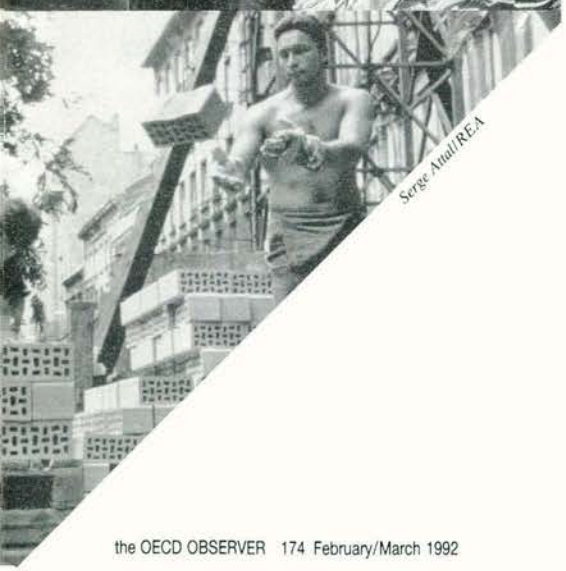
The intimate responsiveness of entrepreneurs and managers (as well as those of workers and customers) to their local culture explains why promoting entrepreneurship demands not only a technical training exercise. It also calls for a basic re-assessment of the fundamental values in which the school system, university and research institutes, as well as the media, should participate in helping ordinary people understand the way in which a

At the eye of the storm? Joseph Schumpeter saw economic advance as a process of 'creative destruction', as unvalued activities gave way to entrepreneurial dynamism.



Roger-Viollet (photo of Joseph Schumpeter)

Serge Attal/REA



Serge Attal/REA

market economy and a pluralistic democracy work – and the role of the entrepreneur as one of the prime movers of progress.

In tandem with this cultural change, and as a prerequisite for it, comes the definition of the 'rules of the game': private ownership, market determination of prices, and an efficient legal system that guarantees the sanctity of contracts. Not least, administrative simplification and streamlining would allow the emergence of freer markets and new business opportunities.

Barriers to entry, too, should be lowered to stimulate entrepreneurship and expand self-employment, to provide technical and financial assistance to new entrepreneurs that will help reduce their mortality rate by offering to infant entrepreneurs some of the incentives provided for infant industries, and by allowing those who failed another chance to re-enter the fray. Analysis from an enormous range of countries suggests that seven out of ten entrepreneurs who go bust do so not because their product or service is deficient nor because of lack of money (although money is certainly important – and small amounts, in the range of $20–50,000 will be more effective than loans of $20 million, yet the latter are available, while the former are not). Failure is usually because of lack of management expertise, because of ignorance of the techniques they require to run their business. By using business incubators, for example, the mortality rate of new businesses can be drastically reduced. And it is technical assistance, counselling and practical advice (box) that is required by the new entrepreneurs in the economies in transition, not large grants.

In OECD countries, on average, small firms provide more than half of current employment. In central and eastern Europe they account for about 3%. That striking gap highlights the missing link between a command and a market economy: the presence of entepreneurship. The existing structure of small and medium-sized enterprises (SMEs) is the result of the legal division of vertically integrated conglomerates, not of natural evolution in a competitive market.

Privatisation – particularly small-scale privatisation – has so far taken the form of a massive wave of management buy-outs (MBOs), a trend that is likely to continue. But will buy-outs by management and workers – 'leveraged' by borrowing (LMBOs) or not – be successful in the 1990s? The fashion for LMBOs in some OECD countries in the 1980s gives reason for doubt. Different sorts of MBOs, of course, may have different degrees of success in different contexts. But they are a sophisticated development of capitalism and are still on trial.

Sectoral Disparities

The aim of most of the economies in transition is to reduce to half the weight of the state in the economy within three to five years. That, of course, is critical and should be encouraged. But it would be illusory to expect that the new entrepreneurs and the new jobs will come solely from reducing the size of government. Although privatisation will introduce an essential element of competition into the economy – i.e., the necessity of making a profit – most wealth and the most jobs are likely to be created by the new, fast-growing start-ups, the firms that start from scratch. One independent Czech firm, for example, active in construction and trade, now has almost 2,000 employees with a turnover of more than $70 million, although two years ago it did not exist.

In a society starved of capital, capitalism is unlikely to expand in manufacturing, particularly in countries where it is so uncompetitive, despite an average labour cost of $150–200 per employee per month. Agriculture and services, not least tourism, travel and leisure (TTL), construction and trade, are the most promising of strong entrepreneurial development, despite their strong dependence on the West:

TUTORING ENTREPRENEURSHIP IN ITALY

The biggest government programme ever undertaken through regional development policies to nurture entrepreneurship is the scheme for young would-be entrepreneurs approved in 1986 by the Italian parliament (the Legge 44, or Legge De Vito). This scheme, with a budget of about $2 billion over a three-year period, provided for the setting up of a new Agency for Youth Entrepreneurship (COMITATO) in southern Italy.

The programme is designed to sustain business activities (as co-operatives or other types of company) set up by young people resident in southern Italy. The majority of members of a co-operative or 'registered' applicants must be between 18 and 29 years of age, not only in the number of shareholders (close relatives of the entrepreneur can be associated with the legal incorporation of the new venture) but also in the proportion of their equity holdings.

The COMITATO decides which tutor is best suited to meet the requirements of a fledgling enterprise. The proposed tutor, after having analysed the problems of the new firm being assisted, submits an action plan for approval to the COMITATO. Once the tutorship contract has been signed, the Agency plays a key role between the tutor and the new firm.

On average, a tutorship contract lasts for about 18 months and implies no less than 120–130 days of consulting assistance and training. So far 450 tutorship contracts have been signed, involving more than one hundred tutors, and roughly 700 business projects (only one-third of those submitted) have now been approved, with a projected capacity to provide 15–20,000 new jobs.

The law offers financial and other incentives, such as technical assistance, and basic and vocational training in the start-up phase for the members and/or employees, according to the type of project approved. The financial and technical advice the young entrepreneur receives is mandatory and is provided either by large companies or by specialised auditing and consulting firms on a contractual basis, in that the tutoring company is paid for its services at the market rate, but is legally and morally committed to the achievement of the new enterprise. The projects submitted for financing may be for the production of agricultural, craft or industrial goods, and the supply of services to agriculture, industry, tourism and companies belonging to any industry. COMITATO screens these proposals rigorously, assessing the potential market for the goods or services involved.

Basic entrepreneurial training is given in a five-week scheme (non-consecutive) provided by a variety of training institutions. This takes the form of a 'do-it-yourself' management and basic business training. After this stage, the tutorship programme begins, whereby continuous 'hands-on' advice is provided by large Italian corporations – Olivetti, Fiat, Parmalat, Ferrero, IRI, and Co-operatives' Holdings, for example – or by major international consulting and auditing companies – KPMG Peat Marwick, Proxi, Arthur Anderson, Orga, Ambrosetti, Telos – to enhance both the managerial capacity and the technical skills of new entrepreneurs.

- agriculture, because the farming products of the economies in transition are one of the rare categories of goods they produce that are salable on world markets; growth therefore requires access to western outlets, chiefly in the EC
- tourism, because its potential is hampered by the lack of services to meet the quality standard required by international visitors, and only the West has the experience to provide the appropriate training
- construction, a traditional engine of growth and employment, because only the West can fund the fundamental infrastructures such as the Nuremberg-Prague highway; and only western, private money can afford the cost of refurbishing towns such as Budapest or Prague, where (not least because of legal constraints) office and housing space today is either unavailable or as expensive as that of prime residential areas in the West
- trade, because import competition is instrumental in establishing a national price structure and an export drive essential to strengthen the national capital base.

Entrepreneurship in these sectors is likely to develop more, and more efficiently, than in manufacturing where the legacy of the past will weigh heavily. But even in a service economy, nonetheless, manufacturing matters and should be developed – although this is a task for further down the path of the transition, after macroeconomic stabilisation and the microeconomic reforms of privatisation and the establishment of a legal framework that stimulates the creation of enterprise.

Imitation or Training?

One of the most effective ways to spread entrepreneurship can be through imitation, not through training or teaching. Almost everywhere in the world indeed, three out of four entrepreneurs come from an entrepreneurial family or milieu. Immigrants, too, have used entrepreneurial activity to work their way up the ladder.

In a society which lacks entrepreneurs, models have to be attracted or invented and examples copied. By definition, the managers of multinational corporations are not in a position to spread the gospel of entrepreneurship. Only small entrepreneurs are. And so SMEs have to be encouraged to spread from the West to the East, with the aim of eliminating the institutional risks that ventures with eastern partners will entail for them.

Returning entrepreneurial migrants might be an important component of a strategy designed to build entrepreneurial capacities. Among OECD countries, Canada has successfully developed a policy of attracting migrant entrepreneurs – so why not a policy of red carpets for returning migrants to eastern Europe?

□ □

In their effort to attract foreign investment, the countries of central and eastern Europe are replicating on a larger scale the traditional regional development policy employed by western countries for many years. One mistake often made in OECD countries was the spending of too much energy in attracting foreign talent rather than harnessing the local human potential. Countries hit by a brain drain should concentrate more on nurturing their indigenous entrepreneurs, perhaps through granting them fiscal advantages in the short-term. Yet, paradoxically, governments, in West and East alike, are more inclined to offer tax holidays to multinational investors rather than to local new ventures. ■

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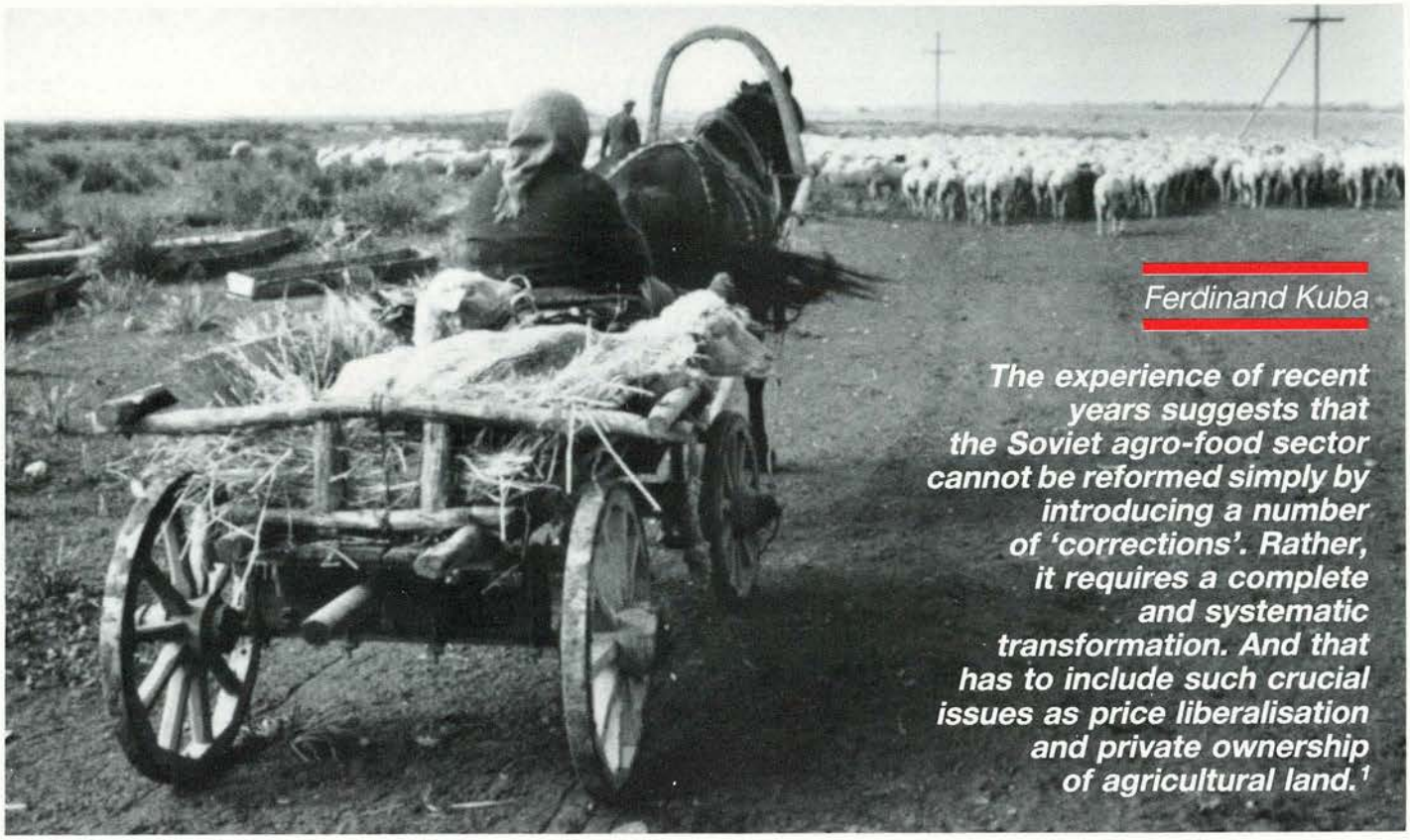
Restructuring Soviet Agriculture



Ferdinand Kuba

The experience of recent years suggests that the Soviet agro-food sector cannot be reformed simply by introducing a number of 'corrections'. Rather, it requires a complete and systematic transformation. And that has to include such crucial issues as price liberalisation and private ownership of agricultural land.[1]

Fred Mayer/Magnum Distribution

For the six years of *perestroika* the agro-food sector was one of the main targets of organisational and institutional restructuring in the Soviet Union. The aim, patently, was to improve its efficiency, not only because of the notoriously unsatisfactory food supply but also because of the importance of the sector within the economy as a whole: it accounts for roughly one-third of total domestic gross output and absorbs one-third of total labour inputs, as well as a high share of investments.

But the reforms introduced in the recent past have not produced the results expected, despite some improvement in individual sub-sectors (livestock production, for example). On the contrary, they have contributed to the mounting deficit of the state budget as well as to inflationary pressures.

The breakdown of the old command economy – as yet unreplaced by any functioning new structures – has been exacerbated by the disintegration of the Soviet Union into independent republics. There is thus now a high risk that the former rigidities of the Soviet food-supply system could – in the short term, at least – develop into a real crisis.

Technical Problems

The Soviet Union still lags far behind Western industrialised countries in the use of agricultural chemicals, both in quantity and in quality. Imbalanced composition of plant nutrients is limiting yields particularly due to shortage of phosphates. The lack of lime fertilisers required to improve the predominantly acid soils of the vast 'Non-Black Earth Zone', covering most of the northern parts of Russia (the former RSFSR) is seriously limiting the agricultural production of the region. The shortage of plant-protection chemicals and herbicides is particularly acute and they have been imported in large quantities since the mid-1980s. But since the late 1980s, not only has total fertiliser application been falling due to increasing prices; the lack of hard currency has also reduced imports and applications of plant-protection chemicals.

Problems of soil fertility and erosion have also been accumulating over the years. In many regions, because of the shortage of organic fertilisers, inappropriate crop rotation, and soil compaction through the use of ever-heavier machinery, they have now reached critical stages. At present, moreover, only 75% of total fertiliser output reaches the field; the remaining 25% is lost in transport or spoiled through inadequate storage.

In animal production, feed is used inefficiently: almost twice the amount of feed

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1. **The Soviet Agro-food System and Agricultural Trade – Prospects for Reform**, OECD Publications, Paris, 1991. This article draws on work carried out within the framework of the OECD Centre for Co-operation with European Economies in Transition, particularly its conferences, seminars and workshops. The study on which this article is based was carried out in 1990; its analysis remains valid in spite of subsequent changes in the former Soviet Union.

Inefficient distribution...

Magnum

units used in Western countries is necessary to produce one unit of livestock product. Unsatisfactory feed conversion ratios (which convert one unit of feed into one unit of animal product), caused by protein deficiencies in the feed, mean that enormous inputs of feed grains are required.

Losses and Wastage

The Soviet agro-food economy suffers from huge losses after harvesting, particularly during transport, storage, processing and distribution. At present, they account for no less than 20–30% of production, depending on climatic conditions, in particular at harvest time, and on the nature of the product. Losses of perishable produce – potatoes or other vegetables, for example – can reach, even surpass, 40–50% in some years, most of the losses occurring in the already overstrained transport system or because of lack of adequate storage. Any increase in production leads automatically to a rise in the amount of losses.

In 1988 the Soviet government therefore endorsed an eight-year programme under which Rbs. 77 billion[2] were to be invested in transport, storage and processing, to reduce losses and improve the quality of food. But this ambitious programme, which was to be supported by the conversion of parts of the defence industry, is lagging far behind the plan. Furthermore, credit lines opened to the Soviet Union by OECD member countries for the acquisition of food-processing machinery have remained largely unused.

The magnitude of the problem is illustrated by the fact that if the Soviets were able to reduce their current losses to proportions similar to those found in the West, they could come close to their declared goal of self-sufficiency in main agricultural products. The high volume of food imports – which costs almost 20% of Soviet hard-currency imports and amounts to about $8–9 billion each year – could be substantially reduced, perhaps stopped altogether, even at the present modest output. The Soviet Union has traditionally envisaged the production of one tonne of grain (at 'bunker weight', that is, before drying and cleaning) per capita in order to achieve self-sufficiency.

By Western standards, this figure appears to be extraordinarily high, but the Soviet Union has to compensate for the high losses and the low efficiency of grain conversion in livestock feeding. A rough comparison with some OECD countries makes this point clearer. In 1990, the Soviet Union produced 750 kg of grains per capita, which is indeed very close to average production volumes in the United States and in the EC, for example, where about 800 kg of grain per capita not only supplies the population with enough cereal products and a much larger amount of livestock products (absorbing a sizable proportion of grain) but also leaves a large surplus for export. Yet the Soviet Union has to import large amounts of grain in addition to meat and dairy products.

Sugar offers another example. In recent years beet production has ranged between 80–90 million tonnes per year, with an average sugar content of about 15–16%. Yet domestic sugar production remains at only 8–8.5 million tonnes – an extraction rate of roughly 10%. With a reduction in losses and an improved extraction rate, the Soviet Union could cut its annual sugar imports of about 4.5–5 million tonnes by some 3–4 million tonnes. At present, in terms of value, sugar is the largest single food product imported into the Soviet Union.

Price Subsidy and Credit

Soviet agricultural policy has traditionally been based on stable and low food prices and large increases in investment in agriculture. The credits extended to state and collective farms have been on virtually unconditional terms, which has led to an enormous accumulation of debts. Furthermore, a large proportion of farms could not cover their loans from their gross income and carried them over from year to year until they were finally written off altogether. Indeed, as of 1990, virtually all long-term debt, amounting to over Rbs. 60 billion, together with a large proportion of short-term debt, had to be written off.

Uncontrolled credit was not only a major reason for the accumulating deficit of the state budget – it also removed the pressure on farms to restructure and to

2. In 1988, the official exchange rate was $1.65 to 1 Rb., although this rate is not based on real value.

improve efficiency, since the system of differential price zones for agricultural commodities and differential price bonuses regularly baled out high-cost producers. It also punished low-cost, profitable farms while rewarding unprofitable ones and thus worsened the performance of agriculture as a whole. Furthermore, the government's equity-led policies produced distortions in resource allocation. In the Non-Black Earth Zone, for example, a high-cost producer area, twice as many funds (per rouble of gross agriculture output) were invested at the end of the 1980s than in the Ukraine, a low-cost area.

The Soviet Union not only subsidises inefficient agricultural production, a characteristic also of developed Western economies – it also subsidises food consumption, a characteristic of developing countries. Low food prices combined with rising incomes (which increased by 50% from 1986–90) and the absence of other consumer goods in the desired quantity and quality, has created an excess demand for, and wastage of, foodstuffs. Furthermore, the authorities continue to favour food programmes which emphasise supply rather than demand, neglecting the critical role that demand plays in balancing the food economy from domestic resources.

In 1986, the Soviet Union introduced a number of measures in the agro-food sector with the intention of correcting some of the worst effects of its *dirigiste* price, credit and support policies. Under these reforms, subsidies to agricultural inputs have been largely removed, interest rates for farm credits increased, price zones for agricultural products cut back, special bonus payments to financially weak farms discontinued, and, as of April 1991, retail prices for food increased. Each of these measures is a step in the right direction. But they have stopped short of forcing farms into restructuring and financial discipline, and they have not curtailed the demand for food.

Missing Incentives

An inadequate incentive system is one of the main obstacles to increasing efficiency on Soviet farms. Wages, for example, are hardly linked to the quantity and quality of work. Because of the special state payments, loss-making farms can often afford to pay higher wages than efficient, profit-making ones. Under such conditions, the incentive for the farm or the individual farm worker to improve performance is, understandably, very low. In the recent past, efforts have been made to link the interests of the individual closer to his work results, through, for example, the introduction of a 'collective-farm contract system' under which a fixed payment is made for performing a specific task, and land is leased by the *kolkhoz* to individuals or groups of individuals.

and supply problems...

Zachmann/Magnum

But these measures have failed to produce the expected results, thus providing strong arguments for the privatisation of agricultural production. Under the present system, state and collective farm workers are entitled to own a piece of land of up to 0.5 hectares and a limited number of animals, although the upper limits for both have been relaxed in some of the republics for the last two years or so. These plots and animals are managed very intensively, providing an indication of Soviet agricultural potential. In 1990, about 8 million hectares of arable land – 3.5% of the Soviet arable total – were cropped as private plots. These plots produced 18% of total Soviet crops in value terms and 25–30% of livestock production. Although these figures are somewhat inflated through inputs provided by the state and collective farms, particularly in the form of feed, they indicate the magnitude of potential gains in productivity from the privatisation of agricultural production.

Private family farms started to develop in the Baltic republics in 1987–88. By the beginning of 1991 there were some 6,000 of them. In total, almost 41,000 private farms were reported to exist on Soviet territory at the beginning of 1991, operating on a total area of 0.7 million hectares. Although at first glance such numbers may seem impressive, they represent no more than 0.1% of the total Soviet agricultural area, or 0.3% of the arable area. Moreover, the development of private family farms is coming up against a number of limitations which will be difficult to overcome in the short run.

First, the interest of workers on state and collective farms in operating a private farm under present conditions is limited. They receive salaries that are unrelated to

V. Kojevnikov/TASS

... belie an enormous potential.

performance. And the upstream and downstream links to agricultural production remain highly monopolised. In any case, they are not geared to serve small-scale holders. As a consequence, private farmers depend essentially on the goodwill of the state or collective farms for their supplies of inputs, as well as for the marketing of their products. In addition, the workers on state and collective farms usually perform very narrowly defined tasks and therefore lack the technical and management skills necessary to operate a private farm.

Furthermore, the managers of state and collective farms have no particular interest in encouraging private farming, since such a move would diminish their powerful local position. As long, then, as agricultural policies do not impose financial constraints, forcing public-sector farms into either restructuring or privatisation, farm managers will continue to resist any privatisation movements. In addition, setting up private farms requires high capital investment in buildings, machinery and equipment. And the supply industries would have to become more responsive to the changed requirements of private farms, with, for example, machinery and equipment better adapted to farming on a smaller scale.

All this suggests that even with the possibility of stronger government support for private farming, it will take some time before any significant improvement in food supplies from private farming (not least in the form of increased production at lower cost) will be felt. In the meantime, other private forms of production, such as producers' co-operatives in which members own clearly defined shares, will have to be explored further. And the gigantic state and collective farms should be broken up into smaller units in which co-operative members could play an active and responsible role.

□ □

Obviously, in order to improve food supplies, the Soviet Union will require quite some time to address and correct the various problems and distortions in its agro-food sector. Yet this should not obscure the fact that the adoption of a coherent set of economic reform policies could have an important impact on food demand relatively quickly. The inadequate food supply in the Soviet Union is most commonly attributed to shortfalls in production; in truth, the effects from overstimulated demand, due to high consumer subsidies in the pre-reform Soviet food economy, tend to be underestimated. Analysis based on modelling work has shown that the impacts of economic reform – and in particular the elimination of high consumer subsidies and the liberalisation of prices – could be large and would certainly produce both higher retail prices for food and falling real incomes. The resulting sharp drop in demand for food would eventually result in lower import requirements.

The model results suggest, too, that, in the first stage of reform, grain imports would fall substantially while imports of meat and protein feed concentrates would tend to rise. In a second stage, with economic reforms fully in place, and assuming reasonable gains in productivity, the former USSR could, in theory, even begin to become a net food exporter. Admittedly, this is a long-term perspective and the Soviet Union has a long way to go to achieve the necessary conditions.

The construction of a model requires a number of assumptions, and its results therefore have to be used cautiously. But the possible direction of post-reform developments in the Soviet food economy is supported by practical experience in Hungary, the Czech and Slovak Federal Republic and, particularly, in Poland. In 1989, Poland was still dependent on western food aid. After introducing a far-reaching economic reform package, including price liberalisation and the elimination of subsidies, not only have the long queues in front of the food shops disappeared; in 1991, with the same production volume as in 1989, Poland became a net exporter of the main agricultural commodities. ■

James Andanson/SYGMA

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The Mounting Pile of Waste Paper

Wilhelm Kurth

The waste paper generated in the OECD area is made up of a myriad of paper and board products – newspapers, magazines, packaging material, office documentation, private and business correspondence, advertising material, kitchen paper towels, and many others. And, with the growing consumption of paper and board products in advanced economies, the amount gets higher and higher. Most paper ends up as solid waste immediately after serving its purpose; other forms escape that fate – for some time, at least – because their use is more permanent: books, permanent records, wallpapers, and a number of industrial uses (for example, in shoes and cars, or as building and insulation material). If these products were added to the pile, it would be some 20% higher.

Can you imagine a pile of 150 million tons of waste paper? That is approximately the quantity the OECD countries generated in 1990, the largest amount ever. Compressed into bales, it would cover the entire city of Paris to a depth of two and a half metres. What measures are being adopted to deal with this growing problem?[1]

How do societies cope with the waste-paper pile? The Figure depicts the principal means the OECD countries use to dispose of waste paper. In almost all of them, the most important method is the traditional one of landfilling (that is, controlled disposal on land): up to 63% of all waste paper ends up here. But landfill sites are growing scarcer in many OECD countries, and the costs of operating them are increasing.

The second biggest outlet is recycling in the domestic paper industries themselves, which in OECD countries absorb

1. **Environmental Issues: Waste Paper**, available free of charge from the Sectoral Issues Division of the OECD Directorate for Science, Technology and Industry.

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The recycling of waste papers, increasingly demanded by the public, requires a constant input of 'virgin' material...

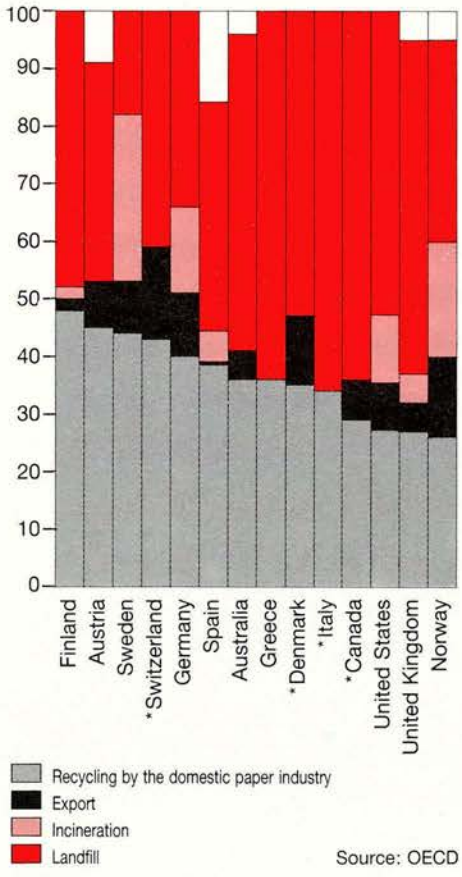
James Andanson/SYGMA

between 27 and 48% of waste paper. Such recycling is increasingly demanded by the public, notably for environmental protection, in part because of the savings in natural wood resources that public opinion expects to result.

In a few countries, incineration is also an important way of getting rid of paper and other forms of waste, especially from households. Relatively small quantities of waste paper are exported, mainly to countries in Asia, where they are recycled.

Composting – especially of boxboard waste – is a new approach which is gaining interest in a few countries (Canada is an example); if present research succeeds, it could well prove a serious option for disposal.

Figure
DISPOSAL OF WASTE PAPER, 1989
% of total



Source: OECD

*For these countries, landfill includes incineration

Future trends in the disposal of waste paper will clearly show a shrinking role for landfill. And it is interesting to see that incineration, in the countries where it is practised, is expected to increase. As a wood-based product, waste paper has a high energy content and, if the energy generated in incineration is recovered (which is more and more the case), can provide a substantial amount of town heating. It could then replace heating based on fossil fuels, as the example of a number of cities in Europe shows – in particular, in district heating in Sweden. Where the waste paper cannot be recycled, incineration, when coupled with energy recovery, is thus considered an alternative to landfilling.

Opportunities for Recycling

Changing the pattern of disposal, and, in particular, stepping up recycling, is not as easy as might be thought because it depends on a number of factors. The most important of these is an efficient collection system which would permit waste paper to be recovered for re-use instead of being thrown away with other waste material, particularly with household waste. Considerable efforts have been made in OECD countries to boost recovery in recent years; statistically, they are reflected in recovery rates of 28–49% (Table 1). Existing methods are constantly being improved upon and new ones tried out, which is expected to lead to recovery rates of 50% in many OECD countries by 1995, with particularly high ones for packaging material, as well as for newspapers and similar publications.

What quantities of waste paper are re-used in the paper industry? In a few countries (Table 2) waste paper accounts for more than 60% of the total production of paper and paperboard products. This figure is expected to grow, with utilisation rates of around 70% being expected in some countries by 1995. But the situation varies. The countries that are highly endowed with wood resources and are sub-

Table 1
WASTE PAPER RECOVERY RATE[1]
%

	1980	*1989*	*1995*
Australia	30	33	n.a.
Austria	33	48	50
Canada	22	28	42
Denmark	26	32	50
Finland	42	48	n.a.
France	30	34	n.a.
Germany	34	43	48
Greece	20	28	35
Italy	30	26	33
Netherlands	45	49	55
Norway	20	26	50
Portugal	32	42	50
Spain	37	39	50
Sweden	33	44	50
Switzerland	30	47	50
United Kingdom	32	30	36
United States	27	32	40

n.a.: not available.
1. Waste paper collected for re-use as a percentage of paper and paperboard consumption.
Source: OECD

stantial exporters of pulp and paper products have low domestic consumption compared to production (Finland, Norway, Canada and Sweden, for example), and as a result low utilisation rates of waste paper – often despite intensive domestic recovery. This sets limits to the utilisation of waste paper in these countries; it has been estimated, for example, that even if all Finnish waste paper were recovered, its use in new products would rise to as little as 10%.

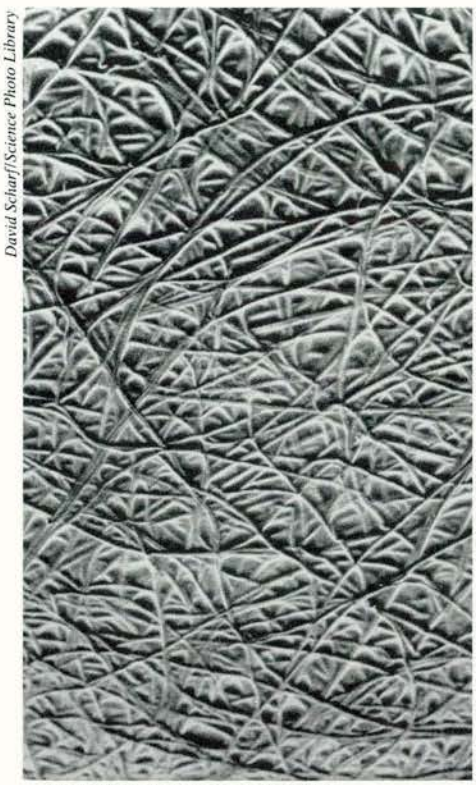
Increasing the recycling of waste paper is not entirely straightforward. In addition to separating paper from other kinds of waste, sorting by different kinds ('grades') to improve homogeneity is of crucial importance. It would, indeed, allow an extension of the use of waste paper in a large number of paper products and the production of a first-class end-product composed of as much as 100% recycled fibre. One limitation – generally unknown to the public – is that waste-paper fibre cannot be re-used indefinitely: it becomes degraded every time it is recycled. It therefore requires input of 'virgin' material to prevent the product from declining in quality. Consumer acceptance of recycled paper products, which is still low in some uses because traditional products are preferred, may increase with the growing environmental conscienciousness in society at large, and it may thus provide the demand the industry requires to recoup the additional investments necessitated by re-use. 'Quality requirements' – such as strength, brightness and durability – limit recycling in specific applications (for permanent records, for example).

Table 2
WASTE PAPER UTILISATION RATE[1]
%

	1989	1995
Australia	42	49
Austria	38	40
Canada	11	25
Denmark	68	75
Finland	5	6
France	46	50
Germany	45	50
Greece	32	35
Italy	48	52
Netherlands	65	70
Norway	8	12
Portugal	39	45
Spain	62	68
Sweden	11	13
Switzerland	49	55
United Kingdom	57	63
United States	26	31

1. Waste paper used for paper and paperboard production as a percentage of total paper and paperbroad production.
Source: OECD

David Scharf/Science Photo Library



... to maintain the quality of the fibres.

Recycling can also generate new kinds of environmental problems. The sludge which results from the ink, degraded fibre and other contaminants washed out of the waste material has to be disposed of. (Every ton of recycled waste paper gives rise to between 50 and 300 kg of such dried sludge.) Much of the sludge is landfilled after it has been 'dewatered' and dried, and research is underway to use it also for other purposes, such as soil conditioning or as mulch in agriculture. These new environmental problems will require more research as the public demands, and the paper industry uses, more waste paper as raw material.

At the present, waste-paper use for the manufacture of new products varies extensively between the different types of paper and paperboard products (Table 3). It is generally highest for packaging and paperboard material, followed by tissues and newsprint, and lowest for printing and writing paper. These differences are mainly due to quality requirements of the final product, consumer acceptance, and not least, low availability of well-sorted waste paper.

Can increased recycling eventually lead to a reduction in the use of virgin wood material, and to the felling of fewer trees for paper production? This question is often posed in view of the vast quantities of paper consumed in advanced societies. The answer is one of degree. In a number of countries, especially where there is relatively little by way of natural wood resources (in continental Europe, for exam-

Table 3
WASTE PAPER IN PAPER PRODUCTS, 1988–89
%

	Newsprint	Printing and writing	Tissue	Packaging	Paperboard
Australia	0	7	5	70[a]	
Canada	1	n.a.	52	38	
Denmark	n.a.	n.a.	35	97	
France	46	10	40	79	62
Germany	59	15	38	92	
Greece	n.a.	n.a.	8	70	
Italy	2	3	2	88	
Netherlands	50	2	70	83	
Norway	0	0	90	50–60	
Spain	25	10	65	87	
Sweden	15	0	55–60	18–20	
Switzerland	40	5	30	90	
United Kingdom	55	7	40	50	96
United States	21	6	34	5[b]	36[c]

n.a.: not available.
a. Including industrial purposes.
b. Includes special industrial paper.
c. Percentages vary between different paperboard grades.
Source: OECD

Tom Craig/REA

Incineration is providing an increasing amount of town heating.

ple), almost all of the virgin wood used for paper production stems not from felling but from the wood waste generated by other timber processing activities, such as saw milling (in the form of 'slabwood'), furniture manufacture, building, from the clearing of forests, and from imports.

The situation is naturally different in countries highly endowed with wood resources, where more virgin material is used in paper production. In addition, there are time considerations. Savings in natural material will occur only as long as there are technical and economic opportunities for recycling still to be exploited. So, if savings of virgin material are to be made, in the long run they will have to come from changes in consumer behaviour.

Government Policies and Private Action

One of the main environmental concerns of the day is the pollution caused by the generation of large quantities of waste paper and the mounting difficulties of disposing of them. In some OECD countries, governments have adopted a clearly defined approach, generally as part of the general management of solid waste. There are different priorities in the handling of waste, sometimes called a 'hierarchical' approach. This is the case in the United States, Germany, Austria, Finland and Italy. It establishes four priorities: in descending order, waste avoidance at the source ('source reduction'), recycling, energy generation, and landfill. Different 'hierarchies' exist in other countries, but recycling always ranks high.

The growing emphasis on recycling can be observed in all OECD countries. In the United Kingdom and Denmark, the government has announced a recycling target of 50% of the recyclable content of the domestic waste stream by the year 2000. The Canadian government has announced its intention to reach a target of 50% diversion of waste from disposal by the same year. In the United States, the Federal Environmental Agency has set a national recycling target of 25% for total solid waste; and several individual states are considering overall recycling goals of up to 50%. Recycled content requirements, particularly for newsprint, are receiving attention; in a few US states, specific regulations have been passed.

Achieving recovery goals depends on the existence of an efficient recovery system. Unlike solid waste collection in general, for which the responsibility lies with the municipalities, waste-paper collection is usually a commercial business in the hands of private merchants and waste-paper dealers. As a result, it has an important economic dimension, in that it is driven by, and must satisfy, the cost/benefit considerations of private entreprise. That can have a significant impact on the stability, or otherwise, of supply and prices, as well as on the sorting activities, since the resale price of waste paper, which is often low in relation to the cost of collection, tends to act as a disincentive.

So can governments stimulate re-use of waste paper? Attempts to do so are currently rare: incentives targeted at the paper industry exist only in a few countries. In 1978, for example, a scheme established in the United Kingdom provided for grants of up to 25% of expenditures on plants to process waste paper; this scheme has been ended. Some financial incentives currently exist in the United States in individual states; and some of them offer tax benefits to businesses that invest in facilities to recycle materials. In Denmark, support can be granted for investment in recycling production. In Australia, there are exemptions from wholesale sales tax for paper products made entirely out of recycled fibres – which also works as an incentive to the consumer.

Recycled paper products are similarly treated. Encouragement to paper users generally is in the form of government regulations; such encouragement often begins 'at home', in government offices themselves; regulations to this effect exist in Denmark, the United States, the United Kingdom, France, Switzerland, Italy, Australia and Germany.

Outside government itself, the authorities sometimes exercise moral support or persuasion to increase the use of recycled material, by, for example, chain stores and producers of notepads, school books and the like. Occasionally, government support for initiatives to mark recycled products accordingly, as a means to sustain the environmental conscienciousness of the consumer, works in the same direction.[2] Work has yet to be undertaken to discover the effects of such incentives and schemes.

□ □

Managing the pile of waste paper, from collection to re-use of recycled paper products, has traditionally been a matter mainly of private responsibility and initiative in the OECD countries. The results so far have been satisfactory. Waste paper has been disposed of in ways that have kept the environmental problems largely under control. Recovery of waste paper, and particularly recycling it back into the paper industry, have attained high proportions and are expected to make further progress.

But there are also signs that the ever-growing quantities of waste paper, and packaging in particular, are provoking social pressure, to which governments intend to respond. Some countries are considering new regulations in waste paper and especially of packaging; the German government recently introduced a specific packaging regulation. These will establish new patterns of behaviour in the collection and trading of waste paper and, eventually, its re-use in the paper industry. What impact those regulations will have is difficult to predict, since it will be some time before their effectiveness can be assessed. ■

2. See Jim Salzman, 'Green Labels for Consumers', **The OECD Observer**, No. 169, April/May 1991.

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25 years of the *Economic Outlook*

***The* OECD Economic Outlook – *the Organisation's half-yearly macro-economic assessment of the state of the world economy – has just celebrated its 50th edition. The consistency of its projections and analysis, underpinned by a unique model and data system, makes it an important guide to domestic and international policy-making.*[1]**

Léo Jouan/OECD

The press conference at the launch of the 50th Economic Outlook.

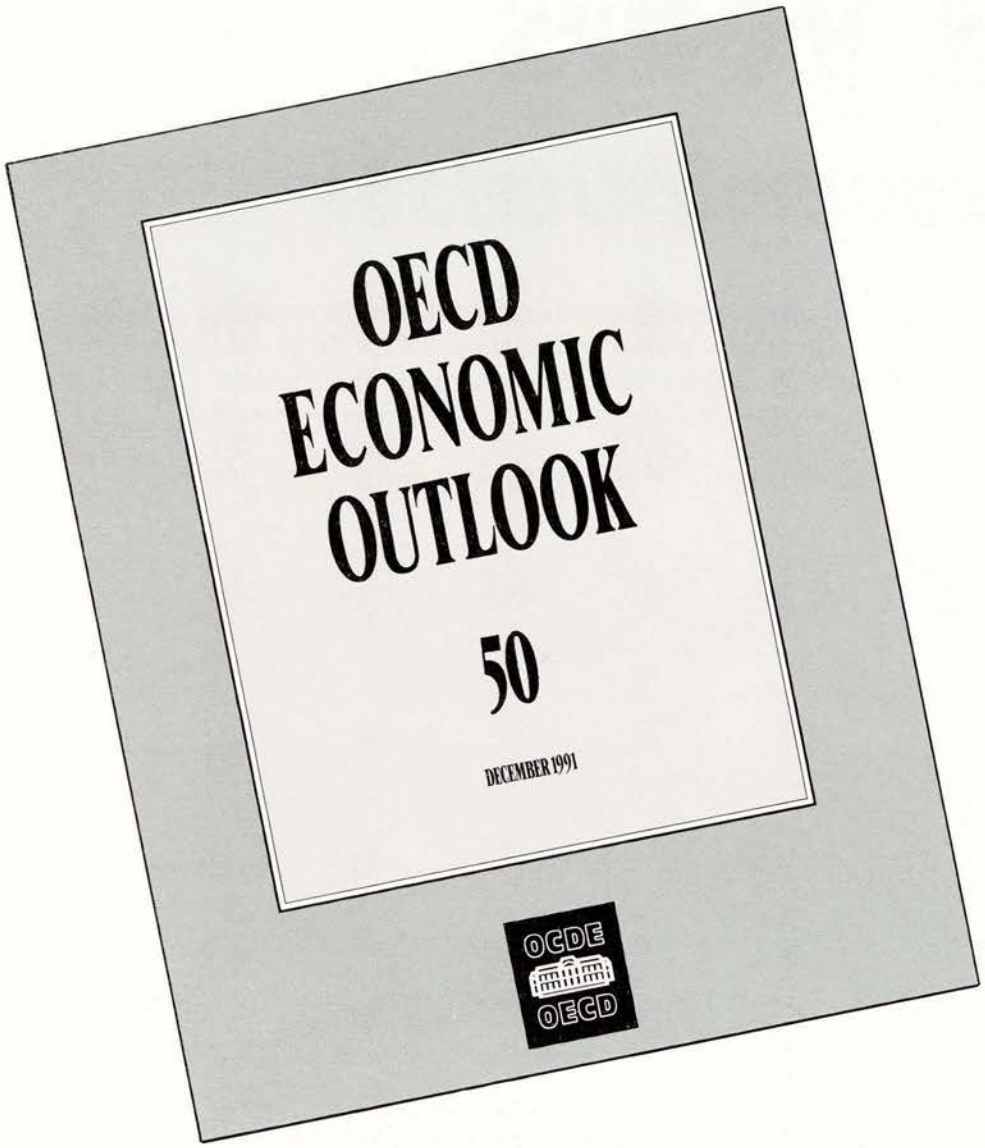
The governments of OECD countries devote a lot of resources to maintaining an enormous stock of knowledge about their economies. They have evolved advanced methods of taking their country's economic pulse, as a basis for formulating economic policy; and the accuracy with which they do it depends on the quality and the timeliness of the available data. Inevitably, policies are based on incomplete information, and governments must ensure that the policies they devise achieve as closely as possible their intended results. One of the earliest tasks of the OECD was therefore to help governments assess the likely effects of a given policy change, both in the country of its origin and on its trading partners.[2]

The behaviour of economic variables (investment, consumption, inflation and growth, for example) is far from self-evident. Economic activity is the result of billions of decisions by economic 'actors' – buyers, sellers, investors, consumers, and so on – public and private. These decisions can take a multitude of forms, ranging in size from agreements to invest millions of dollars in industrial plant to an individual's purchase of one packet of biscuits rather than another. All such actions have an effect on changes in the volume and structure of the economy.

Before they can plan policies for the future, governments have to know what has already happened. So the *OECD Economic Outlook* began its life as an attempt to

1. **Economic Outlook**, No. 50, OECD Publications, Paris, 1991; see also the centrefold of this **OECD Observer**.

2. See John Llewellyn, Stephen Potter and Lee Samuelson, *Economic Forecasting and Policy: The International Dimension*, Routledge & Kegan Paul, London, 1985.



'predict the present'. Between the gathering of raw data in OECD countries, their processing in national capitals, their arrival at the OECD, their harmonisation with other national sources and their being used as a basis for analysing the economic situation, the world had moved on. The OECD's member countries thus wanted to know what were the major economic trends since the preparation of the data, six months or so previously. The only way of doing this was to take the most recent set of figures and extrapolate the trends they revealed into the present. Slowly, this extrapolation evolved in its turn into a sophisticated forecasting exercise.

Although the *OECD Economic Outlook* takes into account official and private national macro-economic projections for member countries, its projections are based on the Organisation's independent assessment of the world economy. A central feature of the *Economic Outlook* is that it combines individual analyses of the OECD member countries, general economic assessment and analyses of specific topics. Every effort is made to ensure that these are internally and externally consistent. The analysis is therefore heavily weighted towards international trade and financial linkages, and the process of overall assessment depends critically on the consistent interaction of domestic and external factors. The aim is to achieve a coherent view of the world economy.

The consistency of external trade assessments is one of the hallmarks of the OECD's projections. Imports and exports have to add up world-wide, and discrepancies have to be explained. The statistical agencies who produce national projections are not well placed to ensure that their figures are consistent with those from the rest of the world. The OECD is.

The first *Economic Outlooks* were based, as now, on work already being undertaken by the OECD Economics and Statistics Department (ESD) for the Organisation's Economic Policy Committee and its supporting group of national experts, the Working Group on Short-Term Economic Prospects (STEP). The focus of this analysis, in its earliest days, was on monitoring growth rates: in November 1961 a ministerial meeting at the OECD had set a target for the OECD member countries of 50% over the following decade (an annual rate of 4.2%, which, indeed, was surpassed). In the apparently stable, Bretton-Woods world of the 1960s, inflation was not widely regarded as a pressing problem. By the end of the decade that view had changed – and the importance of policy analysis (rather than mere monitoring and forecasting) had become evident.

The first impulse for publication came from the OECD Secretariat, who felt that it would allow the material to be made available to a much wider public. As now, it was published on the authority of the Secretary-General – that is, it does not have first to be approved by the Council of the OECD, the supreme body of the Organisation, which is composed of ambassadors from each of the 24 member countries. (In any event, member countries' reactions to the figures and analysis have already been taken into account – box, p. 34.) Indeed, if this procedure had not been followed at the inception of the *Economic Outlook* it might never have appeared as an independent publication: initially, there were considerable misgivings among some of the national delegations to the OECD about the wisdom of 'going public'. At this period many of the member countries did not produce forecasts on their own economies and were far from convinced of the advisability of publishing the conclusions of an external body. Some countries, moreover, were worried that such a forecasting exercise would be seen as the first step towards national planning. There was also the consideration that the OECD's 'provisional projections' might become self-fulfilling prophecies – that, for example, a forecast of inflation might stimulate inflationary behaviour. ▶

THE OECD INTERLINK MODEL

The OECD Interlink model and its data base are a central feature of the Organisation's forecasting process; the model, indeed, was structured to take account of the data bases for individual countries but also to reflect the international nature of its uses within the OECD. For example, it allows projections of demand and expenditures in a given country to be pursued into the effects on the 'market growth' of other countries and hence into the likely impact on their exports.

The model has four clear functions. First, it is a repository of information about the structure of the world economy, based on empirical analysis. Second, it is a software system which allows economists to communicate their judgement to their colleagues in a manner which will produce coherent results. Third, it allows forecasts to be produced on the basis of the data it contains. Fourth, and importantly, it is a simulation vehicle which allows modification and experimentation in 'sensitivity analysis' to examine the risks and uncertainties of the projections and the production of alternative 'scenarios', which are regularly presented to OECD committees and published in the *Economic Outlook*.

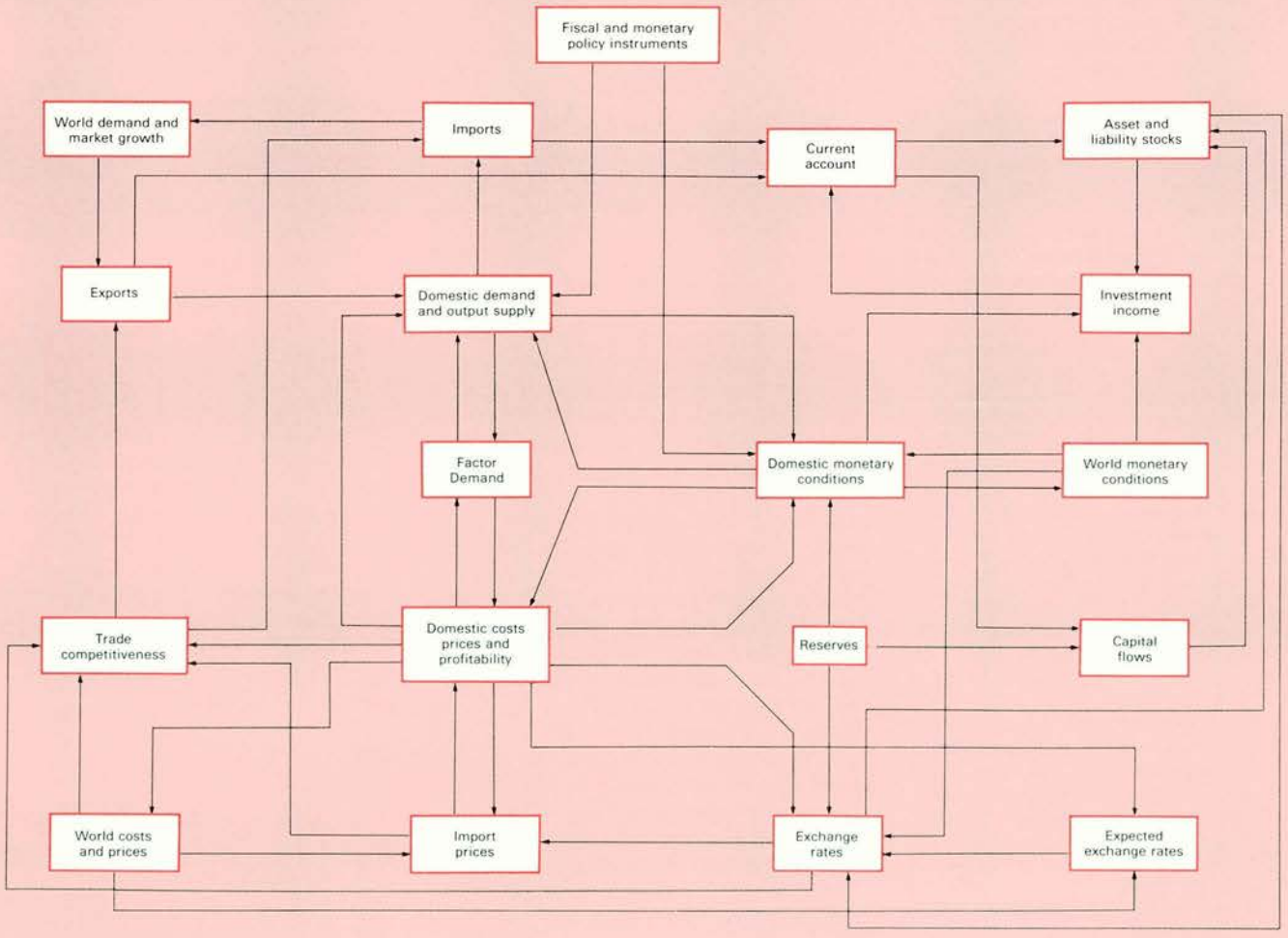
The Interlink system contains empirical macro-economic models for each of the OECD member countries, as well as six slightly less sophisticated models, covering the non-OECD regions: the OPEC countries, the Dynamic Asian Economies, other parts of Asia, central and eastern Europe, Latin America, and Africa. The OECD-country models contain blocks of equations to determine the main components of demand and supply, wages and prices, investment, the prices and volumes of foreign trade, the distribution of income, output and employment, stock building and financial variables, which include short- and long-term interest rates, key monetary aggregates, and exchange rates.

At the beginning of each forecasting 'round' a series of simulations is carried out, based on the previous forecasts, and updated by new assumptions – about exchange rates, commodity prices, fiscal and monetary policies in member countries, and about non-OECD countries. The results of these simulations are fed back to the country desks, who can react. If, for example, there is a large change in monetary or fiscal policy in one of the larger OECD economies, the projections for that country – and the effects on other countries – can be traced through and altered.

During the round, which provides the figures submitted to the STEP group, the model also furnishes the framework for assembling forecasts from the country desks, who too use various parts of the model for their own assessments. Thus their forecasts are always compatible with its data structure and comparable with the corresponding equation-based projections. At the same time the ESD's Foreign Trade and Investment Division carries out a series of analyses using the model to produce the international trade forecast: indeed, the trade relationships between and beyond OECD countries have always been central to the role of the model. They enable the trade analysts to assess the various import demands made by country desks from 'their' countries and subsequently to incorporate them into the export trade forecast on a consistent basis. They also do this both for commodity prices and for the prices of other traded goods and services which, taken together, determine the balance of payments.

Although the model was originally based on a relatively Keynesian, demand-determined view of the world, the ESD has done much to incorporate empirical analysis related to supply and financial-market considerations over the last ten years.[1]

1. The range of empirical studies underlying the current structure of Interlink are regularly reported in the 'Working Papers' of the OECD Economics and Statistics Department (available free of charge; details from the ESD) and in the **OECD Economic Studies**.



HOW THE *ECONOMIC OUTLOOK* IS PRODUCED

The technical expertise of the OECD is expressed primarily through a series of committees, expert groups and working parties, of which there are no fewer than 150. These groups assemble expert representatives from the national capitals. Two important economic fora are the Economic Policy Committee (EPC) and a group of national experts which provides technical support, the Working Group on Short-term Economic Prospects (STEP). The bulk of the material that the *OECD Economic Outlook* contains is produced first to service these two bodies.

At no point does the work on the content of a given issue of the *OECD Economic Outlook* start entirely from scratch: there is always the basis of the projections made in the previous *Economic Outlook*. The OECD staff thus begin their deliberations, working to a very strict timetable, by focussing their attention on the major differences in the economic environment since the publication of the previous *Economic Outlook*. This first stage takes the form of a general internal meeting of the OECD's Economics and Statistics Department (ESD), where an attempt – on occasion in an atmosphere of considerable intellectual excitement – is made to determine the economic climate, some three months ahead of publication. This meeting is backed up by technical expertise, particularly in attempting to assess the implications of changes in exogenous variables, such as exchange rates, government spending, interest rates and oil prices, assisted by model simulations and other information.

The 'country desks', the ESD's specialists in the economies of the individual member countries, then prepare projections, in consultation with the OECD's 'topic' specialists, for 'their' countries which are discussed at a series of internal meetings. The ESD then produces a set of forecasts which is circulated among national governments before the STEP meets; they are then discussed by the STEP. Any divergence between countries' own assessments and those of the ESD are identified. Major differences are signalled to the EPC, which usually meets a week or so after the STEP. The ESD also prepares a substantial amount of policy analysis, in particular in the form of a 'general assessment' and a set of short notes on individual countries. Projections are then revised, taking account of comments made at the STEP and the most recent data; and the analyses are also revised in the light of discussion at the EPC – and another *Economic Outlook* is ready for publication.

These doubts had to be overcome before the first *Economic Outlook* appeared – on these pages, in *The OECD Observer*, No. 17, August 1965. It took up a mere 12 of them, contained ten tables and three charts. The first independent publication appeared in July 1967; it had already swollen to 90 pages in length and was richly furnished in graphs and tables. It was broken down into three main sections – 'General Trends in OECD Countries' (further divided into 'Internal Developments', 'Monetary Developments' and 'Trade and Payments'), 'Labour Market Development' and a section which surveyed developments in the OECD's largest economies. The latest *OECD Economic Outlook*, published in December 1991 and the 50th as a free-standing publication, takes 242 pages, and contains 122 tables and 20 charts.

Evolving Analysis

The evolution of the *Economic Outlook* has been gradual but continuous. The earliest issues contained fewer numbers than current ones; the largest seven countries were then the main focus of interest, with less attention paid to the other OECD member countries, as much for want of statistical resources as any other reason. The growth of the OECD's Economics and Statistics Department in the early 1970s permitted an increase in the number of OECD countries covered in detail, in the depth of the analysis, and in the attention given to non-OECD countries.

Not surprisingly, the content of the *Economic Outlook* has changed. In its early days the OECD was more or less the only body of its kind making such forecasts. Now there are many hundreds of institutions competing for the attention of the world's decision-makers. Yet the OECD is still virtually the only organisation producing forecasts that are both internally and externally consistent.

Forecasting activities themselves now take up proportionately far less time in the work programme that produces the *Economic Outlook*, for two reasons. The first is the enormous productivity gains from growing improvements in computerisation and, since the early '80s, the use of the Interlink model: calculations that previously took an entire day can now be completed within seconds (box, p. 33). The other is that the OECD, happy to let its forecasts stand in their competitive environment, now devotes much more attention to the analysis that accompanies those figures.

Not least, there has been a considerable evolution in terms of the issues covered. In those early days, the *Outlook's* concerns were those of traditional macroeconomics – employment, inflation, savings rates, foreign trade, investment, balance of payments, and so on. A quarter of a century later, although such considerations obviously still play an important role, the growing interest in structural adjustment has enlarged to cover micro as well as macro issues.

But the OECD has kept pace with – indeed, has led – this change, and the Organisation has developed the expertise to allow it better to integrate macro and micro considerations. And as the OECD fosters its internal 'horizontal' approach, complementing the analysis of one Directorate with the expertise of another, the *Economic Outlook* now reflects structural work being carried out elsewhere in the Organisation.

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The *OECD Economic Outlook* will face daunting intellectual challenges in the years ahead to continue to evolve in line with the changes taking place in the world economy – the emergence of the countries of central and eastern Europe as market economies, the increasing importance of the dynamic Asian economies, the new outward orientation of Latin America, the growing desirability of global co-operation on a variety of issues. All these will have to be assessed and assimilated. The OECD's unique approach means that it is well placed to do this. ■

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Spotlight on The Czech and Slovak Federal Republic

In comparison with other former member countries of the CMEA now in transition to a market economy, the Czech and Slovak Federal Republic (CSFR) looks like a quick learner. That is what emerges from the economic survey of the CSFR carried out by the OECD Centre for Co-operation with the European Economies in Transition under its 'Partners in Transition' programme.[1]

Val Koromzay

The Czech and Slovak Federal Republic is proving to be quick on the uptake in many ways. Although the country was not beset by serious macro-economic imbalances before the 'Velvet Revolution' of November 1989, it had to manage its structural reform programme from scratch, not being able – unlike its two neighbours Hungary and Poland – to build on substantive earlier reforms. Hardly two years ago Czechoslovakia had seemed a very model of a centrally planned economy: no legal base for a market economy, virtually no private sector, economic activity concentrated in large units, prices that were completely controlled, heavy dependency on the CMEA for its foreign trade.

Today, in less than two years, a substantial amount has been accomplished. Restrictions on prices and foreign trade have been almost completely lifted; subsidies have melted away; an ambitious privatisation programme has been worked out and is now under way; and the first foundations of a legal base which will allow a market economy and a private sector to develop have been laid, although in a number of areas progress has been slowed by still unresolved issues concerning the constitutional division of functions between the Federal government and the Czech and Slovak Republics.

Most remarkable of all, this first phase of the reforms has been carried through without undermining macro-economic stability. As matters stand today, inflation has steadied at a reasonable rate, there is a budget surplus, external debt has increased hardly at all, the exchange rate is under control and the external deficit is within limits. Above all, despite the hardships they are suffering as purchasing power falls and unemployment rises, the Czech and Slovak peoples are behaving with a calm and patience that signal their maturity.

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Judicious Macro-economic Direction

In 1990 the Net Material Product (NMP) of the CSFR declined by only 1.1%, and domestic demand increased despite a 5.7% fall in real wages. This is ascribable to the steep drop in private saving and to the policy of partially compensating households through the budget for the disappearance of consumer subsidies. That said, consumption was boosted artificially by householders' stockpiling at the end of 1990 in anticipation of the devaluation of the crown. The picture for the first six months of 1991 is therefore a much gloomier one, with an estimated decline of 13.8% in NMP and a 27% fall in real wages attributable in part to the serious financial difficulties that businesses are facing. Unemployment, too, has been rising rapidly since mid-1990. By August 1991 5.1% of the labour force (around 400,000 people) were out of work, and the rate may well be up to 7% by the end of that year.

Price deregulation has made spectacular progress since the beginning of 1991. The percentage of GDP under price regulation was reduced from 85% in 1990 to between 13 and 16% in January, and by October to only 5–6%. As a result prices jumped by 49.2% during the first half of 1991, but then steadied during the summer and are expected to have increased by no more than 5% from June to the end of the year. A wage-price spiral has been avoided, in part due to the operation of the tripartite agreements between the government, employers and the trade unions concerning allowable wage increases. But actual wage developments have been even weaker than called for in these agreements because enterprises were often unable to pay higher wages.

Macro-economic stability was underpinned by tight monetary and fiscal policies. Total subsidies were reduced from 16% of GDP in 1989 to only 4.6% in 1991 and the share of government spending in GNP is down by some 12 percentage points. The budget, which recorded a small surplus in 1990, moved towards a very large surplus in the first half of 1991, leading to some policy adjustments to bring it to rough balance for the year as a whole. Monetary policy, too, was tight, and growth of broad money was kept below the projected rate. The banks, indeed, virtually stopped lending in the first part of 1991.

The current account in convertible currencies deteriorated from a $400 million surplus in 1989 to a $1.1 billion deficit in 1990, largely due to a sharp rise in imports. That deficit was financed entirely by a reduction of reserves. This year, because of good export performance, the deficit should not exceed $500 million. The devaluation of the crown in December 1990 was an important factor in stimulating export growth, since it brought about a significant depreciation in real terms, despite the jump in prices. The CSFR has been the only country in central and east-

1. **OECD Economic Surveys: The Czech and Slovak Federal Republic**, CCEET/OECD Publications, Paris, 1992. See also **OECD Economic Surveys: Hungary**, CCEET/OECD Publications, Paris, 1991.

ern Europe not to have been forced into further devaluations. This will allow Czechoslovakia to use the exchange rate as a credible nominal anchor for 1992, making structural reforms a good deal easier.

Three Major Structural Reforms

Alongside liberalisation measures intended to allow market signals (prices, wages, exchange rate, labour) to work, the authorities have begun a thorough overhaul of the old system. Reform on three main fronts – privatisation, integration in the world economy and financial markets – is proceeding, though at an uneven pace.

The government has made privatisation the cornerstone of its structural policies. The task is a formidable one: it requires shifting to the private sector about 120,000 small and medium-sized enterprises (SMEs) and more than 4,000 large enterprises, which are often highly concentrated – in 1989 almost half of total manufacturing production was in sectors in which the top five enterprises accounted for over 40% of the market.

Though the initial aim of selling 50,000 SMEs in 1991 may seem overambitious, small-scale privatisation is nevertheless proceeding rapidly. As of August 1991, of the 25,000 and more businesses targetted, 12,347 had been privatised, yielding 10 billion crowns ($357 million) of revenue. Admittedly, uncertainty about restitution has kept the proportion of direct sales down to 10%, but leases at pegged rents, enabling a buyer to acquire a business and run it for five years, do not form an obstacle to the development of the private sector. Restitution of SMEs to previous owners is another element of privatisation. These restitutions seek to undo nationalisations which occurred from 1955 onwards; it is expected that some 70,000 properties will be returned.

Under the large-scale privatisation plan, it is hoped that some 2,285 companies, with an estimated book value of 200 billion crowns ($7.1 billion), will be privatised by the summer of 1992 through a voucher system. Every adult Czechoslovak citizen resident in the CSFR (around 12 million in all) can acquire 1,000 voucher points, issued by the federal ministry of finance, for the price of 1,000 crowns ($36). These points can be used to bid for shares in the companies to be privatised. Once the auction process is completed, the value of shares of a given company can be established by dividing the number of investment points offered by the number of shares issued.

Of the 2 to 4 million people expected to apply for vouchers, half are expected to do so through investment funds to which they would give their points to be invested on their behalf. It is to be hoped that investment funds will be involved in exercising ownership control over enterprises, so as to help offset the principal disadvantage of the voucher system – weak control owing to dispersed ownership.

Finally, up to 6% of large state enterprises nationalised between 1948 and 1949 are likely to be privatised under restitution arrangements.

The integration of the CSFR in the world economy is already under way. In the first half of 1991 Czechoslovakia, which used to be more deeply involved (up to 80% at one point) in CMEA trade than most of the other countries, for the first time exported more of its production to the West than to its former CMEA partners (42%, against 39.6%). This opening up of the export market has made it easier to adopt the relative price structure prevailing on the world market and to reform domestic prices.

Since 1 January 1991 all registered enterprises have been authorised to undertake foreign trade. The simultaneous introduction of internal convertibility for the crown has made the right to trade operational by providing access to foreign exchange for imports at a fixed exchange rate, and quantitative restrictions on imports have been phased out almost completely. Yet concern not to compromise macro-economic stability prompted the government to introduce some provisional measures. In December 1990 an import surcharge (initially set at 20% but reduced in June to 15%) was applied, mainly to consumer goods. Licensing was retained only for four categories of imports (crude oil, natural gas, narcotics, arms and ammunition); though some 20% of merchandise exports remain under license. A global import quota covering a few agricultural products was also temporarily introduced. To soften the impact on the economy of the collapse of the former CMEA trade, bilateral agreements were concluded, in particular with the USSR.

The CSFR has committed itself to an overhaul of its tariffs and has prepared a new tariff schedule which is to be submitted to the GATT under the procedure of a 'tariff restructuring'. This will have the effect of increasing the average tariff rate very slightly (from 5% to 5.7%). The government is also looking at ways of alleviating the lack of export financing and is planning to create by the end of 1991 an export guarantee agency, financed jointly by the state, the banks, exporters and possibly foreign capital. Development of foreign investment is being promoted by a federal agency, together with national agencies in each of the Republics. The regulations allow 100% foreign ownership and place no restrictions on the repatriation of profits. Tax incentives are also offered, but fewer than in Poland or Hungary.

Although a start has been made to develop financial markets, much still remains to be done in this area. A two-tier banking system, with central banking (monetary policy and prudential control) separated from commercial banking, became effective on 1 January 1990. But, for the time being, monetary policy relies heavily on quantitative restrictions on credits. And while in law all the banks (36 of them, including nine foreign subsidiaries) are now entitled to operate as universal banks, banking activities remain severely segmented, with a resulting lack of competition. Market mechanisms are still weak: the interbank market consists essentially of short-term deposits by the savings banks in each republic with the commercial bank dominant in the region, at negotiated interest rates. As yet, interest rates do not play a market-clearing role. Nonetheless, an active interbank market in foreign exchange is developing thanks to rapid growth in foreign currency deposits which, since the liberalisation of access to foreign exchange and the move to internal convertibility, have grown to account for almost 7% of broad money.

Non-bank financial intermediation is as yet insignificant. But as privatisation (in

Laurent Dappe

particular through the voucher system) gathers pace, steps are being taken to organise stock exchanges in Prague and Bratislava. With the exception of one open bond issue there are as yet no government securities. Once the proposed law on the state bank is enacted, however, which severely limits the capacity of government to finance its deficits through the central bank, markets in government securities are expected to develop rapidly, particularly in treasury bills, which are intended to become the principal instrument for managing government liquidity.

Desirable Corrective Measures

Given the present trend, and if privatisation goes according to plan, total output could start growing again in the second half of 1992, although this will not prevent a decline in GDP for the year as a whole and a continuing rise in unemployment. Stability is threatened in three ways. First, wage rises may gather pace, particularly if the newly privatised enterprises do not keep a tight hold on management reins once wage controls are lifted. Second, the tax base is likely to be eroded next year with the dwindling of enterprises' margins through pressure from imports and the resultant reduction in profit taxes. Budget balance may therefore be difficult to achieve, especially because the approach of the elections and the growth of social expenditures would seem to make a reduction in total spending difficult. Third, if privatisation does not lead to firm control of enterprises by their new owners, and to determined re-structuring efforts, management 'drift' could lead to increasingly difficult financial conditions in enterprises, and put pressure on banks to roll over credits of deteriorating quality.

As well as providing advice on macroeconomic management, the OECD makes some recommendations on ways of consolidating the success of the changeover. In industrial restructuring, while resisting the temptation to resort to sectoral policies, steps will have to be taken to speed up the effective take-over by the new owners of the running of the newly privatised enterprises. Then, to bring in expertise, foreign investment ought to be encouraged. And last, since large-scale privatisation will take a long time, the managers of state-owned undertakings have to be encouraged to begin straight away the process of adjusting their production to the market.

□ □

Consolidating the institutional and legal framework for a market economy has two top priorities. First, a new tax system will have to be established, introducing income tax (personal and corporate) and value-added tax; this ought to be possible by 1993. Second, the draft Central Bank Act ought to be brought into force as soon as possible so as to make that institution largely independent of the government and strengthen the prudential supervision of banking activities. De-specialisation of the commercial banks should be hastened, too, so as to foster competition. And above all, the underlying solvency of the large banks needs to be strengthened. The current near-absence of internal government debt means that the government does have some capacity to substitute its own debt for that of the state-enterprise sector and could thus carry out a recapitalisation operation.

A final priority for the government, if faulty policy conclusions are to be avoided, is that its statistical apparatus has to be improved, both in quality and efficiency. It would indeed be a pity if the Czechoslovak authorities – who have amply demonstrated their capability – were to see their efforts come to naught through the failure of policies which they had thought right but which in reality were mistaken because they were based on unreliable data. ■

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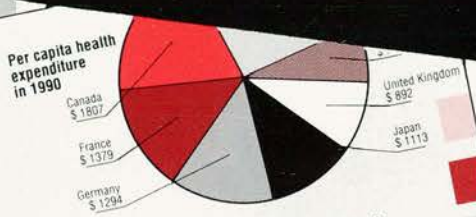

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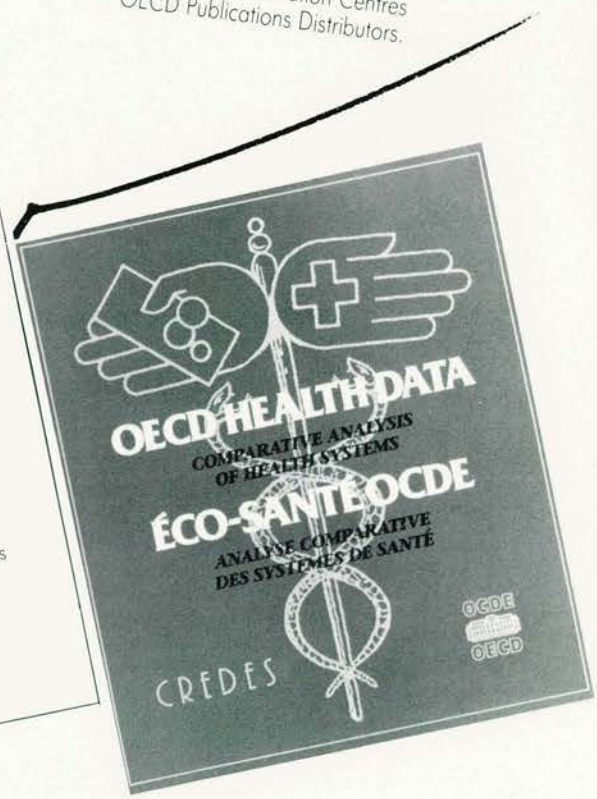

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OECD Economic Outlook

Highlights

The Path to Recovery

OECD growth appears weaker in the second half of 1991 than expected in the July *Outlook*, but the fundamental conditions for renewed growth at a moderate pace are in place. Thus, demand is expected to pick up in 1992 only gradually, as many households, firms and governments seek to improve their financial positions. By 1993, OECD output could be expanding at over 3%. Economic activity is recovering in countries where it had fallen, even though more slowly than expected in the United States; it is slowly picking up in countries where it had been weak; and it is slowing to a more sustainable pace in Germany and Japan – where signs of overheating had persisted into 1991. Hence, differences in rates of expansion across countries should narrow considerably. Underlying inflation could edge down in many countries. By late 1993 average OECD unemployment is projected to be unchanged from its present rate of just over 7%.[1]

Growth Prospects

The main force shaping the outlook for economic growth is interest rates. These have fallen markedly in countries that had experienced a recession, and have come down moderately in most other countries. Business profitability and longer-term factors, like the prospect of an enlarged and more closely integrated European market, are also favourable to the recovery of investment. Demand growth in each country should be reinforced by a more-or-less simultaneous expansion across countries: world trade is expected to turn up.

Uncertainty attaches to the timing and strength of the recovery of OECD growth, given recent softness of indicators. The impetus behind the projected pick-up of activity does indeed seem rather less than in past recoveries. Business and consumer confidence have levelled off and in some cases slipped following a rebound at the end of the Gulf war. Thus, there may be some further lag before the forces leading to recovery are fully felt. More fundamentally, the shallowness of the recession and high levels of indebtedness point to only a moderate pick-up of consumption and investment spending. The OECD consequently projects a weaker expansion than in previous upturns (Table 1).

A particular concern is that the expansion of credit could be inhibited. There are risks both on the supply side, where financial institutions may hold back in order to improve their balance sheets, and on the demand side, where households and firms may be slow to borrow and spend given levels of indebtedness that are already high. Evidence is not clear-cut on the strength of these factors and thus on the extent to which they may retard growth. It appears that, while problems in credit markets may have important effects on particular sectors and actors, they are not likely to derail recovery.

The Inflation Outlook

The *underlying* rate of OECD inflation, abstracting in particular from the rise and subsequent fall of oil prices between mid-1990 and early 1991, declined slightly during 1991. This trend should continue: a slow but steady deceleration of prices seems likely over the next year and into 1993 (Table 2). Significant slack in product and labour markets has emerged in most

1. **OECD Economic Outlook**, No. 50, OECD Publications, Paris, 1991.

Table 1

GROWTH OF REAL GNP/GDP IN THE OECD AREA[1]

seasonally adjusted at annual rates (%)

	Share in total OECD 1987	change from previous year				change from previous half-year				
		1990	1991	1992	1993	1991 II	1992 I	1992 II	1993 I	1993 II
United States	35.8	1.0	–0.5	2.2	3.8	1.4	1.8	3.7	3.9	3.8
Japan	19.2	5.6	4.5	2.4	3.5	0.8	2.7	3.3	3.5	3.7
Germany	8.8	4.5	3.2	1.8	2.5	–2.0	3.3	2.6	2.5	2.5
France	7.0	2.8	1.4	2.1	2.7	2.2	1.9	2.4	2.7	2.8
Italy	6.0	2.0	1.0	2.0	2.5	1.1	2.3	2.4	2.5	2.5
United Kingdom	5.5	0.8	–1.9	2.2	3.2	1.1	2.4	3.1	3.2	3.1
Canada	3.3	0.5	–1.1	3.1	4.1	2.5	3.1	3.8	4.2	4.1
Total of above countries	85.7	2.6	1.1	2.2	3.4	1.0	2.3	3.3	3.5	3.4
Other OECD countries[2]	14.3	2.9	1.0	1.9	2.7	1.3	1.9	2.5	2.8	2.9
Total OECD	100.0	2.6	1.1	2.2	3.3	1.0	2.2	3.1	3.4	3.3
Four major European countries	27.3	2.8	1.2	2.0	2.7	0.4	2.6	2.6	2.7	2.7
OECD Europe	39.8	2.9	1.2	2.0	2.7	0.6	2.3	2.5	2.7	2.7
EC	34.3	2.9	1.4	2.1	2.7	0.7	2.5	2.6	2.7	2.7
Total OECD *less* the United States	64.2	3.5	2.0	2.2	3.0	0.8	2.5	2.8	3.0	3.1
Industrial production:										
Major seven countries	–	1.9	–0.5	2.7	4.5	1.8	2.5	4.1	4.6	4.8
Total OECD	–	1.9	–0.4	2.7	4.3	1.6	2.5	3.9	4.4	4.5

	Share in total OECD 1987	% change from previous year			
		1990	1991	1992	1993
Austria	0.9	4.9	2.8	2.6	2.7
Belgium	1.3	3.7	1.4	2.0	2.7
Denmark	0.8	2.1	2.0	2.5	3.1
Finland	0.7	0.4	–5.2	–0.4	3.8
Greece	0.4	–0.1	1.0	1.3	1.6
Iceland	0	0	0.3	–1.6	0.5
Ireland	0.2	6.6	1.3	2.5	3.3
Luxembourg	0	2.3	2.5	2.9	3.3
Netherlands	1.7	3.9	2.2	1.8	2.3
Norway	0.7	1.8	4.1	2.0	2.9
Portugal	0.3	4.2	2.7	2.6	2.7
Spain	2.3	3.7	2.5	2.9	3.2
Sweden	1.3	0.3	–1.2	0.2	1.5
Switzerland	1.4	2.2	–0.2	1.2	1.8
Turkey	0.5	9.2	2.3	2.8	5.5
Total of above countries	12.5	3.1	1.2	1.8	2.7
Australia	1.6	1.6	–0.6	2.6	3.2
New Zealand	0.3	1.9	–0.4	1.0	2.0
Total of above 17 countries	14.3	2.9	1.0	1.9	2.7

1. Aggregates were computed on the basis of 1987 GNP/GDP weights expressed in 1987 US dollars.
2. Half-yearly data must be interpreted with care.

Table 2

PRIVATE CONSUMPTION DEFLATORS IN THE OECD AREA[1]

percentage changes; seasonally adjusted at annual rates

	1990	1991	1992	1993	1991 II	1992 I	1992 II	1993 I	1993 II
United States	5.0	4.0	3.6	3.5	2.7	4.0	3.7	3.5	3.4
Japan	2.4	2.7	2.0	2.1	1.4	2.2	2.1	2.0	2.0
Germany	2.6	3.4	4.0	4.0	5.5	3.5	3.8	4.8	2.6
France	2.9	3.0	2.9	2.7	3.0	2.9	2.8	2.7	2.6
Italy	6.3	6.4	5.4	4.9	5.0	5.6	5.5	4.8	4.6
United Kingdom	6.0	6.2	4.1	3.5	5.1	3.8	3.6	3.5	3.3
Canada	4.2	5.4	2.9	2.5	3.5	2.9	2.5	2.5	2.3
Total of above countries	4.1	3.9	3.4	3.2	3.1	3.5	3.4	3.3	3.0
Other OECD countries[2]	7.8	7.6	6.6	6.0	7.2	6.4	6.3	6.1	5.6
Total OECD	4.7	4.5	3.8	3.6	3.7	3.9	3.8	3.7	3.4
Four major European countries	4.2	4.5	4.1	3.8	4.7	3.8	3.9	4.0	3.2
OECD Europe	5.4	5.7	5.0	4.6	5.7	4.8	4.7	4.7	4.0
EC	4.4	4.6	4.2	3.9	4.8	4.0	4.0	4.1	3.4
Total OECD *less* the United States	4.4	4.7	3.9	3.7	4.2	3.9	3.8	3.8	3.3

	1990	1991	1992	1993
Austria	3.2	3.2	3.1	3.1
Belgium	3.5	3.3	3.1	3.0
Denmark	2.5	2.7	2.7	2.8
Finland	5.8	4.4	0.3	1.2
Greece	20.0	18.3	14.7	10.9
Iceland	12.8	6.8	8.0	8.0
Ireland	3.2	3.0	2.7	2.7
Luxembourg	4.1	3.2	3.2	3.0
Netherlands	2.4	3.4	3.4	3.8
Norway	4.5	3.4	3.0	2.8
Portugal	13.5	11.4	10.5	9.9
Spain	6.4	5.9	5.6	4.9
Sweden	9.3	10.0	3.5	4.0
Switzerland	5.4	5.8	4.5	3.5
Turkey	60.3	67.8	70.0	58.0
Total of above countries	8.0	8.2	7.1	6.3
Australia	6.2	3.5	3.3	3.9
New Zealand	6.1	2.8	2.5	2.3
Total of above 17 countries	7.8	7.6	6.6	6.0

1. Aggregates were computed on the basis of 1987 GNP/GDP weights expressed in 1987 US dollars.
2. Half-yearly data must be interpreted with care.

OECD countries and is likely to persist. Increases in hourly earnings in manufacturing have already slowed, and recent wage settlements point to further moderation. The average rate of increase of the OECD GNP deflator could be down to just over 3% in 1993, about 1 percentage point less than in 1990.

There are some dark spots in the inflation picture despite the prospect of lower inflation rates with less dispersion across countries. First, inflation is still expected to be unacceptably high in a number of countries even at the end of 1993. Second, the degree of disinflation seen so far is broadly in line with the past responsiveness of prices and wages to demand weakness – but no greater. This is an indication that efforts to make labour markets more flexible and product markets more competitive may not yet add up to a fundamental improvement in the flexibility of OECD economies.

Monetary Policy

A recovery of growth to a sustained, moderate pace – with inflation decelerating – would seem consistent with the objectives of monetary authorities. Thus, on the basis of the OECD's projections, there appears to be no need at present to adjust the basic stance of monetary policies, although interest rates could come down further in some countries as inflationary pressures subside.

A need to change the stance of monetary policy could arise, however, if the situation seemed to be evolving differently. The most difficult issue in the present conjuncture, with inflationary pressures receding somewhat, could be how and when to respond to the possibility that demand is faltering, and what weight to give to slow growth of money and credit aggregates in making this judgement. Several considerations are relevant here:

- the effect on demand of the most recent monetary policy easing has not yet been fully felt
- it is not clear how much sluggish expansion of money and bank loans will restrain recovery; the growth of credit and liquid balances in securitised forms should make output growth less dependent on bank finance
- it is important that any further easing not erode the credibility of the commitments of monetary authorities to achieve approximate price stability. Only if market-determined long-term interest rates come down, along with the short-term rates controlled by central banks, can an easing of policy be expected to improve growth prospects.

If, while giving these considerations due weight, interest rates were lowered, demand could be expected to respond, albeit with some lag; indeed, the experience of the past 40 years is that monetary policy runs a bigger risk of over-stimulation than of failing to boost activity.

In many countries the risks to activity are on the downside, so that debate is centred on the conditions under which it would be appropriate to ease monetary policy further. In a few countries, however, most notably in Germany, inflationary pressures persist, and thus monetary policy must remain oriented to containing them.

Exchange rates of major countries have fluctuated within ranges where relative prices and competitiveness are not serious concerns, and unwelcome external pressures on monetary policies have receded. Within the EMS, there have been some tensions because of the monetary policy constraints involved in maintaining the established parities, but these tensions have not been acute. The credibility that has been built up over recent years of unchanged parities has brought with it lower long-term interest differentials between EMS currencies together with expectations of exchange-rate stability. These conditions are supportive of investment demand.

Fiscal Policies

The steady reduction of budget deficits achieved in most countries over the 1980s, with the OECD general government deficit being brought down to some 1% of area GNP by 1989, has been reversed in the past two years, and only partly for cyclical reasons. Deficit reduction is projected to resume, but even by 1993 only part of the lost ground will have been recovered – and this on the assumption that current official objectives, which are relatively ambitious in some cases, will be achieved. Hence, fiscal policy needs to be directed towards achieving at least these objectives; there is little or no scope for laxity in spending programmes or for tax cuts that would be unsustainable over the medium term. There is scope to improve the balance and efficiency of public expenditure programmes.

Budgetary prospects are of particular concern in a number of countries. In the United States, the Federal deficit in the 1991 fiscal year (which ended on 30 September) was $269 billion, and the medium-term position implied by present legislation is likely to be significantly worse than projected at the time the current Budget Act was adopted. Even taking account of expenditure cuts of over $60 billion which have yet to be enacted, there could still be a large Federal deficit in the mid-1990s. Thus, the budgetary process in the United States still appears to be inadequate to the task of keeping Federal finances on a sound course. In Germany, the tax increases effective in mid-1991 and planned for

Table 3
UNEMPLOYMENT IN THE OECD AREA
national definitions

	1990	1991	1992	1993	1991 II	1992 I	1992 II	1993 I	1993 II
Unemployment rates (%)[1]									
United States	5.5	6.7	6.7	6.1	6.8	6.9	6.6	6.3	6.0
Japan	2.1	2.2	2.3	2.3	2.2	2.2	2.3	2.3	2.3
Germany	5.1	4.6	5.0	5.1	4.7	4.9	5.1	5.1	5.1
France	8.9	9.4	10.1	10.2	9.7	10.0	10.1	10.2	10.1
Italy	11.2	10.9	10.8	10.7	10.7	10.8	10.8	10.7	10.7
United Kingdom	5.9	8.7	9.9	9.7	9.3	9.9	9.8	9.8	9.6
Canada	8.1	10.3	10.2	9.8	10.4	10.3	10.1	9.9	9.7
Total of above countries	5.6	6.4	6.6	6.4	6.5	6.7	6.6	6.4	6.3
Other OECD countries	8.7	9.5	10.1	10.1	9.7	10.1	10.2	10.1	10.0
Total OECD	6.3	7.1	7.4	7.1	7.2	7.4	7.3	7.2	7.1
Four major European countries	7.5	8.2	8.7	8.7	8.4	8.7	8.7	8.8	8.7
OECD Europe	8.1	8.7	9.3	9.3	8.9	9.2	9.3	9.3	9.2
EC	8.4	8.9	9.3	9.3	9.1	9.3	9.3	9.3	9.2
Total OECD *less* the United States	6.6	7.3	7.7	7.6	7.4	7.7	7.7	7.7	7.6
Unemployment (millions)									
North America	8.0	9.8	10.0	9.3	9.9	10.1	9.8	9.4	9.1
OECD Europe	14.5	15.8	16.9	17.0	16.2	16.8	17.0	17.1	16.9
Total OECD	24.6	28.0	29.4	28.8	28.6	29.5	29.4	29.1	28.6

%	1990	1991	1992	1993
Austria	3.3	3.4	3.8	4.0
Belgium	8.8	9.4	9.7	9.6
Denmark	9.5	10.3	10.2	9.6
Finland	3.5	7.7	9.8	9.3
Greece	7.2	8.6	9.6	10.5
Iceland	1.7	1.6	2.0	2.0
Ireland	13.7	15.8	16.5	16.0
Luxembourg	1.3	1.4	1.4	1.3
Netherlands	6.5	6.1	6.4	6.3
Norway	5.2	5.3	5.1	4.8
Portugal	4.6	3.9	4.5	5.3
Spain	16.3	15.9	15.2	14.6
Sweden	1.5	2.7	4.1	4.1
Switzerland	0.6	1.2	1.6	1.4
Turkey	10.4	11.5	13.2	13.4
Total of above countries	8.9	9.5	10.1	10.1
Australia	6.9	9.5	10.1	9.7
New Zealand	7.8	10.4	11.5	11.6
Total of above 17 countries	8.7	9.5	10.1	10.1

1. *As percentage of labour force.*

early 1993, together with the substantial expenditure restraint that is also programmed, appear sufficient to attain the objective of reducing the general government borrowing requirement to some 3% of GNP by 1994; but this objective allows no room for slippage. In Italy, sizable additional – and ambitious – measures are envisaged to put deficit reduction, and attempts to contain the debt/GDP ratio, back on track. But these measures have yet to be implemented, and similar attempts in the past have not reached their goals. Recent measures adopted in the United Kingdom are likely, on the basis of OECD Secretariat estimates, to push the general government borrowing requirement to around 3% of GDP in 1992, and only slightly less in 1993.

The underlying rationale for sustained efforts to reduce, and preferably eliminate, public-sector deficits has not changed: concern about the adequacy of national saving in relation to desirable rates of investment in both OECD and non-OECD countries. While there might be some reversal of the sharp falls in household saving ratios experienced in the 1980s, these are unlikely to rise significantly, and the prospects for much higher rates of corporate saving are likewise not good. Under such circumstances, expansion of funds available for investment will depend on improved public-sector financial balances.

Labour-market Policies

Even before economic activity slowed in the second half of 1990, the average OECD unemployment rate was a full percentage point above its 1979 level (Table 3). The rise in joblessness from cycle to cycle has been most pronounced in the countries of the European Community, which have also experienced a growing incidence of long-term unemployment.

Faced with this situation, governments have experimented with a wide variety of labour-market policies, and they are now devoting to these policies resources equivalent to 1% of area GNP. Although no prescriptions have emerged that would apply to all cases, some lessons are being drawn.

One lesson is that 'active' labour-market policies can help reduce joblessness by providing for re-training, counselling and improved job placement, and by relaxing employment regulations affecting especially young workers and the long-term unemployed (through temporary contracts, exemptions from minimum wage regulations, and reduced payroll contributions to social security). For these programmes to work, the disincentive effects, now widely recognised, of 'passive' income support, and especially of high and long-lasting unemployment benefits without an obligation to accept employment, need to be tackled. At the same time, care must be taken to ensure that active policies do not deal with the problems of some groups of the unemployed in ways that disadvantage others; this would merely redistribute unemployment. An emphasis on active policies needs to go together with removing the regulatory impediments to the efficient functioning of labour markets, and to creating a framework for pay determination which achieves and maintains a better balance between wages and economies' capacity to pay.

International Transactions

Over the past year, current-account balances have reflected in particular the effects of the Gulf War on official transfers, tourism and oil trade (Table 4). Some of these factors were temporary. Other important changes, however, are not expected to be reversed. Germany is likely to remain in current deficit following the rapid evaporation of its large surplus as a consequence of unification. The underlying improvement of US trade performance is expected to be maintained, so that the US current-account deficit over the next year or so, although larger than in 1991, should be much smaller than in the late 1980s. In view of the attention paid to earlier surpluses, it is worth noting that Korea's current account has moved into deficit. One thing that seems not to have changed is the position of Japan as a country in large surplus; but in relation to GNP, current and prospective surpluses are little more than half those of the mid-1980s.

The projected pattern of current accounts does not seem to pose problems of sustainability. The shift in German net capital flows has been absorbed smoothly by financial markets. A recent slowing of direct investment outflows from Japan and shift from portfolio outflows to inflows have been more than offset by net short-term capital outflows. There is a risk that the Japanese surplus could provoke protectionist responses in other countries, but a surplus is not, by itself, indicative of conditions

Table 4

CURRENT BALANCES OF OECD COUNTRIES

$ billion; seasonally adjusted at annual rates

	1990	1991	1992	1993	1991 II	1992 I	1992 II	1993 I	1993 II
United States	-92.1	-4	-56	-61	-35	-54	-58	-60	-61
Japan	35.4	70	82	80	78	82	82	81	80
Germany	47.9	-21	-14	-12	-14	-15	-13	-13	-11
France	-13.6	-8	-7	-7	-6	-8	-7	-7	-6
Italy	-14.4	-15	-19	-23	-14	-18	-20	-22	-25
United Kingdom	-24.5	-11	-15	-19	-10	-14	-17	-18	-20
Canada	-18.9	-18	-18	-20	-17	-18	-19	-19	-20
Total of above countries	-80.2	-7	-48	-61	-19	-44	-52	-59	-63
Other OECD countries	-21.5	-8	0	4	0	-3	2	4	4
Total OECD	-101.6	-15	-48	-57	-19	-47	-49	-56	-59
Four major European countries	-4.6	-55	-55	-61	-45	-54	-57	-60	-62
OECD Europe	-10.4	-52	-44	-45	-35	-45	-43	-44	-45
EC	-8.2	-56	-53	-57	-45	-52	-53	-56	-58
Total OECD *less* the United States	-9.5	-11	8	3	16	7	8	5	2

	1990	1991	1992	1993
Austria	0.8	-0.5	-0.8	-0.9
Belgium-Luxembourg	3.6	4.3	6.4	7.6
Denmark	1.6	2.1	2.6	3.2
Finland	-6.7	-6.1	-4.2	-2.7
Greece	-3.5	-1.7	-2.0	-2.0
Iceland	-0.2	-0.3	-0.3	-0.3
Ireland	1.4	1.2	0.7	0.9
Netherlands	10.3	10.5	13.1	14.9
Norway	3.6	5.3	6.3	7.1
Portugal	-0.1	-0.6	-1.6	-2.4
Spain	-16.9	-16.7	-16.6	-18.0
Sweden	-5.8	-4.3	-4.1	-3.4
Switzerland	8.6	10.6	11.8	13.1
Turkey	-2.6	-0.3	0.2	-0.3
Total of above countries	-5.8	3.4	11.7	16.6
Australia	-14.3	-10.1	-11.0	-12.2
New Zealand	-1.4	-1.2	-0.8	-0.6
Total of above 17 countries	-21.5	-7.9	-0.2	3.9

that require correction, especially when there is concern in many other parts of the world about the adequacy of the flow of funds available for investment. Vigorous efforts to identify and eliminate impediments to imports in Japan would help to improve both domestic performance and international economic relations – as indeed would similar efforts in other individual member countries and in the EC.

While trade balances are not a pressing issue, at the time of writing trade policies are – with the outcome of the Uruguay Round not yet known. It bears repeating that progress on this front would not only yield gains in dynamism and efficiency in the OECD area, but would also provide an important positive message to the many developing countries which have engaged in far-reaching trade liberalisation in recent years, and would help bolster the substantial steps in this direction taken by several of the formerly centrally planned economies. It should lay the groundwork for a determined effort by OECD member countries to dismantle the protectionist measures which have become all too prevalent, and which impose high costs not only on consumers but also – in more subtle and difficult to measure ways – on those efficient, competitively viable firms and industries which hold the key to economic growth.

Central and Eastern Europe

The political disintegration in the former Soviet Union has been a major factor shaping economic developments throughout central and eastern Europe. In the Soviet area itself, central planning has collapsed, and the command and control of enterprises that went with it have not been replaced by organised markets. Falling production and exports, as well as hoarding of convertible currencies, are making it more difficult to maintain debt service and purchase imported inputs, resulting in a further decline of production. Since the failed coup in August, the economic disintegration has accelerated, as flows of raw materials and final products between republics have been disrupted further. Overt unemployment has so far been contained by keeping loss-making enterprises afloat with subsidies and soft credits. The printing of money for this, and to meet government obligations, is fuelling inflation and rapidly completing the destruction of the rouble as a medium of exchange. Barter or use of foreign currency has already become the main basis for inter-republican trade.

The collapse of the Soviet Union as an export market has complicated the difficult situation already facing other central and eastern European countries as they seek to make the transition to a market economy domestically and to establish new international trading arrangements. Nonetheless, all have made advances, even if none are yet on a path of economic expansion. Within the group, Poland, Hungary and, more recently, Czechoslovakia have made impressive progress in shifting exports to other markets. In all of these countries, most prices have been set free – a crucial but difficult step. Czechoslovakia has maintained macro-economic stability and got through the phase of price decontrol. Hungary has halted the increase in inflation. Poland seems at least to be able to keep its inflation problem from getting out of hand. Much has been done in all three countries to lay the legal and institutional groundwork for a market economy.

Privatisation is a critical area where progress has been slow. Countries are following different strategies, and it is not known yet which of the various routes to a private-enterprise economy will prove most efficient in meeting economic and social aspirations. Flexibility in the use of several techniques may well be the best strategy. What is essential is that governments move rapidly on privatisation so that the momentum of reform can be kept up and growth ensue.

OECD countries can support the transition in central and eastern Europe in a number of ways. The most important is to provide access to OECD markets. Resistance that exports are encountering in the West raises a question as to whether success in reorienting trade and production can be sustained. Opening of OECD markets to exports from central and eastern Europe should not come at expense of the market access for other countries that have established themselves as suppliers in world markets for textiles, steel and other goods that are produced in central and eastern European countries. Rather, the best response to the new challenges would be to strengthen adherence across the board to the principle of non-discrimination in trading arrangements.

OECD countries and international financial institutions are extending financial assistance for stabilisation programmes and infrastructure investment to central and eastern Europe, along with public and private technical assistance of various kinds. Private capital is also beginning to flow into the area. This Western support is crucial, but it is essential that the resources provided through assistance and private investment be used well. This largely depends on the steadiness and vigour with which the recipient countries themselves face up to the complementary challenges of structural transformation and macro-economic stabilisation.

28 November 1991