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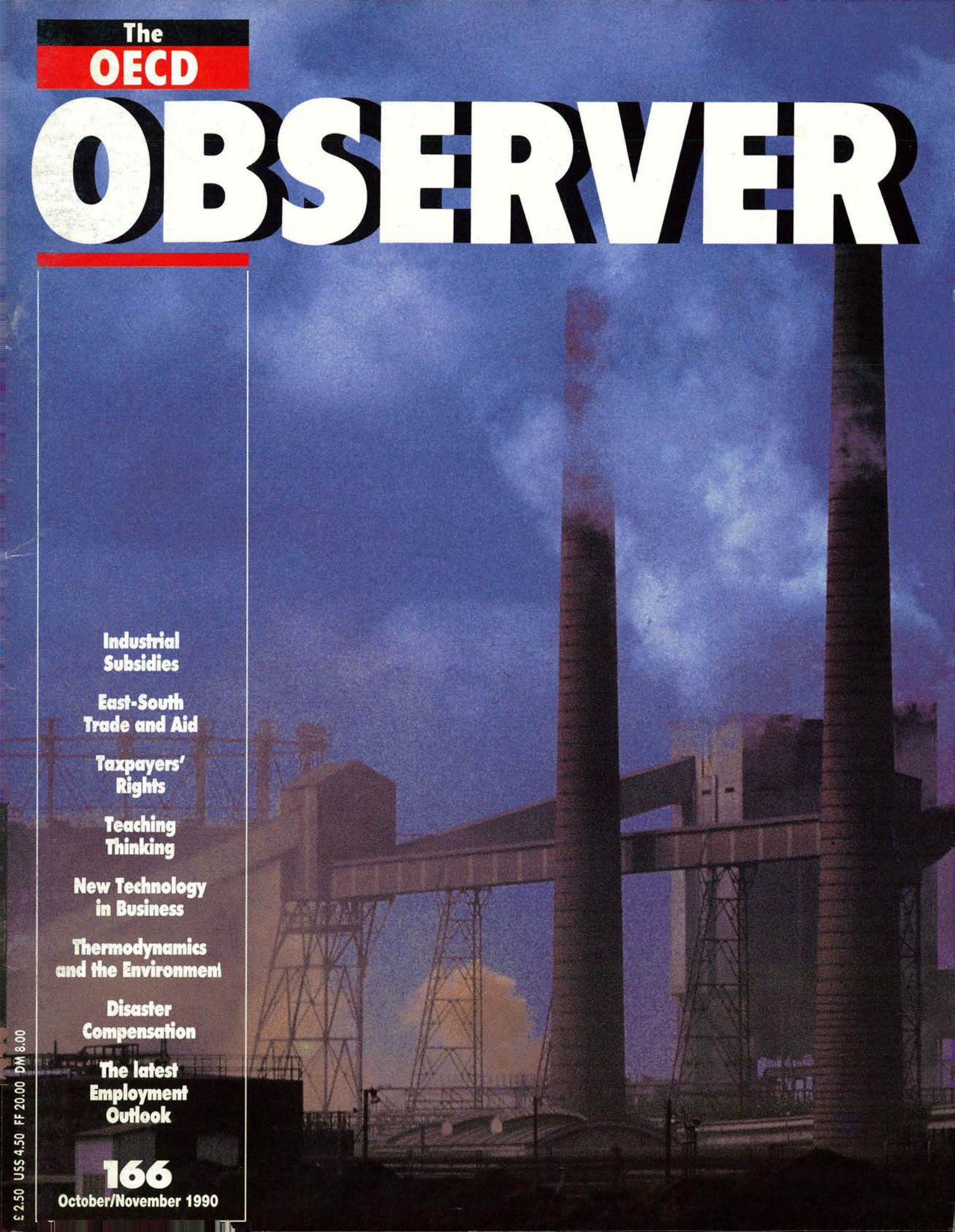

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The cost of subsidising industry goes beyond the direct burden on national exchequers; subsidy can also impede structural adjustment and distort international trade.

Robert Ford

Governments of both OECD and non-OECD countries spend considerable sums of money in the hope of propping up declining industries, encouraging new ones, fostering specific economic activities such as R&D, equalising regional imbalances and so on. It has become apparent that industrial support has often failed to achieve these goals, although it has drained government coffers. Worse, subsidies often favour the production of the wrong things, encouraging firms to lobby for more subsidies instead of producing goods and services. These problems have not been confined to national borders and, as a result, subsidies have moved closer to centre-stage in international trade negotiations.[1]

The Cost of Subsidising Industry

There are many ways to subsidise industry. Direct cash grants to firms are the most obvious, and the most important, type of subsidy in most countries. Tax concessions are another popular form of subsidy: the recipients are 'paid' by a reduction in their taxes. Governments also provide loans at below-market interest rates or on advantageous terms (so-called 'soft' loans), with the difference being made up by the taxpayer. Loans are sometimes backed by government guarantees. If all goes well, the guarantees are not triggered, but in the event of a default the public pays the bill. Finally, governments invest directly in enterprises and may not receive, or even require, a competitive market return.

Analysis of these instruments is hampered by the lack of detailed, comprehensive and comparable estimates of industrial subsidies for the OECD countries. Such data would be the foundation of multilateral surveillance that could reduce the prospects of competitive subsidisation, avoid possible trade wars, and promote the careful assessment of whether subsidies really do increase economic welfare, as their proponents often claim.

The Economics of Subsidies

A subsidy is an explicit or implicit payment by government that lowers the cost of a good or service. From the recipient's point of view, a subsidy is a transfer of funds that improves its position relative to domestic and international competitors. From the taxpayer's point of view, it is another form of government expenditure and means, ultimately, higher taxes. And considering the economy as a whole, subsidies draw productive resources (such as capital and labour) into subsidised sectors, at the expense of sectors that receive fewer or no subsidies and that can therefore no longer afford to pay for them.

This re-allocation of resources is important to both the effectiveness and the economy-wide costs of subsidies. The central role of markets is to allocate productive resources in a way that maximises their productivity. By providing subsidies, governments can override market signals by artificially boosting the profitability of selected economic activities. The result is that more resources will flow to, or be retained in, the subsidised activities – often the purpose of the subsidy – but those resources will produce less output that they could have done in other activities.

There are three reasons that might nevertheless justify subsidisation. The first is 'market failure': sometimes markets do not allocate resources to their most efficient use, usually because the owner of those resources cannot reap the full return. A properly designed subsidy programme could, in principle, increase economic efficiency by offsetting such market failures.

Research and development (R&D) is an example. A firm undertakes R&D expenditures in the hope of selling products based on the discoveries that might result. But potential competitors could also use the knowledge gained from the R&D and, if so, will take a share of the profits without incurring any of the costs. Since this is often difficult to prevent, despite protection provided by patents and copyrights, firms tend to spend too little on R&D. One solution (there are others, of course) is to subsidise them to do so.

The successful design and application of subsidies to correct market failures requires, in general, that governments acquire considerable information about complex economic interactions. For example, if they are not skilled in judging the probable return to alternative R&D projects, subsidy money will simply be wasted. Worse, scarce resources will have been diverted from more promising projects. In effect, market failures can be aggravated, rather than corrected, by subsidisation. Careful analysis is therefore required to establish on a case-by-case basis that market failure actually exists – and that a proposed subsidy would offset it.

The second reason for providing subsidies arises in the context of economies of scale in production – unit production costs fall as the volume of output rises. If there are economies of scale, a large firm has a competitive advantage over its smaller rivals and can make profits as a result. But this is not a reason to subsidise small firms, because doing so would reduce the pressure to expand (and may even shorten) production runs.

Yet if the large firm were foreign-owned, a government subsidy to a domestic competitor could allow it to overcome its initial competitive disadvantage and compete successfully in the longer run. At least in principle, such a policy could shift enough profits to domestic residents to bring a higher return than the subsidy costs. A prominent example of such a strategy is the subsidised entry of Airbus Industrie into the commercial jetliner market. This market features economies of scale and had been dominated by a non-European producer (Boeing). The presence of Airbus almost certainly reduced aircraft prices and transferred to Europe some of the profits that Boeing would have made. Nevertheless, some studies suggest that the profit transfer has been too small to justify the implied subsidy.

A serious drawback of this sort of policy is that it reduces world-wide economic efficiency. Productions runs are shortened and unit costs increased. Moreover, any gain to one country comes at the direct expense of others. This 'beggar-my-neighbour' aspect exacerbates international trade tensions and could lead to

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1. Robert P. Ford and Wim S. Suyker, 'Industrial Subsidies in the OECD Economies', **OECD Economic Studies**, No. 15, forthcoming 1990.

subsidy wars, with each country backing its national champion.

The third, and in practice probably the most important, justification for subsidies is 'non-economic'. Principle among such objectives is income distribution: certain goods (housing is the most prominent example) are subsidised on the grounds that the poor could not otherwise afford them. But subsidies often do not meet the stated objectives, or they do so inefficiently.[2] Subsidies to house purchases, for example, can drive up house prices, to the benefit mainly of landowners. In many cases, direct income transfers would be more appropriate than subsidies to address inequalities of income.

The Scale of Subsidies

Estimates of the amount of subsidies provided by governments to industry vary considerably, depending on which policy instruments and programmes are considered to be subsidies, the definition of industry and the methods used to calculate the subsidy amounts. A number of international organisations have attempted to produce subsidy data that are both comprehensive in terms of subsidy instruments and sectoral coverage, and are comparable across countries.

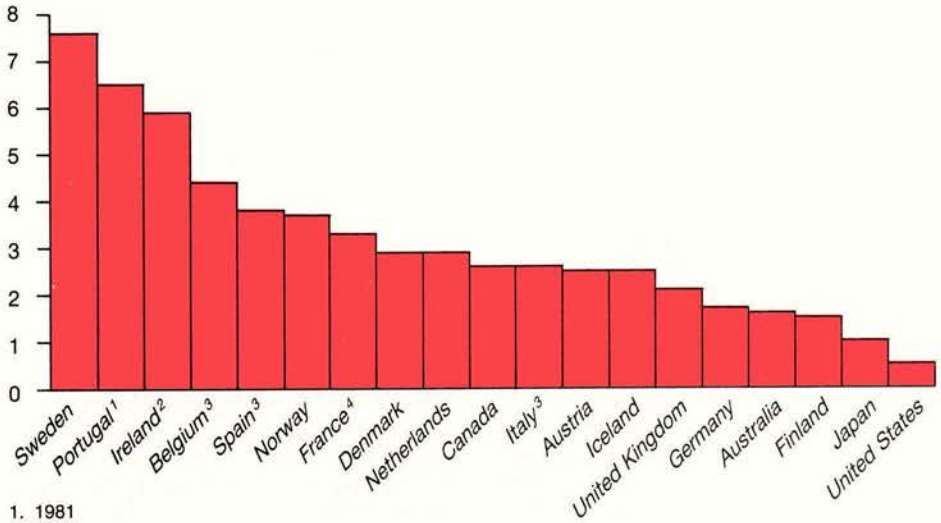
Since 1984, the Secretariat of the European Free Trade Association (EFTA) has estimated subsidies to manufacturing in the EFTA countries. These estimates cover a broad range of subsidy instruments: direct grants, soft loans, loan guarantees and equity participation. But the EFTA Secretariat reports do not break down subsidies by instrument or by subsector.

The Commission of the European Communities (EC) recently published subsidy estimates for ten Community countries (Spain and Portugal were not included, and figures for Greece and Italy are still preliminary) for 1981–86. These figures are broader than those provided by EFTA, as they also include tax concessions and subsidies to sectors other than manufacturing – coal mining and rail transport, for example.

Figure 1

SUBSIDY RATES TO INDUSTRY – 19 OECD COUNTRIES

% of value added; 1985



1. 1981
2. 1975
3. 1980
4. 1984

Sources: *OECD National Accounts,* 1989; Eurostat; national sources

Finally, the OECD has calculated, in a consistent manner across all OECD countries, gross government expenditures on the manufacturing sector for 1982–86.[3] Work is in progress to calculate subsidies to manufacturing for 1986–89.[4]

The national accounts produced by each OECD country provide subsidy data that cover all sectors of the economy, and which are broadly comparable from country to country (Figure 1). Yet only direct grants to firms are counted, while the support provided by other instruments is missed. Defining industry very broadly to include essentially all sectors of the economy except government, agriculture and food processing, national accounts data show that subsidy rates – the subsidy paid out as a percentage of sectoral value added – tended to rise in most OECD countries through the 1970s, but then stabilised in the 1980s at around 2–3.5%.

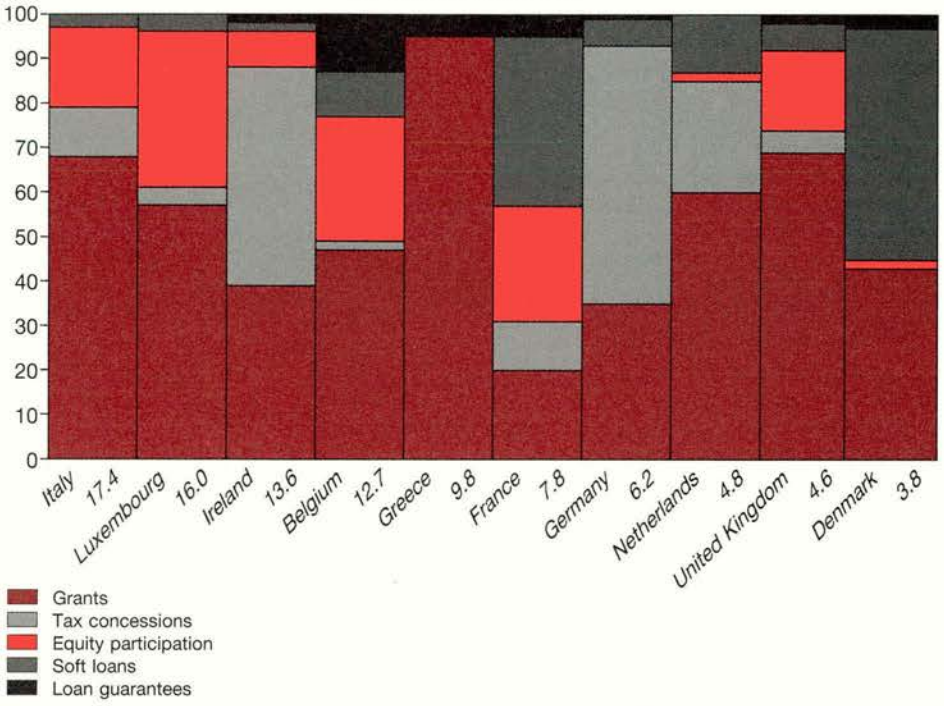
But these figures understate the true rates of support, as the EC study, which takes several forms of support other than direct grants into account, illustrates (Figure 2). For the then 10 EEC countries as a whole, direct grants accounted for only about half of the total support to industry between 1981 and 1986. Almost a quarter of total support took the form of tax concessions, while soft loans and equity participation each accounted for about one-seventh of the total. Support from all these sources averaged almost 9% of industrial value added in the ten countries.

Subsidisation on this scale is a substantial drain on public funds. Figures from the EC study suggest that total industrial subsidies come to just over 9% of total government outlays on average.

Prospects for Reform

While industrial subsidy rates have apparently been stabilised in recent years, there are nonetheless several compelling reasons for concern about them. First, the rise in subsidy rates in the 1970s occurred during a period of protracted economic slowdown and rising unemployment rates. They stopped growing only as the OECD economies recovered from the recession of the early 1980s and the pressure on governments to provide relief eased.

Figure 2
SUBSIDIES TO INDUSTRY – EEC–10
types of industrial support as % of total support; 1981—86 average; descending order by % of value added



Source: *The First Survey of State Aids in the European Communities,* Commission of the European Communities, Brussels, 1989

Another downturn in economic activity could generate renewed pressures on governments to provide support, and past evidence suggests they would be tempted to do so.

Second, certain industrial sectors enjoy rates of subsidy far in excess of the industrial average: these include, notably, declining industries, such as steel, coal mining and shipbuilding. In such cases, government subsidy policy has often attempted to provide 'breathing room' in the hope that competitiveness would be restored or that reductions in excess capacity could be carried out in a socially acceptable way. In the event, this has rarely been the outcome. Rather, subsidisation tends to remove the incentive to undertake necessary, if difficult, adjustments. As the world-wide pattern of production and trade continues to evolve, other industries will almost certainly come under intense competitive pressures, raising the prospect of further rounds of subsidisation.

Third, the argument that subsidies can improve a nation's international competitiveness has taken on new life, particularly in high-tech industries. The case rests on the existence of market failures and economies of scale. While these are certainly important features of OECD economies, there is considerable doubt about the scope of government subsidy policies to offset them. Such policies have often amounted to 'picking winners', a task at which governments have not proved particularly adept in the past, and there has been a tendency not to allow projects to fail once support has been provided.

Finally, horizontal subsidies – those that do not directly target specific sectors or activities – threaten to become much larger. For example, regional aid is likely to grow in importance, particularly in the EEC as it moves towards economic integration. Although such subsidy programmes do not explicitly support particular sectors, they generally do so in practice and are, in any case, a further burden on government finances.

□ □

The available evidence suggests that industrial subsidy rates have not increased in recent years in the OECD as a whole. In most countries, nevertheless, they remain high by historical standards, and they vary considerably both from sector to sector and from country to country. Although little work has been done to date on the net social costs of industrial subsidisation – largely because of inadequacies in the data – studies in other sectors, notably agriculture,[5] suggest they could be substantial.

Industrial subsidies are likely to be subject to increasing scrutiny in the coming years as tariff and non-tariff barriers to trade are progressively eliminated. This is already happening in the Economic Community as it prepares for the 'single market' in 1993, and the United States and Canada are currently discussing industrial subsidies in the wake of the recently signed Free Trade Agreement. Thus, while there are good reasons to fear an increase in subsidies, there are also encouraging signs that international pressures are working to reduce them. ■

2. See L. Alan Winters, 'The So-called "Non-economic" Objectives of Agricultural Support', **OECD Economic Studies**, No. 13, Winter 1989–90, pp. 237–263.

3. See pp. 8–12 of this **OECD Observer**.

4. These figures will be published as soon as they are available.

5. See **Agricultural Policies, Markets and Trade: Monitoring and Outlook 1990**, OECD Publications, Paris, 1990, and Gérard Viatte and Frédéric Langer, 'Agricultural Reform: A Hesitant Start', **The OECD Observer**, No. 165, August/September 1990.

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From Subsidies to Structural Adjustment

Rauf Gönenç

What are the policies that encourage the investment required to modernise industry?

COI, London

The absence of a comparative overview of industrial support practices in the OECD countries has long been felt, both nationally and internationally. Because not enough is known about the economic impacts of the various types of industrial support measures, it has been difficult to monitor multilaterally the most controversial support programmes with a view to promoting more transparent conditions of competition. There has also been a growing debate on the role and impact of industrial subsidies in national structural reforms.

It was in the mid-1980s that the European Free Trade Association (EFTA) and the EEC, having noted that the gradual elimination of trade barriers can result in the stepping-up of direct aids to industry, started to carry out international comparisons of industrial subsidies.[2] These pioneering studies shed light on the extent and types of subsidies in the EFTA and EEC areas.

In 1986, furthermore, industrial subsidies were placed on the agenda of the Uruguay Round of the GATT multilateral trade talks. The negotiators proposed to subject national subsidies by the Contracting Parties to the monitoring and the multilateral discipline of the GATT. The aim was to continue and to build upon the work already done in the Tokyo Round, which had resulted in 1979 in the signing of a 'Code on Subsidies and Countervailing Measures' by 29 countries, including 23 OECD member countries.

Rauf Gönenç is a specialist in structural policy in the OECD Directorate for Science, Technology and Industry.

The OECD has recently completed the first phase of a project which aims to provide a satisfactory international picture of the extent of industrial subsidy and to help form an international consensus on the disciplines that should be applied to such support policies. What are its findings, and what are the implications for the second phase?[1]

In the 1980s the OECD made progress in analysing the impact of industrial support programmes, and particularly those that most clearly impede the efficient allocation of resources.[3] Discussions have continued simultaneously on 'grey' areas, such as support for strategic and generic technologies, and more 'horizontal' policies, such as general support for R&D, aids to small and medium-sized enterprises and regional aids; here there is less agreement about the desirability of support policies or about the distortions that they cause. But it was precisely in these activities that many countries stepped up their commitments in the 1980s, a trend which could continue in the 1990s. The OECD project aims to clarify the issues involved by reviewing and appraising the quantitative and qualitative features of industrial support policies in various countries.

First Findings

The preliminary findings of the first phase cover the period from 1982 to 1986; they provide, for the first time, an international overview of the structure and trend of industrial support policies in 21

industrialised countries. In the first phase the accounting basis of support policies is gross government expenditures (box). The relative shares of subsidised policy areas and the various aids used can thus be pinpointed in each country's total budgetary expenditures on industrial policies. In this way it was possible to shed light on the pattern and absolute volume of expenditures and the relative role of the main instruments in the support policies of individual countries (Figures 1, 2 and 3 offer a few examples).

THE OECD PROJECT

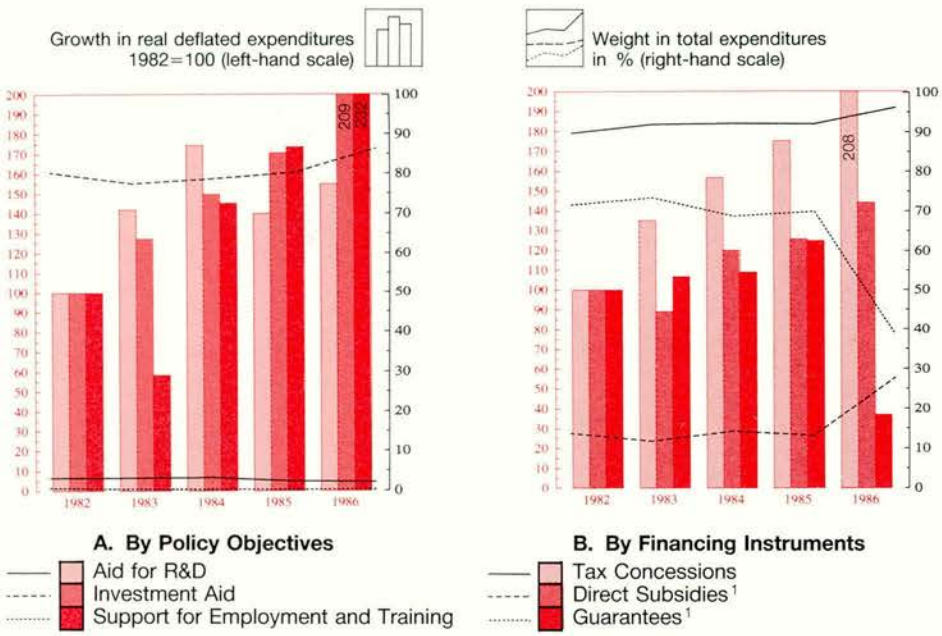
The OECD project 'Subsidies and Structural Adjustment' consists of two phases. Phase I consists of an analysis of the structure and trend of gross government budget expenditures (GGBE) on industrial support programmes over the period 1982–86. The net subsidy content of these expenditures as a Net Cost to Government (NCG) in 1986–89 will be calculated in Phase II.

GGBE can be viewed as 'total' gross expenditure, incorporating all financial flows used by governments for industrial support. It describes and measures the budgetary outlays but takes no account of the corresponding budgetary inflows from these programmes: guarantee premiums, for example, loan interest, capital repayments, or share dividends. GGBE is not, therefore, an approximation of the net subsidies granted by governments to industry.

This information was collected through a questionnaire compiled and distributed by the OECD Industry Committee. In reply the OECD countries submitted a list of their industrial support programmes and detailed information about their objectives, instruments and technical features. Quantitative data on gross expenditure under each programme were provided for Phase I, and additional information that will allow their net subsidy content to be calculated is currently being collected for Phase II. All member countries (except Iceland, Luxembourg and New Zealand) and the Commission of the European Communities took part in Phase I of the project.

Questions about public procurement and expenditures on equipment and R&D for national defence were included in the survey. A considerable amount of information was collected for the project, but there are still some gaps in the data on some types of programme, particularly those implemented by non-central tiers of government, and on some types of instrument, notably in tax expenditures, the calculation of which sometimes poses technical difficulties. Ways of filling some of these gaps are currently being sought.

Figure 1
GROSS GOVERNMENT EXPENDITURES: UNITED STATES
1982–86



1. The shares of direct subsidies and guarantees are calculated with the total expenditures excluding tax concessions. Guarantees are measured by total commitments.
Source: OECD

Categorisation by Policy

Eight categories of aid were distinguished by type of policy, and the various industrial programmes were classified accordingly: sectoral aids; aid to enterprises in difficulty; research and development aids; regional aids; general investment aid; aids to small and medium-sized enterprises; support for employment and training; export promotion.

It was found that, during the period under consideration, most countries concentrated their spending on one or two priority areas, although these differed from one country to another. In 19 out of the 21 countries the top policy area accounted for at least one-third, and the top two for more than half of total expenditures. Investment aid, sectoral measures, regional aid and export promotion seem to be the main priorities in most countries.

Output subsidies proper, the purpose of which is to support the production of manufactured goods, were not identified and measured as a separate item in the first phase of the project. Their use is mainly confined to specific industrial sec-

1. **Subsidies and Structural Adjustment. Industrial Support Policies in OECD countries: Evolution by Policy Objectives and Financing Instruments, 1982–1986**, OECD Publications, Paris, forthcoming winter 1990.

2. *Final Report of the Working Party on Government Aids*, European Free Trade Association, Geneva, 1986; *Government Aid in 1985 and 1986*, European Free Trade Association, Geneva, 1987; *Government Aid in 1987*, European Free Trade Association, Geneva, 1988; *First Survey of State Aids in the European Community*, Commission of the European Communities, Brussels, 1989.

3. See pp. 4–7 of the **OECD Observer**, and Daniel Malkin, 'Assistance to Industry and Structural Adjustment: An Overview of Economic Effects of Industrial Subsidies', in R. Gerritse (ed.), *Producer Subsidies*, Pinter Publishers, London, 1990.

Schlegelmilch/REA

Subsidies to declining industries are themselves declining.

tors experiencing adjustment difficulties, and in both absolute and relative terms they seem to have declined in the 1980s.

Some areas are attracting a growing share of commitments throughout the OECD: here the promotion of technological innovation (R&D aid) heads the list, followed by regional policies, which have played an important role for a longer period. Many countries are also stepping up aid to small and medium-sized enterprises.

Structural Changes

In the 1980s the policies implemented in these various areas seem to have converged on the goal of encouraging structural changes in the corporate sector, irrespective of the category – sectoral measures, aid to enterprises in difficulty, regional policy or aid to SMEs – into which the aid programmes fall.

Government aid to help companies upgrade their technology and organisation consists mainly of subsidies for physical and non-physical inputs (products and services) that are estimated to be of special importance for adjustment, primarily investment in new equipment and machinery, R&D and human resources. Other costs that are subsidised by a number of countries are: new product design (as distinct from research projects), information technology applications to products and organisational control, consultancy for marketing innovation and for management innovation, environmental protection and energy conservation equipment.

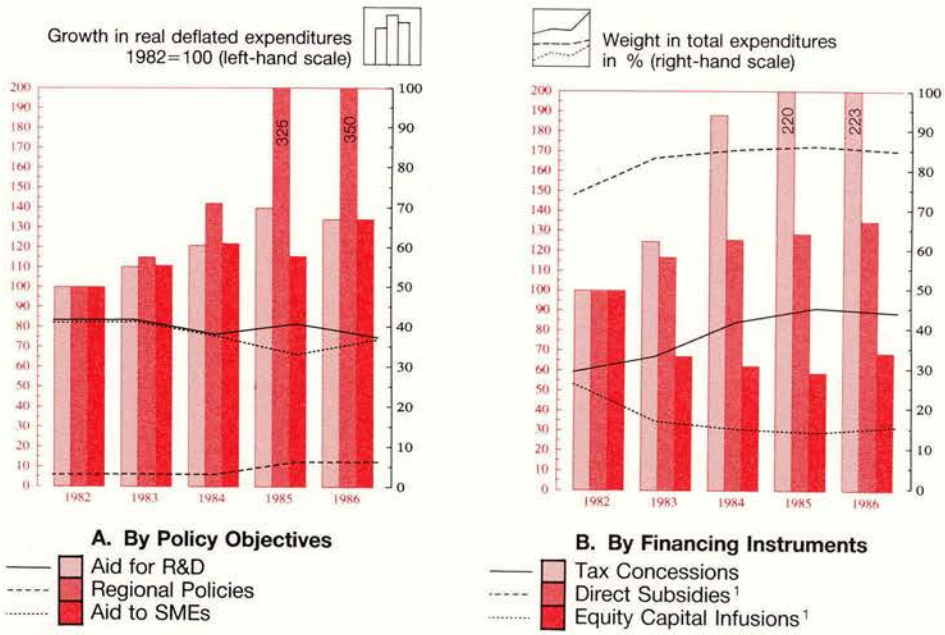
Support to 'sunrise' (high-technology growth) sectors, as reported, appears to be provided more in the form of R&D policies than sectoral measures. These enterprises are strategic to enterprises in high-technology activities, and in most instances the demand for R&D of these firms is relatively cost-inelastic once the decision to enter a particular sector has been taken. In such cases, R&D subsidies can amount to direct financial transfers (and to output subsidies) to companies.

Support for high-tech sectors may also involve the government sharing the tech-

Figure 2

GROSS GOVERNMENT EXPENDITURES: JAPAN

1982–86



1. The shares of direct subsidies and equity capital infusions are calculated with the total expenditures excluding tax concessions.

Source: OECD

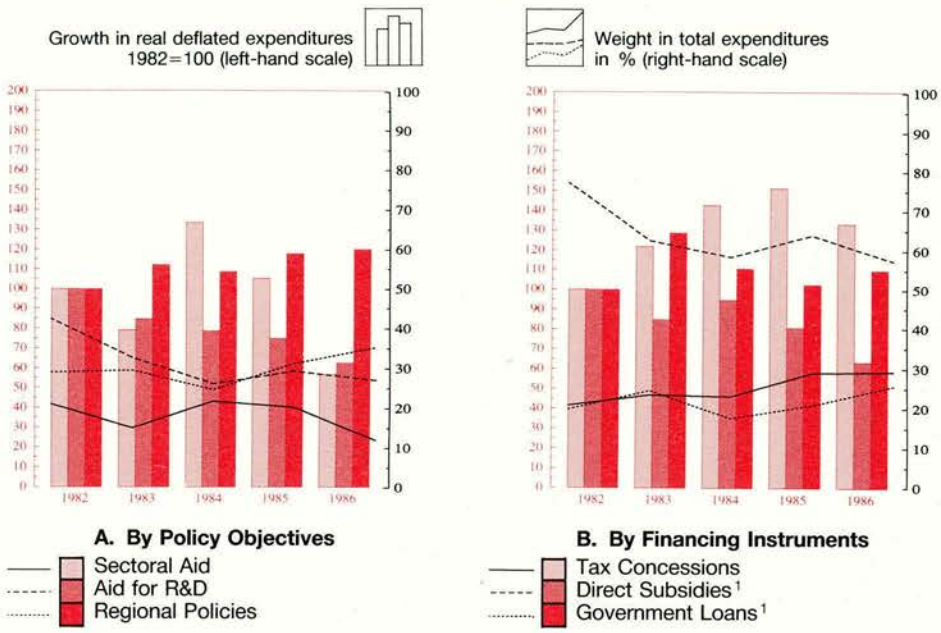
nological and commercial risks inherent in some development projects. Consignment subsidies and conditional loans may bring a sizable degree of support to such projects; they might be paid back on normal business terms in the event of success or written off in for failures. New product development contracts in public procurement are also a form of distribution or transfer of risks from firms to government.

Financing Instruments

The OECD project distinguishes five instruments of industrial support, and classifies expenditure on the various programmes under one or other of them: grants, government loans to industry, government guarantees, equity capital infusions, tax concessions. The net subsidy element implicit in these instruments is different in each case (box).

Grants are the most widely used form of financing in the OECD countries. The share of grants in total government expenditures via financing instruments exceeds 60% in 11 countries and 40% in 16 countries. They include interest-rate subsidies, which are allocated to groups of companies that meet specific criteria, and direct subsidies, which are allocated more frequently to individual companies or projects. Repayable consignment subsidies to support technological development projects were used in several countries in the 1980s.

Figure 3
GROSS GOVERNMENT EXPENDITURES: GERMANY
1982–86



1. The shares of direct subsidies and government loans are calculated with the total expenditures excluding tax concessions.

Source: OECD

Policy developments in the aviation industry are attracting considerable international interest, both from governments and individual companies.

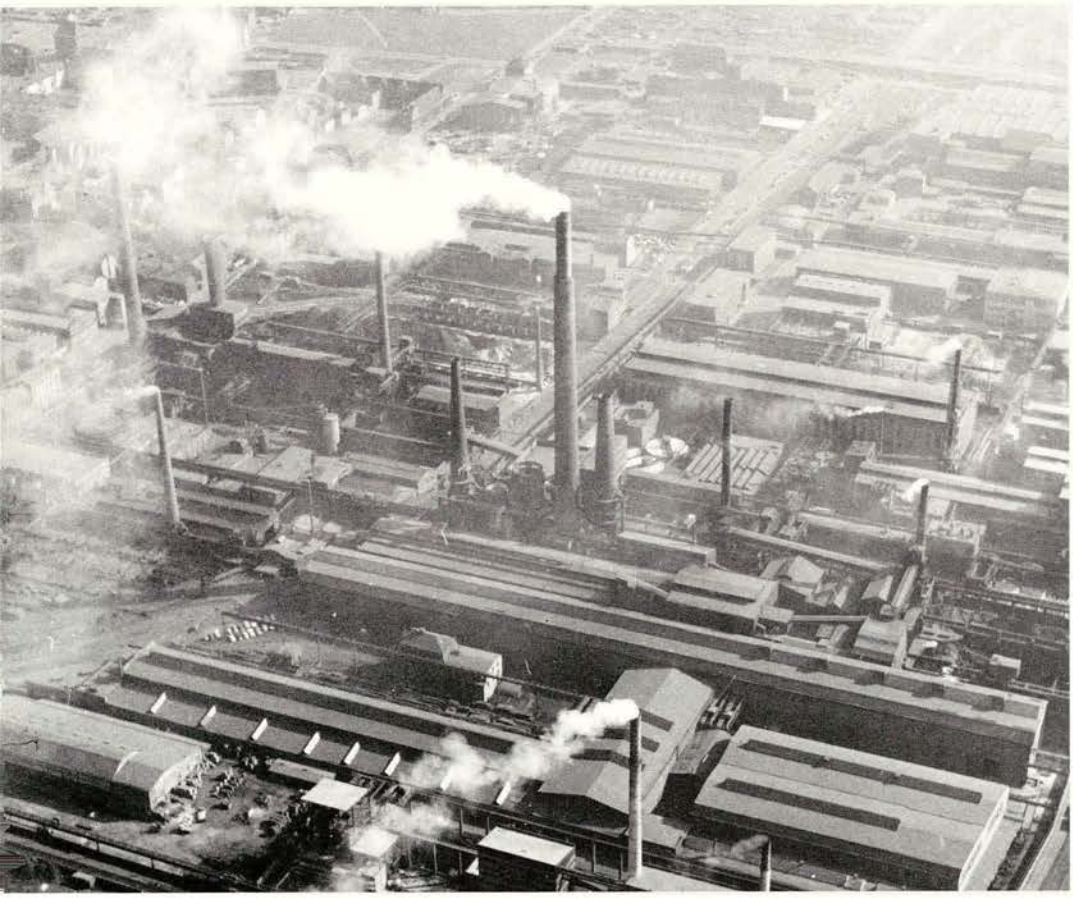
Mario Fourmy/REA

The role of other financing instruments – government loans, equity capital injections and government guarantees – varies from country to country. Direct government loans are now less frequent in most countries, while government guarantees are playing an increasing role in export finance. In general, equity capital injections are not used regularly, and when they are, it is mostly to increase government shareholdings in public enterprises. Most of these instruments are not used horizontally across the entire economy, but are tailored to specific companies or projects.

Tax Expenditures

Tax concessions, or expenditures, comprise various types of instrument such as tax exemptions, tax allowances, tax credits, special rate reliefs and tax deferrals.[4] They are often used to support in-

4. **Tax Expenditures. A Review of the Issues and Country Practices**, OECD Publications, Paris, 1984.



Didier Maillac/REA

The identification and measurement of subsidies to manufacturing industry is a vital element in preparing structural reforms to restore normal competitive conditions.

vestment and R&D by giving preferential tax treatment to investment expenditure that meets specified criteria. In most countries a large number of companies receive them, so their effect upon national economies is very diffuse.

In some cases tax concessions may be used more selectively, under regional policies, for example, or aid to enterprises in difficulty.

In most countries, with the notable exceptions of the United States and Turkey, financing instruments play a bigger role than tax concessions in total budgetary expenditures. Yet by and large the share of tax expenditures increased in all countries during the period under review. But since 1986 many countries have implemented tax reforms with a view to reducing tax exemptions. The second phase of the OECD project will make it possible to verify whether, as is probable, the role of exemptions has decreased during the most recent period as a result of these reforms.

□ □

This overview of industrial support policy is innovative by virtue of its systematic nature and its geographical coverage and, because of its pioneering nature, it clarifies the issues for international discussions on support for industry. But it has nonetheless a number of technical limitations and shortcomings. In particular, the absence at this stage of information about net subsidies (box) precludes international comparisons of the absolute volume of support. In consequence, the data do not yet permit a discussion of the actual national and international economic impacts of industrial support programmes. One of the major objectives of Phase II of the project will be to contribute to such an assessment.

Furthermore, the first phase of the project showed that government aids cannot be described and classified satisfactorily on the basis of the official aims of industrial support programmes. Depending on the way they are implemented, programmes with the same policy aim can have different economic and competitive impacts, whereas programmes in different policy areas may resemble one another in their purposes, instruments and impacts. The net cost to government budgets of industrial support programmes also depends to a large degree on the way such programmes are implemented, particularly where government guarantees and conditional loans are concerned. One of the main aims of the OECD project is to classify programmes more exactly by using more precise and relevant criteria.

Phase II, which has just started, aims to make further progress in classifying industrial support instruments according to their national and international economic impacts, and to measure their net subsidy content. Following on from the work done in the Uruguay Round, this analysis should contribute to the framing and consolidation of more precise international rules for industrial support. ■

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Aid and Trade In East-South Relations

Jürgen Bartsch

With the disappearance of the Iron Curtain and the fall of the Berlin Wall, the fixed patterns of thinking that were valid for decades have lost their relevance. The traditional East-West divide reflects political and economic realities less and less. Several countries which had been part of the East Bloc no longer wish to be considered as countries with a different economic and social system. What are the implications for East-South relations?

W. Campbell/SYGMA

The economic and political upheavals in Eastern European countries have major implications for their relations with developing countries, in both aid and trade. Not only are Eastern European countries cutting back on foreign aid but its distribution will no longer be determined by political and strategic considerations. The East is shifting the focus of its economic relations with the developing world to the more dynamic of its countries and is now competing with the South for funds on western capital markets and for market shares of imports of the industrialised countries. Moreover, the aid that remains will be more rigorously oriented to development, better administered and partly co-ordinated with assistance from other sources.

Relations between Eastern Europe and the developing world have in the past reflected East-West relations and conflicts, with East European donor countries offering aid and preferential economic relations to win allies and support. The bulk of their aid went to the three non-European members of the Council for Mutual Economic Assistance (CMEA) – Cuba, Mongolia and Vietnam – and most of the rest went to countries that adopted Soviet-style economic and political systems (Angola, Ethiopia, Kampuchea, Korean PDR, Laos, Mozambique, Nicaragua and Yemen PDR). Strategic considerations also played a role, which explains why the Soviet Union gave significant amounts of aid to neighbouring countries such as India, Afghanistan, Iran and Turkey.

Today, developing countries are no longer regarded by Eastern countries as a zone for rivalry with the West, but as potential economic partners to whom scarce resources should be made available sparingly and efficiently. The Soviet aid administration has already been changed after a cost/benefit analysis of economic relations with developing countries revealed serious deficiencies in Moscow and on the side of the recipients. The requirements of the Soviet economy and changes in foreign policy have also contributed to a re-orientation of Soviet aid. The Soviet Union is increasingly looking for mutually advantageous economic and technical co-operation and is thus putting more emphasis on joint ventures with the larger, more advanced developing countries.

The other countries in Central and Eastern Europe are also going to reduce and modify the distribution of their economic aid in the coming years, primarily to the detriment of CMEA members and other Marxist regimes. The shift to market principles in Eastern Europe implies that they will no longer obtain the same favourable treatment and guaranteed outlets and prices. Cuba in particular will suffer from Eastern countries' refusal to pay artificially high prices for its sugar. Vietnam, on the other hand, appears to be moving towards a more market-oriented economy under Soviet pressure.

The industries and projects for which East European aid was mainly provided in the past reflected the structure of their own economies. Soviet aid was advanced essentially for large-scale public-sector projects in heavy industry and energy. Today, industrialisation is no longer regarded as the sole or even the main

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objective for developing countries, and the Soviets are beginning to emphasise other socio-economic goals, including agriculture and rural development. It is intended to channel 20% of Soviet aid to sub-Saharan Africa into agricultural projects. The protection of the environment, which had hitherto been absent from the Soviet aid programme, is now being given increasing attention. Furthermore, it is acknowledged that a large state sector is not a prerequisite for the development of the Third World, and some support is now given to private-sector concerns, but the implementation of this policy will take time. In 1989, the bulk of new Soviet aid commitments was still in the field of infrastructure, mainly power generation.

Cutting Back on Aid

East European aid is not only being redirected; it is also being reduced, although to what extent is hard to gauge. Like many other economic data, detailed information on the aid programme has been a state secret in the USSR and the other Eastern European countries. The global figures put forward in UN fora by the USSR, the German Democratic Republic (GDR) and Czechoslovakia encompass many forms of co-operation not included in the accepted definition of Official Development Assistance (ODA). They do not distinguish very clearly between aid and trade. Furthermore, Eastern countries as a whole do not provide finance as such but supply goods and services, the prices of which have been fixed arbitrarily by the donor countries.

Various figures for the Soviet Union's economic assistance to developing countries have recently been advanced by different official sources. Soviet experts estimated the amount of economic support for developing countries in 1989, including preferential foreign trade arrangements and other non-ODA transactions, at about 10 billion roubles ($15.7 billion at the official 1989 exchange rate). On the other hand, in presenting his budget to parliament the Finance Minister stated that appropriations for grant assistance would be reduced by 20% in the 1990 budget to 1.6 billion roubles ($2.5 billion). The OECD

TASS

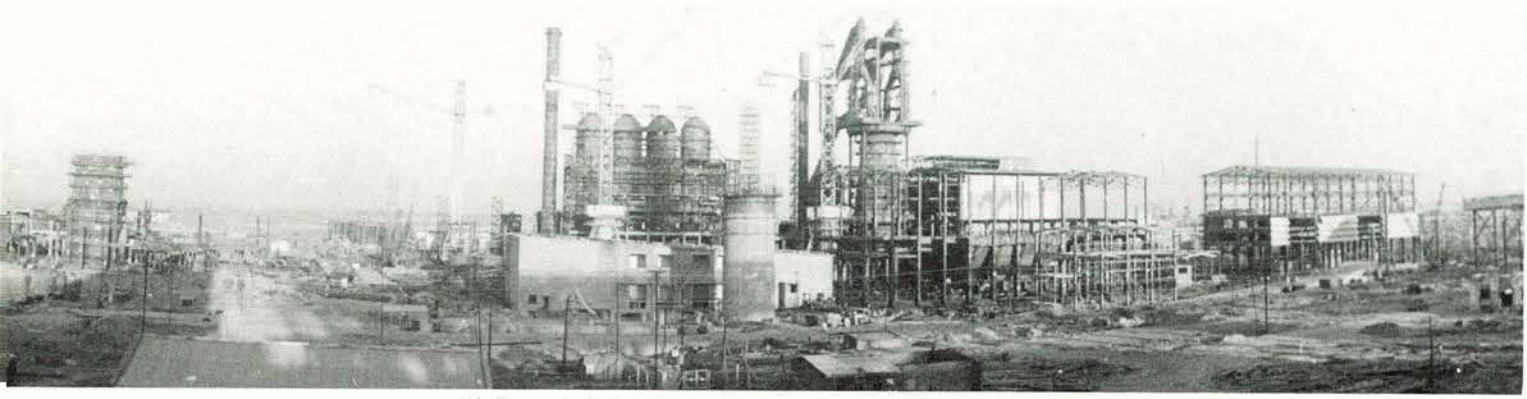
Aid from eastern Europe is beginning to be directed towards socio-economic goals.

estimates that the amount of USSR net ODA disbursements declined somewhat in 1989, to below $4 billion; nevertheless, the USSR was still the fifth largest donor overall in 1989.

Figures for other East European countries, where they exist, are even less informative, except for the German Democratic Republic. The latter's aid disbursements declined in 1989 by almost 30% over 1988, to 1,150 million GDR marks. A further decline in 1990 seems to be inevitable, although the new government stated its intention to continue to help the developing countries.

Increasing economic constraints, combined with social and ethnic unrest in various parts of the Soviet Union, will put a heavy strain on available resources for development assistance. Faced with declining living standards, public opinion is unlikely to support a large development assistance programme. The USSR Government will therefore be unable to maintain the country's aid effort at present volumes, and certain forms of economic support, such as preferential price arrangements, are likely to be abandoned.

The rest of Eastern Europe will similarly be forced to cut down on its largesse to the Third World. Czechoslovakia, Hungary and Poland announced that they will no longer buy Cuban sugar at subsidised prices, and that they were no longer prepared to commit themselves to large contributions to the 1991–95 five-year plans of Cuba, Mongolia and Vietnam. Poland and Romania are no longer in a position to provide development assistance apart from a few scholarships and experts. Hungary's ability to extend aid is limited by



A. Shalnov/TASS

Until recently Soviet aid was targeted principally at large-scale projects in the public sector, in heavy industry and in energy.

a heavy external debt burden and the Hungarian Parliament voted in December 1989 to halt aid to Angola, Nicaragua and several other countries. It was reported moreover that the East European countries started to withdraw a number of experts from sub-Saharan Africa during early 1990. Besides the USSR, only Czechoslovakia appears to be in a position to continue its aid programme, although at a reduced scale, given its relatively healthy external financial position and its comparatively balanced internal economic situation. In addition, some of the present GDR aid activities will be continued in the framework of a united German aid programme. At present, the GDR has some 200 co-operation and other agreements with 60 developing countries.

Repayments and Debt

A particular feature of East European assistance has been the provision for developing countries to repay loans in kind, in particular through the export of goods from plants financed by the donors. Nearly half the Soviet Union's imports from developing countries in 1987 were derived from industrial projects it promoted. This form of repayment in kind at guaranteed prices can be of considerable interest for developing countries, especially when commodity prices are falling.[1] On the other hand, when world prices are high and the Soviet Union insists on receiving the contractual volume at the stipulated price, it can become a heavy burden on the country concerned.

In spite of the high degree of countertrade co-operation, serious debt problems have arisen in East-South relations. The Soviet Union disclosed that developing countries owe it 78.7 billion roubles ($123.6 billion), about one-quarter of that in convertible currency. The biggest debtors are Cuba (Rb 15.5 billion), Mongolia (Rb 9.5 billion), Vietnam (Rb 9.1 billion), India (Rb 8.9 billion) and Syria (Rb 6.7 billion). It is not known how much the Third World owes to the rest of Eastern Europe.

The Soviet President has said that the Soviet Union is prepared to grant a moratorium of up to 100 years on debt owed by the least developed countries, and in some cases to write off debts altogether. Between 1986 and 1989, Moscow granted debt deferments to 30 developing countries totalling Rb 14.2 billion ($22.3 billion). In addition, some Rb 900 million of debt had been written off by the end of 1989, of which Vietnam owed over two-thirds and Mongolia and Ethiopia most of the rest.

The move from a centrally-planned to a market-oriented economy also implies that in future the aid programmes of the East European countries will have to be financed through clearly identified aid appropriations. A proper aid budget, discussed and approved by parliament, will give a more precise idea about the real costs of the aid programme and improve the monitoring of its implementation. In this context, it is noteworthy that the USSR, as well as other East European donors, have made contact with the OECD with the aim of establishing aid statistics according to internationally accepted criteria.

In view of the decline in the volume of aid, the USSR is concerned to increase its efficiency and improve its quality. It consequently turned its attention to aid co-ordination. In May, 1989, the USSR participated for the first time in a joint World Bank/UNDP meeting on Guinea Bissau. According to Soviet officials, arrangements have been made for the USSR to participate in future UNDP Round Tables concerned with developing countries for which it is an aid donor. The Soviet Union also envisages participating in local aid co-ordination and co-financing arrangements. Discussions to this effect have been initiated with Germany and Portugal. In Mali, the Soviet Union began to co-ordinate its assistance with that of the World Bank and other Western donors. In addition, the USSR shows increasing support for international organisations, and for the first time paid a large amount to a UN aid organisation.

Trading on Credit

Trade between Eastern Europe and developing countries is worth about $70 billion a year, making it a relatively small component of world trade. For Eastern Europe, some 20% of its exports go to developing countries and 15% of its imports come from them. For the developing countries, the respective figures are only 6% and 8%, but that is because East-South trade is concentrated in a small

1. See Margitta Wülker-Mirbach, 'New Trends in Countertrade', **The OECD Observer**, No. 163, April/May 1990.

V. Sobolev/TASS

The Aswan Dam, a symbol of the traditional form of Soviet aid.

number of Third World countries – 14 account for over four-fifths of developing-country trade with the East. For some of them – the three CMEA members, Afghanistan and Korea PDR – trade with Eastern Europe represents between 50 and almost 100% of their total trade. Eastern countries also provide between 10 and 50% of the imports of Angola, Ethiopia, Guinea, Nicaragua, Mozambique and Yemen PDR.

East-South trade continued to grow in 1987 and 1988, although developing countries' share of East European imports declined from 17.9% in 1985 to 14.5% in 1988. There was an aggregate deficit in developing countries' trade with Eastern Europe of $11.6 billion in 1988, and of $80 billion during the period 1980 to 1988. In 1988 Romania was the only East European country not to have a surplus. With only a small part of East-South trade conducted in convertible currency, much of the surplus has accumulated as debt, giving Eastern European countries a growing net creditor position vis-à-vis developing countries.

As regards the distribution of East-South trade, Asian countries have been Eastern Europe's most important Third World trading partners, absorbing over 60% of Eastern exports and supplying 55% of Eastern imports. Africa's share has fallen in recent years while that of Latin America has risen. In future, the changes in Eastern economies make it likely that there will be a shift away from trading mainly with the poorer developing countries to dealing more with the dynamic ones. As with aid programmes, economic rather than political considerations will determine Eastern countries' choice of trading partners in the Third World.

East-South relations are not limited to a transfer of resources from the East to the South, but also consist of a still limited but growing transfer of finance and technology from the South to the East. Kuwait concluded an oil co-operation agreement with the Soviet Union already in 1986 and provided bank loans in 1987 and in 1990. South Korea, too, is forging closer economic ties with the USSR and other East European countries, having amended the statutes of its Economic Development Co-operation Fund to make those countries eligible for long-term low-interest loans. It has provided loans to Poland and Hungary and is a founding member of the European Bank for Reconstruction and Development. Taiwan is also offering loans to Eastern Europe and Turkey has extended $500 million in 1989 to the USSR.

□ □

The future for East-South relations is uncertain, given the current upheavals in Eastern European countries which require massive inflows of capital to modernise their delapidated economies. Developing countries will be competing with them for funds in the financial markets of the West at a time when they will be even more dependent on western aid since Eastern European countries are scaling down aid programmes and advising recipients to seek more aid from western donors.

But in the medium and long term the economic changes in the East will create additional markets for the South. Furthermore, the remaining development assistance Eastern countries do provide will be better adapted to the requirements of the recipients, better co-ordinated with other sources of aid and more efficiently implemented. Developing countries should also derive some benefit from the end of the East-West confrontation, since part of the Eastern and Western financial resources hitherto devoted to defence will be released for other uses. ■

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Taxpayers' Rights and Obligations

Jeffrey Owens

***What are the basic rights of taxpayers, and how are they protected? What obligations accompany these rights and what are the control powers of tax authorities to ensure that their requirements are met? In what ways can taxpayers appeal against decisions of the tax authorities?*[1]**

Governments grant tax authorities wide powers to enforce taxation. These measures are necessary to ensure that all taxpayers pay the correct amount of tax. Non-compliance is not only a threat to the professional activities of honest taxpayers' by distorting competition, but also increases the share of taxation that they have to pay.

There may be a potential conflict between the use of these powers and the requirement that all taxpayers are fairly treated and that their rights are respected. The rights to privacy, to confidentiality, of access to information, and to appeal against decisions of the administration, for example, are fundamental rights in democratic societies. A breach will undermine taxpayers' perceptions of the fairness of the tax system.

OECD governments have always recognised the importance of measures to protect the taxpayer against the misuse of power by tax authorities. And in recent years these measures have frequently been given a higher political profile and are more clearly spelt out than in the past.

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Taxpayers' Rights

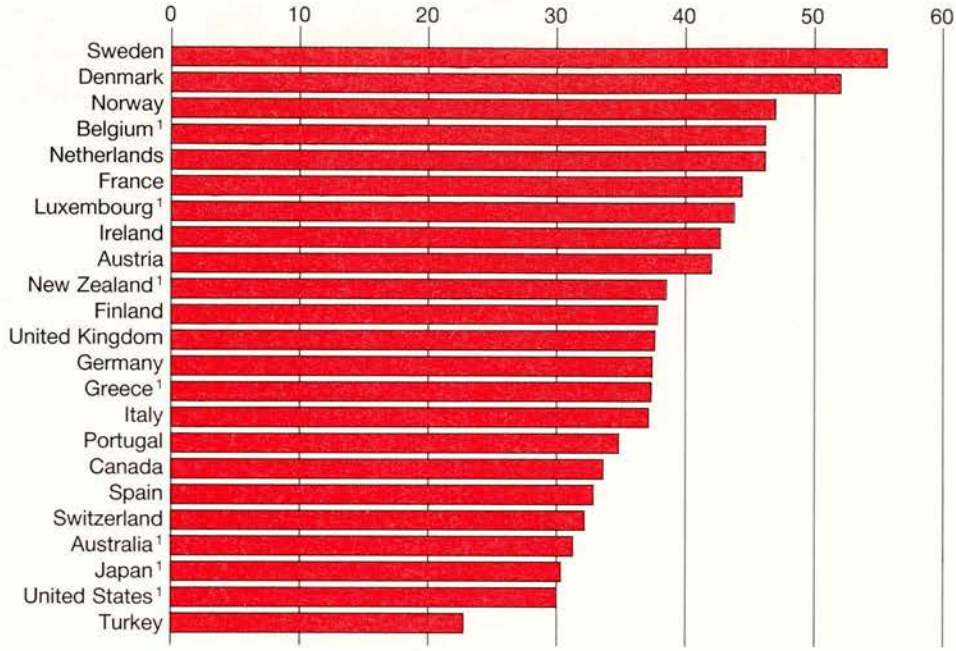
In many OECD countries there has recently been a wide ranging discussion on the rights of taxpayers and the measures required to guarantee that these rights are respected because:

- the burden of taxation has increased (Figure), with the largest growth frequently during the last ten years
- tax thresholds in some countries have been falling in real terms so that an ever larger number of households have begun to pay income taxes for the first time
- tax legislation has been growing more and more complex since governments have had to implement anti-avoidance legislation and tax advisors have then devised new tax minimisation schemes, which in turn requires new anti-avoidance legislation
- new computer technologies have opened up new opportunities of storing and matching data on taxpayers
- in some countries the tax authorities now have so many sources of information that they are able to assess tax liability for a large proportion of the population on the basis of information provided by third parties
- in a few countries the debate on taxpayers' right has been provoked by an extension of the control powers of the tax authorities, and a fear that these new powers will be misused.

There is a broad consensus among OECD governments on what may be called the basic rights of taxpayers. Allowing for some minor variations between countries, the following are the rights which apply to all taxpayers in the OECD area. ▶

1. **Taxpayers' Rights and Obligations: A Survey of the Legal Situation in OECD Countries**, OECD Publications, Paris, 1990.

Figure
TOTAL TAX REVENUE AS PERCENTAGE OF GDP
1988



Note: Countries are ranked by their ratios of total tax to GDP (1988).
1. 1987
Source: *Revenue Statistics of OECD Member Countries, 1966–1988,* OECD, 1989

The right to be informed, assisted and heard

Taxpayers are entitled to have up-to-date information on the overall operation of the tax system, on the way in which their tax is assessed and assistance in complying with the tax legislation. They also are entitled to be informed of their rights.

The right of appeal

The right to appeal against any decision of the tax authorities on income-tax liabilities applies to all taxpayers and to most other decisions made by the tax authorities, whether on the application and interpretation of the law or of administrative rulings.

An appeal will normally first be lodged with an administrative tribunal, in some cases consisting of lawyers and experts and in others of specifically designated tax officials only. Some countries attach importance to involving laymen in the appeals procedures. If taxpayers are not satisfied with the outcome at the first level of appeal, they can appeal to the courts taking their claim in some cases as far as the highest court. Appeals may be allowed on an interpretation of the law or questions of facts. Generally the appeal has to be made within a certain time limit, which is clearly a constraint on the taxpayer.

In addition, most member countries have an Ombudsman who can deal with tax complaints, although his mandate generally covers the whole of the public administration. In half of the countries with an Ombudsman he can initiate inquiries, as well as respond to complaints by taxpayers. Except for the United States, his conclusions are not legally binding, though they are generally followed.

The right to pay no more than the correct amount of tax

Taxpayers should pay no more tax than they are required to by law, taking into account their personal circumstances and income. Taxpayers are also entitled to assistance from the tax authorities so that they receive all the reliefs and deductions to which they are entitled. Reducing one's tax liability by legitimate tax planning is acceptable but forms of tax minimisation which clearly go against the intent of the legislator are not.

The right to certainty

Taxpayers also have the right to certainty. They should be able to anticipate the tax consequences of their actions, even though tax authorities will be reluctant to provide the taxpayer with certainty in relation to the application of anti-abuse provisions aimed at taxpayers seeking to take advantage of tax laws for purposes that were never intended by the legislature.

Another aspect of certainty is that legislation and changes in the administrative interpretation of tax laws should not be retrospective.

Privacy

All taxpayers have the right to expect that the tax authorities will not intrude unnecessarily upon their privacy. In practice,

this is interpreted as avoiding unreasonable searches of their homes and requests for information which are not relevant for determining the correct amount of tax due. In all countries very strict rules apply to the entry into a home or business premise by a tax official in the course of a tax investigation and on obtaining information from third parties. In the majority of countries a signed warrant is generally required to enter the home of a taxpayer who objects to a visit by the tax authority. Similarly, strict rules apply to obtaining information from third parties on the affairs of a taxpayer.

Confidentiality and secrecy

Taxpayers are naturally concerned that information provided to the tax authorities on a confidential basis should not be misused. Any information provided to the tax authorities is normally not usable for any purpose other than the assessment or enforcement and collection of tax. Nevertheless, in most countries, information collected for tax purposes can be passed to social security departments and, in some member countries, to other government departments, although it will continue to be protected by the confidentiality rules that apply to the tax authorities. Information can also be passed to foreign tax authorities under bilateral or multilateral instruments which specifically provide for such exchanges.

Taxpayers are concerned that their business secrets should not be revealed to competitors. For example, if information passed to foreign tax authorities was inadvertently divulged to the public, this could harm the competitive position of the taxpayer. This is very unlikely to occur, since requests for information will be refused if the state that receives the request believes there is a risk of disclosure.

Another sensitive area is that of bank secrecy and professional confidentiality. In most countries banks have legal obligations to maintain the confidentiality of their clients' affairs. But in nearly all OECD countries the tax administration has the statutory power to override that confidentiality and to obtain specific information from the bank for tax purposes.

In almost all countries banks have to provide the tax authorities with information on the aggregate amounts of interest and dividends paid out by them. It is also widely accepted that where the tax authorities ask for information on a specific taxpayer who has an account with a bank, information will be provided. What is more controversial is whether tax authorities should be allowed to carry out general investigations – so-called 'fishing expeditions' – into a bank's accounts to identify potential tax evaders.

Although these issues of confidentiality and secrecy have been subject to a lively debate, very few cases have been identified where the tax authorities have misused their information powers or confidential information has been made public. Tax legislation imposes very heavy penalties on tax officials who misuse confidential information and the confidentiality rules that apply to tax authorities are generally stricter than those applying to any other government department.

Beside these specific rights, taxpayers are entitled to assume that the tax legislation will be applied in a fair and impartial manner. People in similar circumstances should be subject to the same control procedures. The tax authorities should normally base their assessments upon the information provided by the taxpayer unless there are good reasons to believe that this is misleading. Taxpayers can also expect to be treated in a courteous and efficient manner.

A number of countries have recently consolidated the measures taken to protect taxpayers into a 'taxpayers' charter' or 'declaration'. These statements are seen as a useful way of informing taxpayers of their rights and reaffirming a government's commitment to ensure that these basic rights are protected. For the most part, they do not extend the guarantees given to taxpayers. In some countries (Canada and the United Kingdom, for example) they have taken the form of a general statement of the broad principles which should govern the relationship between the tax authorities and the taxpayer. In others (for instance, France and the United States), they provide a more detailed guide to the rights of taxpayers at each stage in the assessment process.

Taxpayers' Obligations

In most spheres of life, rights imply obligations. Taxation is no exception, and here almost all of them involve the provision of information.

One of the basic obligations of taxpayers is to file a tax return. The way in which this requirement is met will in part depend upon the way in which tax is assessed and collected. For personal income tax, all OECD countries except France and Switzerland operate comprehensive withholding systems on wages and salaries whereby the employer withholds tax and passes it to the government. Many countries operate a similar system for interest and dividend income, whereby the payer of the income has to withhold a certain percentage. In Austria, Ireland and the United Kingdom, the withholding systems on wages and salaries (the so-called

Table
A SURVEY OF SELECTED LEGAL PROVISIONS IN OECD COUNTRIES[1]

	Taxpayers' Charter	Ombudsman	Taxpayers' Identification Number[2]	Powers of Entry into Dwelling[3]	Self-Assessment Systems	Use of Tax Amnesties
Australia	No	Yes	T	Yes	No	Yes
Austria	No	Yes	T	Yes	No	Yes
Belgium	No	No	T	5 am to 9 pm	No	Yes
Canada	Yes	No	T	Yes	Yes	No
Denmark	No	Yes	G	Yes	No	No
Finland	No	Yes	T	If penal crime suspected	No	Yes
France	Yes	Yes	T	Yes	No	Yes
Germany	No	No	T	If fraud suspected	No	No
Greece	No	No	T	5 am to 9 pm	No	Yes
Ireland	Yes	No	T	Yes	No	Yes
Italy	No	Yes	T	Yes	Yes	Yes
Japan	No	No	None	Yes	Yes	No
Netherlands	No	Yes	T	Yes	No	Yes
New Zealand	Yes	Yes	T	Yes	No	Yes
Norway	No	Yes	G	Yes	No	No
Portugal	No	Yes	T	Yes	No	Yes
Spain	No	Yes	T	Yes	Yes	Yes
Sweden	No	Yes	G	Yes	No	Yes
Switzerland	No	No	None (Fed)	Yes	No	Yes
Turkey	No	Yes	T	Yes	No	No
United Kingdom	Yes	Yes	T	Yes	No	No
United States	Yes	Yes	S	Yes	Yes	No

1. Iceland and Luxembourg did not participate in the exercise.
2. G=General Number used for all transactions with government; S=Social Security Number; T=Tax File Number.
3. A warrant is normally required and in many countries the taxpayer must be present.
Source: OECD

'Pay As You Earn' system) are set up in such a way that most taxpayers do not have to file an annual tax return; in other countries a return is required from the large majority of taxpayers.

In most countries the taxpayer has to provide only the information required for the tax authorities to calculate tax due. Once this is done, he is then sent a notice stating this amount. In others he is required under their self-assessment systems to calculate the tax due and to enclose a cheque for this amount with the tax return.

There are a number of other obligations that are generally placed upon taxpayers. In all countries the tax authorities have the power to request information in addition to that contained in the tax return, provided this is necessary for the assessment of the tax. In most countries the tax legislation also specifies the nature of the accounts that must be kept by different types of taxpayers.

Some examples of other specific information requirements placed upon taxpayers are:

- to give evidence on his tax affairs to the tax authorities
- to notify the tax authorities of any change in personal circumstances
- companies may be required to list their directors
- payments to non-residents may be subject to special information requirements
- cessation and start-up of new business may have to be notified to the tax authorities.

Another widely discussed aspect of information requirements is the use of taxpayer identification numbers. With the exception of Japan, all OECD countries operate some sort of taxpayer identification number. Broadly speaking, there are three groups of countries. The first is where all individuals are allocated a personal identification number which is used in all their transactions with government. The second group – which contains only the United States-uses the social security number for tax purposes. The third and by far the largest group is where there is a specific tax file number allocated to each taxpayer and which must be used during any transaction which has a tax consequence.

Taxpayers are also obliged not to delay excessively payment of tax due. The tax legislation will specify the time at which tax is due – for example, one month after the end of the tax year – and the penalties that will apply if this deadline is not met.

Obligations on Third Parties

Besides the obligations on the taxpayer to supply information, there are information requirements that must be met by third parties, particularly employers and banks.

In all countries employers have to supply the tax authorities with information on the amounts of salaries and wages paid to employees.

Almost everywhere, banks and other financial institutions are required to respond to requests for information on interest payments to identified taxpayers. In some countries they must also automatically pass to the authorities the names of and amounts of interest received by residents and non-residents, although in a few others the only obligation is to notify the aggregate amounts of these payments. Corporations are usually required to provide the tax authorities with information on recipients of dividends and interest.

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These issues will continue to occupy an important place on the political agenda of OECD countries. A knowledge of the legal position of taxpayers and tax authorities in other member countries is an essential element of informed debate, and this is what the OECD hopes to have provided. ■

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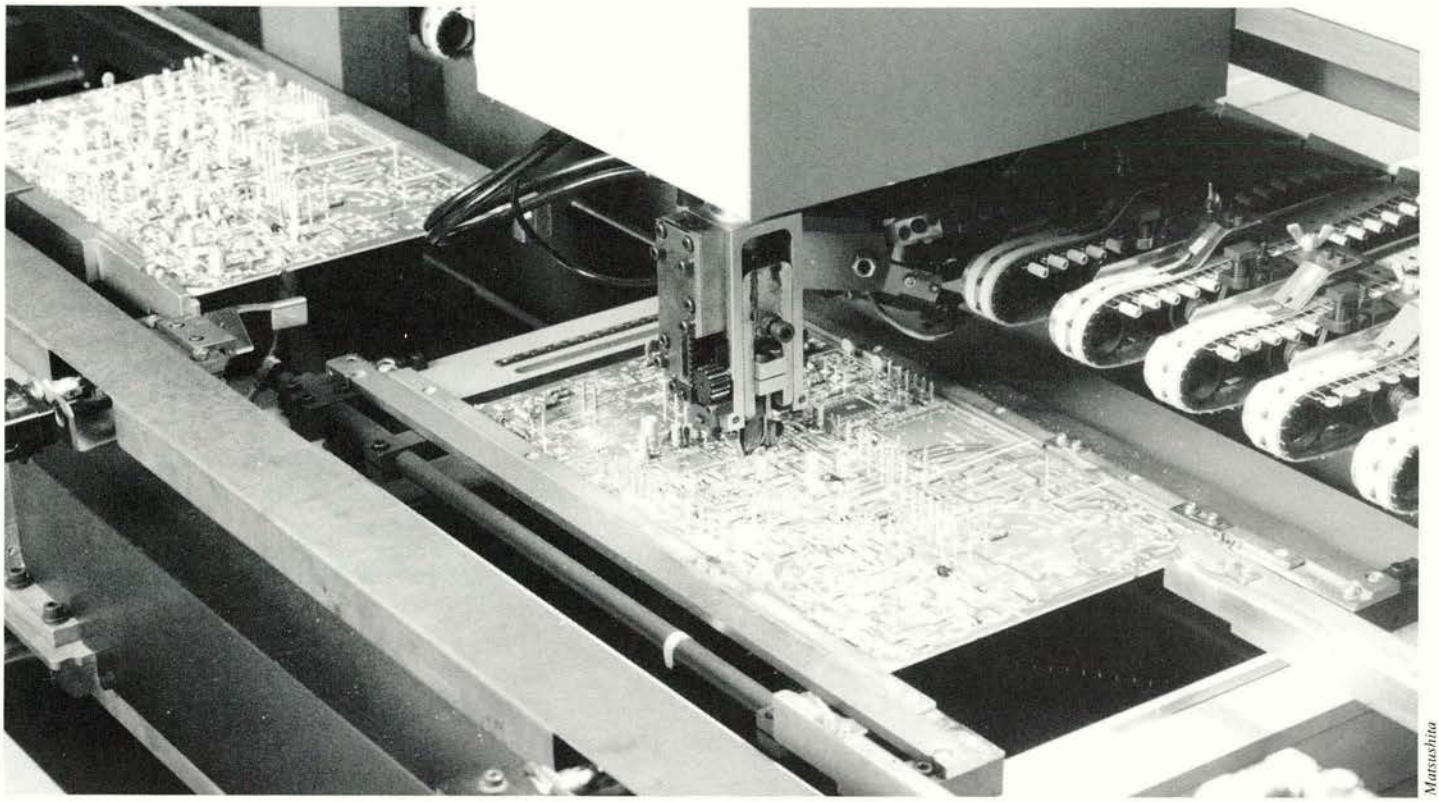
The Diffusion of Manufacturing Technology

Howard Rush and John Bessant



Matsushita

Industry in OECD countries is spending heavily on automating production processes through the use of computer-aided design, robots and flexible manufacturing systems. Yet these advances have not generated the expected savings in cost and in productivity improvements. To obtain the full benefit of their investment in computerised manufacturing, firms will have to grasp the nettle of comprehensive integration of the new technologies and the consequent re-organisation of work methods.[1]

Manufacturing industry in OECD countries has introduced micro-electronics and computerisation on a large scale. But the bulk of that investment has taken the form of 'substitution innovation' rather than the transformation of production systems through the integration of individually automated component parts. Companies have succeeded only in doing what they were already doing a little better – more quickly and more accurately – and they have not taken full advantage of the new technology to improve the manufacturing effectiveness of their organisation as a whole.

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From Integration to Flexibility

The result has been the so-called 'productivity paradox' – the failure of capital investment in automation to generate corresponding productivity gains.[2] To overcome that pitfall, the automation of specific operations has to take into consideration the longer-term benefits to be derived from full integration. This entails connecting each computerised stage of the production process, from product design and development to packaging and despatch, into a coherent, communicating whole – computer-integrated manufacturing (CIM).

'Integration' has been the leitmotiv of industrial innovation since the early days

1. 'Diffusion of New Technologies', presented at 'Technology and Investment: Crucial Issues for the 90s', a conference organised in Stockholm earlier this year by the Royal Swedish Academy of Engineering Sciences and the Swedish Ministry of Industry in co-operation with the OECD.

2. See Gerard Bell, 'Technical Change and the Productivity Paradox', **The OECD Observer**, No. 164, June/July 1990.

of automation. Ford's production lines, first introduced before World War I, were considered the epitome of integration, linking humans and machines in a complex but extremely efficient production system. More recently, the machines themselves have become increasingly intelligent, with the incorporation of sensors and computerised control systems. Now the advent of computer-aided design (CAD), robots and flexible manufacturing systems are introducing a further dimension, opening up the possibility of integrating all these techniques into a single production process – computer-aided design/computer-aided manufacturing (CAD/CAM), which is one step removed from CIM.

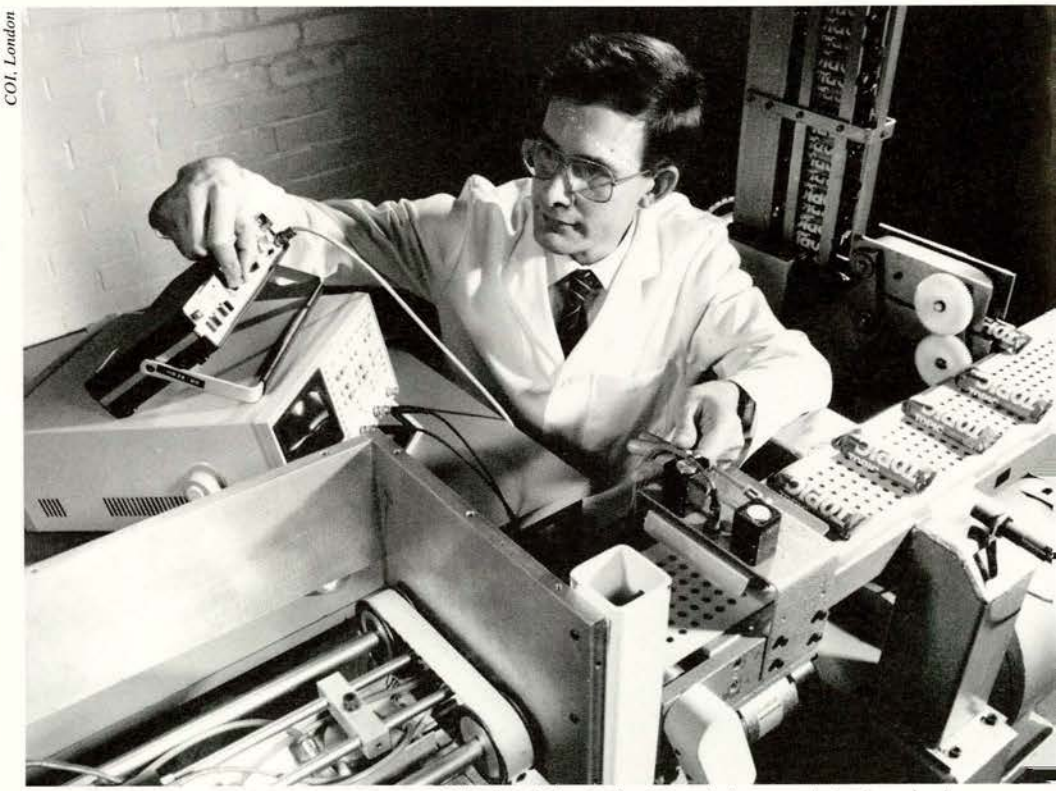
The main difference between the technology now arriving in the industrial workplace and previous generations of process technology is that while earlier innovation was designed mainly to lower labour costs, the advanced manufacturing technologies of today are designed to offer an increase in operational flexibility. That flexibility might take the form of a reduction in working capital costs, improved delivery response times, lower rates of rework and scrapping, and more customisation of products. Labour is now seen as a vital resource in this equation instead of simply another input, and labour savings are rarely mentioned as a factor in deciding to invest in new technology.

A wide variety of more intangible considerations, such as skill shortages and general competitiveness, have to be taken into account in deciding whether to invest in automated manufacturing technology (AMT). To obtain the full benefits of these technologies, major organisational changes are also required, affecting the way individual operations are performed, production lines are organised and different activities and departments interact.

Benefits and Costs

In surveys of companies that have invested in CAD, for instance, it is clear that numerous benefits have been derived, including enormous productivity improvements, increased accuracy, reduced lead times, easier repeating and modification of work and the possibility of maintaining on-line drawings databases. Similarly, flexible manufacturing systems (FMS), which are virtually unmanned, and computerised production units that execute a specific range of tasks to produce varying quantities of customised items offer both technical and efficiency gains over traditional batch production techniques. It has been estimated that items manufactured in batches spend up to 95% of their time in the factory being moved about or simply waiting in a queue for processing, while value-added operations account for less than 2% of the time. In one UK engineering factory, for example, a product would typically spend twelve weeks in the factory and a further four in storage as a finished good – although the total processing time involved in its manufacture was around three hours. FMS can bring enormous benefits, therefore, in terms of higher rates of use for machine tools, reduced lead times, faster stock turnover, lower stocks and less work-in-progress.

COI, London



Products manufactured in batches spend some 95% of their time in the factory being moved about or simply waiting in queues for processing.

But it has to be acknowledged that a large proportion of firms using these technologies report limited (and occasionally negative) returns on their investment. And even where tangible gains are obtained, the firm often has to wait two or three years before they appear. Flexible manufacturing systems are expensive, and to justify the hefty outlays involved firms may have to disregard their traditional cost-accountancy practices, which call for quick returns on investment, and instead take a more strategic, longer-term view. Another factor that is inducing firms to delay purchasing decisions is the accelerating pace of technological progress, encouraging them to defer investments in anticipation of new and perhaps cheaper solutions. Rapid technical change is also shortening the life cycle of modern equipment, and increasing the degree of built-in obsolescence.

At the same time, there is also a supply-side constraint: even large and experienced companies, despite all their new

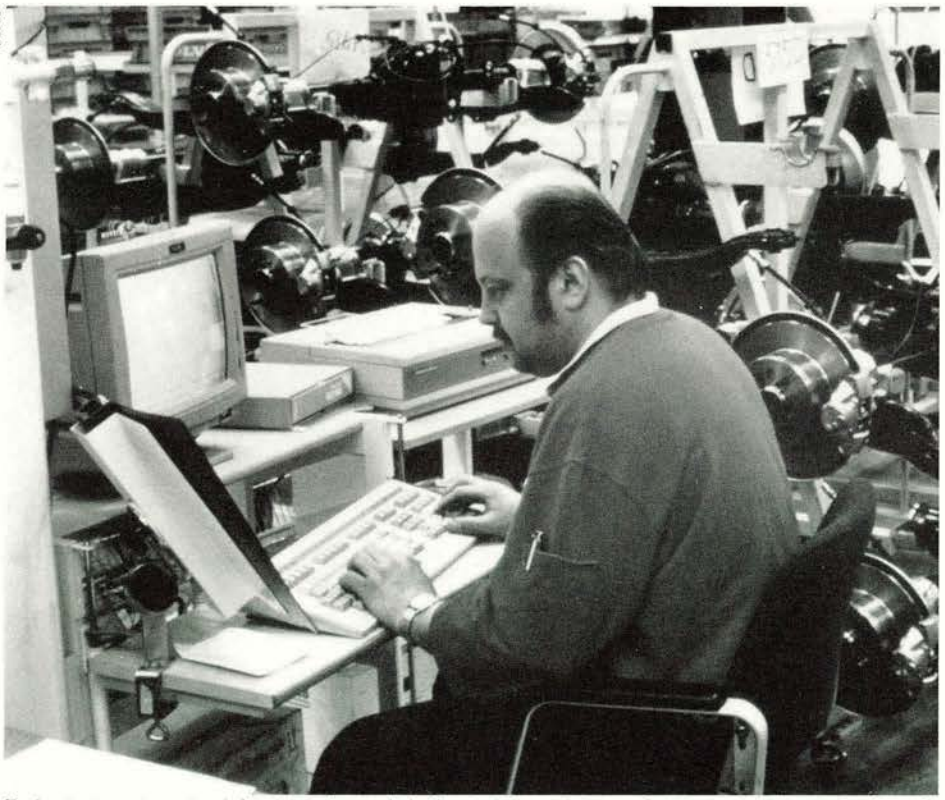
technology, are unable to supply ready-to-run integrated technology packages partly because individual firms have very specific requirements and partly because few suppliers have sufficiently broad expertise and resources to offer complete packages.

Moving into the implementation of integrated automation systems often requires a range of support which complements the in-house resources and experience of users; very few will be happy to leave the entire project to outsiders to plan and manage. Thus some form of partnership involving joint problem-solving is to be preferred. There is a variety of components on the supply side. Solutions should be provided to specific problems, rather than technology packaged and sold as a remedy for all ills. Sometimes, too, total rather than partial solutions reflect the supplier's bias towards selling a particular product. Help is required in choosing different approaches to solving the problem, involving, for example, managerial or organisational as well as technological change. Incremental approaches should permit gradual change which the organisation can afford – and, more importantly, can absorb. And long-term guarantees should ensure support and technical service.

There is a number of different suppliers in the automation market but so far none is in a position to supply this range of services and equipment. As one of the larger firms, Digital Equipment Corporation, put it:

> [...] the main obstacle to integrated manufacturing is the inherent incompatibility between existing systems.[3] Integration was not a consideration when many of these systems were acquired. There is no simple solution to the problem. CIM is a business strategy, not a single product you can buy. No single supplier has all the products to integrate a manufacturing enterprise.

Volvo



Technological integration brings new demands in the analysis and diagnosis of faults, which requires a much wider range of skills.

Users and suppliers are responding to these difficulties by forming joint ventures or consortia and using systems integrators and/or managing agents to put a package together on behalf of a client. Users, too, are reducing their demands to such an extent that a single source can supply and guarantee a system (demonstrated, for example, by the market growth in smaller flexible manufacturing cells rather than in large and complex systems). They are also managing projects on a 'do-it-yourself' basis.

As a result, some big companies that wanted to acquire a competitive advantage by pioneering automated manufacturing techniques have turned to developing their own systems, becoming major suppliers of such systems in their own right. The most notable examples are the big motor manufacturers, as well as some aerospace companies. Aerospace involves a combination of high-value, high-complexity and low-volume manufacturing; it is a sophisticated user which requires increased flexibility. Motor-vehicle production, on the other hand, is a high-volume industry, but it, too, is characterised by growing complexity and an increasing demand for flexibility. Both had the resources to invest early on in the new technology.

Changes in Skills

Another impediment to the diffusion of AMT is the lack of suitably skilled personnel, in a period which has seen the general polarisation of skills. Some skills have been lost, with highly trained operators becoming simply machine-minders. Yet the problems that arise with automated control systems do require the intervention of skilled supervisors. Maintenance, too, is a concern, since technological integration brings new demands in the analysis and diagnosis of faults, which requires a much wider range of skills. In reality, the era of the unmanned factory, if such a thing were desirable, is still a long way off: even where one of the objectives of introducing AMT was to reduce labour costs, it has gradually been realised that

3. See Georges Ferné, 'The Economic Stakes of Computer Standardisation', **The OECD Observer**, No. 164, June/July 1990.

Matsushita

The goal of the unmanned factory has given way to the realisation that even automated manufacturing systems can still require the intervention of skilled workers.

the system nonetheless requires skilled workers to achieve a high utilisation rate.

Three broad changes in the range of skills can be identified. The first reflects a structural shift towards the higher degrees of skill required to support increasing complex technologies. Data for a variety of industrial sectors and countries confirm the general observation that there is a decline in the numbers of unskilled and semi-skilled workers in manufacturing and an increase in the numbers of professional engineers, technicians and similarly qualified staff required.

The second trend is towards increased convergence, with the shift from single skills towards the multiple skills that are required to support increasingly integrated and interdependent technologies. This process has been observed across a wide range of occupational groups and at all levels in the organisation of the firm.

The third move is towards improved flexibility of deployment. Whereas traditional models involved clearly defined, predictable and predetermined tasks for which single skills could be developed, the pattern that is emerging demands a more flexible response. The central element here is the ability – or agility – to switch to different skills as and where relevant. The task of maintenance, for example, is becoming more and more dependent on diagnosis and fault-finding, which require considerable flexibility and creativity, and correspondingly less so on the straightforward technical ability to repair equipment.

One consequence of this reliance on multi-skilled and flexible support in AMT is the emphasis which it places, of necessity, on training and development. Skills now often have a short life-cycle and the ability in acquiring new skills and updating old ones is becoming critical. Such 'learning to learn' depends principally on developing a gradually deepening understanding of the broader context in which the worker is operating.

This in turn moves the emphasis from task-related training to individual development, and from being a cost derived from a particular piece of new technology towards being seen as an investment in organisational capability. Many firms are now beginning to recognise the advantages offered by becoming a 'learning organisation'.

There is no longer any technological imperative which argues for a particular degree or disposition of skill but rather a range of 'strategic choice' open to managers. Whereas earlier systems emphasised deskilling and the removal of operator control and discretion, much of the current trend is in the reverse direction: human operators are now seen as central to successful implementation and flexible operation of advanced systems.

□ □

The introduction of AMT and the move towards CIM raises questions about the traditional pattern of functional specialisation in the workplace. The merging of design and manufacturing functions in CIM has given rise to the concept of 'design for manufacture', designing products so as to avoid unnecessarily complex manipulations and operations at the manufacturing stage. The essence of functional integration is to ensure that specialist skills are co-ordinated. To that end, the production process should be viewed as a single system, so traditional departmental barriers may have to be eliminated.

Japan has shown the way in integrating new techniques like 'just-in-time' production which uses streamlined planning and simplified manufacturing procedures to create a suitable framework for the introduction of AMT. To achieve an appropriate organisational structure, companies may have to rethink their traditional working practices completely. ■

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Chemical Thermodynamics for Environmental Protection

Hans Wanner

A high-quality thermodynamic data base (TDB) is an indispensable basis for the reliable prediction of the chemical behaviour of hazardous substances in the environment. The TDB project developed at the OECD Nuclear Energy Agency for the management of radioactive waste could easily be expanded to help solve the environmental problems associated with other types of waste.

Hans Wanner is in charge of the Thermodynamic Data Base Project at the Data Bank of the OECD Nuclear Energy Agency at Saclay.

In recent years, the populations of OECD countries have become increasingly aware of the hazardous consequences that toxic waste materials may have on man and the environment (the 'biosphere').

Among such toxic materials are heavy metals, such as mercury, cadmium, lead and others which are used, for example, in batteries, and organic materials which serve as solvents or occur as side-products of chemical processes in industry. In some places concentrations of toxic substances in supplies of drinking water are so high that it has to be declared unusable. In such cases the search for the origin of the pollution often reveals that a nearby waste disposal site has leaked, releasing hazardous materials into the groundwater system. The frequent absence of precise information on the contents of such waste dumps makes it virtually impossible to estimate the extent of the threat they pose for the environment. ▶

It is even more alarming that several unregistered, illegal waste dumps have been found and that many more are assumed to exist, threatening the environment like well-hidden time bombs. There are also large and ever-increasing amounts of waste, classified as hazardous, in temporary storage while it waits for appropriate and safe places where it can be disposed of.

To protect the environment from the dangerous consequences of the uncontrolled dispersion of hazardous waste, disposal sites have to be identified and prepared, and safe repositories have to be constructed and located in areas that ensure a sufficient isolation of the hazardous materials from the environment. But it is very unlikely that a complete, long-term isolation of hazardous waste, guaranteed solely by the assumed impermeability of the containment materials, is possible. So standards have to be set for the safety requirements of waste repositories in the event of the escape of hazardous material. The governments of several countries have recognised the urgency of systematic and well organised waste management and are undertaking investigations to that end.

Extensive experience in the management of nuclear waste has already been garnered in the OECD member countries. Large investments in research and development over the last fifteen years have produced feasibility studies and safety assessments of potential repositories for radioactive waste. Among the many theoretical options, the disposal of radioactive waste in stable geological formations was internationally agreed to be technically and politically the most acceptable solution. A large number of technical reports have been published; a few of them – for example, the Swedish KBS-3 report (1983) and the Swiss Projekt Gewähr (1985) – contain complete examinations of the architecture and engineering of radioactive waste repositories, including comprehensive safety analyses with quantitative assessments of the potential hazardous consequences many thousands of years into the future.

Minimum Standards for Waste Disposal

The principal criterion for the licence of a proposed waste repository is that it can be demonstrated to comply with the safety requirements as defined by the government of each country. In other words, components of a sealed repository which eventually may escape into the biosphere as a consequence of realistically assumed processes must not exceed the maximum dose rates defined, that is, they should not harm human beings. So each country has to undertake quantitative modelling studies of the consequences of a possible release of hazardous components into the surrounding area, including their dispersion and 'migration' into the biosphere.

One indispensable basis for such modelling studies to produce reliable results is the availability of high-quality data on the behaviour of the hazardous elements under relevant conditions. These data should provide information about the chemical forms in which the hazardous elements may exist there, the saturation criteria which lead to the formation of solid and immobile material, and the interaction of dissolved substances with the rock surfaces, known as sorption processes. The basic information required for a quantitative assessment of these processes is provided by chemical thermodynamic data which are not site-specific and they can thus be used under a large variety of conditions and circumstances.

A large spread of other kinds of data is also required, data particular to a geological site and in general not predictable. These site-specific data include, for example, information on water-bearing zones and fractures, their chemical and physical characteristics, and data on the water flow in these areas.

The hydrological information is very important for the safety assessment of a waste repository because the transportation of hazardous material from a geological repository to the biosphere can take place only through water (water is the only carrier substance present in geological formations that can flow through fissures and fractures or even diffuse through compact rock).

Since the effort in research and development required for the safe disposal of hazardous waste is very large, there is a vital interest in co-ordinating internationally those parts of the work that are of general use and whose results do not depend heavily on the differing kinds of approaches adopted by different governments for waste disposal in geological formations. That is why, six years ago, the NEA Radioactive Waste Management Committee (RWMC) undertook the development of the NEA Thermochemical Data Base (TDB) project, with the aim of providing up-to-date and high-quality sets of chemical thermodynamic data for the

CHEMICAL THERMODYNAMIC DATA

The following thermodynamic parameters are considered in the NEA-TDB project. They are dependent on temperature and pressure.

G: Gibbs or free energy. *G* describes the energy content of a chemical species and allows the determination of the net energy change of chemical reactions. *G* values are used to calculate the degree to which chemical reactions may take place and specific compounds be formed.

H: Enthalpy. *H* describes the heat content of a chemical species and allows the determination of the net heat change of chemical reactions. For example, the enthalpy allows one to calculate whether and how much heat is needed for a reaction between two chemical substances to take place. *H* values are used to calculate the temperature dependency of chemical reactions.

S: Entropy. *S* is a measure for the ordering of the atoms in chemical substances; its value decreases with an increasing order. For example, the entropy of any ice crystal, in which each water molecule is at a fixed place, is lower than that of liquid water, where the water molecules are mobile. Further, the entropy of liquid water, in which the water molecules move around but are still linked together by chemical bonds, is lower than that of water vapour, where the water molecules are not bonded to each other and therefore have free mobility. *S* is directly related to *G* and *H* and can therefore be used to calculate *G* or *H* if one of these parameters is unknown.

C_p: Heat capacity at constant pressure. C_p is used to derive the temperature dependencies of *H* and *S*. C_p is itself dependent on the temperature, and its temperature function is therefore tabulated in the NEA-TDB project if it is available.

most important elements contained in radioactive waste. These data will be recommended for use in safety-assessment studies of radioactive waste disposal systems in NEA member countries.

Predicting Chemical Behaviour

Chemical thermodynamic data (box) allow the calculation of the behaviour of chemical elements under a wide variety of conditions. Their character permits a wide application which is not restricted by the chemical and physical forms of particular geological formations. They permit the prediction of the chemical forms in which these elements may be present at different temperatures, their interaction with dissolved or solid material, as well as the maximum amounts of these elements that may be transported in water-bearing zones, such as fractures and fissures in rocks, or porous rock. Information about inhibited reactions – that is, those that do not take place spontaneously in spite of favourable energy conditions – is also required for environmental modelling studies.

The determination of chemical thermodynamic data has been the subject of extensive research for more than a hundred years. A large amount of data have been reported in the scientific literature over this period. But their quality varies widely, which explains the discrepancies in the literature. The reasons for these inconsistencies are often difficult to identify, even for scientists with a good background in thermochemistry. Shortcomings in experimental procedures and erroneous or incomplete interpretations and evaluations of the measured parameters are among the most frequent sources of error.

Although critical selections of thermodynamic data have been published in the past thirty years, their direct use for environmental modelling purposes is rather limited. Some of them are not complete enough for practical application; others do not present any detailed discussion of the data selection procedures, which makes it difficult or impossible to verify the quality of the data sets presented. The purpose of the NEA-TDB project is to develop, following well documented and internationally acknowledged procedures, a high-quality thermodynamic data base for practical use in environmental modelling studies. The first set of five 'key' elements represent essentially the important elements contained in high-level radioactive waste. Additional priorities should be set in the coming year.

The process of establishing high-quality data sets is divided into several steps. For each element a team of four to six internationally recognised experts is formed by the NEA. These experts perform a critical, comprehensive review on the chemical thermodynamic data reported in the scientific literature. This includes the compilation of the data and information reported in the literature, the critical assessment of the quality of this information, which sometimes requires a complete re-evaluation of the experimental data and the selection of reliable data for each important chemical species. The review procedures are defined in a number of technical guidelines.[1]

The result is a selected data set, as well as a report containing a detailed description of the evaluation process, including the judgement of the available literature sources and the analyses of the reported experimental data. Each report is reviewed by a group of independent experts in the corresponding field of chemical thermodynamics, according to further guidelines developed for this purpose.[2] Following this additional step, the reports are published by the OECD and the recommended data sets are made available to users, on request, in machine-readable form that facilitates their direct use in common geochemical modelling codes. At the same time, an additional report will be published in which the important gaps are pointed out. This report also presents recommendations for experimental studies required to fill these gaps.

The first volume of the series of publications that will result from this work is on uranium. The final draft of the chemical thermodynamics of uranium is currently being reviewed by independent experts. It amounts to over 600 pages, considers about 900 scientific publications, and contains separate discussions of 260 experimental studies. It will be followed, over the next two to three years, by studies on technetium, americium, neptunium and plutonium.

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There is no difference in principle between the safety assessment of radioactive waste repositories and that of non-radioactive waste repositories. A large number of models have been developed for the prediction of the behaviour of radioactive waste components in the geosphere and biosphere, which can be used without or with only minor modifications for the prediction of the behaviour of non-radioactive waste. But the chemical thermodynamic data required have to be compiled and reviewed separately for each important waste element. The procedure for the elaboration of high-quality data sets for the elements in non-radioactive waste is the same as for those in waste that is radioactive. The NEA-TDB project offers a powerful data-base system to develop high-quality data sets for use in environmental modelling studies. ■

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Mario Fourmy/REA

Guaranteed Compensation for Accidental Pollution

Henri Smets

Poisoned rivers, contaminated groundwater, oil spills, polluted soil and toxic fumes are only a few of the consequences of accidental pollution. People may be asphyxiated or disabled and fauna can disappear for several years or be wiped out altogether. In the wake of an accident, the least that can be done is to repair the harm caused and provide compensation for all victims.

If an accident involves a worker employed by a particular company, a special compensation scheme will provide him with redress for any harm suffered. In a country such as France, for example, if the accident is caused by a road transport firm, any pedestrian poisoned or injured will always receive compensation, even if the accident takes on enormous proportions. In the event of radioactive pollution or an oilspill at sea, the victims will, in most countries, benefit from some special and particularly generous compensation scheme.

But if the victim happens to live in the vicinity of a chemical or oil plant, he will have to look for redress to traditional mechanisms of compensation. In spite of

In too many cases, the victims of accidental pollution stand no chance of being awarded compensation; and these instances will receive little attention if the victims are poor or if they cannot easily join forces to defend their interests.

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the catastrophic nature of the accidents which occurred in Bhopal (toxic fumes), Seveso (soil pollution) and Basel (river pollution), no special measures have been taken to *guarantee* compensation for the victims of accidental pollution in OECD countries.

The traditional compensation system may have its drawbacks, but it ensures, at least, that in time victims will generally receive compensation from the polluter. In practice, victims must prove the identity of the polluter and take successful legal action against him if they are eventually to be awarded compensation, which will be depleted by the high costs involved in litigating pollution cases if prompt settlement is not reached.

The Battle for Compensation

Victims of damage caused by accidental pollution must first establish a causal link between the damage and the pollution. They must then go on to identify the origin of the pollution (the polluter), prove that he is liable and make him pay for the damage.

Before setting the compensation process in motion, victims must take into account the considerable costs involved in pollution proceedings and in preparing expert reports, the likelihood of any compensation actually being paid and how much it would be if the proceedings were successful. A plaintiff who has a claim below £1,000 will probably be inclined to accept a very low settlement or give up altogether. This explains why compensation is not paid in a large number of cases of 'minor' damage. For damage on a bigger scale, victims will sue the polluter with varying degrees of success.

There are two avenues that countries usually take to avoid too many victims failing to obtain compensation; these consist, first, of relieving the victim of the onus of proving fault on the part of the polluter, and, second, of ensuring that the polluter has the means to pay for any damage caused by accidental pollution.

The first method is used in many OECD countries. In the event of accidental pollution from a hazardous plant, the operator will be liable and must provide any victims with compensation, even if this entails his taking action against other parties. The concept of strict liability as used in nuclear energy is now spreading to other types of hazardous plants since the few European countries which were traditionally opposed to such exceptional schemes of liability (such as the Netherlands and Germany) have recently expressed support for them.

The second method consists of requiring the polluter either to take out adequate liability insurance to compensate victims or, failing that, to give the necessary financial guarantees. The method has been used in nuclear energy and the transport of hazardous goods, generally with limited cover (ranging from $10 million to $100 million, according to the type of accident).

Very few countries have introduced this type of requirement for hazardous plants, apparently assuming that the operators of fixed installations would always be able to pay. The reasons for this belief are the high cost to industry of compulsory insurance and insurers' dislike of any obligation to take out insurance cover. In the ab-

THE WAREHOUSE FIRE IN SAINT-BASILE-LE-GRAND

Ministry of the Environment, Quebec

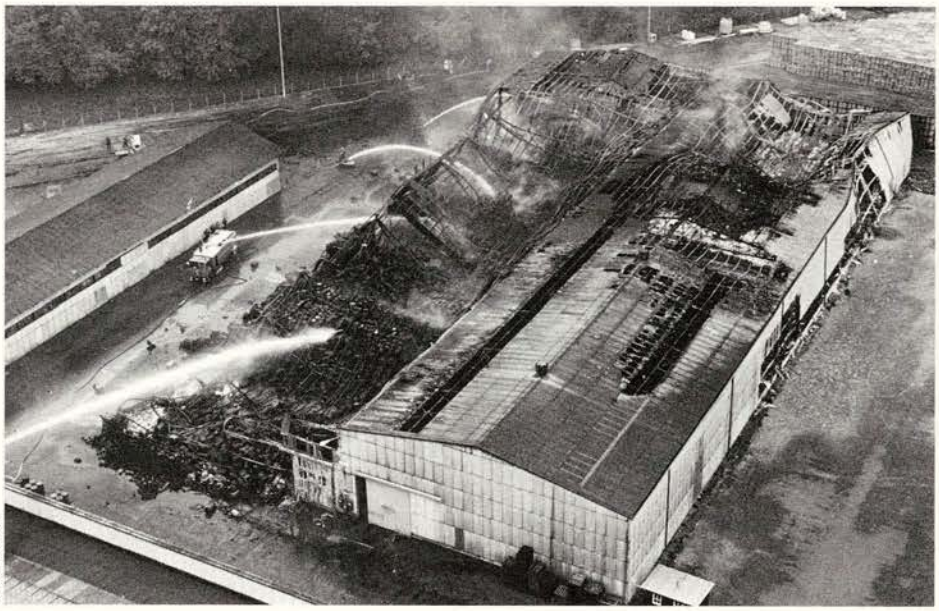
In August 1988, 30 kilometres from Montreal, arson caused a fire in a warehouse storing 3,800 barrels of polychlorobiphenyls (used transformer oil) and inflammable solvents. In view of the risk of contamination from dioxins and furans and the similarity between this accident and the notorious disaster at Seveso, the entire area beneath the pall of smoke was evacuated (a total of 14 square kilometres, 1,800 homes and 5,000 people). The inhabitants were authorised to return to their homes 18 days after the accident, once it had been proved that potential contamination was less than the permitted maximum.

As a result of the fire the authorities spent almost C$ 38 million, C$ 10 million of which were paid to individuals, businesses and farmers. There is little hope that these costs will be reimbursed either by the arsonist or the warehouse owner.

Even if the firm had been insured (under comprehensive or third-party liability policies covering operation and under fire policies), it seems likely that most of the damage suffered by the authorities or third parties would not have been covered (because of storage of quantities in excess of authorised limits, illegal storage of certain substances, incorrect disclosure of risk to insurers, very limited cover for off-site material damage, damage not covered by the insurance policy and so on). But a compensation fund, if it had existed, could have been called upon; it would have spread the cost of the accident over the economy as a whole, rather than leaving a limited number of individuals and authorities to shoulder the burden. An event of this kind could occur in many countries, especially when the firm involved is left with only very limited financial resources after the accident.

sence of very strong political pressure, insurance remains 'voluntary' and cover is generally proportional to the size of the company insured. Moreover, insurers in many countries do not cover gradual accidental pollution and insurance policies contain numerous other exclusion clauses.

As a result, small and medium-sized firms capable of causing serious accidental pollution carry insufficient cover and may be unable to meet the cost of compensation in the event of an accident. Thus the company responsible for the Seveso accident would have been unable to provide victims with compensation had it been a 'family' firm rather than the subsidiary of a multinational company. Yet there is nothing to suggest that serious accidents will only occur in large companies or in subsidiaries of powerful multinational companies.



Silvio Meitler

A Supplementary Compensation Scheme

But there is a third option – a guarantee fund to provide compensation not paid by the polluter, for example, because the polluter is not liable, or because he is unknown or insolvent. One specific version of this fund is the 'complementary scheme for compensating accidental pollution' (COSCA). This scheme complements insurance and covers compensation not paid by the polluter, together with compensation in excess of a certain ceiling, in the event of a disaster.

One of the advantages of a scheme such as COSCA is that it improves compensation without modifying the rules of liability or creating compulsory insurance. But there has to be some regular source of finance, which implies either a voluntary agreement among industries or funding by compulsory taxation. If industry itself were to initiate and run a COSCA, it would enable 'high-risk' industries to share their risks at a cost which would generally be lower than that of insurance on the conventional market.

A second advantage of COSCA is psychological: through this scheme, industry as a whole agrees to compensate damage caused by one of its members. By ensuring that compensation is always paid, industry demonstrates that the risk of an accident occurring is low, as is the overall cost of accidents. Such an attitude is reassuring and proves that operators of hazardous installations are ready to shoulder their responsibilities in the event of a disaster. It is financially viable only within a social and economic framework broad enough to absorb the costs of a disaster and within those sectors of industry sufficiently well-managed for disasters to be a rare occurrence. These conditions appear to be met in the major industrial countries such as France, Germany or the United States.

The third advantage of a COSCA would be that in practice it enables operators to limit their liability without creating any serious problems in the event of a disaster. COSCA is a supplementary insurance mechanism and offers operators cover that would otherwise be unobtainable. Coupled with state intervention, COSCA could even provide an extremely high degree of cover.

Guarantee Schemes in Practice

Several professions have seen fit to offer the public financial protection against the chance that one of their members might cause serious loss or fail to meet his obligations. In other words, the members of a profession who are, so to speak, blameless jointly take on certain debts incurred by colleagues who are experiencing 'difficulties'. Practical examples are to be found in the service sector – with, for instance, notaries, stockbrokers, estate-agents and bankers. A similar approach could be envisaged in some sectors of industry, if the operator experiencing 'difficulties' went bankrupt because of accidental pollution or if damage is caused by an industrial sector but cannot be attributed to any one of its members.

An approach involving the joint responsibility of an entire profession has already been adopted by the oil sector. When the cost of an oil spill is in excess of the amount shipowners have agreed to pay in compensation, oil importers will cover the cost of compensating victims through a scheme called CRISTAL (Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution). The same applies to cases where the shipowner is not liable but where damage does originate from an oil tanker.

CRISTAL is not the only example. In the North Sea, for instance, the OPOL scheme set up by the off-shore oil production industry ensures compensation for victims

Table
EVALUATION OF THE COST OF COSCA TO FRENCH INDUSTRY
million francs per annum

French Chemical Industry	
Turnover	280,000
Profit	8,000
Expenditure on pollution control and accident prevention	7,200
Contributions in regard to industrial accidents and accidental risk	1,460
Accidental Pollution caused by French Chemicals Industry	
Third-party compensation	approx. 50
Possible contribution to COSCA	approx. 15 (incl. 10 for large claims)
Net additional cost of COSCA to the chemicals industry	under 5 (i.e., less than 2/100,000th of total turnover)

Note: COSCA would also be financed by other sectors of industry, e.g., the oil sector, or by government contributions on behalf of sectors not directly participating in the scheme.

on a joint basis if the polluter who is liable does not himself provide it.

For land-based pollution, there are also schemes guaranteeing compensation. The earliest of these is the Air Pollution Fund, set up in the Netherlands in 1971, for air-pollution victims who cannot obtain compensation from other sources. In recent years, the Fund has had to pay out around Fl 0.3 million per annum for around twenty cases, mainly involving farmers or car-owners. Recently, Sweden created a similar scheme, devised and set up on the initiative of industry and insurers, to cover all forms of accidental pollution. These guarantee schemes are similar in nature to COSCA.

Initial Reactions to COSCA

A proposal to create a COSCA meets with two somewhat contradictory objections: first, it is said that COSCA will virtually never be used since victims will already have received compensation; the second objection, in contrast, is that this type of scheme could be very expensive.

In truth, the average running costs of such a scheme in France, for instance, are expected to be under FF 35 million per annum; that is less than one hundredth of the amount spent by the chemicals industry alone on preventing accidental pollution (Table). And every year in France COSCA might be used in around twenty cases of accidental pollution caused by an unknown polluter, such as with polluted rivers or acute air pollution. Moreover, it is impossible to rule out the occurrence, every ten years or so, of pollution so serious that COSCA would be required to pay the cost of such a disaster.

The second objection is based on the suspicion that COSCA might entail high administrative costs. In fact, the cost of an industry-run COSCA is not expected to be higher than that charged by insurers. In practical terms, taking into account experience gained from oil schemes such as the industry-run CRISTAL or the state-run IOPCF (International Oil Pollution Compensation Fund), administrative costs could be less than 10% of all compensation paid out.

Another objection is based on the supposition that COSCA costs will mainly be borne by larger firms and their subsidiaries, those which, indeed, already provide full compensation for the victims of any accidents they may cause. In other words, the cost of any damage caused by the 'other' risk-creating firms would not be borne by those responsible but by companies which already consider themselves 'beyond reproach'.

But larger firms, too, are expected to benefit from COSCA, because the mutual underwriting of major risks will be less costly than other options and because the most severe pollution events have originated from the subsidiaries of certain large companies. And pollution by small firms, indeed, is only a small proportion of the total. Lastly, this objection could largely be ruled out if a high number of potential polluters were to subscribe to COSCA and if the state were to contribute on behalf of all those firms representing a low individual risk but a more substantial collective one.

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Although the adoption of a strict liability regime or compulsory insurance can improve the victims' chances of obtaining redress for accidental pollution, it does not guarantee they will receive rapid and full compensation. In order to ensure that all victims receive compensation, while still respecting the polluter-pays principle, a compensation mechanism is required which would be financed by potential polluters. COSCA is a scheme which supplements the compulsory/voluntary insurance taken out by polluters and provides compensation for all victims of accidental pollution at a very low cost to industry. Such a scheme, were it to be set up, would not involve any changes in existing liability regimes and could even be run on a voluntary basis.

In view of the threat posed by major technological risks, industry should not hesitate to demonstrate the confidence it has in its high-risk sectors by guaranteeing that full compensation will be paid in the event of an accident. Any refusal to compensate fully, any reluctance, evasiveness or delaying tactics where compensation is concerned, will only serve to fuel public apprehension about the chemical and oil industries, which is becoming as strongly felt as that about the nuclear energy sector. ■

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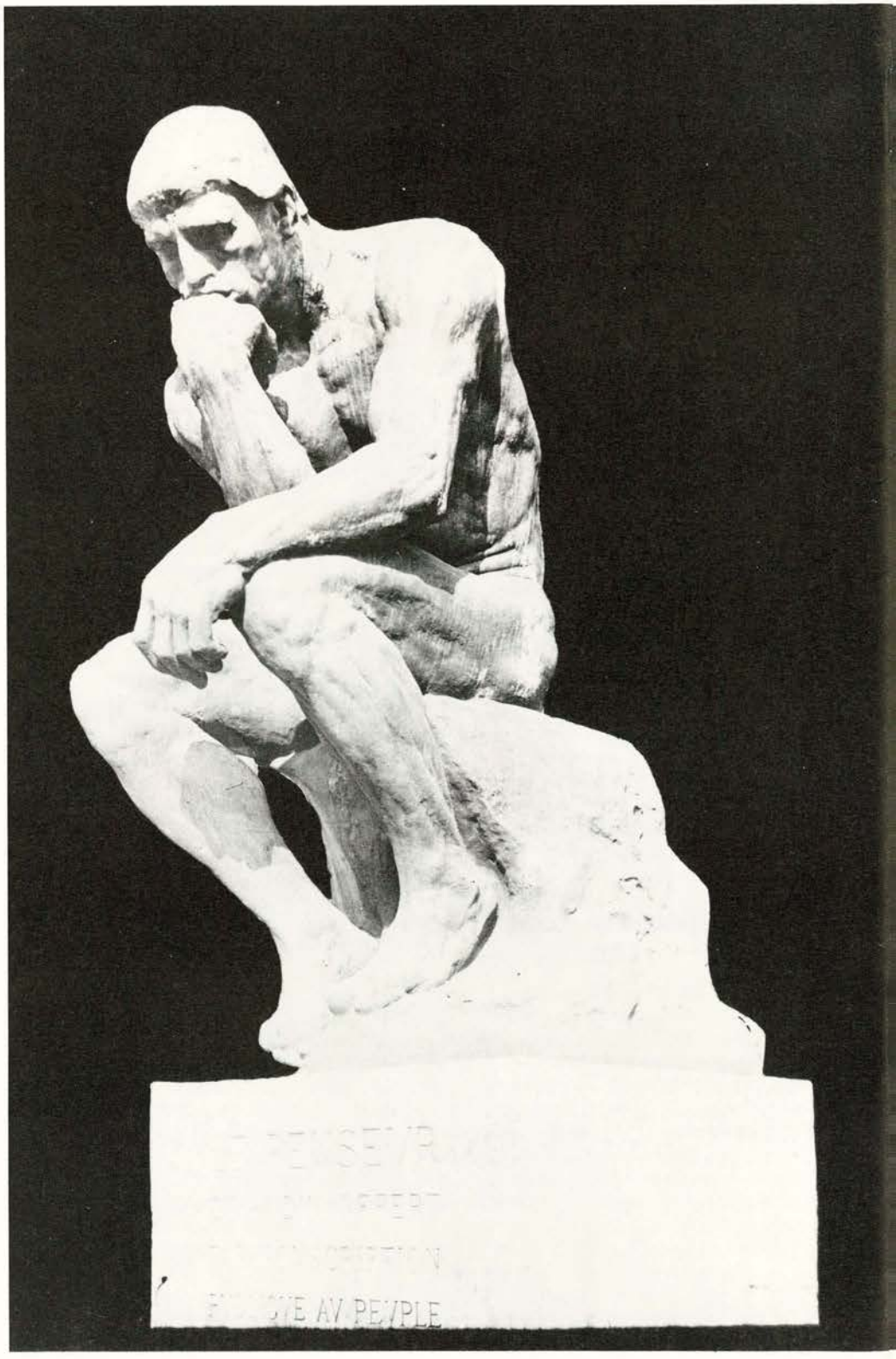
The Teaching of Thinking

Stuart Maclure

Can thinking be taught? What sort of learning programme is most likely to improve students' thinking capacity? Can thinking be improved by teaching the traditional curriculum in new ways, or do the conventional subjects already provide a perfectly satisfactory course in thinking skills?



The debate on education in the developed countries in recent years has been dominated by questions of efficiency and utility – how to make the money invested in public education produce better standards of achievement and a better economic return.

Discussion of ways of increasing students' powers of effective thought arises naturally from this larger concern. There is an assumption that students are learning for a purpose – to make them more capable individuals as citizens and workers. This means making them better able to bring their minds and knowledge to bear on the practical problems of living and working. There seem to be three main bodies of opinion on this question – those who favour a 'Skills Approach', those who favour an 'Infusion Model', and the 'Sceptics'.

Advocates of the 'skills approach' include people like Dr Edward de Bono, of the Cognitive Research Trust (CoRT) of Cambridge, England, who supports the development of 'packages' which incorporate particular methods and materials. His materials teach the skills of thinking independently of other subject matter, prescribing a set of drills and mnemonics to take students through a series of operations devised to precipitate good decision-making and creative thinking. He combines both analytical and creative

Stuart Maclure was the rapporteur of the OECD conference on 'Learning to Think: Thinking to Learn'. He is a Distinghuished Visiting Fellow at the Policy Studies Institute in London and was Editor of *The Times Educational Supplement* from 1969–89.

D. White/OECD

approaches, so as to make thinking both rational and imaginative. His teaching materials embody his methods and provide a robust framework in which teachers can use them.

The Israeli psychologist, Professor Reuven Fuerstein, is another social scientist who has tried, in a very different way, to develop programmes for teaching thinking which are independent of the other subjects in the school curriculum. His 'instrumental enrichment' approach was created to help severely disadvantaged children – immigrants to Israel in the years after the Second World War – build some of the structures of thought which they had failed to develop as a result of their deprived childhoods. The 'instruments' he has devised take the form of problem-solving tasks and exercises in 14 areas of cognitive development, intended to improve the student's ability to learn and to think – indeed, to raise his or her measured intelligence.

The skills approach makes demands on the existing school curriculum: it can be adopted only when the school authorities are willing and able to carve time out of an already crowded time-table in order to devote an hour or two a week for classes specifically aimed at teaching thinking skills.

As Professor Martin Skilbeck, of Deakin University, Geelong, Australia, has pointed out, this is not easy to arrange: public authorities require proof that thinking can be improved by these deliberate methods, and that the opportunity cost of taking something else out of the programme in order to make room for thinking skills is worth paying.

Many educationists, on the other hand, maintain that the explicit teaching of thinking as a skill or set of skills is less effective than teaching thinking through the regular subjects, by adopting a problem-solving approach. This more traditional method has come to be known as the 'infusion model'.

The Infusion Model

Among the pioneers of this approach is Professor Antoine de la Garanderie, the French educator, and the team which has worked on the FACE project involving Finnish primary schools. Many projects have been taking place in the United States, based on subjects ranging from philosophy and the humanities to the sciences and mathematics. The infusion model offers fewer practical problems for school administrators than the 'skills approach', but is more difficult to carry through with consistency and vigour. It is impressive to say that the teaching of thinking should be every teacher's business (like the teaching of the mother tongue) but, as they say, everybody's business is nobody's business, and it is difficult to make sure it really happens if it has no clearly identified slot of its own.

On the other hand, it is argued that the modification of the syllabus and teaching methods of, say, mathematics in such a way as to increase the demands which are made on students' powers of thought is likely also to lead to better mathematics learning: it may be difficult to prove that the students have made short-term gains in thinking skills but as a teaching method it may have been shown to be effective.

But how can one evaluate innovations in teaching aimed at improving the quality of students' thinking? So many variables have to be taken into account that it becomes extremely difficult to establish cause and effect. And what is meant, precisely, by the term 'thinking'? Does it refer to relatively low-level thinking skills – the ordering of information for the purpose of simple decision-taking. Or is it about higher-order thinking and philosophical analysis?

The 'Sceptics'

My guess is that the 'Sceptics' – those not flying a flag for any single approach – form the majority of the educational community in most countries most of the time. They suspect the *faux naif* suggestion that thinking has to be taught. For them, thinking is a by-product of all human learning.

The thinking of many teachers – especially the Europeans – has been strongly influenced by the ideas of Jean Piaget, the Swiss developmental psychologist, which has not made them receptive to the notion that thinking can be taught, explicitly. They are much more disposed to accept an 'infusion model' but they believe – more or less – that such a model already exists in the regular subjects of the school curriculum when properly taught and studied.

And yet it is plain that many students leave school without acquiring strong powers of thought – and without having deduced the connexion of the school subjects they have studied with the 'real world' outside and without any formula for applying what they have learnt to the business of living. In some countries – Britain is one – this has prompted courses in 'Personal and Social Education' at the end of the compulsory school period, in which there is a belated attempt to equip school-leavers with 'survival skills' – how to behave at a job interview, how to write a letter of application for a job, how to budget on limited funds....

The process of curriculum development in most OECD countries has emphasised the importance of a practical, problem-solving approach. Although this has not

Roger-Viollet

Gaillard/Jerrican

necessarily taken the form of an attempt to 'infuse' the curriculum with experiences which build up students' ability to think effectively, there is no doubt that the smug certainty that 'we are already doing everything that is necessary' is not the prevailing mood.

It would be fair to say that the administrators and the practitioners seem to be more impressed with the packages of thinking skills, such as de Bono's CoRT tools, than the psychologists and the academic experts. The evidence suggests that many of the schools which have used the materials have found them valuable. The same applies to the use of 'instrumental enrichment' and its derivatives. But the academics have been less impressed and wait for more convincing research evidence to support what is claimed.

Recent work at Cook University in Queensland, Australia, by Dr John Edwards has come up with research results which offer some support for de Bono's claims. One study showed 'large increases in the number of ideas, quality and structure of answer on a familiar essay topic'. Others showed significant gains in standardised tests of scholastic aptitude, creativity and 'self-concept' which together are claimed to represent 'highly impressive' results. No doubt these will be examined further by the research community and attempts will be made to replicate them.

Much of Dr de Bono's material is pitched at a fairly simple standard – the practical decision-making of everyday life. Much of what the exponents of the 'infusion' model have in mind is the refinement and development of higher thinking capacities of analysis and synthesis. (It is true that Dr de Bono also teaches thinking as a management tool, so not all his tools are for beginners). Schools which have adopted the thinking skills packages have, in the main, used them with pupils who have not been particularly successful in academic studies. The materials have often provided a valuable means of motivating and giving an experience of success to otherwise low-performing students.

The infusion model, on the other hand, is linked to teaching of the regular school subjects, so students who benefit most will be those who benefit most – and achieve most – as a result of the subject-based curriculum; by the same token those who do not do well in the school subjects may not get much out of the infusion model.

Transferring Talent

Many of the arguments turn on the question of 'transfer', that is, the process by which teaching of one subject – say, mathematics – is turned into a general thinking capacity rather than a specific mathematical ability. People used to make large claims for the classics as a 'training of the mind'. Someone who had learned Latin or Greek was thought thereby to have acquired general abilities which would provide the mental equipment to rule an empire or manage a business. Psychologists disputed this, and the idea of transfer became generally discredited. Yet both the skills approach and the 'infusion' model depend on reviving the notion of transfer and showing that by using particular teaching methods or particular teaching materials it is possible to inculcate general thinking powers.

This case has yet to be proved. But there does seem to be a useful distinction to be made between a high road and a low road to more effective thinking. Such a formulation would not offer two mutually exclusive alternatives. Both could be seen to have value: thinking skills packages as limited but useful aids to practical problem-solving; the infusion model as an approach to learning which encourage thoughtful understanding and reasoning.

What is clear is that thoughtful learning and its application to the business of living can extend to all education, including the education of the imagination and the sensibilities. Professor Maxine Greene of Columbia University, New York, argues powerfully for what she calls the 'passion of thoughtfulness'. She is as much concerned with the imagination and the emotions as with cold reason; she believes the thinking process must be located firmly within a context of moral feelings and all the ambiguities of meaning and perception which go with them. Literature, poetry, history – all can raise these issues. Learning to think about them and understand them is to engage in the enrichment of the mind and helps to 'repair a thoughtless age'.

Professor Greene's rhetoric is a useful antidote to the psychological jargon in which much of the discussion of thinking is currently couched; psychological jargon which may be just as heavily loaded with rhetoric, but which claims to be more objective.

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The debate continues. There remain real unanswered intellectual questions which trouble the psychologists and the curriculum designers alike and which cannot be ignored by the pragmatists of the classroom. And among the 'consumers' of education – the employers and managers who receive the products of the education system when they leave school or college – there is a lively interest in questions of capability and competence. For their part they have little doubt that this includes the ability to think to some purpose and tackle practical problems and they expect the schools to make this a priority. ■

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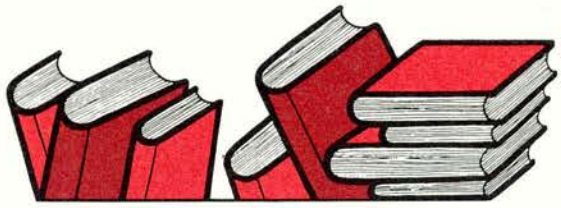

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Editorial

LABOUR MARKETS IN THE 1990s

After almost a decade of sustained economic growth, labour markets in the OECD area are characterised by both success and disappointment.[1] Employment growth is strong, and the proportion of the working-age population holding jobs has reached record levels in many OECD countries. In particular, the female employment rate is increasing everywhere, while that for males has ceased to fall in several countries. In 1989 the unemployment rate in the OECD area fell again for the sixth consecutive year.

But unemployment rates in most OECD countries are above those recorded at the peak of the last recovery in 1978–79, and in several – Belgium, Ireland, Italy and Spain, for example – the incidence of long-term unemployment remains high. Persistent unemployment in some countries appears to be inducing some workers to leave the labour force altogether. This may be one of the reasons for the growing numbers of 'new poor' who do not participate in the mainstream of social and economic life and who are generally not responsive to economic opportunities.

This persistent unemployment is basically structural in nature. Inflationary pressures and the high degree of capacity utilisation indicate that OECD economies – including those with high unemployment – are operating at levels of demand close to or even above their aggregate short-term supply potential. There seems to be little scope for addressing unemployment by aggregate demand measures. The answer lies mainly in structural policy.

The slowdown in the growth of the working-age population is adding supply constraints to demand pressures on labour markets. The fall in the numbers of young people of working age, an increase in the population aged 65 and over, and the growth in the number of women with a single child of pre-school age are changing the composition of labour supply. Evidence from business surveys shows that in most OECD countries, more businesses report shortages of skilled labour, or overall labour shortages, than in previous years – although in certain cases the shortages reported are still below the peaks reached a decade ago. In reaction to these pressures, the trend to earlier retirement appears to be slowing, while young people are entering the labour market at a higher rate – largely on a part-time basis, since school participation rates have not fallen.

1. **Employment Outlook**, OECD Publications, Paris, 1990.

Developments in Labour Supply

Technological change is both increasing the variety and complexity of skills required for employment – especially for processes once thought to require 'unskilled' labour. This has made much more difficult the task of re-absorbing into employment those who have been displaced by structural change from long-tenure positions. Their work experience and obsolete skills are often unsuited for new jobs. Furthermore, if national economies are to remain competitive, domestic labour markets will have to respond to the globalisation of product and investment markets. Maintaining informal and formal barriers to flows of people and their skills between labour markets is in conflict with international trading developments and the wide-ranging implications of globalisation.

In spite of prevailing unemployment levels, flows of migrants from outside the OECD area are increasing. Some are nationals of OECD countries taking up resi-

Table 1
AVERAGE HOURS WORKED PER PERSON PER YEAR[1]

	1975	1979	1983	1986	1987	1988
Total employment						
Canada	1,837	1,794	1,730	1,764	1,754	1,765
Finland	1,885	1,859	1,798	1,771	1,772	1,780
France	1,877	1,817	1,717	1,684	1,684	1,695
Italy	1,841	1,788	1,764	–	–	–
Japan	2,100	2,110	2,081	2,083	2,082	2,078
Norway	1,692	1,581	1,551	1,570	1,551	1,424
Spain	–	2,148	2,052	1,987	1,925	1,934
Sweden	1,516	1,451	1,453	1,457	1,466	1,485
United States	1,833	1,808	1,789	1,782	1,783	1,786
Dependent employment						
France	1,720	1,667	1,558	1,535	1,540	1,547
Germany	1,737	1,699	1,670	1,630	1,620	1,623
Netherlands	–	1,672	1,608	1,545	1,534	–
Spain	–	2,032	1,946	1,890	1,830	1,843
United States	1,791	1,767	1,756	1,745	1,747	1,752

1. Includes part-time work.
Sources: Canada: Statistics Canada; Finland: estimated from national accounts; France: INSEE on a national accounts basis; Germany: Institut für Arbeitsmarkt- und Berufsforschung; Italy: ISTAT; Japan: OECD estimate based on data from the Monthly Labour Survey of establishments and the Labour Force Survey; Netherlands: CBS (contractual hours); Norway: Central Bureau of Statistics; Spain: estimated from quarterly Labour Force Survey; Sweden: Estimated from national accounts; United States: Bureau of Labor Statistics.

dence rights, some are recruited to fill labour shortages, some are family members joining earlier settlers, some are seeking asylum, some are temporary visitors who take up employment and some are illegal entrants. But in almost all cases the rate of inflow has been encouraged by labour-market opportunities.

Internal migration, on balance, results in a net movement of population from high-unemployment to low-unemployment regions. Nonetheless, analysis of regional labour-market trends also shows the

Alain Nogues/SYGMA

'Many forms of skill formation can be offered effectively only on the job.'

limits of such movements in evening out labour-market disparities. The regions with persistently high unemployment are also those with low participation rates, in particular for women. A main reason for this is often lack of jobs because of narrow industrial structures. Another contributory factor to low participation may be the availability of support services. For example, child-care facilities in non-metropolitan areas are generally much less comprehensive than those in urban areas.

Women have been attracted into the labour market in ever-larger numbers. Female participation rates are now at their highest ever, and there is no sign of their ceasing to grow – even in the Nordic countries where female rates are close to male rates. But this measure in itself is deceptive, since participation rates in terms of persons do not take account of the number of hours worked, which for women – a large proportion of whom work part-time – are on average much less than for men.

Women are often constrained in the type of work they can seek. In particular, part-time employment is often the only form of employment available to women with child-care responsibilities, and for whom few formal child-care facilities are available. Hence, their contribution to easing skill shortages will be less than it might be otherwise. The fact that many part-time workers are cut off from training and career paths available to full-time workers also reduces women's potential impact on skill shortages.

These constraints are by no means the only influence on female participation. While clearly the availability of jobs and child-care facilities are both crucial, taxation policies are also important. The progressivity of the direct tax system and the issue of whether taxes are levied on individual or family incomes make a big difference to the income received as a result of female labour-force participation, and so influence the demand for part-time positions and for child-care services. The same factors also influence the supply of child-care services; a tax system which encourages part-time work by spouses of full-time workers may encourage the further availability of child care.

Changing Forms of Employment

In the turbulent environment of the 1980s, forms of employment relationships other than long-term full-time work have developed and spread in many sectors and areas. In some cases these developments have been prevented or constrained by restrictive legislation. The long-term nature of most employment relationships and the expectations about 'regular' work that they generate have often meant that temporary work has been viewed as inferior. In other cases, the spread of 'flexible' but less secure jobs has given rise to debate and concern over the degree of protection of the workers involved, and whether they would be trapped into a permanent underclass of low-pay, low-skill, dead-end jobs, often with poor working conditions.

While this might be the case in some instances, it is to be recognised that these forms of employment – particularly when they are linked to career paths and industry training – can provide a means of entry or re-entry into the labour market which otherwise might not be available. Nor will prohibiting or restricting these forms of employment necessarily lead to more 'regular' full-time positions: employers may reduce their hiring, resort to overtime work by regular employees or avoid the regulations by sub-contracting. The end result may be a lower level of overall employment, accompanied by increased job insecurity.

Other public policy issues arise in relation to the spread of 'flexible' but less secure jobs. Evidence is emerging that casual employees experience an accident rate considerably above that of their more

Table 2
ANNUAL HOURS WORKED OF ALL EMPLOYED PERSONS, FULL- AND PART-TIME, 1987

	Canada	Finland	France	Germany[1]	Japan[2]	Netherlands[1]	Spain[3]	Sweden	United States
All employed	1,753	1,772	1,684	1,620	2,078	1,534	1,925	1,466	1,783
Employed full-time	1,933	1,850	1,787	1,732	2,253	1,755	1,977	1,654	1,970
Employed part-time	749	875	914	850	1,217	890	892	905	889

1. Employees only.
2. The ratio of weekly hours of part-timers relative to full-timers is based on data from the 1979 Special Survey of the Labour Force, where part-timers are defined as persons usually working less than 35 hours per week.
3. Hours worked of persons employed full-time and part-time are based on labour force survey data for the last three quarters of 1987.
Sources: Data on annual hours worked by persons employed full-time and part-time are OECD estimates based on data on annual hours for all employed persons, including the self-employed and family workers, on information on the shares of full- and part-time in employment and on the ratio of weekly actual hours of work per person at work of full- and part-time workers, from labour force surveys. The Netherlands: Centraal Bureau voor de Statistiek; Japan and Spain: of annual hours worked for all employed persons are OECD estimates.

permanent colleagues in the same industry or occupation. Moreover, if social protection provisions are dependent on employment, often only full-time and/or regular employees are covered. This can lead to serious labour-market distortions. The exemption of 'flexible, less secure' jobs from social security contributions or from other forms of insurance coverage creates an incentive to substitute such jobs for 'regular' workers on grounds other than efficiency.

Re-integrating the Unemployed

Unemployed people – that is, those available for work, without a job and looking for one – are the first source of potential labour supply. In some countries, unemployment is absorbed relatively quickly. Countries in which unemployment rates have declined substantially in the upswing (North America, Australia and the Nordic countries) are generally characterised by high labour turnover. Job search and hiring in these countries are fairly widespread activities and are associated with a relatively high likelihood of experience of unemployment, particularly for young people. These factors may well be conducive to job matching, as may the varied work experience of many unemployed workers.

By contrast, the persistence of long-term unemployment in the face of rising employment levels and increasing participation in many countries in Europe shows that the unemployed are not responding effectively to labour-market demand pressures. Much of the recent reduction in unemployment in these countries appears to have come from declines in inflows into unemployment, partly because of demographic developments, rather than an increase in the rate of outflow from unemployment and in hirings. But there are indications that the move towards more active policies is now beginning to have an impact on this persistence of unemployment.

'Women have been attracted into the labour market in ever-larger numbers. Female participation rates are now at their highest ever, and there is no sign of their ceasing to grow.'

In some instances there have been calls to withdraw income support for the unemployed after a short period because of the disincentive effects of such support. In this conventional framework, therefore, the choice has been seen as the stark one of balancing the (marginal) increase in employment which can result from withholding income support against the deprivation which will result for those who cannot or do not find employment. But this can be a spurious dichotomy. With a funda-

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mental restructuring of administrative procedures, entitlements and programme structure within an 'active labour market policy' thrust, it is possible both to ensure income support and to encourage reintegration.

The experience of job losers in OECD countries is instructive here. Long-term employment, in particular, can make employees valuable to their current employer but unsuited to successful searches in the open labour market. Job losers who find employment frequently experience long periods in which their incomes are lower than in their previous jobs. But policies subsidising employers for labour hoarding or compensating those laid off for their lost income have often tended to prevent or slow the adjustment process, leading to slower economic growth and longer periods of joblessness and premature retirement. It is now increasingly recognised that it is by assisting job losers to reintegrate into the labour market – through transferring and marketing their existing skills and/or developing new ones – that trade unions, employers and public agencies can best help job losers and other job seekers adjust.

A New Framework

The challenges faced by OECD labour markets, then, are of two sorts: quantitative and qualitative. The quantitative challenges are presented by continuing unemployment and (in regions with persistently high unemployment) low participation rates which endure in the face of falls in the supply of new entrants and consequent skill and labour shortages, of which increasing migrant flows are a signal. The qualitative challenges are derived from the changing nature of work and skill requirements, and the fact that these requirements are sometimes for aptitudes which can be developed only in employment. Combined, these aspects of labour markets have a tendency to produce a segmented society, in which those integrated into structural change prosper, while others find themselves excluded. In OECD countries, there have been three main policy responses to these dilemmas.

The first is the drive to 'enable' people to participate actively in society, and in particular in the labour market. This is the motive behind the swing from 'passive' to 'active' approaches to labour-market policies (which is currently occurring, to varying degrees, in member countries) and the movement away from reliance on merely 'passive' income support as the principal means of countering social disadvantage, including income loss from unemployment.

The second is derived from the first, and lies in education and skill formation. Enabling wider participation is likely to be only a palliative unless the skills on offer attract a good return in the labour market. Without a broad and solid background of basic education, the acquisition of relevant specific skills, particularly those required by the new form of work organisation, becomes difficult or even impossible.

The capability to adjust through lifelong learning (including the use of vocational education and training) to the ever-changing requirements of production systems and employment careers is also dependent on basic education. Ensuring that the opportunities for education and training are varied and flexible enough to meet market requirements is therefore essential. It is vital that these be developed in close association with employers and worker representatives. In fact, many forms of skill formation can be offered effectively only on the job. Private-sector involvement in training is therefore essential, as is co-operation and co-ordination amongst all social and economic partners in the design and delivery of labour-market programmes. Skill formation carried out outside the employment context has to be responsive to short-term and long-term market requirements.

The third response addresses directly quantitative imbalances which arise from mismatches between jobs and workers. These imbalances testify to difficulties in reconciling needs and aspirations and in

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The second half of the 1980s has witnessed considerable progress in sustaining economic growth and expanding employment in the OECD area. Progress made in structural reform has contributed to better performance. But persistently high unemployment rates in many OECD countries are an ever-present reminder that much remains to be done over a wide range of issues to improve performance and forestall developments that could threaten sustained growth and the achievement of full employment.

Over the longer term, there are both opportunities for, and potential risks to, economic growth and job creation. Pervasive technologies, trade liberalisation and reforms in Eastern and Central Europe have the potential of boosting economic activity globally. On the other hand, three developments pose potential risks to the performance of labour markets:

- Demographic trends will reduce the number of young people entering the labour force – often the most mobile and adaptable. Labour shortages may emerge, adding urgency to policies that mobilise under-utilised human resources
- With the proliferation of the new technologies jobs generally are becoming more skill-intensive; the very pace of change requires more versatile workers, capable of improving their skills throughout their working life. Additional investment in human capital will be required to counter emerging skill gaps
- In response to growing pressures of structural change jobs will be more varied, in terms of conditions and requirements, and also in the long-term employment and career prospects they offer. Both job search and recruitment are becoming more important and difficult and should be facilitated by policy measures.

The Manpower and Social Affairs Committee of the OECD endorses the principles of an active labour-market policy laid down in the 1964 and 1976 Council Recommendations. In the view of the Committee, globalisation results in the increasing interdependence of labour markets and creates a new setting for the conduct of labour-market and social policies. The Committee agrees that the challenge for the coming decade will be to focus policy concern on the quantity and the quality of the labour force and the efficiency of the labour market to accommodate economic and social change. This will be crucial to containing the risks mentioned above.

Well-designed labour-market policies often have the advantage of achieving efficiency and equity objectives simultaneously. While the main policy emphasis will be on the supply side, special demand-side measures for the disadvantaged continue to play a role, in line with the social objectives of labour-market policy, as a step towards regular employment. Policies will focus on the following issues.

Mobilising Labour Supply

Priority should be given to active measures such as training, placement and rehabilitation programmes for the unemployed, the inactive and those on welfare in order to break dependency cycles, reduce inequality in the access to jobs and generally integrate people into the mainstream of productive activity. These priorities should be reflected in the allocation of resources.

The basic thrust of the notion of the 'active society' is to foster economic opportunity and activity for everyone in order to combat poverty, dependency and social exclusion. In practical terms, this implies co-ordination of various types of income support to avoid work disincentives, coupled with measures to promote active job search. In order to equalise access to gainful work it is important that all workers be as competitive as possible in the open market. This is particularly important for those drifting into long-term unemployment – often concentrated in economically depressed regions – whose prolonged detachment from work reduces their employability. Furthermore, the growing interdependence of the global economy and more competition in the labour market will increase the vulnerability of some groups for whom targeted programmes will have to be developed.

The participation of women in the labour market often remains not only below potential but also under-utilised in a qualitative sense, being still too concentrated in low-skilled jobs with only limited career opportunities. Active equal-opportunity policies, including measures to facilitate the choices of workers with family responsibilities and child-care requirements, should be emphasised and integrated with training and labour-market measures aimed at equalising access to gainful work; appropriate provisions in broader policy areas such as education, tax, infrastructure, and social policies will also be necessary.

Similarly, measures such as more flexible retirement arrangements and better-adapted working environments would increase the participation of others such as the elderly and those with physical, mental and social disabilities whose work potential is often grossly under-utilised. For those with disabilities these arrangements should be co-ordinated with other forms of support, notably with special education and training arrangements.

International migration has historically played an important supply adjustment role in OECD labour markets. Future migration policies – other than those pursued on social and humanitarian grounds – will have to be co-ordinated, in the longer-term perspective, with policies for mobilising and re-allocating domestic human resources in both sending and receiving countries. The effective integration of migrants in the society and the labour market of the host countries is an important policy goal.

Developing Employment-Related Skills

Avoiding the emergence or widening of a 'skill gap' which would have serious consequences for economic performance demands developing new relationships with the education system and reinforcing the key role of the private sector in job training and up-skilling of the labour force.

Effective job training depends upon a strong commitment by employers and the co-operation of employees; it also depends upon every worker having acquired a sufficient foundation of general education. Better

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co-operation between enterprises and education and training institutions will be required to cope with evolving skill requirements and their increasing complexity.

In this context, it is essential that labour-market policy be closely co-ordinated with education and training policies, and that an appropriate incentive structure involving employers, employees and disadvantaged groups be put in place to encourage training. The fundamental principles which apply are these:

- all young people should complete, before entering the labour market, at least secondary-level schooling of sufficient breadth and depth to enable them to take part subsequently in various types of job-related training on a recurrent basis
- in view of the emerging demographic trends and the continuing pressures to accommodate structural and technological change, particular efforts are required to extend adult training and retraining
- public authorities have a role in encouraging the extension and improvement of enterprise training in a broad sense. Governments should act as a catalyst by promoting training co-operation between enterprises and also between enterprises and educational institutions. They can also contribute to improving the transferability of skills by setting standards for curricula and examinations
- governments have a special responsibility to ensure that job-related training – constantly adjusted, in close co-operation with the private sector, to rapidly changing skill requirements in the open labour market – is available to the unemployed and disadvantaged groups.

Promoting a Spirit of Active Search

Labour-market efficiency should be enhanced by providing a broad range of services to individual labour-market participants, be they job-seekers or firms in search of suitable skills; the services should not be limited to short-term objectives but should assist workers in their long-term career development and enterprises in their forward-looking human resource management.

The increasing complexity of the labour market tends to increase 'transaction costs' in terms of time and money spent on job search and recruitment. The efficient matching of workers and jobs is therefore crucial. The re-allocation of labour to the most productive and rewarding uses is a permanent challenge.

Employment services have a central role to play both in improving the efficiency of the labour market and in equalising access to employment. An efficient information system will depend on its coverage of the labour market. For the majority of job-seekers and employers, the availability of relevant market information will generally suffice. But there are many workers who will also require counselling and many enterprises which might benefit from advice on recruitment, manpower planning, human resource development and new organisational arrangements. These will, in future, be an essential element of labour-market efficiency.

There is scope for administrative improvement and better co-ordination of different programmes, especially between those for income maintenance, training and employment promotion and placement. It is also important to ensure consistency between services which have short-term effects, such as immediate placement, and services which have longer-term effects, such as training.

To prevent jobless workers who wish to re-enter employment from drifting into long-term unemployment, priority should be given to quick-acting market-oriented services such as guidance, and services which increase job motivation, search efforts and job readiness. If these fail, more intensive types of public intervention such as training and employment subsidies should be envisaged.

Close contacts locally with public authorities, business groups, trade unions and other organisations are important for the successful delivery of employment services and labour-market programmes. These contacts primarily convey direct information about the labour market, but they can also provide a forum for local initiatives, thus mobilising more local resources and hence creating more jobs.

The creation of new enterprises providing additional jobs is a dynamic element in a well functioning labour market. Facilitating self-employment and promoting the necessary entrepreneurial climate and the requisite skills call for co-ordinated policy efforts within government, central and local, as well as partnerships between the public and the private sector.

The Policy Challenge

Labour-market policies operate in the wider context of economic, social, educational and cultural policies. In particular, close interaction between labour-market policies and economic policies is essential to ensure the sustained growth of output and employment. Policies which improve the functioning of the labour market, strengthen labour supply and facilitate adjustment to structural change reduce the risk that sustained expansion will be forestalled. Conversely, the more successful macro-economic policies are in maintaining non-inflationary growth of output, the better the prospects for employment and labour-market insertion. The fundamental challenge will be to maintain this virtuous circle in the decade ahead.

Labour-market authorities, in co-operation with other relevant government agencies and the social partners, will make determined efforts to strengthen labour-market policies for the 1990s and beyond, along the lines of the broad framework above. Effective action by the social partners to cope with structural change will reinforce these efforts. The precise contents of national policies will depend upon individual circumstances and institutional arrangements but the common challenges and growing economic interdependence demand that the OECD countries jointly seek viable solutions and coherent policies.

As part of the ongoing work of the OECD on multilateral structural surveillance, the Manpower and Social Affairs Committee will review member countries' labour-market performance within the framework outlined here.

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Table 3
MATERNITY AND PARENTAL LEAVE: UNIVERSAL GOVERNMENTAL MEASURES[1]

	Maternity leave		*Parental leave*	
	Maximum duration[2]	*Replacement rate[3]*	*Maximum duration[2]*	*Replacement rate[3]*
Australia	52	–	–	–
Austria	16	100%	Up to 1st birthday	Fixed allowance in some cases
Belgium	14	From 100% to 79.5%[9]	[13]	Fixed allowance
Canada	17 or 18[4]	Up to 60%[10]	–	–
Denmark	28	90%	10 weeks	Fixed allowance
Finland	17.5	80%	28 weeks[14]	80%
France	16–28[5]	84%	Up to 3rd birthday	Fixed allowance for 3rd child and over
Germany	14	100%	Until 15th month[15]	Fixed allowance
Greece	14	100%	Up to 30th month	Unpaid
Iceland	13	Fixed allowance	–	–
Ireland	14	60%	–	–
Italy	20	80%	Up to 3rd birthday	–
Japan	14	60%	–	–
Luxembourg	16	100%	–	–
Netherlands	16	100%	[16]	–
New Zealand	14	–	Up to 1 year	–
Norway	28	100%[11]	Up to 1st birthday	Paid (social security)
Portugal	13	100%	Up to 3rd birthday	Fixed allowance in some cases
Spain	16	75%	3 years	–
Sweden	12[6]	90%	Up to 1st birthday[17]	90% then fixed allowance[19]
United Kingdom	18[7]	90%[12]	–	–
United States	[8]	–	[18]	–

– None.
1. The general provisions in each country's labour legislation; workers may have additional benefits under collective agreement provisions (longer leave, higher replacement rate) which are not covered here.
2. When leave is expressed as a number of weeks, it is in addition to maternity leave; otherwise it is given in terms of the child's age.
3. The replacement rate of the gross salary; if the maternity benefit is not subject to social security contribution or income tax, the net replacement rate may be higher; in some countries, there is a ceiling for the calculation of the benefit.
4. According to the province.
5. According to the number of children.
6. Obligatory leave for the mother in connection with child birth. After, it becomes a parental leave.
7. Does not apply to women with less than 2 years' employment by the same employer.
8. There is no national provision; some states grant unpaid maternity leave. Federal legislation prohibits employment discrimination against pregnant women or those who have just given birth.
9. The rate equals 100% of mother's wage during the first month and then decreases according to a fixed level.
10. Up to 60% of a maximum determined annually and under unemployment insurance eligibility conditions (the first two weeks are unpaid).
11. The replacement rate is equal to 100% if 26 weeks are taken of 80% for 35 weeks up to an annual income of NKr 200,000.
12. Six weeks at 90% of the woman's full wage and a fixed allowance for the remaining 12 weeks.
13. There is no parental leave as such, although all workers are entitled to a 'career interruption' leave (subject to approval by employer in the private sector – this leave is generally approved when it is a parental leave).
14. Unpaid leave is also possible up to child's third birthday.
15. Up to 18 months as from 1 July 1990.
16. Parents of a child under 4 years of age are entitled to work shorter hours (minimum of 20 hours per week) for a period of six months. Wages are paid for hours actually worked.
17. Up to 18 months as from 1991.
18. In some states only, up to 12 weeks; unpaid.
19. 90% for the first 270 days, followed by a lower flat rate.

improving the working of agencies – such as employment services – whose purpose is to help the unemployed and those in search of employment. These agencies have to broaden and reorient their functions away from bureaucratic control, aiming more at improving their administrative capabilities with a view to active facilitation of labour-market processes. This might include the provision of sophisticated and customer-tailored services, such as information and counselling, networking with training opportunities and institutions, and providing access to data banks.

The Ministerial Council of the OECD welcomed, at its May 1990 meeting, the statement on 'Challenges and Opportunities for the 1990s', which had been adopted by the Manpower and Social Affairs Committee.[2] A number of factors (demographic change, the impact of technology, the globalisation of the world economy, skill and labour shortages) combine to provide a new setting for labour market policy in the 1990s – with new opportunities but new problems. The statement lays out a framework for the design and assessment of expenditure programmes on social protection and human resource policies going beyond the consideration of their economic (and budgetary) costs alone, and emphasising the investment in human capital that they represent. It approaches the issues of high unemployment, intractable long-term unemployment and detachment from society as largely structural problems, and proposes ways in which labour-market institutions can facilitate structural solutions. The statement offers a framework in which labour-market policy can both contribute and respond to overall economic adjustment, through public policy measures and through the actions of the social partners. ■

2. **Labour Market Policies for the 1990s**, OECD Publications, Paris, 1990.