



STI

SCIENCE TECHNOLOGY INDUSTRY



REVIEW
No. 21

Special Issue on Public Support to Industry

Introduction: The OECD's Mission in the Field of Public Support to Industry

Trends and Patterns of Public Support to Industry in the OECD Area

International Control and Discipline of Subsidies: The EU and WTO Surveillance Exercises

State Aid Control in the European Union

The Evaluation of Support Programmes: The Example of the United Kingdom

Downsizing Subsidies: The Finnish Example

Public Support to Industrial R&D Efforts

Defining Subsidies for R&D and Industrial Innovation



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to Industry

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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FOREWORD

Prepared by the OECD Directorate for Science, Technology and Industry, the *STI Review*, published twice yearly, presents studies of interest to science, technology and industry policy makers and analysts, with particular emphasis on cross-country comparisons, quantitative descriptions of new trends and identification of recent and future policy problems. Because of the nature of OECD work, the *STI Review* explores structural and institutional change at global level as well as at regional, national and sub-national levels. Issues often focus on particular themes, such as surveys of firm-level innovation behaviour and technology-related employment problems.

This special issue addresses the role of public support to industry, and, more specifically, the role of public support to industrial R&D efforts as a policy instrument in a globalising world economy. The quantitative development of such supports, the response of national governments to the design of support policies in a period of budgetary stringency, their demand for more effectiveness of support programmes, and the trade-distorting potential of industrial subsidies and supports under regional and international rules of the game, are the themes covered in this issue of the *STI Review*.

The views expressed in this publication do not necessarily reflect those of the Organisation or of its Member countries. The *STI Review* is published on the responsibility of the Secretary-General of the OECD.

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INTRODUCTION: THE OECD'S MISSION IN THE FIELD OF PUBLIC SUPPORT TO INDUSTRY

Pursuant to Article 1 of the OECD Convention, the OECD shall *inter alia* promote policies designed:

- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

This mission places the OECD in a good position to analyse and monitor industrial subsidies.

When the OECD launched its public support project more than ten years ago, distortion of international trade in selected industries as well as the negative effects of subsidies on structural adjustment were major concerns of OECD Ministers. Since then, on several occasions Ministers have reaffirmed the important role of the Organisation in strengthening the multilateral trading system and the multilateral rules crucial to the proper functioning of a globalised economy. Recent Ministerial communiqués have explicitly urged the OECD to continue its analysis of national support policies and to pursue its efforts towards increased international transparency and discipline in industrial subsidies.

Subsidies have long been associated with economic inefficiency. It is argued that they hamper the efficient allocation of resources and have the potential to distort international trade and competition. They also place a heavy burden on public budgets, nowadays increasingly stretched to the limit.

Until recently, no justification for subsidies existed in the economic theory. Even the matching or counter-subsidising of support provided to competing firms from abroad would not have been accepted as an exception to this rule. Only in the context of the theories of externalities and market failure have exceptional conditions for the provision of subsidies been identified. Prominent examples of market failures and externalities are the social benefits inherent to certain private research and development activities, the high costs of re-entry into the market or the shortcomings of capital markets in the supply of risk capital. Concerning the market failure argument, certain economists, in the light of painful experience, were quick to highlight the limitations of government action. In their view, the state, in general, does not do any better than the markets.

The OECD has undertaken to raise the level of international transparency and to compare, at an international level, the trends and patterns of public support to industry. The OECD's Industry Committee, through its project "Subsidies and

Structural Adjustment” (recently renamed “Public Support to Industry”), has become the acknowledged leader in this effort.

An initial report, “Industrial Support Policies in the OECD Countries: Evolution by Policy Objectives and Financing Instruments” (OECD, 1990) was presented to the OECD Council at Ministerial level in 1990. It surveyed gross budget flows benefiting the manufacturing sector in OECD economies, either exclusively or in part, over the period 1982-86.

Then, in response to a Ministerial mandate to increase the transparency and comparability of national support policies, the Industry Committee and its Working Party continued work on this project for a second period, 1986-89.

As a result of these efforts detailed information was collected on 879 support programmes and procurement practices in 22 Member countries (excluding Greece and Luxembourg who did not participate in the exercise) and the Commission of the European Communities for the period 1986-89. The resulting report, entitled “Industrial Support Policies in OECD Countries, 1986-1989” (OECD, 1992), was presented in 1992.

In 1996, a third report was brought to the attention of Ministers, covering the period 1989 to 1993. This report reviewed the evolution of support policies in 24 OECD Member countries and the Slovak Republic and at the level of the Commission of the European Communities. The analysis built on quantitative and qualitative information drawn from 1 552 support programmes, reporting on R&D contracts and intermediary R&D institutions as well as procurement policies.

The Industry Committee’s project “Public Support to Industry” has attained several milestones in its efforts to improve international transparency and comparison of support measures:

- First, methodological innovations have contributed greatly to achieving a common understanding of support policies. The questionnaire, *Industrial Subsidies: A Reporting Manual* (OECD, 1995), has become, in OECD countries and elsewhere, the international reference for monitoring industrial support practices.
- Second, the peer review procedure for collectively reviewing the information reported has evolved as a valuable confidence-building measure. It has helped complete and consolidate the database and, at the same time, shed light on remaining reporting gaps. The peer review procedure created for this project has served as a model for examining notifications in other international organisations.
- Third, the project’s strict programme-based bottom-up approach makes it the unique source of “real” public support to manufacturing industry; the figures given in surveys published by other international organisations are derived either from national accounts or government finance statistics.

Industrial subsidies continue to feature prominently on the international agenda. In spite of a deteriorating budgetary situation in almost all OECD Members in recent years, widespread expectations of a strong reduction in industrial subsidies were fulfilled in only a few countries. Industrial support constitutes a cornerstone of structural policies all over the OECD area.

The enlargement of the OECD and, in particular, the new membership of former centrally planned, state economies calls for a better understanding of the role of subsidies in the post-transformation process of these countries.

Furthermore, other categories of financial government interventions in favour of a specific manufacturing industry such as civilian and defence procurement, tied-aid mechanisms in development policies or support through public R&D institutions and R&D contracts, have evolved. These interventions have the potential to serve as indirect means of public support and they channel far more public financial resources to manufacturers than do grants, loans, guarantees, equity capital infusions and tax concessions combined. Clarifying the role of such indirect measures as a policy instrument and, more specifically, as a tool of support to manufacturing industry should rank high on the policy agenda.

Last, but not least, incidental cases of criminal misuse of subsidies, involving amounts of up to several hundred million US dollars, have evolved as a new dimension of concern over subsidies.

In response to all these developments, the most important step forward was the signature of the new WTO "Agreement on Subsidies and Countervailing Measures" in April 1994, in Marrakech. Built on more solid "rules of the game", and a geographical coverage of more than 100 signatory states, the WTO has been designated as the principal actor in the institutional landscape of the new world trading system. With the prohibition of so-called export subsidies, and the exposure of so-called "actionable" subsidies to countervailing measures of the WTO Members concerned, international discipline should rapidly improve.

At the regional level, the state aid policies of the Commission of the European Communities and state aid controls in the framework of EFTA and NAFTA have played and continue to play a major role in improving international subsidy discipline.

The OECD has recently collected data on almost 1 500 support programmes in the OECD area alone. These programmes transfer annually more than US\$50 billion from public budgets to the enterprise sector. The long-term side-effects of these programmes on the competitiveness of manufacturing firms should not be underestimated: in a globalising world economy, it is more than likely that public support will either directly or indirectly affect trade and investment. Recent discussions on the role of increased R&D funding and on investment incentive packages for creating new businesses or attracting new branches

of firms to new locations point to the existence of such problems. Subsidy races in new technologies and “site wars” to attract new investments demonstrate how important the monitoring, analysis and evaluation of support policies are in the context of accelerating globalisation and international competitiveness.

In some OECD Member countries, high priority is attached to the down-sizing of industrial subsidies. It is interesting to see how rigorously some countries have proceeded in phasing out subsidy programmes. This reveals an interesting feature of decision-making by finance ministers, who appear to look principally at the potential for budgetary savings. A strategy of flat, across-the-board reductions of subsidies is the usual outcome of such decisions.

In a budgetary environment characterised by the principle of “doing more with less”, industry support programmes must be fully effective in meeting their stated objectives. An evaluation of the costs and benefits of support programmes is essential in order to obtain a maximum return in government spending. The absence of methodologies which enable the costs and benefits of support programmes to be evaluated in economic or even in fiscal terms explains to a large extent the current deficiencies in today’s national industrial support policies. With regard to the evaluation of programmes, I am aware that this is an extremely difficult task. To date, little analysis has been carried out on this subject which appears to be a central issue of future support policies.

In October 1996, a special session was organised by the Industry Committee, entitled “Industrial Support in the OECD Area: The Future of Public Support”.

The rationale for this special session, which included the participation of subsidy experts from non-OECD governments and experts from international organisations, business and academia, was to provide a setting for policy discussion on public support to manufacturing industry. The forum offered, for the first time in the history of this OECD project, an opportunity for Industry Committee delegates to address the future of public support, while benefitting from a comprehensive review of some of the many facets of this issue, ranging from international transparency and discipline to selected country policy approaches and evaluation of support programmes.

In her concluding remarks, the Chairperson of the special session, Mme. C. Chicoye from France, highlighted the following aspects:

- Public support to industry remains a relevant theme for the work of the Industry Committee for a number of reasons:
 - Most governments are confronted with the issue of a downsizing in subsidies due to their international commitments and to increasing budgetary pressures. For most governments industrial support is a policy instrument, albeit a more important instrument for some countries than for others.

- There is a clear complementarity and no duplication between the work undertaken in the OECD and that carried out in the WTO. The OECD is the forum where the economic perspective and the evaluation of subsidies should be developed. In addition, WTO has expressed the wish for continued collaboration with OECD.
- The work undertaken in the OECD and the national administrations consists of giving choices to policy makers. As was illustrated in many of the special session presentations, subsidies are at the heart of national policies and national sovereignty. Hence the necessity for the public servant to have at his disposition the means to indicate to policy makers the economic consequences of different policy choices. The evaluation of government support programmes and the development of evaluation methodologies is a logical next step in the OECD's programme of work. This is an area where the Working Party on Public Support to Industry could contribute significant value added. The presentations by the delegates from the United Kingdom and the United States of the evaluation systems and methodologies used in their countries confirmed this point.
- The considerable information on public support to industry collected by the OECD is a valuable resource for future work and the potential for the exploitation of this database is very promising.

This Special Issue of the *STI Review* on industrial subsidies features some of the presentations made at the special session, the results of recent Secretariat work on R&D support, and an article on industrial Subsidies as seen from the viewpoint of academia.

Udo Pretschker

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TRENDS AND PATTERNS OF PUBLIC SUPPORT TO INDUSTRY IN THE OECD AREA

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This article was written by Risaburo Nezu, Director of the OECD's Directorate for Science, Technology and Industry.

I. INTRODUCTION

The OECD Industry Committee's project on "Public Support to Industry", previously known as "Subsidies and Structural Adjustment", is a data collection exercise on direct and indirect public support programmes benefiting manufacturing industry. The primary objectives of this project are to improve international transparency and compare, OECD-wide, the trends and patterns of such support.

Launched in 1986, three rounds of data collection have been carried out, covering the periods from 1982 to 1986, 1986 to 1989 and 1989 to 1993, respectively. Three reports draw on the main findings of each round of data collection. To date, the OECD's database on industrial support programmes contains detailed information on approximately 1 450 support programmes applied in 24 OECD Member countries as well as in the Slovak Republic, which participated as an observer and at the level of the Commission of the European Communities. Greece and Luxembourg did not take part in the exercise, and Hungary and Poland were not yet OECD Members when the third phase of the project was finalised. In addition to the data on support programmes, information was collected on public R&D contracts, intermediary R&D institutions and civil and military procurement which all have the potential to serve as indirect means of public support.

The OECD publication *Industrial Subsidies: A Reporting Manual* describes the definitions and methodologies used. This publication is acknowledged both inside and outside the OECD area as a valuable tool for monitoring and measuring industrial subsidies.

II. THE METHODOLOGY

The concept of public support to manufacturing industry covers all types of selective financial government programmes at the central or sub-central level or, indirectly, through intermediary agencies or institutions. Regarding the selectivity of financial support, the common understanding that has evolved over recent years has resulted in the reporting of first, programmes that are exclusively available to manufacturing industry, and second, those that are also available to non-manufacturing enterprises. However, the figures entered into the database

refer exclusively to manufacturing. Whenever actual data were not available, the relevant figures were generated based on estimations.

Public support was calculated in terms of Gross Government Budget Expenditure (GGBE) and Net Cost to Government (NCG). GGBE measures the total amount of funds transferred to beneficiary companies and the total amount of uncollected tax liabilities from them per year by programme. NCG measures the difference between the cost of funding a programme and the revenue generated for the public budget by the same programme in any given year.

Public support was classified into ten policy areas identified as priority objectives of industrial support policies. These areas are:

- sectoral policies;
- crisis aid;
- R&D and technological innovation;
- regional development;
- general investment incentives;
- support to SMEs;
- labour and training;
- exports and foreign trade;
- energy efficiency;
- environment protection.

113 programmes reported under the policy objective of labour and training were finally withdrawn from the database and presented in an annex. This decision was made having regard to the strong ties to social policy objectives and uncertainties which persist regarding the final beneficiaries of such programmes.

The project's strict programme-based bottom-up approach makes it the unique source of actual public support to manufacturing industry. Respective figures in surveys published by other international organisations are at least partly derived either from national accounts or government finance statistics without isolating the share of total support that goes to manufacturing. Moreover, the information reported has undergone a collective review procedure by the Industry Committee's Working Party on Public Support to Industry. This so-called "peer review" has evolved as an important confidence-building measure.

In spite of the considerable improvements in the reporting – the number of programmes collected for this phase is 50 per cent higher than that for the previous phase – gaps do persist in a few countries, particularly with regard to sub-central support, the reporting on tax concessions and on quantitative information for the years 1992 and 1991. Due to the existence of such gaps, the analysis, at this stage, focuses on overall developments and features of public support in the OECD area, excluding country-specific analysis and country comparisons.

For the same reasons and with respect to the methodology applied, comparisons with other surveys must be carried out carefully.

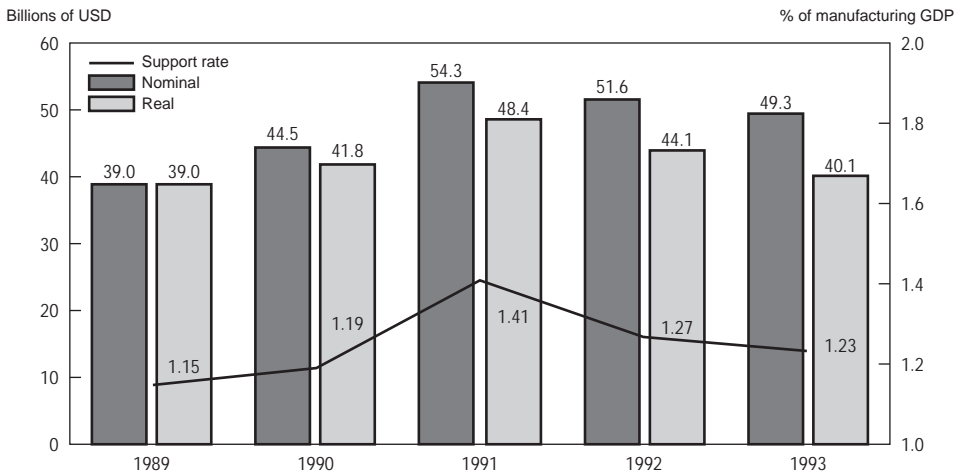
III. MAIN QUANTITATIVE FINDINGS

Widespread expectations of a continued reduction in public support to manufacturing industry over 1989 to 1993 were not fulfilled. Embedded in an economic and geopolitical environment particularly marked by:

- accelerating globalisation of industrial activities;
- the conversion of military production after the collapse of communism;
- deteriorating budgetary situations in almost all OECD Member countries;
- a changing pattern of industrial policies from a sectoral to a more framework-oriented approach; and
- emerging international subsidy discipline in the final stages of the Uruguay Round negotiations,

public support in the OECD area grew by 25 per cent in nominal terms from 1989 to 1993. Figure 1 shows that nominal net expenditure rose from US\$37 billion in

Figure 1. Nominal and real NCG expenditure and the manufacturing support rate



1989 to US\$47 billion in 1993. This upward trend should be even more significant when 1992 and 1993 data for certain large support programmes becomes available. These amounts clearly point to the persisting importance of subsidies as an instrument of structural policies in OECD Member countries.

Support declined in only one-third of the participating countries, while it was expanded in the other two-thirds. Intensified spending under the policy objective of regional development, which almost doubled in the period under review, is the predominant reason for the observed increase in public support. It should be mentioned that under the heading of regional development, the focus on funding that is channelled to manufacturing industry stems from incentives to attract foreign and inward investment.

In constant dollars, the support level increased between the beginning and the end of the period under review by 1 per cent. The manufacturing support rate measured as nominal support as a share of manufacturing GDP was 1.09 per cent in 1989, and 1.15 per cent in 1993. However, the relative stability of support intensifies when the first and the last year of the period are compared, a fact that is more likely due to the rise in manufacturing GDP than to collective policy efforts to curb industrial support.

The overall trend masks considerable diversity in spending under the various policy objectives. Table 1 shows that reductions in the areas of sectoral aid, investment incentives and SMEs were largely outweighed by stronger support in all other areas.

Support to regional development, exports and trade, and R&D played a very prominent role in net spending. In 1993, expenditure under these policy objectives represented almost 70 per cent of total support.

The still significant amounts of support and the large number of programmes in the areas of sectoral aid, crisis aid, and exports and foreign trade at the end of the period point to a challenge for policy makers. In the spirit of positive adjustment policies and stronger international discipline, a more marked shift from sector-specific, enterprise-specific and product-specific measures of support towards horizontal policy areas would have been expected.

The concentration of almost 50 per cent of sectoral support on three ailing industries (steel, shipbuilding and textiles), which represent only 9 per cent of manufacturing GDP in OECD countries, adds to this problem. Support to selected industries is shown in Table 2.

In terms of both direct and indirect support, the aircraft and space industries lead other sectors. These industries benefit in particular from R&D programmes, civil and defence-related R&D contracts and support provided by space agencies and intermediary R&D institutions (see Table 3).

Table 1. **Reported expenditures and programmes by policy objective**

Policy objective	Programmes	NCG in current prices; million US dollars				
		1989	1990	1991	1992	1993
Sectoral	147	4 449	4 923	5 813	5 194	3 388
% share	10.2	12.1	11.7	12.1	11.1	7.4
Crisis aid	53	1 625	668	875	585	3 188
% share	3.7	4.4	1.6	1.8	1.3	6.9
R&D and technological innovation	269	6 369	7 864	9 102	9 976	8 677
% share	18.7	17.3	18.7	19.0	21.4	18.9
Regional development	213	8 510	9 803	14 049	14 863	15 386
% share	14.8	23.1	23.3	29.3	31.8	33.4
Investment	148	2 953	2 805	2 767	2 396	2 594
% share	10.3	8.0	6.7	5.8	5.1	5.6
SMEs	359	5 432	6 031	4 340	4 693	3 750
% share	25.0	14.7	14.4	9.0	10.0	8.1
Export and foreign trade	118	6 883	8 973	9 920.2	7 813.4	7 267.8
% share	8.2	18.7	21.4	20.7	16.7	15.8
Energy efficiency	64	436	620	840	866	1 443
% share	4.5	1.2	1.5	1.8	1.9	3.1
Environment	66	249	338	216	329	333
% share	4.6	0.7	0.8	0.6	0.7	0.7
Total	1 437	36 906	42 025	47 983	46 717	46 028

Under the policy objective of crisis aid, interventions at the level of large firms – whether publicly or privately owned – are likely to occupy a lower place on the agenda, while the emphasis of crisis aid is shifting to SMEs in difficulty, with funds increasingly provided by sub-central governments.

Concentration of support in a few programmes is particularly evident for R&D and technological innovation. The ten largest programmes represented more than 50 per cent of direct R&D support in 1991 and 1992. A majority of R&D programmes are directed *towards* general R&D objectives such as funding of technology parks or R&D venture capital, international R&D co-operation or support for hiring R&D personnel. Almost 40 per cent of all R&D programmes directly promote selected technologies, focusing on microelectronics/information technology, energy saving, new materials, space and aeronautics, and biotechnology.

Table 2. **Support to selected industries**

Value in millions of US dollars

	1989	1990	1991	1992	1993
Shipbuilding	2 114.6	1 957.1	2 304.0	1 815.0	1 337.7
Steel	187.9	255.3	66.0	47.0	38.2
Textiles	153.4	101.7	95.0	85.4	45.8
Aircraft	464.9	607.4	366.9	502.7	340.7
Total sectoral support	4 449	4 923	5 813	5 194	3 388

Table 3. **Support to the aircraft and space industry**

Total value in millions of US dollars, 1989-93

	Aircraft	Space
Sectoral aid ¹	1 846.0	–
R&D programmes ¹	497.2	572.0
R&D contracts ² /Space agencies ²	–	29 274.7

1. NCG expenditure.

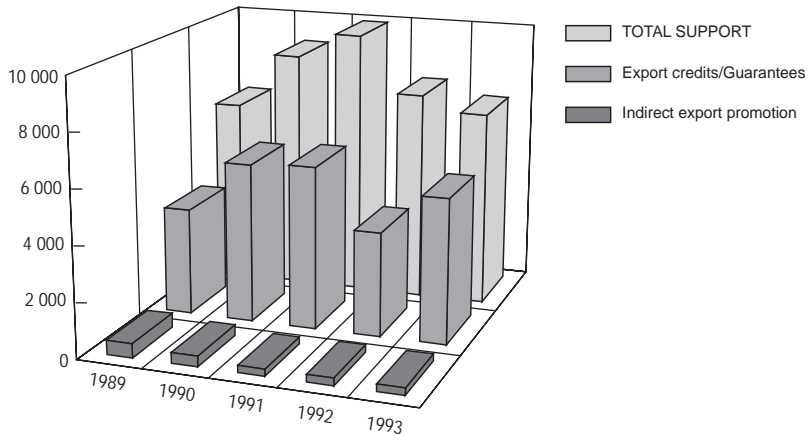
2. Contract values, procurement values or contribution to the agencies.

Source: OECD Industrial Support Database, April 1996.

Programmes providing support to SMEs as either their primary (359) or secondary (194) policy objective constitute more than one-third of all reported programmes. The greater policy focus on SMEs from the early 1990s – in terms of programmes and Gross Government Budget Expenditure rather than in net spending – appears to reflect the recognition of their contribution to job creation and employment.

In addition to 148 investment incentive schemes, 96 other programmes which promote investment as a secondary policy objective were reported, particularly in the area of regional development. Overall, 765 programmes in the database have investment or specialised investment as a supported economic activity. They absorbed 37 per cent of total public support in the years 1989-93. Investment incentive schemes appear to be a domain of sub-central governments and reflect intensified competition among them for creating new businesses or attracting them to their territory. The enormous amounts of support provided under such schemes, in the order of up to US\$100 000 per job created by the investment, call for a policy discussion on their trade- and competition-distorting side-effects.

Figure 2. **Support to exports and trade in million US dollars: the role of export credits/guarantees**



In the area of support to exports and foreign trade, export credits and guarantees appear as one of the main channels for providing public finance to manufacturing industry. The net expenditure peaked in 1991 at approximately US\$6 billion, and credits issued representing a multifold of this figure (Figure 2). The issue of export credits and export credit guarantees may merit further attention in post-Uruguay trade policies, given their financial volume and their uneven distribution among countries.

Under the policy objectives of energy efficiency and environment protection, the new paradigm of sustainable economic development may have been the driving force behind the shifts towards programmes supporting the use of cleaner or renewable energy inputs, more efficient production technologies, and more integrated process approaches.

IV. QUALITATIVE FEATURES OF PUBLIC SUPPORT

Defence procurement, R&D contracts, contracts awarded by and procurement of space agencies, and intermediary R&D institutions which may have the potential to serve as indirect means of public support, channel far more financial

Table 4. **Direct and indirect support to manufacturing industry**

	Reported expenditure in billion US dollars					
	1989	1990	1991	1992	1993	Total 1989-93
Direct support (1 447 programmes)	36.9	42	48	46.7	46	219.6
R&D contracts to manufacturing industry	19.3	17.8	17.5	16.7	17.2	88.5
Space agencies: contracts awarded by/ procurement of	4.9	5.9	5.6	6.5	6.4	29.3
Public support to intermediary R&D institutions	0.8	0.9	0.9	1	1	4.6
Defence procurement expenditures: Total	209.7	221.4	234.3	210.2	207.3	1 082.9
<i>of which :</i>						
Goods	169.1	178.2	188.7	168.9	166.9	871.8
R&D	28.9	30	28.4	29	29.5	145.8

Note: See the detailed footnotes relating to the above elements in the relevant tables of the report on "Public Support to Industry" [OCDE/GD(96)82].

resources into manufacturing industry than direct support. This is clearly demonstrated in Table 4. Even if the support element in indirect measures only represents a very small percentage, it would be very significant. As there is as yet no agreed methodology for measuring the support element in indirect measures, uncertainties remain as to its role as a policy instrument and, more specifically, as a tool of support to manufacturing industry.

Only 4.4 per cent of all support programmes reported limit access to national enterprises. The opening of national support policies to domestically established, foreign-owned firms or even to enterprises from abroad can be considered a policy response to world-wide industrial globalisation. The resulting international diffusion of national spending raises new issues and particularly complicates the interpretation of national support figures and rates (Figure 3).

With only 17 per cent of all support programmes terminating within a five-year period, turnover in the stock of programmes does not appear to be very dynamic. Moreover, almost two-thirds of the programmes have a duration of five years or more (Figure 4). In a dynamically changing economic environment with rapidly shortening product life cycles, often closely linked to the lifetime of the investments for their manufacturing, the policy rationale for long-lasting programmes is somewhat unclear in certain cases. While it is evident in cases where problems of a structural nature call for government intervention, the longevity of operational support schemes established particularly under the policy areas of crisis aid, R&D, and exports and foreign trade warrants detailed analysis. Such schemes normally operate on a short-term basis.

Figure 3. National treatment of Industrial support programmes

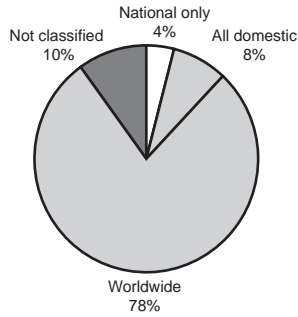
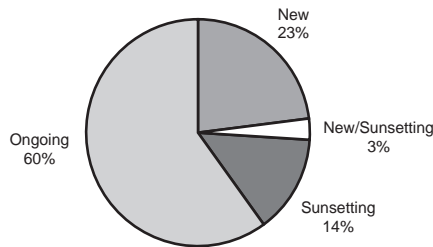


Figure 4. Duration of industrial support programmes



The role and the development of sub-central support is rather difficult to analyse given the existing gaps in reporting at this level in major federally structured countries. In addition, significantly less quantitative information was provided for sub-central programmes than for programmes at the central level. Therefore actual sub-central support is considerably larger than indicated in Table 5.

In terms of the programmes reported, strictly central programmes represent 45.7 per cent and strictly sub-central programmes, including those at regional and local levels, 36.3 per cent of the total. Regarding the expenditure for central and sub-central programmes, the contrast is much sharper. On average, centrally financed programmes account for 80 per cent of the total, while sub-central

Table 5. **Central and sub-central support**

Managing level	Programmes	NCG in current prices; million US dollars				
		1989	1990	1991	1992	1993
Central	650	31 076	34 074	39 770	37 320	32 300
Joint central/sub-central	91	1 043	1 279	2 178	2 753	5 949
Local	144	512	762	796	876	898
Regional	52	872	1 016	1 010	917	796
Sub-central	330	767	827	743	981	696
Private institution	22	1 227	1 549	1 158	1 426	2 481
Public institution	124	1 192	2 250	1 984	1 771	2 503
Public/private institution	7	77	102	107	122	126
Unclassified	17	140	169	239	551	279
Total	1 437	36 906	42 025	47 983	46 717	46 028

Note: See Chapter 2 of "Public Support to Industry" [OCDE/GD(96)82].

programmes represent 6 per cent. In addition, public and/or private institutions managed 8 per cent of the total reported expenditure. It is fair to say that even if all the gaps in sub-central reporting were filled, the dominance of centrally managed support programmes would still persist.

V. OUTLOOK

The project on "Public Support to Industry" is being continued with a view, firstly, to enter into country-specific analysis. To this extent, monographs of support by country are being designed, building on existing and updated submissions as well as on additional qualitative background information allowing for a better understanding and assessment of national support policies.

Secondly, the analysis, which at this stage remains at a factual level, will be more policy-oriented and thematic in the future. A first area in which such analysis will be undertaken is R&D and technological innovation.

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INTERNATIONAL CONTROL AND DISCIPLINE OF SUBSIDIES: THE EU AND WTO SURVEILLANCE EXERCISES

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I. INTRODUCTION

The completion of the Uruguay Round of the GATT may facilitate the deeper integration of individual trading blocs while simultaneously making the rules of commerce more similar across blocs. In particular, the Agreement on Subsidies and Countervailing Measures (SCM) of the Uruguay Round may spur the development of rules for state aid control, already well established within the European Union, in the WTO as a whole or in other trading blocs, such as NAFTA or APEC. In the first instance, this will occur through the required notification of subsidies to the WTO. In addition, as described elsewhere in this issue, the OECD has conducted a survey of industrial subsidies among its Members. These exercises, by shedding light on the amount of state subsidisation in the various countries, will help create pressures for control both among trading partners and among interest groups within individual nations.

This article will begin by reviewing the results of the recently completed *Fifth Survey on State Aid*, conducted by the European Commission, as a jumping-off point from which to assess the extent to which the EU's controls have proven successful. It will be shown that, once the extraordinary impact of German reunification is accounted for, the EU has managed to continue reducing the overall volume of state support to enterprises given by member governments, the amount given to manufacturing and certain service sectors, and the types of aid most likely to be awarded to mobile investors. At the same time, the Commission remains hard-pressed to persuade the governments of the most prosperous states to reduce their aid as much as has been the case in the least prosperous members. Next, the article turns to the work of the WTO. Its notification and review process is becoming better established and it is beginning to overcome a number of its early difficulties, as will be discussed in detail below. Finally, the article will consider the prospects of increased subsidy control in North America and the possibilities for the eventual development of a more global subsidy regime.

II. STATE AID IN THE EUROPEAN UNION

In 1997, the European Commission issued the *Fifth Survey on State Aid*, covering the years 1992-94. This followed the work of the first four *Surveys* covering 1981-92. In this section, I will summarise some of the main findings.

In contrast to the results of the *Second* through *Fourth Surveys*, the total volume of aid has probably not fallen in real terms when one takes into account the fact that there is substantial missing data for the agricultural sector (*Fifth Survey*, p. 25). Aid to the manufacturing and certain service sectors (most notably airlines) has risen slightly in real terms from 1990-92 to 1992-94, again in contrast to the long downward trend since 1986. However, once the extraordinary impact of German reunification is factored in, we see that there was a continuing decline in the other 11 Member States¹ taken as a whole (eight countries registered decreases and three increases). Given the fact that the economic situation in the new *Länder* was even poorer than that of the Cohesion Countries (Greece, Ireland, Portugal and Spain), it is neither surprising nor troubling that there has been a high level of subsidisation there.² As a result, I do not share the Commission's negative evaluation of its state aid control efforts in 1992-94, as expressed in the *Fifth Survey* and concurrent press releases. Moreover, when the effect of reunification is accounted for by excluding Germany, we see that there was a substantial decline in those types of aid most likely to go to mobile investment projects (*e.g.* regional aid, research & development aid, and general aid programmes).³ This is shown in Table 1.

Table 1. **European Union state aid (annual averages)**

Billion ECU, 1993 prices

	1990-92	1992-94	Change (%)
All state aid	96.6	95.0 ¹	-1.7 ¹
State aid in manufacturing	41.6	42.6	+2.4
State aid in manufacturing ²	27.6	25.2	-8.7
Regional, R&D, general	24.9	26.5	+6.2
Regional, R&D, general ²	14.5	12.1	-16.8

1. Note that there is substantial missing data for agricultural aid; see main text.

2. Excluding Germany. The reunification of Germany has led to high and rising aid in the new *Länder*, partially offset by substantial aid cuts in the old *Länder*.

Source: Calculated from Commission of the European Communities, *Fifth Survey on State Aid*, Brussels, 1997, p. 34, Table 14; p. 7, Table 3 and pp. 62-73, Annex Tables A4/1-A4/12.

These figures suggest that the Commission continues to be successful in its attempts to bring state aid under control.⁴ It is especially noteworthy that this decline was achieved despite Europe's economic troubles during the period,⁵ since we should expect that demands for subsidies will increase during times of economic distress,⁶ and in spite of the fact that German unification added ECU 13.3 billion of spending annually for the former East Germany by 1992-94 (*Fifth Survey*, p. 7, Table 3).

A second aspect of the Commission's efforts has been its ongoing work to make state aid policy transparent. One important way in which this is done is through its encouragement to Member States that they use more transparent forms of state aid, such as grants and tax reductions, and refrain from using less transparent forms such as equity participation and loan guarantees. As the Commission writes, "The calculation of the aid element of guarantees is particularly difficult and, therefore, they are, together with the equity participation, a very non-transparent form of aid".⁷ The Commission's ordering from most to least transparent is: *i*) grants; *ii*) tax reductions; *iii*) soft loans or tax deferrals (*i.e.* accelerated depreciation); *iv*) guarantees; and *v*) equity injections (*Second Survey*, pp. 26-7). Overall, the Commission has been very successful in obtaining reductions in the portion of state aid provided through equity injections, probably unsuccessful in reducing guarantees, and generally successful in having most aid given through its preferred methods of grants and tax reductions. Table 2 shows the use of grants and tax reductions, the broadest measure of transparency,⁸ from 1981-86 (covered by the *First Survey*) to 1992-94 (*Fifth Survey*).

As Table 2 shows, the Commission has succeeded in increasing the use of more-transparent forms of aid in virtually every country, thereby reducing less-transparent types of aid. The biggest increases in the grant/tax reduction share came in Denmark and France, both as a result of a dramatic cutbacks in soft loans. Belgium and Luxembourg also saw significant increases in these aid forms, while Greece showed a substantial decline (though, again, note the less reliable nature of the Greek data). The German decline is, not surprisingly, related to the process of reunification and to the fact that the Commission assesses guarantees in eastern Germany in a different fashion than it does elsewhere in the EU.⁹ Overall, then, it appears that the Commission has made good progress in having aid given more and more in its preferred forms over time. This increase in transparency improves the prospects for continued successful control of state aid in the future.

Another goal of the Commission has been the elimination of "general" investment programmes, which are targeted neither sectorally, regionally, nor to clearly permitted goals such as R&D or pollution abatement. As the *Fourth Survey* (p. 21) indicated, "With regard to the completion of the Internal Market, the existence of such general schemes is, therefore, more and more difficult to justify". Here, too,

Table 2. **Grants and tax reductions as a percentage of total aid in manufacturing**
1981-86, excluding steel and shipbuilding¹

	1981-86	1992-94
Belgium	64%	82%
Denmark	44%	96%
Germany	86%	66%
Greece ²	95%	74%
Spain	78% ³	86%
France	31%	65%
Ireland	85%	85%
Italy	79%	80%
Luxembourg	78%	93%
Netherlands	88%	91%
Portugal	86% ³	93%
United Kingdom	83%	93%

1. Following the Commission's presentation, the 1981-86 data exclude steel and shipbuilding due to extremely high short-term spending on those sectors in that period. Without adjusting for steel and shipbuilding, the levels of grants and loans are: Belgium, 49%; Denmark, 43%; Germany, 86%; Greece, 95%; France, 24%; Ireland, 81%; Italy, 79%; Luxembourg, 61%; Netherlands, 85%; and United Kingdom, 71%. *Second Survey on State Aids*, Annex I, p. 9, Table IX.
2. Note that the data for Greece, especially for 1981-86, are not as reliably based as the statistics for other countries. For the first four *Surveys*, the Commission used a consultant's study and its own extrapolations. In the *Fifth Survey*, p. 4, the Commission reports that, "The contribution received from the Greek authorities has permitted improvement of the Greek data. Regrettably, however, as no comprehensive contribution is forthcoming from the Greek authorities the figures still remain essentially estimates, and therefore the results for Greece should be treated with caution".
3. These figures are for 1986-88, since Spain and Portugal did not join the EU until 1986. *Source: Second Survey*, p. 25, Table VIII; *Fifth Survey*, p. 13, Table 5.

the Commission has been moving in its chosen direction, with general investment aid falling from 4.7 per cent of total aid to manufacturing in 1981-86 to 1.6 per cent in 1992-94.¹⁰

However, as the Commission itself has noted, state aid control has failed in the service of cohesion. That is, while aid has fallen in both the Cohesion countries and in the richer parts of the Community, it has actually fallen proportionately more in the former than the latter (*Fifth Survey*, p. 40). As Table 3 shows, this problem was especially pronounced in 1990-92 vs. 1988-90, whereas in 1992-94, the fall in aid in non-Cohesion areas was proportionately greater than in the Cohesion countries. This table shows that the rate of decline was substantially more rapid in the four Cohesion Countries than in six prosperous states (Belgium, Denmark, France, Luxembourg, the Netherlands and the United Kingdom). Germany is shown separately due to the effects of reunification; as can be seen, while aid to manufacturing in the former West Germany fell sharply, aid in the

Table 3. **Comparative decline in state aid to manufacturing, Cohesion and non-cohesion countries**

	Million 1993 ECU		Percentage change	
	1988-90	1990-92	1990-92/1988-90	
GR, SP, IRL, P	6 240	3 850	-38.3	
B, DK, F, L, N, UK	14 400	11 463	-20.4	
WEST GERMANY	9 146	7 373	-19.4	
EAST GERMANY	-	6 592	n.a.	
ITALY - 92(3)(a)	6 683	7 146	+6.9	
ITALY - ALL OTHER	6 421	5 175	-19.4	
6 + WG + IT-OTHER	29 967	24 011	-19.9	

	1990-92	1992-94	Percentage change	
			1992-94/1990-92	1992-94/1988-90
GR, SP, IRL, P	3 850	3 560	-7.5	-43.0
B, DK, F, L, N, UK	11 463	10 141	-11.5	-29.6
WEST GERMANY	7 373	4 156	-43.6	-54.6
EAST GERMANY	6 592	13 254	+101.1	n.a.
ITALY - 92(3)(a)	7 146	5 534	-22.6	-17.2
ITALY - ALL OTHER	5 175	5 995	+15.8	-6.6
6 + WG + IT-OTHER	24 011	20 292	-15.5	-32.3

Source: Calculated from *Fifth Survey*, Table 3, p. 7; Table 6, p. 20; *Fourth Survey*, Table 3, p. 10; Table 6, p. 24; and *Third Survey*, Table 6, p. 22. 1988-90 figures converted from 1991 to 1993 prices using the EC-12 consumer price index, *Eurostat Yearbook '95*, p. 238.

former East Germany has skyrocketed to over ECU 13 billion annually, more than 3½ times the four Cohesion Countries combined. Italy is also presented separately due to the Mezzogiorno, which is a 92(3)(a) region for state aid purposes and an Objective 1 region for Structural Funds (as is eastern Germany). Like the new *Länder*, its economic situation is more similar to that of the Cohesion Countries than to the rest of the EU. The Mezzogiorno saw a considerably smaller fall in aid to manufacturing than did the Cohesion Countries. Combining the six prosperous countries, West Germany and non-Mezzogiorno Italian aid, we see that the rate of decline for those areas between 1988-90 and 1992-94 was 32.3 per cent compared with the 43.0 per cent decline in the Cohesion Countries. As the *Fifth Survey* (p. 21) notes, this result "is at variance with the objective of cohesion".

Trends in overall state aid are not the only way in which state aid policies have failed to contribute to the goal of cohesion. State aid for research and

Table 4. **R&D aid as share of manufacturing aid, 1992-94**

	Percentage R&D
Belgium	7
Denmark	30
Germany	4
Greece	1
Spain	11
France	18
Ireland	2
Italy	2]
Luxembourg	8
Netherlands	26
Portugal	3
United Kingdom	16
EU average	7

Source: Fifth Survey, p. 20, Table 6.

development, which is likely to contribute to the future growth of the economy, is more concentrated in the central Member States than in the Cohesion Countries, as Table 4 shows. Of the latter, only Spain devotes more than the EU average of state aid spending on R&D.

Not only, as we see, does national state aid spending favour the central EU countries, Jurgen Grote argues that EU technology policies “tend to widen already existing gaps in the technological factor endowment of regions” (Grote, p. 27). Finally, if we look at actual spending per capita for research and development, not just state aid for R&D, we find that the Cohesion Countries spend only 50 per cent of the EU average (Martin and Steinen, p. 21). The combined effects of national and Community imbalances in spending for research and development do not bode well for reducing the differences in living standards between the Cohesion Countries and the rest of the EU.

A second problem for cohesion is the regional policy within the more prosperous countries. States such as France and Germany have been loath to abandon their long-established regional policies, despite the fact that their lagging regions are not nearly as poor as the Cohesion Countries (eastern Germany excepted). Moreover, in Britain and France, virtually all regional aid is used to provide investment incentives for individual firms.¹¹ As a result, some of the wealthier EU Members provide regional aid that is competitive (on a per capita basis) with what is given in the Cohesion Countries. Table 5 shows regional spending per head of assisted areas within the EU.

Table 5. **1992 NGE expenditure per capita, assisted areas**
 Pound sterling, 1992 prices and PPP

	Expenditure
Italy	312.2 (1990)
Luxembourg	112.5
Greece	42.2 (1988)
Ireland	30.6
Northern Ireland	29.1
Portugal	27.7
Belgium	24.6
Germany	24.0 (1991)
Netherlands	17.6
United Kingdom	13.5
Spain	8.5 (1991)
France	4.6 (1991)
Denmark	0.0

Source: Yuill *et al.*, *European Regional Incentives 1995-96*, table 5.8, pp. 473-474.

This table (which does not include the recent increases in spending in eastern Germany) shows that several well-developed areas of the EU offer regional spending that is competitive (on a per-capita assisted basis) with much poorer areas of the Community. While Italian regional spending almost all goes to the Mezzogiorno, an area that is approximately as poor as the Cohesion Countries, its spending is three times as high on a per-capita assisted basis as anywhere else in the Community. Luxembourg spends more per person in assisted areas than any Cohesion Country (though of course, given its small size, the absolute effect is rather small), and Belgium spends close to what Portugal, Ireland and Northern Ireland do on this basis. The conclusion Yuill *et al.* draw is that the competitiveness of the richer countries in providing incentives for mobile investment is likely a problem: "Given the extent of the problems to be tackled in the designated areas of those countries with major Objective 1 areas, it may be of some concern that there are not bigger differences between countries in respect of *per capita* incentive support within the problem regions" (Yuill *et al.*, 1995, p. 34).

In light of this problem, the Commission has proposed the reduction of aid intensities for regional aid throughout the EU, but particularly in less seriously disadvantaged areas (*Fifth Survey*, p. 40). As the negotiation of regional aid frameworks has in the past at times taken years to conclude, it is not clear when, or indeed if, these new discussions with Member States will reach fruition.

Overall, the Commission is succeeding at some of its goals (overall aid reduction, transparency, reduction of “general” aid), but not in others (contributing to cohesion). In this light, while I agree that action is needed on regional aid, I am not persuaded by the Commission’s argument that the recent increase in aid to manufacturing (essentially due solely to eastern Germany) now requires “a timetable for reducing overall aid budgets” (*Fifth Survey*, p. 40) in all Member States. The overall trend in the other 11 (through 1994) Member States continues to be downward; the real issue to be determined is what level of subsidies in the new *Länder* is to be considered legitimate.

III. WORLD TRADE ORGANISATION SUBSIDY NOTIFICATIONS

The Agreement on Subsidies and Countervailing Measures (SCM Agreement)¹² annexed to the 1994 Agreement Establishing the World Trade Organisation provided, for the first time, a GATT definition of a subsidy, explicitly introduced the concept of specificity and divided subsidies into three categories: prohibited, actionable and non-actionable, popularly known as red-, yellow- and green-light subsidies.¹³ In the red-light (banned) category are export subsidies and subsidies requiring the use of local content. In the green-light category are subsidies for regional aid, meeting new environmental regulations, and R&D purposes, mirroring strongly the types of aid toward which the European Commission is favourably disposed.¹⁴ All other subsidies are considered actionable if they cause “adverse effects” to other WTO Members (SCM Agreement, Article 5).

In addition, the SCM Agreement requires WTO Members to notify their subsidy programmes to the Secretariat annually.¹⁵ Unlike EU practice, this is *ex post facto* notification rather than *ex ante* notification. Non-actionable subsidies are to be notified in advance of implementation, however.¹⁶ Like the OECD’s work on public aid to industry, WTO notification is best considered “a long-term confidence-building measure”, according to Ronald Lorentzen.¹⁷ It also shares with the OECD exercise the use of a peer review process in which each Member can raise questions about the notifications of any other Member.

The first round of notifications began in 1995-96, although delays in submissions and in the peer review process meant that it was not until summer 1997 that most of the peer reviews were completed. Several problems originally emerged in the WTO notification process, although they have been reduced in intensity over time. A substantial (but decreasing) number of countries have failed to meet their obligation to notify. Others have claimed, in many cases very implausibly, to have *no* subsidy programmes as defined in the SCM Agreement. Another problem is

that, outside the European Union, many countries (including such federal states as the United States, Canada, Australia and Switzerland) have provided little or no subsidy information for sub-central levels of government. According to Lorentzen, the United States has collected some sub-central subsidy data, and is prepared to discuss a procedure leading to better sub-central reporting. Finally, a number of submissions appear to be incomplete, for example by omitting agricultural subsidies, *ad hoc* subsidies not provided within the context of a formal programme, or tax expenditure subsidies (the US submission is an example of the latter). The peer review of the initial “new and full” notifications is now drawing to a close as only few reviews remain to be completed. However, the delays in this first round have led to some overlap between updating notifications and peer reviews.

In the long run, this process should contribute to the control of subsidies in general, including those used in competition for mobile investment. One promising sign is that these notifications are publicly available six months after submission, rather than confidential. Moreover, the peer review process and related efforts are improving the quality and quantity of the notifications. Nevertheless, it will be some time before all WTO Members are reporting equally, a subject of obvious concern to the more complete notifiers, who may as a result be unfairly branded as “high-subsidy” countries.

As the WTO moves beyond notifications and begins to generate case law under the new SCM Agreement, it will face a number of issues similar to those the European Commission sees in its enforcement role. For example, will dispute resolution panels be able to gather information from a potentially recalcitrant Member against whom a complaint has been lodged? Can sanctions against an already-paid-out subsidy work? (Compare the problems faced on this issue by the European Commission, for example in the *Boussac* case of non-notified aid.)¹⁸ How these and similar issues are resolved will determine the effectiveness of the WTO’s subsidy controls.

In addition, it remains to be seen how the rules themselves will work in practice. For example, it is unclear how subsidies for Mercedes’ investment in Alabama (1993) would have been affected had the SCM Agreement been in effect at that time. On the one hand, the main incentives were generally available, seeming to make the package “non-specific” and hence not subject to WTO subsidy discipline. On the other hand, some elements of the Mercedes package do appear to have been specific, such as agreeing to pay the salaries of the workers for the first year of operation at a cost of US\$45 million (Watson, pp. 25-6). At such a high level, it would appear to trigger the possibility of causing “serious prejudice” based on the standard established in Annex IV of the Agreement, which specifies that “Where the recipient firm is in a start-up situation, the overall rate of subsidisation shall not exceed 15 per cent of the total funds invested”

(SCM Agreement, Annex IV, paragraph 4). (US\$45 million was exactly 15 per cent of the US\$300 million investment.) However, whether the subsidies fell into the actionable or non-actionable category would determine what type of action could be taken by a WTO Member. Complaints about actionable subsidies are heard by the WTO's newly established Dispute Settlement Body, which must adopt panel reports unless all Members (including the complaining party) agree not to. Complaints about non-actionable subsidies, by contrast, go to the Committee on Subsidies and Countervailing Measures, which operates by consensus – meaning that the subsidising party could block a negative decision. Disputes over whether a subsidy qualifies for green status may be decided by binding arbitration.¹⁹

Finally, there is some question regarding who would lodge a complaint in cases such as Mercedes in Alabama: the United States would not complain about its own subsidy (and individual US states do not have standing to do so); the EU presumably would not, since an EU firm is the beneficiary; and Japan might not, even though the incentives surely affect Japanese exports of sport utility vehicles, because many Japanese firms have benefited from similar subsidies. That the actual impact of the rules on such a situation is uncertain is nicely illustrated by the widely varying responses I have received from trade experts on whether the SCM Agreement would have applied to this case had it been in effect at that time: from “absolutely” (a Canadian who has served on Canada-United States dispute resolution panels), to all sorts of “it depends”, to “almost certainly not” (a high EU official). Again, growing familiarity with investment location incentives will improve how they are handled in the future.

The effect of the new agreement on sub-national and regional aid is another area of uncertainty. Canada lobbied very hard, and successfully, to ensure that a subsidy offered throughout the territory of a sub-national government “would not be automatically deemed specific”, as it would have under the so-called “Dunkel draft” of the Uruguay Round that formed the basis for the final successful negotiations. This was to avoid giving Quebec separatists an argument that provincial industrial policy would be restricted under the SCM Agreement, in a way that would not be true were Quebec independent.²⁰ Fiona Wishlade argues that this provision could give US states and Canadian provinces advantages in competition for investment *vis-à-vis* the EU. First of all, while a generally available subsidy in a country with its own currency would impact its exchange rate, there would be no similar negative impact for such a programme in a US state or Canadian province. Second, European sub-national governments have to have subsidy programmes approved by the Commission, while states and provinces do not have a comparable requirement (1996, pp. 45-6). Moreover, she contends, “It seems likely that there will be considerable difficulty in demonstrating that the regional policy programmes of the Member States, as approved by the Commission, comply with the GATT Code”. The main difficulty is that regional subsidies must be non-specific to be green-lighted under the WTO rules, and many regional

aid programmes in the EU are highly discretionary in terms of sectoral emphasis, amount granted to each aid recipient, etc.²¹ The question, then, is how much discretion is too much to be considered non-actionable under the SCM Agreement? This will be key in determining its impact on regional aid policies. Already, the United States has imposed countervailing duties on an Italian regional aid in the “Italian pasta” case (*Milling & Baking News*, 26 December 1995), so it is clear that the possible clash of EU and WTO concepts of regional aid is no mere conjecture. In particular, the SCM emphasis on non-specificity will collide with the EU’s long experience showing that non-specificity is expensive, which is why European regional aid programmes have become increasingly more discretionary over the last decade and a half (Yuill *et al.*, 1994, pp. 10-11).

While it is still too early to predict the exact effects, it seems clear that the WTO subsidy rules will be significant. In particular, the effectiveness of the WTO as an enforcement body in this area and the impact of the SCM rules on existing regional policies bear watching. Moreover, the key rules on the presumption of serious prejudice, non-actionable subsidies, and consultations over non-actionable subsidies come up for review after the agreement has been in force for five years (SCM Agreement, Article 31), which will no doubt occasion further negotiations over these rules.

IV. CONVERGENCE ON SUBSIDY ISSUES?

Does the recent upsurge in multilateral subsidy studies presage deeper economic integration through subsidy control? In the long run, perhaps it does. The European Union’s interest in exporting its state aid rules (Ehlermann, 1995) coincides with interest expressed, especially in North America, in controlling investment incentives and other subsidies given by the states and provinces (Ronayne, 1993; Thomas, 1996). In both Canada and the United States, there is recognition of both efficiency and equity drawbacks to widespread subsidisation of capital, and indeed, there is substantial pressure in the United States from both the Left and the Right to reduce so-called “corporate welfare” (Thomas, 1997). Canada, however, has made the only steps toward centralised control of subsidies, with the adoption of a Code of Conduct on Incentives as part of its 1994 Agreement on Internal Trade. This bans the provinces from using investment incentives to induce a firm’s relocation from another province, and urges best efforts to avoid bidding wars for greenfield investments.

Nevertheless, there are many obstacles to subsidy control beyond the EU, even in the relatively favourable North American environment. In the United

States, although state governors recognise the problem of bidding wars, they are loath to give up their economic development prerogatives. Thus, the National Governors' Association opposes federal pre-emption of the use of subsidies, and calls instead for voluntary agreements, despite the failure of regional agreements in the Midwest and the Northeast.²² In Canada, a growing proportion of subsidies has been provided by the provinces rather than the federal government (Ronayne, pp. 39-40), and this decentralisation of provision no doubt augurs poorly for their control. Moreover, the experience with the Code of Conduct on Incentives through summer 1997 has been relatively disappointing. In January 1995, New Brunswick offered United Parcel Service C\$ 11 million in incentives to relocate some of its operations from British Columbia, Manitoba and Ontario, and the company moved 870 jobs to New Brunswick. The following year, British Columbia complained under the AIT, and informal negotiations between the two provinces were fruitless. By September 1996, British Columbia claimed that New Brunswick had refused to enter the formal stage of dispute resolution, while New Brunswick argued that the UPS deal had been done prior to the June 1995 signing of the standstill agreement and so was not covered by the agreement at all. It further charged that British Columbia was simply using its complaint as a pretext to pull out of the Agreement on Internal Trade. Whatever the outcome of the dispute, one clear culprit identified by observers was the weak dispute-settlement procedure.²³ Several other cases of violations of the Code of Conduct have been alleged, including the transfer of Air Canada's call centre from Montreal to St. John, New Brunswick (Morris, 1996), and the relocation of 300 meat packing jobs from Vancouver to Saskatoon, Saskatchewan (Kines, 1996), but these are farther from resolution.

Nonetheless, prospects for subsidy control look more promising than ever before. Canada's Code of Conduct provides a useful model for the United States of a small, but significant step in the right direction (and one that should be easier to enforce in the United States). Pressure from above (WTO, OECD) and below (numerous citizens' organisations) for subsidy transparency and accountability are likely to have an eventual impact in the United States. Finally, the EU's relative success may be a spur to the United States and other countries to consider what aspects of EU state aid policy might work in their institutional environments.

NOTES

1. Austria, Finland and Sweden did not join the EU until 1995.
2. This is not to deny that there have been problems in the administration of aid in eastern Germany, as the case of Bremer Vulkan spectacularly attests, but that is a separate issue.
3. These types of aid were identified as most likely to go to mobile projects by Mr. Reinhard Walther, Unit Head, State Aid Inventory and Analysis, personal interview, Brussels, 23 September 1993.
4. On the relative success of the Commission's state aid control efforts prior to German reunification, see Thomas (1996).
5. Europe's economic slowdown was worst in 1993, when EU-15 GDP actually fell. See OECD (1996), p. 27.
6. On the likely rise of investment incentives during recessions, see Quinn (1988).
7. Fourth Survey, p. 18. In fact, the Commission does not calculate the *ex ante* value of guarantees, but only considers guarantees actually called upon. As will be seen below, a different procedure is followed for guarantees in eastern Germany.
8. For more detail on specific forms of aid, such as capital injections and guarantees, see Thomas (forthcoming), Chapter 6.
9. Except in the case of eastern Germany, the Commission only counts a guarantee as containing an aid element when it is actually called upon. This means that the guarantees were made at some time in the past, which underscores their lack of transparency. In the case of Germany, the Commission considers Treuhandanstalt guarantees far more likely to be called upon than those made in other Member States, and so considers the aid element to be 20 per cent of the amount guaranteed (*Fifth Survey*, pp. 23-24).
10. Calculated from *Second Survey*, Annex I, p. 11, Table X B; *Fifth Survey*, p. 17.
11. Personal interview with Fiona Wishlade, European Policies Research Centre, University of Strathclyde, Glasgow, 20 May 1994.
12. All citations to the SCM Agreement below are contained in US Trade Representative (1993).
13. Unless otherwise noted, the discussion in this paragraph draws on O'Brien (1997), pp. 115-125.

14. Ironically, it was the Mexicans who introduced environmental subsidies for green light status, after the EU had previously abandoned the issue. See O'Brien, p. 122. Fiona Wishlade (1996, p. 21) points out that the SCM criteria for "legitimate" regional subsidies are drawn directly from EU practice (employment at 110% of average, GDP/capita 85% of average or lower).
15. SCM Agreement, Article 25, "Notifications", paragraph 25.1. A new and full notification is to be made every third year, with updating notifications in the intervening years.
16. SCM Agreement, Article 8, "Identification of Non-Actionable Subsidies", Paragraph 8.3. To date, no subsidies have yet been notified as non-actionable.
17. Personal interview with Ronald K. Lorentzen, Director of WTO Industrial Issues, Office of the US Trade Representative, Washington, 10 June 1996.
18. A good discussion of Boussac can be found in Slot (1991).
19. SCM Agreement, Article 9, paragraph 5. Note also that the issue of whether a subsidy is non-actionable can arise before a dispute settlement panel in cases where *de facto* green light status is raised as a defense of subsidies not notified as non-actionable. This "*de facto* green" defense is provided for in SCM Agreement, Article 10, footnote 33.
20. O'Brien, p. 121. He notes that while the United States supported this position, it was a far more critical issue for Canada.
21. Wishlade, pp. 47-8. The quote is from p. 47. She also mentions that Member State pressure has diluted Commission adherence to the letter of its published methodology, and that regional aid approved for Sweden and Finland on the basis of low population density does not meet the SCM unemployment and GDP/capita tests.
22. For the National Governors' Association position, see Kayne and Shonka (1994). For the breakdown of regional pacts, see Gauf (1992), Prokesch (1992), and Myers (1994). Ronayne (1993, pp. 53-54) suggests that regional attempts at voluntary control by Canadian provinces have also failed.
23. See Damsell (1996), Toulin (1996), and *Financial Post*, (19 September 1996).

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STATE AID CONTROL IN THE EUROPEAN UNION

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I. INTRODUCTION

State aid is an established and widely used economic policy instrument in all Member States of the European Union. One only has to consider the large number of aid schemes that are currently in operation and the new cases the European Commission deals with each year to appreciate the importance of this instrument. And, according to data provided to the EC for the period 1992 to 1994, these schemes and cases translated into an average total annual amount of aid of more than 95 billion ECU. About 40 per cent of this huge amount went to industry, where on average it accounted for around 4 per cent of value added.

All aid distorts competition between companies and it is this damaging effect on competition which prompted the authors of the EC Treaty to confer to the Commission responsibility for controlling the conditions under which aid may be granted.

The starting point is well known but worth recalling briefly: state aid control is traditionally unknown to States, whether they are organised as central states, federations or confederations. State aid control is a unique feature of the European Union. It is the EC's experience which has inspired the successive GATT subsidy codes and its recent "exports" of state aid control mechanisms to the European Economic Area and to neighbouring countries, in particular Central and Eastern Europe.

State aid control in the EC had to be established progressively from scratch. Neither the authors of the Treaties nor the High Authority of the ECSC and the Commission of the EEC could have recourse to earlier international or national practice. Still today, the understanding of state aid control is under-developed: compare the wealth of writing on antitrust questions and the dearth of publications on state aid issues.

II. REASONS FOR STATE AID CONTROL IN THE EUROPEAN UNION

The maintenance of a system of free and undistorted competition is one of the cornerstones of the European Union. It is undisputed that competition may be distorted by advantages given by public authorities to certain companies which

compete with other companies in the Union. All efforts under the antitrust rules to ensure that companies do not distort competition and trade within the Union would be to no avail if Member States were allowed to seek to outbid each other in offering subsidies to save firms in economic difficulties or to attract investment.

Today, this applies more than ever. There are three major reasons for the increasing importance of state aid control:

- First, as the Single Market becomes a reality, the elimination of a vast number of trade barriers between Member States also progresses. This means that the more classical forms of distortion of competition by Member States have disappeared. If not properly controlled, state aid may be used to replace the barriers to trade that have already been dismantled.
- Second, the single market in Europe has witnessed widespread liberalisation of sectors where competition was restricted or even excluded, such as telecommunications, postal services and energy. The consequence of this trend is obvious: introducing competition necessarily means enlarging the scope of state aid control to these sectors.
- There is a third reason for the increasing importance of state aid control: in periods of serious economic difficulties with politically unsustainable levels of unemployment, governments – not only in the EU, but also in other regions of the world – are tempted to use state aid as an instrument to combat unemployment, often merely shifting the problem to another factory, another sector, another area, another country.

III. THE NOTION OF STATE AID

State aid is defined in Article 92(1) EC Treaty. On the one hand, the definition is large enough to capture all possible forms of aid; on the other hand, it is sufficiently restricted in order not to go beyond the area of aid. Any such extension to include general economic policy measures would interfere with the Member States' sovereign economic policies and would not reflect the intentions of the Treaty. In practice what interests the Commission most under Article 92 is state financial intervention in favour of certain identifiable undertakings or sectors of industry which may give them competitive advantages within the common market. This does not, however, preclude the Commission from analysing whether automatic and non-specific schemes contain state aid elements.

IV. STATE AID PROVISIONS

The compatibility of state aid is examined on the basis of the substantive rules of Article 92 and according to the procedural provisions of Article 93 EC Treaty. With the exception of common policies (agriculture, fisheries and transport), coal and steel and shipbuilding, the Council has not enacted secondary legislation for state aid control. Article 94 which allows the Council to “make any appropriate regulations for the application of Articles 92 and 93” has remained virgin territory, although proposals are now being discussed with the Council with a view to exempting certain well-defined sectors from the requirement of prior notification.

The explanation for the few exceptional situations in which the Council has enacted special rules for state aid is the following. The case of common policies in agriculture, fisheries and transport is obvious: state aid is a market-correcting instrument *par excellence*; it is normal to regulate it specifically in view of the objectives of these policies. State aid to shipbuilding is expressly mentioned in Article 92(3)(c); the authors of the EEC Treaty acknowledged the particular character of an industry, which is exposed to world-wide competition but cannot be protected by traditional trade law instruments. Subsidies for coal and steel should normally not be subject to specific rules: according to Article 4(c) of the ECSC Treaty they are totally prohibited; this prohibition being closely linked to the idea that national funding instruments would be entirely replaced by Community funding under Article 5, 2nd indent of the ECSC Treaty. However, this prohibition proved to be unenforceable in the real world and it was replaced by successive state aid codes enacted under Article 95 ECSC Treaty which follow closely the provisions of Articles 92 and 93 EC Treaty. While more generous for coal, the state aid regime for steel is stricter than the Commission’s practice under Article 92 for regional and restructuring aid in general. In practice, this has not led to outright prohibitions but to derogations granted according to Article 95 ECSC Treaty.

V. CONTROL PROCEDURE AND ASSESSMENT PRINCIPLES

One might, at least in theory, advocate the simple ban of state aid to achieve free and undistorted competition throughout the European Union. However, the early experience with the European Coal and Steel Community and its strict and

unconditional prohibition of any state aid has shown that this way cannot realistically be maintained: in some cases there are valid reasons to grant aid.

The conclusion drawn in the Treaty of Rome was to accompany the general prohibition to grant aid by a list of possibilities for exemption. Properly controlled, the granting of aid may contribute to the development of the Community as a whole, whilst potentially harmful or protectionist effects can be eliminated.

Article 93 obliges Member States to notify the Commission all aid plans in advance. The Commission decides on whether to prohibit or authorise aid. It has a decision monopoly, *i.e.* it decides independently of the Council and the decision is directly applicable law in the Member State concerned; aid awarded without authorisation is illegal.

This is indeed the very centre-piece of state aid control in the European Union: the Treaty of Rome not only obliges the Member States to inform the Commission of subsidies granted to enterprises. The obligation goes an important step further and makes the award of aid subject to prior approval by the Commission.

The obligation of notification prior to implementation and, more than that, the fact that the implementation of a plan to grant or alter aid is subject to approval by an independent authority, is one of three key elements which make the control of state aid in the European Union unique both in international and national law. Only the Commission may find aid compatible by applying one of the exemption clauses provided for in the Treaty.

The second element characterising the state aid control system established by the European Union follows from the first: there are remedies against state aid decisions. Also private operators, in particular aid recipients and competitors, may seek judicial review before the European Courts.

Third, the Commission is not only entrusted with the day-to-day application of the state aid rules, but is also empowered to develop the Community's state aid control policy. Within the wide margin of discretion entrusted to it, the Commission has gradually developed policy through cases and, in order to ensure homogeneity and to increase transparency, through policy frameworks, communications and notices.

The following principles governing the assessment of aid derive from Article 92.

The aid must be economically necessary in order to bring about the desired development, *i.e.* the assisted measure would not be carried out without the aid. The amount and duration of the aid – which also means the extent and duration of the distortion of competition – must be in proportion to the objective pursued through the aid.

Assistance should always be confined to pump-priming. Aid that is unlimited in time and intended to cover the day-to-day operation of a firm, *i.e.* operating aid, will not be authorised any more than export aid within the Community.

National interest or the interest of particular firms alone do not justify the authorisation of aid, which must be of benefit to the Community as a whole.

Lastly, aid which fits coherently into Community policies or into measures on which there is a Community-wide consensus can more easily be declared compatible with the common market. Conversely, aid in sectors in which there is overcapacity and particularly fierce competition throughout the Community can be authorised only subject to strict conditions.

These principles have over the years been fleshed out and in many respects further clarified through the individual decisions taken by the Commission and through the case law of the Court of Justice. A whole system of derived rules has accordingly been developed, all of which have been published and for the most part discussed in advance with the Member States.

Today, the Commission has at its disposal a broad set of clear-cut, transparent and consistently applied rules in the field of state aid control. It distinguishes between aid which is or may be declared compatible and aid which is incompatible with the common market: a favourable approach is usually given towards:

- regional aid;
- aid to SMEs;
- aid for environmental protection and R&D; and
- aid for the creation of employment.

On the other hand, the Commission does, as a general rule, not allow:

- general investment aid for large companies outside well-defined disadvantaged geographic areas;
- export aid; and
- operating aid, *i.e.* aid to cover current expenses of enterprises of a continuous or periodic character.

Furthermore, a close and in-depth scrutiny is carried out in cases of:

- rescue and restructuring aid;
- financial transactions between the State and its public companies resulting in aid; and
- aid to companies in certain sensitive sectors such as steel, shipbuilding, motor vehicles and synthetic fibres.

VI. ENFORCEMENT OF THE STATE AID DISCIPLINE IN THE EU

The notification discipline ensures that the Commission sees and evaluates aid. Aid which does not meet all the conditions required to benefit from one of the possibilities for exemption is incompatible with the objectives of the Treaty and must not be implemented. Where a Member State has not fulfilled its obligation to await the Commission's decision before awarding aid, the Commission may request recovery of illegally granted aid.

It has not been easy to establish, step-by-step, a strict and coherent state aid policy. Introducing a systematic policy to recover incompatible aid has proven even more difficult. The most important milestones in this process are:

- It was in 1973 that the Court, in the German "mining regions" case,¹ clarified the Commission's right to order recovery of illegally granted aid.
- In the course of the 1980s, recovery orders became regular Commission practice. The Court firmly backed the Commission's approach by stating that recovery is the "logical consequence"² of the finding that an aid was unlawfully granted. In its recovery policy, the Commission concentrated its efforts on "big" cases like Renault and Peugeot (1988), Alfa Romeo (1989) or British Aerospace/Rover (1993).
- The "Boussac" judgement, delivered by the Court in 1990,³ can be regarded as a "cornerstone" in two respects:

First, it stated that the Commission is obliged to examine the compatibility of an aid even in cases where the Member State has not fulfilled its obligation to notify and to await the Commission's decision. Thus, it is not possible for the Commission to order recovery simply for the reason that a Member State has granted aid whilst failing to respect the procedural obligation to notify. To order recovery, therefore, the Commission must also establish the substantive incompatibility of the aid with the common market.

However, when faced with aid implemented before a decision has been taken, the Commission has the power to issue an interim decision ordering the Member State concerned to suspend further payment pending the outcome of the Commission's investigation. Moreover, this interim decision may also contain an order to provide the Commission with all necessary information in order to enable it to assess the compatibility of the aid with the common market. The Commission has done so recently in the "Volkswagen" case concerning aid to projects in eastern Germany.⁴

- In a communication issued in June 1995,⁵ the Commission went a step further and announced that it may, in appropriate cases, adopt an interim decision ordering the Member State to recover any amounts which have

been disbursed in infringement of the Treaty. In doing so, the Commission reacted to the problem that a suspension order does not have any practical meaning in cases where the unnotified aid is already paid in full.

During the past years increased notification discipline and a very high public awareness of the consequences of unlawfully granted aid has therefore been achieved. Clearly the purpose of recovery is to re-establish the previously existing situation on the market.

However, a number of difficulties remain: it may take several years from the Commission decision to actual recovery. The recovery order is, like any other decision in the State aid field, addressed to the Member State concerned, which then has to recover the aid in accordance with national law. Procedurally speaking, the beneficiaries of illegal aid may use all remedies available under national law in order to seek to delay or suspend the immediate restoration of the previously existing situation.

However, the rule that aid must be recovered with interest at market rates calculated from the date of the actual award should reduce somewhat the length of the recovery period. Moreover, it is important to note that the recovery claim sticks to the company regardless of changes of ownership and without any period of limitation.

An analysis of the Commission's decisions shows that the percentage of cases where the aid is eventually recovered has gradually risen. This confirms what seems to be a general underlying principle in the process of European integration: once a specific target has been set, the Community is usually able to achieve it in a step-by-step approach. The policy concerning recovery can be said to be in its third phase: in the 1970s, the Court confirmed the principle. In the 1980s, the Commission established the practice. Today, in the 1990s, we seek to improve the effectiveness of the Commission's practice. In view of the fact that recovery is undertaken according to national law, we are approaching this in co-operation with the Member States. This effort is based on the Court's findings that national law cannot stand in the way of full application of Community law. Member States have to co-operate with the Commission to overcome all difficulties encountering the implementation of a recovery order.⁶

National courts can also play an important role in the enforcement of state aid rules. The prohibition of granting aid before the Commission has taken its decision is one that has direct effect.⁷ This means that individuals may invoke an infringement of this obligation before a national court. The role of national courts is to preserve the rights of individuals faced with possibly illegal state aid until the final decision of the Commission.⁸ Competitors may thus achieve suspension of payments or recovery of illegally granted aid pending the outcome of a Commission decision on the matter.

This important task of national courts of safeguarding competitor's interest was emphasized in a landmark decision of the European Court of Justice handed down recently:⁹ the Court held that a national court is obliged to meet a request for recovery in cases of unnotified aid, unless exceptional circumstances are involved.

This recent judgement also underlines that it is the Member States' responsibility to notify aid. Therefore, individuals may sue the State for damages resulting from illegally granted aid. On the other hand, a beneficiary cannot be held liable for damage caused to other economic operators on the sole base of Community law.

In its recently published Notice on co-operation with national courts in the field of state aid,¹⁰ the Commission offers to assist national courts in such cases. It is our hope that national courts will use this assistance and thereby increase the possibilities for competitors to seek interim protection of their rights before national courts in state aid cases.

VII. INCREASING TRANSPARENCY

The situation in the EU is certainly more transparent than in any other part of the world, as it is the only place in which all state aid projects are subject to a procedure of prior and systematic scrutiny. In addition, transparency within the EU will increase further over the coming years. The reasons are both political and legal. There is growing demand by Member States for information and explanation of the Commission's decision making practice with respect to state aids granted by other Member States; this demand is of course reinforced by the overall debate on transparency following the Maastricht Treaty negotiations. Another political factor is the Commission's determination to pursue its policy of issuing more guidelines, frameworks, notices, etc., which explain in advance how the Commission will react to certain categories of state aid projects such as regional aid, aid in favour of research and development, the protection of the environment, small and medium-sized enterprises, employment, etc. Legal requirements for increased transparency will be generated by the Courts in Luxembourg, in particular by the Court of First Instance. Observers of the Courts will confirm that the recent jurisprudence shows a tendency to align the procedural rights of private parties in the state aid sector on those which they enjoy in antitrust matters. This tendency is the procedural expression of a fundamental shift which has occurred almost imperceptibly over the last years. Aid granted by a Member State is no longer controlled exclusively or principally in the interest of

other Member States, but also, and perhaps even more so, in the interest of the competitors of the intended beneficiaries of the aid. The original macroeconomic approach of the authors of the EEC Treaty is being supplanted progressively by a microeconomic perspective, similar to that which has always dominated substantive and procedural antitrust law.

VIII. THE EU'S INTEREST IN EXPORTING STATE AID CONTROL

Because of the high degree of transparency of state aid control in the EU (which will continue to increase in the future), the EU has every interest in advancing the scrutiny of subsidies at the international level. This is true of both substance and procedure, *i.e.* monitoring. If such rules do not exist or if they are not effectively implemented, non-member countries will benefit gratuitously from the EU's internal control mechanism. Such a situation is clearly not desirable. It might in the end even jeopardise the correct functioning of the EU's own state aid control. Contrary to commonly held views about the risks of subjecting oneself to international rules, the EU has nothing to lose and can only win by exporting its own state aid discipline to other parts of the world.

The EU has of course successfully done so through the agreement on the European Economic Area (EEA), through the so called Europe Agreements with Central and Eastern European Countries (CEECs) and through the new Subsidy Code agreed during the Uruguay Round. The recent OECD Shipbuilding Agreement is a further example, although in this case implementation awaits ratification by one of the EU's major trading partners.

The most ambitious exercise has been the establishment of the EEA through which all the EU's state aid rules and procedures have been exported *en bloc* to those EFTA countries which have joined the EEA. Identical EEA aid control rules are implemented by the EFTA Surveillance Authority.

A hardly less ambitious operation has been agreed in the Europe Agreements. The CEECs will respect substantive state aid rules which correspond in principle to those applicable within the EU in similar situations. However, they will not set up among themselves a plurinational control mechanism like the EFTA Surveillance Authority. They will have to ensure the respect of their international obligations towards the EU through strictly national control mechanisms.

In the new multilateral agreement on subsidies and countervailing measures negotiated during the Uruguay Round and to be monitored by the WTO, the EU definition of subsidy was adopted and EU state aid rules and procedures have

largely gained admittance with respect to both actionable and non-actionable subsidies, in particular those regarding regional aid.

The recent agreement negotiated in the framework of the OECD on normal competitive conditions in the commercial shipbuilding and repair industry is another example of the convergence of internal state aid policy with external trade policy. Lack of an effective commercial defence instrument against unfair competition on the world market in that sector has obliged the EU for several decades to pursue a very costly sectorial state aid policy, allowing production aid for shipbuilding. By sacrificing this policy, which in any case ran contrary to its general aversion to sectorial aid, the EU obtained, *inter alia*, the institution in the same agreement of a code protecting it against injurious pricing by shipbuilders in the signatory countries. Ratification of this agreement by all concerned OECD Member countries will represent a great leap towards the efficient use of state resources and a further testament to the ideals shared by the authors of the EU's treaties.

NOTES

1. ECJ Case 70/72, Commission/Germany, ECR 1973, 813 (829).
2. See, for example, ECJ Case C-142/87, Belgium/Commission (Tubemeuse), ECR 1990, I-959 (1020).
3. ECJ Case C-301/87, France/Commission, ECR 1990, I-307.
4. Commission Decision 96/179/EC of 31.10.95 enjoining Germany to provide all documentation, OJ 1996 L 53/50.
5. OJ 1995 C 156/5.
6. ECJ Case C-303/88, Italy/Commission (ENI-Lanerossi), ECR 1991, I-1433(1485).
7. ECJ Case 120/73, Lorenz/Germany, ECR 1973, 1471 (1484).
8. See ECJ Case C-354/90, FNCE ("Saumon"), ECR 1991, I-5505 (5528).
9. ECJ case C-39/94, SFEI, Judgement of 11.7.1996.
10. OJ 1995 C 312/8.

THE EVALUATION OF SUPPORT PROGRAMMES: THE EXAMPLE OF THE UNITED KINGDOM

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I. EVALUATION OF PUBLIC SUPPORT PROGRAMMES

Policy evaluation is the process of examining a policy while it is in operation or after it has come to an end. It can be seen as part of the policy making cycle which starts with appraisal. Appraisal helps to improve decision making by considering whether a proposed policy is likely to be worthwhile and by comparing in advance the different options for implementing it. Policy evaluation allows a review of the impact of the policy which can be used to modify the programme design if the external environment has changed or if it proves to be ineffective.

The framework for policy evaluation used in the United Kingdom was first set out by HM Treasury in *Policy Evaluation – A Guide for Managers* (HM Treasury, 1988).¹ The guide indicated that evaluation was part of a cycle that starts with appraisal; leads on through identification of options to decisions; and is then followed by implementation, monitoring and evaluation, back to reappraisal. Further guidance on appraisal and evaluation is also available in the revised version of HM Treasury's *Green Book – Appraisal and Evaluation in Central Government* (HM Treasury, 1997),² published in June 1997.

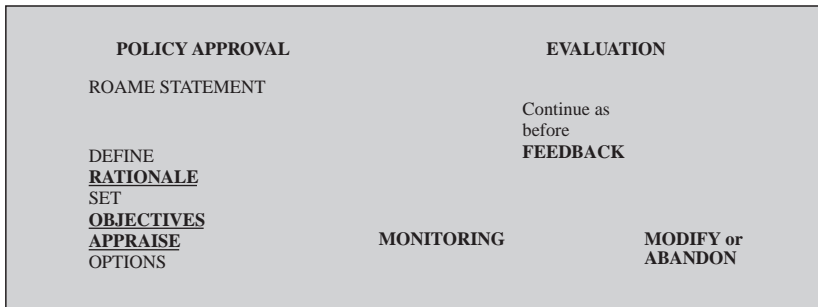
II. THE ROAME(F) STATEMENT

Government departments have developed the Treasury's general guidance for internal purposes and the Department for Trade and Industry (DTI) and Department for Education and Employment (DfEE) use ROAME and ROAME(F) statements. The ROAME(F) statement in effect describes the management cycle: establishing rationale, setting objectives, appraising options, monitoring the process, evaluating the outcome, and feeding back the lessons learned in the earlier stages of the measures:

- *rationale* makes a case for undertaking a particular activity;
- *objectives* reflect and make operational the aims of the measure;
- *appraisal* examines the options available for delivery of the outputs of the measure;
- *monitoring* is routine checking of progress against plan;
- *evaluation* reviews the outcome of the measures that have been undertaken;

The term “measure” is used here to encompass policies, programmes and projects. Figure 1 provides a graphical representation of the ROAME(F) framework indicating how the ROAME statement feeds into the other parts of the decision-making process involved in policy implementation. The ROAME(F) statement explains what a programme consists of, what it is seeking to achieve and the specific objectives against which its success should be measured. In addition, the ROAME(F) statement must explain why government assistance is necessary to achieve these objectives, and how the proposal fits into the overall template of government schemes. Annex 1 shows the procedures for programme evaluation undertaken within the Department of Trade and Industry.

Figure 1. The ROAME framework policy



III. RATIONALE

Within the public sector establishing a rationale will typically involve justifying an activity in terms of its expected impact on economic performance, or in terms of some other stated objective of government policy, or some combination of the two. A distinction is usually made between the two types of objectives when formulating a rationale for an activity, and account has to be taken of uncertainties about linkages between non-economic and economic objectives.

In the United Kingdom, establishing an economic rationale involves identifying good grounds for believing that an activity is likely to generate supply-side benefits which will enhance the sustainable level of real national income over time. For example, an activity might increase the efficiency of resource allocation in factor or product markets, ease a supply constraint, or promote a new technology with general applications.

The specific source(s) of market failure which prevent the private sector from achieving the benefits without government involvement have to be explained. This generally involves presenting some supporting analysis of the workings of the market in question, including specifying the available source of relevant empirical evidence. There are occasions where we can observe market failure directly, *e.g.* survey can reveal inadequate information or lack of a variety of products on offer. However, often, we can observe only the symptoms, *e.g.* polluted rivers (indicating externalities) or high prices and poor standards of service (indicating barriers to entry and exit).

Some of the sources of market failure include:

Public goods. Goods and services whose consumption by one firm or individual does not preclude their use by others. Thus, public goods are those which are non-rival in consumption and imperfectly excludable. These conditions give rise to “free rider” problems, and the market will produce an inefficiently low level of output.

Education and training programmes have public-good aspects. One response may be to attempt to make the good excludable, but exclusion may not be efficient if the marginal cost to additional users is negligible. A more effective solution is to facilitate collaboration – or provide an institutional mechanism for such collaboration. For instance consider the role of government in developing the aligned series of international trade documentation: the standard specifications involved are a “public good”, from which exclusion would be highly undesirable.

Imperfect market for information. In some markets information has the character of a public good, both in that giving information to additional users does not reduce the amount that others have, and in that the marginal cost of producing that information may be negligible. Technology diffusion programmes are an example of policy responses to this market failure. Market-place efficiency requires, *inter alia*, that the cost of access to market-related information and market transparency mechanisms should not exceed the marginal cost of provision, and that access to market-places and information sources is not hindered by institutional, legal or other barriers.

Information asymmetries and uncertainty. For an efficient market buyers need to know about the quality of the good or service, and the value of the benefit

it can provide to them. Sellers need to know the reliability of a buyer if purchase is by instalments, or by deferred payment. The difficulties of assigning risks due to information asymmetries may hamper the efficient working of the market-place. This can explain why it is difficult for small firms without a track record to obtain finance (capital-market failure), as the costs of appraising and monitoring an investment will be high in proportion to the size of the loan. This explains the emergence of the Small Firms Loan Guarantee Fund as a DTI programme.

Capital market inefficiencies. There may be a case for intervention if there is insufficient competition among finance providers so that they are able to earn excess returns on lower risk investments and so avoid higher risk projects. Insufficient competition among finance providers also reduces the incentives to acquire the information and expertise needed to appraise more unusual investment projects, such as those which use novel technologies. This may result in financiers avoiding such investments, or requiring inefficiently short pay-back periods. This provides a case for some R&D support programmes.

Externalities occur where the actions of an individual or firm confer benefits or costs on others without being able to reap corresponding rewards or compensation. Almost all economic activities generate externalities, so it is necessary to restrict the case for intervention to where specific, substantial externalities can be identified. Examples of externalities include training and technology spillovers, and environmental improvement programmes.

Inefficient market structures and barriers to entry. The level of competition in a market may be too low to lead to an efficient use of resources. The following factors can give rise to entry barriers: absolute cost advantages; economies of scale; and product differentiation. Absolute cost advantages can be permanent, e.g. where a firm or group of firms control access to a key input; or temporary, e.g. possession of a key patent or knowledge assets which can only be created through learning-by-doing. In addition, sunk costs, by acting as a barrier to exit can deter entry. This situation may well be exacerbated through strategic behaviour on the part of incumbent firms, e.g. by investing in excess capacity or through predatory pricing policies. Other examples of market inefficiencies include indivisibilities (where an activity cannot be carried out on a small scale) and missing markets (where a significant input or output cannot be traded). In general, situations where competition is inadequate are matters for the competition policy authorities, although there may sometimes be implications for other areas of policy towards industry.

Dynamic adjustment. Where market processes adjust too slowly then intervention may be justified. For example, reducing search costs by addressing information problems and/or activities designed to increase the supply of relevant entrepreneurial competencies in the economy, sector or region. This could be seen as a rationale for business support and export promotion activity; in

particular through the wider dissemination of best practice and measures to improve entrepreneurial/business skills.

It is clear from the above that a distinction is needed between static and dynamic analysis of market failure. Economic development is cumulative in nature. Uncertainty, imperfect information and the role of learning, together with barriers to entry and/or exit, also make it path dependent. The consideration of the dynamic nature of market failure is likely to be particularly important in the case of interventions related to science, technology and innovation. However, while dynamic market failure may justify support in some instances, *e.g.* encouraging firms to be early exploiters of new technologies, other forms of intervention may be difficult or futile, *e.g.* encouraging firms to be late entrants to markets where incumbents have already created entry barriers, and the correct policy response will depend upon the nature and level of the barrier in any particular case.

The above indicates that there are many areas in which justifications for government intervention can be made. *The difficult task is to make a convincing case that government actions can improve on the imperfect market outcome and to set objectives and indicators that can show whether or not this has been achieved.* It is only then that we can get an idea of whether government intervention has led to an improvement in economic performance.

IV. OBJECTIVES

Successful policy is facilitated by having clear objectives which relate directly to the economic rationale. There is often a hierarchy of objectives: *e.g.* the DfEE distinguishes between ultimate, intermediate and immediate objectives. The logical framework or project framework, which is employed by a number of bodies, including the Overseas Development Administration (ODA),³ utilises a 4x4 matrix (shown in Annex 2) in which the rows represent the levels of project objectives (the vertical logic) and the columns indicate how the achievement of these objectives can be verified. The matrix distinguishes between goals, purpose, outputs and inputs. Goals represent the ultimate reason for undertaking the project – the objectives of the programme or policy of which the project is part. The purpose is the immediate objective of the project – the motivation behind the production of the outputs. The outputs represent the specific results of the project, whilst the inputs are activities to be undertaken and resources available to produce outputs.

Objectives should not be vague statements, but clearly focused and measurable. They should allow the definition of a performance indicator that can be

monitored during the life of the programme. For example, an objective such as “*increase the use of laser technology*” is too vague to allow the definition of a performance indicator. It says nothing about whether firms who buy a new piece of machinery should achieve a productivity improvement by using it. Similarly it does not specify the target of the policy. Thus, a more reasonable objective would be “*to improve performance in firms of less than 200 employees without their own R&D capability by increasing the use of laser technology*”.

This objective is, in principle, measurable, and it refers to the target firms of the policy. It also allows a performance indicator to be defined. In this case, the indicator is the number of firms with less than 200 employees and without their own R&D capability, who have successfully improved their performance by using laser technology.

V. APPRAISAL

The appraisal is intended to determine which of a set of options will best achieve the stated objectives.

Appraisal should be thought of as a continuing process, and it may be necessary to revise or repeat the appraisal process as circumstances change, and as additional information becomes available. Nevertheless, a particularly important step in the appraisal process will occur before the signing of the contracts or the commitment of resources. The appraisal report is often combined with details of project financing and management to form a business plan. This allows a check that the options being put forward are consistent with existing UK and international regulations concerning the behaviour of government departments, agencies and non-departmental public bodies.

The techniques of appraisal in common use include, in descending order of generality:

Cost-benefit analysis attempts to quantify in money terms as many of the costs and benefits of a measure as possible. This includes the valuation of non-marketed impacts, for example in cases involving transport accident risks, or impacts on people’s time and, sometimes, environmental impacts. The analysis entails the comparison of alternative cost and benefit streams over time, together with judgements about the comparative risks of alternative proposals.

Cost-effectiveness analysis: comparison of alternative cost streams, to produce a broadly similar set of public service outputs. The analysis can include consideration of the risks associated with any particular option.

Financial or commercial appraisal: often applied to public sector trading activities where benefits can be measured as receipts from sales and charges and costs represent payments for goods and service use as inputs.

Exchequer cost analysis: this involves the examination of the public expenditure costs and savings of each option.

For most schemes appraisals will, in principle, be wholly in terms of economic costs and benefits. On occasion it may be appropriate to appraise an issue on a number of levels, *e.g.* in terms of both economic and financial costs, allowing both to inform policy.

VI. MONITORING

The processes of monitoring and evaluation are used to assess a programme's performance, either concurrently or after the event. The balance between these two methods of assessing performance will depend on the characteristics of the scheme, although usually a combination is used.

The monitoring stage is the systematic collection of financial and management information during implementation. This is important for all schemes, both to provide ongoing information on the progress of schemes and to provide information on which to base *ex-post* evaluation. Regular monitoring information is particularly useful for schemes that are running for a fixed short period and where the effects are likely to be evident in the short term. Some schemes of this nature might be subject to "real-time evaluation" which implies more emphasis on regular monitoring information and a closer relationship between evaluators and programme managers.

Monitoring information should refer back to the scheme's stated objectives. There are two main types of monitoring. Those related to:

- *results:* check for the effect of policy in terms of the *outputs*, *i.e.* the effect of the policy on firms.
- *management:* examine the extent to which the policy is being carried out as planned referring to *input* objectives.

Monitoring differs from evaluation in that it does not address issues related to the validity of the rationale, additionality (see section on "Additionality" below) or wider effects of the scheme.

VII. EVALUATION

The term evaluation usually refers to an in-depth review of all policy activity over a period of years. It involves assessing the impact of a measure while it is in operation or after it has come to an end. The economy, efficiency and effectiveness of a measure have to be considered with the aim of learning lessons that can be applied to future measures. Evaluation reports are best assessed by an independent group of experts not directly involved in the project, and this is the purpose of the Evaluation Methodology Group within the DTI.

Evaluation work usually includes a survey of a sample of participants to ask what effect policies have had. In the industrial context quantitative data on improved sales, profits or employment can be collected. Information is also collected on the validity of the rationale including the state of the market where government has intervened. An evaluation will also include a search for any wider effects of policy. There are, in fact, several constituent parts to an evaluation and all should be covered.

Effectiveness

This part of an evaluation considers achievement of output objectives which, if correctly specified, indicate whether the policy lead to a better outcome as suggested by the rationale. Value for money is assessed in different ways, depending on whether the outputs can be economically quantified or not.

Ideally results will be quantifiable in terms of higher sales, profits and incomes. This allows a *value-added* approach to evaluation which will compare costs against benefits. Quantified information may have been forecast in appraisals or collected in the process of monitoring. However, the commercial effects of government policies take some time to feed through and a survey may be necessary after the event to gauge the effect on firms. In a value-added approach, the relevant costs are not just those to government but all costs associated with the change in activity that the policy has generated. These costs should include components, labour and capital equipment at their market prices. The timing of these flows should be adjusted to net present value using an agreed discount rate. There should also be some recognition of which transactions are real economic costs and which are transfers. Grants to firms are costs to government, but are transfers within the economy.

In practice, getting from achievement of objectives to a full quantification of value added is very difficult. Usually only direct government support to investment projects or to individual firms is a suitable candidate for a value-added approach. These projects are usually those which have been subject to full economic

appraisal, and evaluation is then a matter of re-visiting forecasts to see if they have been fulfilled.

Often the policy goals are long-term and cannot be quantified easily at the time of evaluation due to long lags in commercial effects. The effectiveness of these policies is assessed using cost-effectiveness analysis. In this approach, an evaluation will measure the increase in the desired objective (*e.g.* R&D or training expenditure) per £ of government money spent. This form of evaluation does not test the validity of the policy objective, *i.e.* it assumes that R&D spending is in itself a “good thing”. Such an approach does not easily allow comparison between different policy areas.

Effectiveness



Effectiveness

Additionality



Would it have happened anyway?

Source: HM Treasury (1988), *Policy Evaluation: A Guide for Managers*.

Additionality

Additionality measures the amount of output from a policy as compared with what would have occurred without government intervention. In order to assess additionality it is necessary to construct a counter-factual which sets out what would have happened in the absence of the policy in question. This means that it is necessary to estimate the deadweight associated with the programme. *Dead-weight* refers to that part of the activity generated by a programme that would have occurred in the absence of the programme. At the DTI this is usually done by conducting a survey asking what the companies would have done if the policy had not been in existence.

In order to assess the extent of additionality it is also necessary to consider the extent of displacement generated by the project. *Displacement* refers to those outputs generated by a programme in one area that lead to a loss of the same output in another area. Related to this is the concept of *substitution* which refers to subsidised resource inputs (usually labour) taking the place of unsubsidised resource inputs (other labour). Any estimates of value added or cost effectiveness should be adjusted to take account of these factors.

In the United Kingdom, appraisal and evaluation are almost always done on the basis that resources used in a project could be used in a alternative economic activity either by direct re-allocation within a firm or by the indirect effect on the rest of the economy. The evaluation needs to show whether the government-sponsored outcome is superior to alternative uses of resources. However, even if achievement of objectives can be shown to be additional, there are a number of other considerations. For example, the firm receiving the grant might directly transfer labour and other resources from a different activity or from another region. In the case of government-supported R&D projects firms might have alternatively invested funds in equipment or training. Investment grants in one region may be at the expense of investment in another location (*e.g.* supermarket location).

Government-supported activity at one firm may discourage a competing firm from taking up the same activity. Thus, the resources used are indirectly re-allocated between the two firms. For example, grants to local tourism services operate in a fairly closed market. Grants to one firm are likely to directly affect local competitors. Alternatively, government support of R&D in large firms may discourage smaller firms from trying to enter the market.

Crowding out must also be considered if a value-added approach is adopted. Government-supported investments use up national labour and capital resources which could be used by other firms. Even if unemployment exists, government inflation targets mean that increases in demand in one area will usually need to be matched by cutbacks elsewhere, though the extent of this depends on local

labour market conditions. However, unless policies are directly designed to address local labour market problems, it is usually assumed that the national job creation effect of an individual project is zero; *i.e.* that crowding out plus displacement is 100 per cent.

Crowding out means that in the case of a value-added approach, any labour resources used in a project should be valued at market prices and that shadow prices adjusted for unemployment are inappropriate. It also explains why costs and benefits falling in different years should be discounted. To sum up, the crowding-out assumption implies that projects must be justified on the grounds of their effect on the supply side of the economy rather than their impact on aggregate demand.

Wider effects

The evaluation should also make an attempt to look at other wider effects of the policy. There may be positive side effects on other firms or individuals as a result of the government intervention which are additional to the achievement of the stated policy goal. For example, government support for best practice seminars may lead to the development of independent organisations that disperse information without government support. This type of policy sustainability would have long-term implications as well as the immediate effect on original participants. There may also be effects that did not appear in the stated rationale which may be more important than expected. For example, an R&D project may have its main benefit in the training it provides to scientists rather than in any resulting product or process.

Efficiency and programme management

The other aspect of an evaluation is concerned with the management of the programme. The Treasury and Civil Service Committee defined programme efficiency as "given the objectives and the means chosen to pursue the objectives, the minimising of inputs to the programme in relation to the outputs from it". An efficient programme achieves the highest possible level of output for a given quantity of inputs; or, alternatively, uses the lowest possible quantity of inputs to achieve a given level of output. Ideally, efficiency measures or indicators express the ratio of costs and benefits of each objective, and they enable managers to compare this with the achieved ratio in earlier years, with the planned ratio, and perhaps with the ratio which might be achievable by alternative policies. Efficiency measures can relate to both ultimate and intermediate objectives. This may cover areas such as whether the policy was implemented as intended. For example, did expenditure meet targets? Other areas for examination might include the

applications procedure, for example whether they were handled quickly and efficiently or if applicants were clear what the criteria were.

VIII. FEEDBACK

The final and most important stage of the evaluation process is the feedback. Evaluations will not always show favourable results, but they do allow corrective action to be taken when evaluations indicate failings in schemes. Publishing evaluation results may also serve to help to influence the attitudes of the public, and of interest groups, to raise the level of debate, and make it easier to achieve the government's objectives.

IX. SUMMARY

Following the management cycle described above allows a consistent view of policy implementation to be developed. The DTI has been able to use ROAME statements to ensure consistency in approach across varying policy areas. Evaluation can be used to ensure that the government obtains value for money in its programmes and that scarce government funds are targeted on those areas in which they can have maximum impact. Evaluation results can be used to inform decisions concerning what form the programme ought to take in the future and whether changes to the design of the scheme should be made.

NOTES

1. This paper was initially presented at the OECD Special Session on “Industrial Support in the OECD Area: The Future of Public Support”, Paris, 15 October 1996.
2. The Stationary Office before privatisation was known as HMSO.
3. ODA is now called the Department for International Development (DfID).

Annex 1

**PROCEDURES FOR PROGRAMME EVALUATION
IN THE DEPARTMENT OF TRADE AND INDUSTRY**

1. This note:
 - i)* sets out the respective roles of the Evaluation and Policy Improvement Committee (EPIC), the Evaluation Methodology Group (EMG), and programme budget-holders and Individual Programme Committees (IPCs);
 - ii)* defines the membership of EPIC and EMG; and
 - iii)* outlines the process that should be followed for each evaluation.

EPIC

2. EPIC:
 - issues guidelines for the conduct of evaluation in DTI;
 - agrees an annual work programme, for approval by Ministers;
 - monitors progress under the work programme;
 - considers evaluation reports when this is judged necessary by the chairman, because of their importance of wider policy implications;
 - receives annual reports on the outcome of continuous monitoring and evaluation;
 - checks that agreed evaluation recommendations are acted on by budget-holders.
3. EPIC meets at least annually to discuss the work programme. Otherwise it normally conducts its business by correspondence, except when the chairman considers a meeting is necessary to take a particular evaluation report. The secretariat provides a quarterly report on progress to the chairman, who seeks explanations for any delays in agreed evaluations.
4. EPIC is chaired by the Director, Finance and Resource Management (FRM). Its members are the Chief Economic Advisor; the chairman of EMG; the Director, Programme Finance; all Directors responsible for evaluation; representatives from Competitiveness Unit (CU) and the Industry Command; and main budget-holders or their representatives. Programme managers are invited to attend when their own programmes are under discussion.

EMG

5. EMG

- agrees proposals prepared by the evaluator for the conduct and methodology of individual evaluations, usually shortly before the start of an evaluation;
- supervises the conduct of evaluations;
- considers draft evaluation reports;
- refers completed evaluations to budget-holders for action, with a summary of conclusions and recommendations and any appropriate comments on the evaluation, copied to the chairman of EPIC;
- where necessary invites the chairman of EPIC to consider the results of evaluations and to arrange a meeting of EPIC to discuss them;
- considers issues arising from continuous monitoring, if so requested by the evaluator responsible (see paragraph 16 below).

6. EMG meets frequently, whenever evaluation business requires. Where appropriate it carries out its work through *ad hoc* steering groups established to supervise individual evaluations.

7. EMG is chaired by the Director Economics (Wider Issues). Its core members are the Directors responsible for evaluation and the Director, Programme Finance or his representative. All evaluators are welcome to attend. The CU also receives papers and may attend if it wishes. Programme managers are invited to attend when their own programme is under discussion.

8. The secretariat for both EPIC and EMG is provided by the ES Directorate.

Programme budget-holders

9. Programme budget-holders:

- agree evaluation proposals as part of ROAME statements;
- when approving ROAME statements, identify any issues concerning monitoring or evaluation which may require consideration by EMG before evaluation starts;
- provide funds for evaluation consultancy from their budgets;
- receive reports on evaluations from EMG or EPIC;
- are responsible for acting on evaluations and reporting to the chairman of EPIC on their decisions within three months.

10. Budget-holders should act with the advice of the relevant IPC or equivalent committee. If, exceptionally, there is no relevant committee for the programme in question, budget-holders should consult the relevant evaluation Director and FRM at all stages of the evaluation process.

Evaluation process

11. The evaluation process starts *before the programme has been approved*. The prospective programme manager should involve the responsible evaluator, and the relevant economic adviser if different, in consideration of the rationale, objectives, monitoring and evaluation proposals which are to be put to the budget-holder for approval in the ROAME statement.

12. For programmes over £2 million the evaluation proposals should normally be set out concisely under the following headings: purpose; key issues; methodology; timing; resources. The section on timing should include advice on whether a detailed evaluation plan, or aspects of it, needs to be prepared immediately for consideration by EMG or whether this can be done later in the programme. For smaller programmes, where a full *post hoc* evaluation may not be justified, a more summary approach can be adopted unless there are reasons why a fuller statement would be desirable. In all cases the respective roles, if any, of continuous and *post hoc* evaluation will normally take place. ROAMEs which do not include these points should be rejected by the relevant IPC Secretariat.

13. Once a programme has been approved, the relevant evaluation Director is responsible for putting proposals to EPIC for its inclusion in the work programme. This should normally be done as part of the annual review of the work programme, but can be done at any time during the year if work needs to start immediately (*e.g.* if baseline surveys need to be conducted or for a real-time evaluation). The evaluation Director should first obtain the budget-holder's agreement to the provision of any necessary funds for consultancy. If there is any disagreement on that score, the chairman of EPIC will seek to resolve it with the budget-holder.

14. Before an agreed evaluation begins a document setting out detailed proposals for the conduct and methodology of the evaluation must be prepared by the evaluator and agreed by EMG. The draft report on each evaluation is considered by EMG. Once EMG is satisfied that an evaluation has been completed satisfactorily it sends the report to the budget-holder, copied to the chairman of EPIC, for action. If appropriate, EMG may first invite the chairman of EPIC to consider the implications of a report and convene a meeting of EPIC to discuss it.

15. The budget-holder decides what action to take on the evaluation, and reports back to the chairman of EPIC within three months. The budget-holder puts a submission (cleared with FRM) to Ministers informing them of the outcome of the evaluation, seeking their approval for any resulting policy decisions, and seeking agreement that the report should be published (or not, if there are special arguments against publication).

16. In the case of continuous monitoring and evaluation, regular information is reported to the budget-holder (where there is one, to the IPC or its equivalent). If this information gives rise to particular issue requiring wider consideration – for example, if there is disagreement as to what action to take in the light of findings, or if the findings are relevant to other programmes – the evaluator should put a paper to EMG, and the various stages set out above for *post hoc* evaluations should be followed. A summary of progress on continuous monitoring and evaluation is reported annually to EPIC.

Annex 2

THE LOGICAL FRAMEWORK OR PROJECT FRAMEWORK

Input or output	Indicators of achievement and value	How indicators can be quantified or assessed	Assumptions, risks and conditions
Contribution to sector or national objectives	How measured?	Sources of information?	External conditions needed for immediate objectives to contribute to sector or national objectives?
Contribution to immediate objectives	How measured?	Sources of information?	External factors which may restrict progress from outputs to achievement of immediate objectives?
Outputs	Physical measures of kind, quantity and when.	Sources of information?	External factors necessary for planned outputs to be delivered to schedule?
Inputs	What materials, personnel, training, etc., at what cost, over what period, provided by whom?	Sources of information?	Decisions/actions outside the control of ODA necessary for inception of the project.

Source: HM Treasury (1997), *Green Book*, June.

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DOWN-sizing SUBSIDIES: THE FINNISH EXAMPLE

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I. INTRODUCTION

This article attempts to describe the efforts of the Finnish government over the past few years to curb and refocus industrial subsidies. The description emphasizes the process, and does not provide details on national policy or accurate statistics. The process consisted of several parts: analytical research and planning, public political discussion, the new emphasis of industrial policy, shaping the political decisions and implementation of such policies. These components are not independent of each other; on the contrary, they are deeply interrelated. In practice, they take place simultaneously, to a large extent, and do not follow each other in distinct temporal stages, although, in an imperfect written presentation they have to be treated in an approximate sequence. Moreover, the process is not independent of other developments in the economy and political arena and there may be other essential factors that have not been taken into account here. However, a certain process and period can be outlined. Of course, there is continuity in both the factors that triggered off the developments and their consequences. In addition, the reform process described here has not achieved all the targets set and has not yet reached its conclusion.

II. FINNISH AID POLICY

Over the years, various means of support to industry have been widely applied in Finnish industrial policy, based, in general, on widespread regulation and a sheltered domestic sector. However, scant state finances limited their expansion, and aid to industry remained fairly modest until the end of the 1980s. At that time, the share of industrial support in GDP started to grow and, at a rough estimate,¹ almost doubled during the first half of the 1990s.

An international comparison leads to similar results. According to EFTA reports, Finland had fairly moderate levels of support during the 1980s, but in 1988 support levels increased above the EFTA average. A comparison of the Finnish and average OECD manufacturing support rates shows parallel developments.

It should be noted that these figures were affected by the exceptionally deep recession of 1991-93, which, in addition to the impact on support policies

Figure 1. **Financial support related to value added in manufacturing and services**

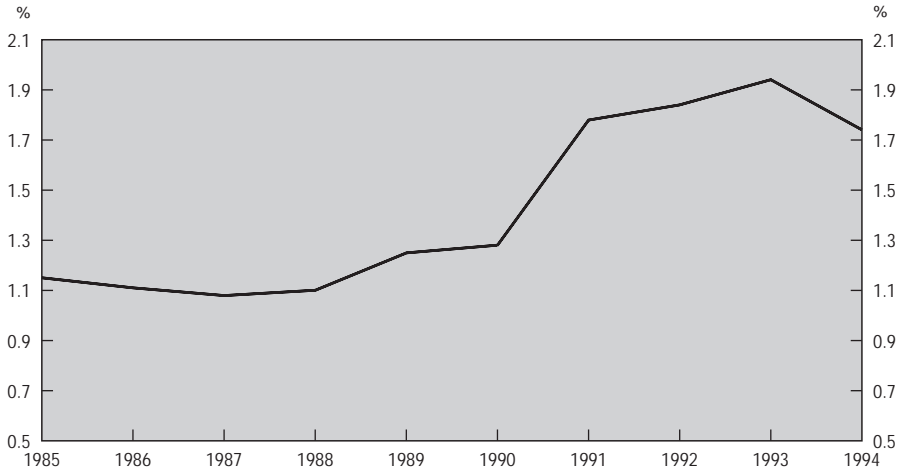
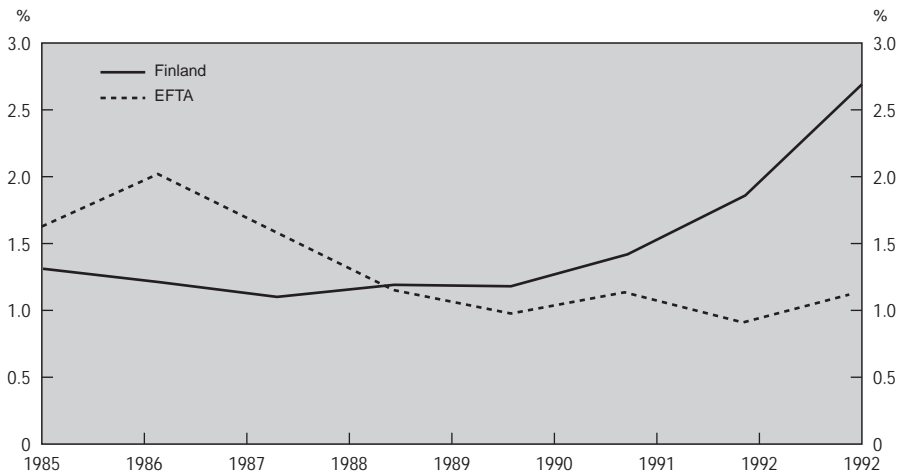


Figure 2. **State aid as a percentage of value added in industry in Finland and in EFTA countries, 1985-92**



described above, also caused the rate to rise. GDP at fixed prices contracted by as much as 11.4 per cent from 1990 to 1993 and did not reach its 1990 level again until 1996.

III. THE NEW EMPHASIS OF INDUSTRIAL POLICY

The Finnish economy remained relatively closed until the end of the 1980s, relying largely on one strong open sector (the pulp and paper industries, and woodworking). Industrial policy relied to a great extent on regulation and sectoral policies. With the development of the economy and economic policy, a new framework for industrial policy had to be found.

The *National Industrial Strategy*, published in 1993, was the first declaration to explicitly express the new way of thinking of Finnish policy makers. This milestone in the reform of industrial policy ratified the separation from traditional policy and pledged the government to horizontal policies aiming to create favourable conditions for business.

The *New Outlook on Industrial Policies*, published in 1996, continued and expanded that debate. Whereas the earlier paper had stressed the need to change the focus of Finnish industrial policy from a “raw-material-driven” approach to a “knowledge-driven” one, this report emphasized the requirement for a shift from “input-driven” policy to “efficiency-driven growth”. This was considered essential in order to maintain competitiveness and to adjust to changes in technology and the global market.

Later in 1996, the government presented to Parliament a *White Paper on Industrial Policy*, an attempt to respond to the challenges brought about by ongoing structural change. Among other things, the White Paper stresses the central position of “re-engineered” services, and proposes placing the services sector on an equal footing with industry.

The Finnish industrial policy strategy is to achieve international competitiveness of firms by promoting efficiency in the national economy through horizontal policies. This efficiency-driven growth strategy aims to reduce market failures such as insufficient competition, inefficient functioning of capital markets and insufficient investment in research, development and education.

IV. ANALYSIS AND PUBLIC DISCUSSION OF AID POLICY

At the beginning of the 1990s state aid was becoming a national issue: weakening state finances, the emerging impact of competition policy, structural policies and the various ideas on industrial policy that had been evolving over the years – all requiring new analysis and an outright reform of aid policy. In addition, Finland's accession, first to the EEA in 1994 and then to the European Union in 1995, brought a new point of view that accelerated national developments.

Particular credit should be given to the work of EFTA in identifying the aid programmes and their cost.² This enabled an international comparison with relatively similar economies and broadened the viewpoint of national policy makers.

A number of research papers were written and a multitude of aid programmes were identified. Methods for measuring expenditures and the resulting figures were implemented. This created the setting necessary for the administrative and political evaluation of support measures. Gradually the analysis took on a more policy-oriented approach. The resulting reports had varying points of departure, depending on the body responsible for the analysis:

- The 1992 Ministry of Finance memorandum, "Balancing Public Finances", aimed, as its name suggests, at achieving savings in the state budget. It dealt with all sectors of the budget, but business subsidies were one of the most explicit targets.
- The 1993 MTI memorandum, "Principles of Subsidising and Financing Industry", was based on structural thinking based on theories of economic growth. The concept of market failure was introduced into the discussion.
- In 1994 the Co-ordination Group on Administrative and Financial Systems in the Prime Minister's Office approached the issue from the point of view of an administrative co-ordination problem and dealt with welfare subsidies to families as well as support to industry.

Although the public discussion was lively, no major measures were taken. On the contrary, the volume of subsidies remained high. The chain of analysis and policy papers culminated in the report of a one-man task force, published at the beginning of 1995. This report reiterated the earlier papers, arguing through economic reasoning based on the modern economic paradigm for reforms of, curbs on and greater focus to support policies. It also presented a detailed reform programme for the MTI subsidy system, recommending the termination of a number of programmes and the merging of others. The report also stressed the effectiveness of the support programmes and proposed a shift in emphasis away from direct grants towards indirect instruments in order to allow the authorities to better control the success of the projects or subsidies.

The ideas put forward in the report were reflected in the programme declaration of the multi-party government in April 1995, and were subsequently confirmed in the Subsidy Act of 1997.

As to the issue of downsizing industrial aid, the reform report did not bring forward any new issues. Most of the targets had already been presented in the memorandum of 1992. The actual size of the cuts was left to political decision. The fresh contribution provided by this report was its coherent qualitative analysis. The main substance of the report can be summarised in the following points:

- aid policy should be an integral part of industrial policy;
- subsidies are often an ineffective and expensive means of policy;
- aid should be used only in the case of market failure – however, even in that case, government intervention should be undertaken only after other means had failed;
- positive externalities justify support to intangibles;
- the costs of aid programmes must be demonstrated accurately and transparently;
- programme effectiveness should be evaluated better and more regularly;
- most programmes preserve existing structures rather than helping to renew the structures;
- programmes should be of a limited duration;
- the national structure of programmes, instruments and organisations should be rearranged.

These principles have now been adopted as the guidelines for Finnish support policy.

V. SHAPING THE POLITICAL STAND

The issue of support policy, and industrial policy in general, was from the very beginning profoundly political in character. However, since it was important that the background of the issue be factual and non political, much of the documentation was produced by civil servants. The public discussion began to take shape – in addition to individual political statements, the media and various interest groups expressed their views on the subject.

The most important contributions were those of the business community and the trades unions. Both took a very critical stand against subsidising business, apparently for much the same reasons: they realised that the subsidies are financed out of the tax burden. Of course, the stress was rather different: businessmen were more worried about the distortion of competition, while the trades

Table 1. **Pre-election political declarations**

	Billion Mk		
	Kokoomus (Conservatives)	SDP (Social Democrats)	Keskusta (Centre Party)
Total cuts in state expenditure:	16..18	15..21	12
Cuts in subsidies	3.5	6..8	2
<i>of which:</i>			
– Agriculture	1.5	4..5	0
– Manufacturing and services	2	2..3	2

Source: Author.

unions made a comparison with the cuts in welfare expenditures. There were almost no voices raised to defend the subsidies, although the benefits of R&D support and the need for regional balancing were mentioned.

The public discussion on economic and industrial policy and state finances created a situation where the main political parties all declared their intention to curb state expenditure, particularly state aid. The declarations differed in many respects, but in terms of cuts in subsidies to manufacturing and service industries, they were all remarkably similar: a cut back of Mk 2 000 million was to be expected whatever the results of the election.

VI. THE COMMITMENT TO DOWNSIZING AND RENEWAL

After the elections, a multi-party government was formed, the parties with the greatest majority being the Social Democrats and the Conservatives. Other parties in the “Rainbow Coalition” were the Left-Wing Alliance, the Greens and the Swedish People’s Party. The downsizing of industrial subsidies was one of the central themes of the programme negotiations.

Excerpts from the government’s programme³ indicate that it adopted a modern industrial policy which is also the cornerstone for its position on support policies:

Industry and Business Policy

The Government will promote enterprises’ real competitiveness, based on innovations, skilled labour, quality of working life, high standards of

environment protection and concentration on research and development. Enterprises' price competitiveness will be secured by means of low inflation and employment-enhancing taxation.

The Government aims at a growing ratio of investment in research and development including the increased efforts of the private sector, in relation to the national product. Research will particularly focus on those areas of industry and service expertise which are at the beginning of their life cycles, such as energy, telecommunications and environment.

The government programme lays down consistently clear targets for down-sizing and renewal of industrial subsidies. The political promises made before the elections were fully applied in the action plan presented by the government.

The overall target for expenditure cuts in subsidies to trade and industry in the period 1996-99 was set at Mk 1.7 billion; a few months later it was raised by a further 0.2 billion to Mk 1.9 billion. The cut in subsidies to transport was set at Mk 0.7 billion, bringing the total target for subsidy cuts in the manufacturing and service industries in the four-year election period to Mk 2.6 billion.

It was decided that the cuts should be front-loaded; thus Mk 0.8 billion of trade and industry cuts were implemented in the 1996 budget, in addition to cuts in the supplementary budget for 1995. This approach ensured that the bulk of the objective has already been achieved.

Qualitative targets were set out in the government's programme as follows:

"The system of enterprise subsidies will be made clearer and subsidies will to a higher extent be paid out only against requital. Any subsidies distorting competition or overlapping with each other will be eliminated. A survey

Table 2. Effect of 1996 savings decisions on expenditure for 1997-99

	Billion Mk				
	1996	1997	1996	1999	1996-99
Development co-operation	0.2	0.2	0.2	0.2	0.8
Defence forces	0.1	0.2	0.1	0.1	0.5
Subsidies to transport	0.4	0.1	0.1	0.1	0.7
Subsidies to trade and industry	0.8	0.4	0.4	0.3	1.9
Basic amount of national pensions	–	0.4	0.4	0.4	1.2
Farmers' Pensions Act	0.15	0.15	0.15	0.15	0.6
Takings from slot machines and lotteries	0.2	0.2	0.2	0.2	0.8
Total	1.85	1.65	1.5	1.45	6.5

Source: Appendix of the Programme Declaration, as modified in August 1996.

will be made of the various forms of state financing for enterprises and of the division of tasks between the state organisations handling these matters. Any overlaps will be eliminated, and an efficient financing system will be developed to cover the enterprise sector's needs for special financing within the European Union. The co-ordination of subsidies in the industrial and services branches will be organised within the administrative sector of the Ministry of Trade and Industry."

Other parts of the programme provide instructions as to how the re-focusing of industrial support should be carried out.

The programme declaration builds on and converts into political doctrines the analytical work which culminated in the task force report. The Economic Policy Committee of the Cabinet committed the government to the reform and the principles of the report on 20 June 1995, in the very first months of the new government.

VII. IMPLEMENTATION: SUCCESSES AND DIFFICULTIES

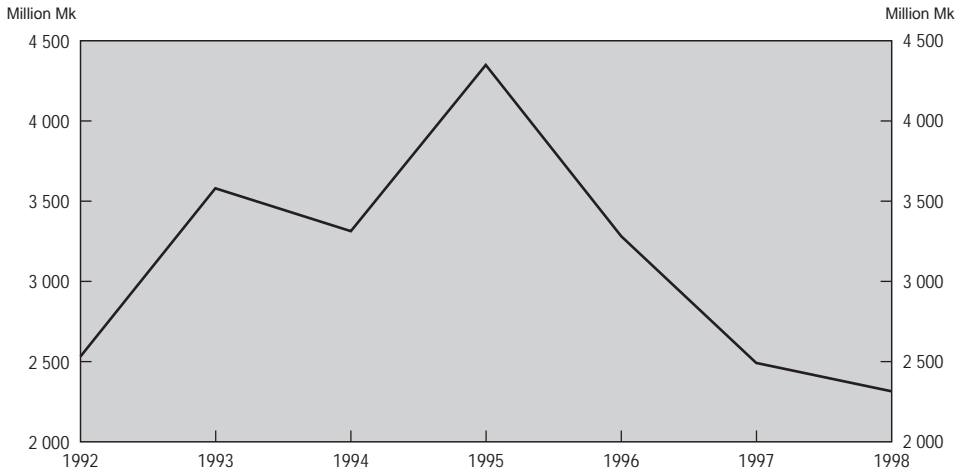
Developments in the administration branch of the Ministry of Trade and Industry (MTI), the major authority responsible for granting support to industry, indicate that the bulk of the downsizing programme has already been implemented. Ministry of Trade and Industry figures also portray well industry's part of the state support.

The downsizing programme has been very successful, particularly as there are some new support elements which did not exist when the programme was prepared, such as the new sectoral aid programmes such as investment aid to shipbuilding or the food industry to assist these sectors in adapting to EU markets. On the other hand, some developments took place that eased the cuts, such as the fall in export credit interest rates and favourable developments in guarantee claims.

As a result of the downsizing programme, on the one hand, and the rapid growth of GDP, on the other, the ratio of support has declined sharply. The OECD study on industrial subsidies in Finland presents similar results indicating the declining rate of manufacturing support.

The re-focusing of support is indicated by the sharp rise in R&D support: while the overall level of support is declining, appropriations to technology are on the increase. This development has been made possible in spite of budget

Figure 3. **Support appropriations in the administration branch of the Ministry of Trade and Industry¹**



1. The figures consist of budget appropriations because the net cost to government can be calculated only afterwards. In the Finnish budget system appropriations are cashbased and reflect not only the new decisions of the current budget year but also to a certain extent the cash payments of the commitments of earlier years. Currently, all budget support items must also indicate the figure showing the share of the new decisions, but this data is not available for all years of the time series.

constraints by earmarking part of the income from privatisation by the Decision of the Economic Policy Committee of the Cabinet in September 1996, that has been characterized as “the most important industrial policy decision the government has made”.⁴

Investment in technology, know-how and the information society is one of the main lines of Finnish industrial policy. Support to technology is mainly provided in forms other than grants to industry, but the implementation of the policy is not consistent if the trend does not show also in this respect. One of the detailed characteristics of the policy of increasing support to technology is that a larger share than was the case in the past should be directed – either directly or by encouraging the formation of networks – to small businesses, which encounter greater difficulties in financing R&D programmes than do larger corporations.

Figure 4. MTI appropriations as a percentage of value added in industry

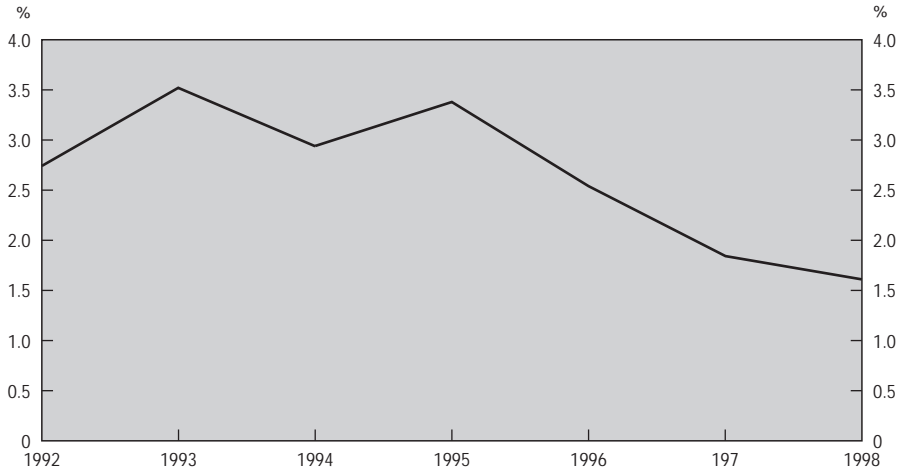
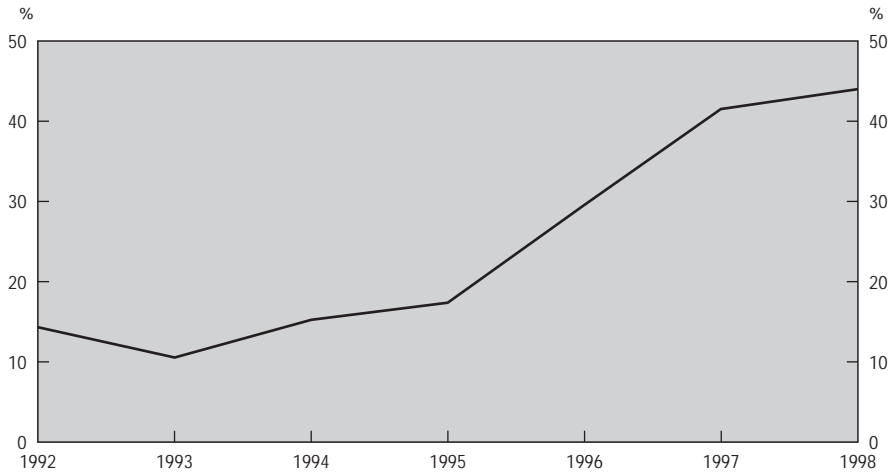


Figure 5. Share of R&D support in MTI appropriations



VIII. CONSOLIDATING THE RESULTS

Subsidies Act

At the end of 1996, the government introduced in Parliament a Bill for an Act on the general conditions for the provision of industrial subsidies (Act 786/1997). The Bill was passed by Parliament in summer 1997 and will enter into force on 1 January 1998. This Subsidies Act concerns all aid programmes aimed at enterprises, including soft financing but excluding tax provisions. However, it is possible to establish support programmes that do not conform to the Act, but only by means of an act passed by Parliament.

The Act stipulates that all programmes must be of limited duration, and makes the evaluation of their effectiveness obligatory. Taken together, these provisions mean that the whole support system is under continuous evaluation.

For the first time in Finnish legislation, and probably in any country's legislation, the Act explicitly introduces the concept of market failure. Support should be directed primarily to situations where market failure has occurred, specified as intangible development and the long-term enhancement of the competitiveness of SMEs.

A special body, the Advisory Committee on Business Subsidies, will assess all new support programmes and oversee the changes to be made to existing ones. This also gives effect to the co-ordination objective mentioned in the government programme.

Regional development and SMEs

At the beginning of September 1997, the regional offices of the Ministry of Trade and Industry, the Ministry of Labour, and the Ministry of Agriculture and Forestry were merged into 15 regional business service centres, to be known as "Employment and Economic Centres". They also house the regional agencies of the Technology Development Centre (Tekes), the Finnish Foreign Trade Association and the Finnish Guarantee Board. These new centres offer a "one-stop-shop" for SMEs, providing a wide range of training and support services.

The funding of subsidy programmes from European Structural Funds has had a significant influence on the regional support system. These funds have helped to finance the programmes and have brought new ideas into regional development, but, contrary to the co-ordination objectives, have also increased and complicated the administration of the schemes.

From subsidies to risk sharing

The most recent component of the reform of industrial support is the report of the Committee on special purpose state financing, dealing with state soft finance institutions. The most concrete proposal of the Committee is to merge the separate state institutions which grant loans to SMEs and export guarantees, and to consolidate the state-majority venture capital units. The report was welcomed by the business community, and the political reactions have been cautiously positive. The Committee did not interfere in the arrangement of the financing instruments, leaving this to be carried out in co-operation with the future combined body, but the line of thinking behind the proposals was quite clear: the state should intervene by offering financial services only when the market fails to do so. Finnish financial markets have developed rapidly and now require less patching up than in the past. Still, there are some services that call for intervention, including: long-term export risks, especially political ones; financing of start-ups; barely profitable financing of micro firms; and the underdevelopment of the venture capital and equity financing structures. The Finnish financial market is liquid (contrary to that of the state): rather than offering direct financing, state intervention might do better to share the risk of private finance providers.

IX. CONCLUSION

The Finnish case proves that significant reforms of industrial policy can be achieved – although this requires persistence and patience. Many and various processes are required: critical analysis, open discussion and co-operation between the administration and political organisations. Political discussion and the development of a political stand cannot be over-emphasized because eventually it is they that determine the whole process.

Significant of the process is the fact that it is not only quantitative, but also qualitative. When policy is striving towards efficiency while support allowances are decreasing, an across-the-board approach may actually be counterproductive, and focusing becomes even more crucial than in support policy in general. This is truly a situation where policy should achieve “more with less”. It may be painful to reject funding of many good projects, but the only consistent option is to set the focus of support policy in line with the focus of industrial and structural policy.

Positive achievements can lead to complacency. Although Finland has been successful in implementing a modern industrial policy, it is wise to be on guard

against setbacks. In the Finnish support system, operational subsidies to shipbuilding have been avoided until now, but the first grants to Finnish shipbuilding were awarded in 1996 as a reaction against subsidies provided in other countries.

In addition, intolerably high levels of unemployment and politically sensitive regional imbalances create local and political pressures to use whatever tools are available in an attempt to alleviate these serious and persistent problems. Even support to R&D, generally considered beneficial, has to be strictly controlled: the sharp increase in the cost of projects, together with strong demand, is challenging the capacity of the distribution mechanism.

The best way to avoid pitfalls is to continuously and critically evaluate the system of support and avoid systemic failure. Access to relevant and reliable information on the costs and benefits of industrial support is crucial to political decision making.

NOTES

1. Data are collected from several sources using variable definitions, thus the figures are not completely comparable between each other and with the PSI database; they should, however, be consistently parallel. Most of the national data are not broken down between the manufacturing and service industries. The MTI figures consist almost entirely of support to manufacturing industry.
2. The Decision of EFTA Council No. 10 of 1987 (EFTA/DC 10/87) required the Secretariat to present an Annual Report on State Aid in EFTA countries.
3. The text of the programme declaration is available at the Web address: <http://www.vn.fi/vn/english/index.htm>.
4. The government decided to increase public research financing by Mk 1.5 billion over the next 2.5 years, a 25 per cent increase in current funding. This, together with the private sector stake, will raise the national research input to 2.9 per cent of GDP by 1999.

PUBLIC SUPPORT TO INDUSTRIAL R&D EFFORTS

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This article was written by Udo Pretschker, Principal Administrator in the Industry Division of the OECD's Directorate for Science, Technology and Industry. The text was originally presented at the Conference of "Ethics for Science- and Engineering-based International Industries", held in Durham, North Carolina, 14-17 September 1997.

I. THE MISSION OF THE OECD CONCERNING PUBLIC SUPPORT TO INDUSTRIAL R&D

Pursuant to Article 1 of the OECD Convention, the OECD shall, *inter alia*, promote policies designed to:

- achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus contribute to the development of the world economy; and
- contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

Such a mission places the OECD in a good position to analyse and monitor public spending on business R&D from different angles. This article deals with the potential of public support to industrial R&D to distort competition and trade at the international level.

When the OECD launched the public support project more than ten years' ago, both the distortion of international trade in selected industries, and the negative effects of subsidies on structural adjustment were major concerns of OECD Ministers. Ministers, on several occasions, have reaffirmed the important role played by the Organisation in strengthening the multilateral trading system and the multilateral rules necessary for the proper functioning of a globalised economy. Recent communiqués of meetings of the Council at Ministerial level explicitly urged the OECD to continue its analysis of national support policies, to pursue its efforts towards increasing international transparency and discipline of industrial subsidies, and to tackle unfair business practices, including the combating of bribery and corruption in international business transactions.

II. BASIC FACTS AND FIGURES

Technological progress – the creation of new products or the adoption of more efficient methods of production – is the main source of economic growth and enhanced quality of life. Governments influence firms' capability and incentives to innovate, and the preconditions for technology diffusion, directly through a mix of financial support measures, and indirectly through the provision of a

macroeconomic environment and regulatory conditions under which technological progress can flourish. In the area of research and development and technological innovation, financial support schemes constitute the predominant type of governmental policies.

Gross domestic expenditure on research and experimental development (GERD), which covers all R&D carried out on national territory, consistently increased in the OECD area. Measured in purchasing power parities, expenditure which equalled US\$345 billion in 1990 rose to US\$410 billion in 1995. This overall development mirrors the steady growth of expenditure in in the main zones of OECD membership. Gross expenditure in 1995 represented a share of 2.16 per cent of GDP in OECD Member countries.

While the percentage of gross domestic expenditure on R&D financed by industry grew from 57.5 per cent in 1990 to 59.1 per cent in 1995, the share financed by government declined when the beginning and the end of this period are compared. However, an increase in public expenditure stands behind the respective shares of 37.8 per cent in 1990 and 34.5 per cent in 1995.

In spite of a deteriorating budgetary situation in almost all OECD Member countries in recent years, the OECD-wide level of public R&D support has grown since the late 1980s.

These figures clearly demonstrate the importance of public support to industrial R&D as a policy instrument.

III. THE MAIN CATEGORIES OF PUBLIC SUPPORT TO INDUSTRIAL R&D

Public support to industrial R&D efforts covers five main categories of measures:

- direct financing measures to support industrial R&D activities;
- support to intermediary R&D institutions serving industry;
- civilian and defence-related R&D contracts awarded to industry;
- contracts awarded by and procurement of space agencies; and
- defence-related R&D procurement.

The concept of public support goes far beyond the common understanding of subsidies. While the latter mainly focuses on direct financing measures – fiscal incentive schemes or expenditure programmes –, public support also encompasses support to intermediary R&D institutions and space agencies, R&D

Table 1. **Gross domestic expenditure on R&D**

GERD (million current PPP US dollars)

	1989	1990	1991	1992	1993	1994	1995
Australia	–	3 765.0	–	4 752.3	–	5 449.5	–
Austria	1 621.7	1 824.1 ^c	2 037.7 ^c	2 182.3 ^c	2 286.0	2 486.3 ^c	2 553.5 ^c
Belgium	2 567.3 ^a	–	2 853.1 ^c	–	3 130.4 ^p	–	–
Canada	6 708.8	7 486.6	7 882.7	8 400.2	9 104.5	9 638.4	10 010.0 ^e
Czech Republic ^e	–	–	1 901.4 ^t	1 574.3 ^t	1 176.5 ^t	1 138.9 ^t	1 127.6 ^a
Denmark	1 247.8	1 383.6	1 531.8	1 638.4	1 786.4	–	2 052.2 ^c
Finland	1 420.1	1 541.8 ^c	1 609.3	1 644.6 ^c	1 754.3	1 938.9	2 110.5 ^p
France	21 499.6	23 762.1	24 977.6	26 546.0	26 430.5	26 457.1	27 100.1
Germany	30 362.7	31 955.9 ^c	35 492.0 ^a	37 178.7 ^{a, c}	36 483.9	37 249.5	38 106.2 ^c
Greece	337.7 ^a	–	368.1	–	545.0	–	–
Hungary ^e	–	–	655.2 ^t	638.9 ^t	602.2 ^t	575.6	504.3
Iceland	42.7	43.7	53.8	64.3	66.3	71.8	85.6
Ireland	292.7	342.6 ^c	414.0 ^c	514.8 ^c	616.3 ^c	758.3 ^c	866.9 ^p
Italy	10 760.9	11 964.3	12 870.0	13 557.3	12 725.6	12 381.2	12 696.5 ^p
Japan ^t	59 362.8	66 965.3	71 102.6	74 493.5	74 382.2	75 078.0	81 976.8
Mexico	–	–	–	–	1 502.4 ^c	2 135.5	2 518.4 ^p
Netherlands	4 659.6	5 130.7 ^a	5 074.7	5 268.8	5 456.8	5 866.7 ^a	–
New Zealand	381.1	450.3 ^a	454.0	497.8	545.6	–	–
Norway	1 185.3	–	1 308.7	–	1 597.0	–	1 568.7 ^c
Poland ^p	–	–	–	–	–	1 578.9	1 565.3
Portugal	–	501.8	–	699.8	–	–	753.0
Spain	3 191.8	3 888.9	4 329.2	4 731.9 ^a	4 765.7	4 509.7 ^c	4 459.7 ^c
Sweden ^m	4 058.8	–	4 186.7	–	4 820.2 ^a	–	4 985.5 ^{c, e}
Switzerland	3 826.7 ^a	–	–	4 227.3	–	–	–
Turkey	–	855.6	1 455.5	1 471.5	1 465.2	1 154.8	1 333.6
United Kingdom	19 142.4	19 908.7	19 048.8	20 726.4	21 245.8	21 716.2	21 381.8
United States ^{a, j}	143 820.6	154 467.0	160 652.0 ^a	164 904.0	165 480.0	168 478.0	179 126.0 ^p

Table 1. **Gross domestic expenditure on R&D** (*cont.*)

GERD (million current PPP US dollars)

	1989	1990	1991	1992	1993	1994	1995
Total OECD^{b, j}	317 403.4	344 973.6	363 525.5^a	379 967.7	381 349.3	388 266.5	409 693.3^p
North America ⁱ	150 529.4	161 952.6	169 628.9 ^{a, b}	174 659.9 ^b	176 086.9	180 251.9	191 654.4 ^p
European Union ^b	101 568.6	109 449.3	115 389.6 ^a	122 698.9	122 764.0	124 789.0	127 498.8
Nordic countries	7 954.7	–	8 690.2	–	10 024.2 ^a	–	10 805.0 ^b

Notes to Tables 1, 2a and 2b:

- a) Break in series with previous year for which data is available.
- b) Secretariat estimate or projection based on national sources.
- c) National estimate or projection adjusted, if necessary, by the Secretariat to meet OECD norms.
- e) National results adjusted by the Secretariat to meet OECD norms.
- j) Excludes most or all capital expenditure.
- l) Overestimated or based on overestimated data.
- m) Underestimated or based on underestimated data.
- p) Provisional.
- s) Unrevised breakdown not adding to the revised total.
- t) Do not correspond exactly to the OECD recommendations.

Source: OECD, DSTI/EAS (MSTI database), April 1997.

Table 2a. **The financing of gross domestic expenditure on R&D**
 Percentage of GERD financed by industry

	1989	1990	1991	1992	1993	1994	1995
Australia	–	41.1	–	43.9	–	45.7	–
Austria	53.0	52.0 ^c	50.2 ^c	49.3 ^c	49.0	47.3 ^c	48.0 ^c
Belgium	63.9 ^a	–	64.8 ^c	–	62.7 ^p	–	–
Canada	42.0	41.5	41.3	–	44.8	–	46.7 ^p
Czech Republic	–	–	–	–	–	–	63.1
Denmark	46.8	49.3	51.4	50.7	50.0	–	–
Finland	62.2	–	56.3	–	56.6	–	–
France	43.9	43.5	42.5	46.6 ^a	47.0	48.7	–
Germany	63.3	63.4 ^c	61.7 ^a	61.6 ^{a, c}	61.4	60.9	60.9 ^c
Greece	19.4 ^a	–	21.7	–	20.2	–	–
Hungary ^s	–	70.1 ^l	56.0 ^l	52.5 ^l	53.1 ^l	38.0	43.0
Iceland	23.9	23.9	24.5	24.4	31.6	31.6	31.6
Ireland	55.4	59.1 ^c	60.6 ^c	64.3 ^c	61.7 ^c	67.9 ^c	67.4 ^p
Italy	46.4	43.7	47.8	51.5	48.2	48.0	48.7 ^p
Japan	72.3	73.1	72.7	71.1	68.2	68.2	67.1
Mexico	–	–	–	–	14.3 ^c	19.0	22.4 ^p
Netherlands	53.4	48.1 ^a	47.8	47.0	44.1	44.8 ^a	–
New Zealand	33.2	29.3 ^a	27.4	29.7	33.9	–	–
Norway	45.6	–	44.5	–	44.3	–	–
Poland	–	–	–	–	–	32.8	31.8
Portugal	–	27.0	–	20.2	–	–	18.9
Spain	47.8	47.4	48.1	43.7 ^a	41.0	40.3 ^c	–
Sweden	58.6 ^l	–	61.9 ^l	–	63.0 ^a	–	–
Switzerland	73.9 ^a	–	–	67.4	–	–	–
Turkey	–	27.4	28.5	33.8	31.8	33.0	30.8
United Kingdom	51.3	49.6	49.6	50.6	51.2	49.8	48.0
United States ^{e, j}	52.2	54.0	57.6 ^a	58.5	58.4	59.0	59.9 ^p
Total OECD^{b, j}	56.7	57.5	58.8^a	59.3	58.6	58.8	59.1^p
North America ^l	51.7	53.4 ^b	56.5 ^{a, b}	57.3 ^b	57.4	57.8 ^b	58.7 ^p
European Union ^b	53.3	52.3	52.2 ^a	53.4 ^a	52.8	52.9	–
Nordic countries	55.3	–	56.1	–	56.4 ^a	–	–

Note: See notes to Table 1.

Source: OECD, DSTI/EAS (MSTI database), April 1997.

Table 2b. The financing of gross domestic expenditure on R&D

Percentage of GERD financed by government

	1989 ^p	1990	1991	1992	1993	1994	1995
Australia	–	54.9	–	50.3	–	48.3	–
Austria	43.4	44.6 ^c	46.5 ^c	47.4 ^c	48.0	49.8 ^c	49.1 ^c
Belgium	32.0 ^a	–	31.3 ^c	–	32.5 ^p	–	–
Canada	44.1	44.3	43.7	–	40.1	–	37.7 ^p
Czech Republic ^m	–	–	–	–	–	–	32.3
Denmark	45.5	42.3	39.7	38.6	37.7	–	–
Finland	35.3	–	40.9	–	39.8	–	–
France	48.1	48.3	48.8	43.5 ^a	43.5	41.6	–
Germany	34.1	33.9 ^c	35.8 ^a	36.0 ^{a, c}	36.7	37.0	37.1 ^c
Greece	68.9 ^a	–	57.7	–	46.9	–	–
Hungary ^s	–	28.9 ^j	40.0 ^l	41.6	40.5 ^l	53.4	47.9
Iceland	65.8	65.8	69.7	69.8	62.9	62.9	62.9
Ireland	34.0	30.1	27.8 ^c	25.3 ^c	28.8 ^c	22.1 ^c	22.6 ^p
Italy	49.5	51.5	46.6	44.7	47.8	46.4	47.4 ^p
Japan	18.6	18.0	18.2	19.4	21.6	21.5	22.4 ^b
Mexico	–	–	–	–	73.4 ^c	63.6	53.4 ^p
Netherlands	41.8	48.3	48.6	48.9	48.5	43.8 ^a	–
New Zealand	64.7	60.3	61.8	59.1	54.8	–	–
Norway	50.8	–	49.5	–	49.1	–	–
Poland	–	–	–	–	–	64.0	64.4
Portugal	–	61.8	–	59.4	–	–	65.2
Spain	46.8	45.1	45.7	50.2 ^a	51.6	52.4 ^c	–
Sweden	38.1 ^m	–	34.0 ^m	–	31.5 ^a	–	–
Switzerland	23.2 ^a	–	–	28.4	–	–	–
Turkey	–	71.4	70.1	64.0	65.2	62.9	64.5
United Kingdom	35.7	35.5	35.0	34.3	33.4	33.5	33.3
United States ^e	45.6	43.8	38.7 ^{a, j}	37.7 ^j	37.7 ^l	36.9 ^j	36.1 ^{i, p}
Total OECD^b	38.8	37.8	35.7^{a, j}	35.1^j	35.5^l	34.9	34.5^{i, p}
North America	45.6	43.8	39.2 ^{a, b, j}	38.2 ^{b, j}	38.1 ^l	37.3 ^{b, j}	36.4 ^{i, p}
European Union ^b	40.4	40.9	40.9 ^a	39.6 ^a	40.0	39.2	–
Nordic countries	40.8	–	38.8	–	37.2 ^a	–	–

Note: See notes to Table 1.

Source: OECD, DSTI/EAS (MSTI database), April 1997.

contracts and R&D procurement which are all considered as indirect means of public support.

The emphasis of direct financing measures lies in the promotion of selected technologies. Other programmes support collective R&D efforts of firms, research co-operation between firms and research institutes or international R&D projects. Financial support for hiring R&D personnel or for temporary employment of R&D personnel from research institutes, and providing public funds for technology parks and the funding of R&D venture capital are the focus of programmes directed towards general R&D objectives. All these fiscal incentive schemes or expenditure programmes provide selective financial transfer payments to firms, groups of firms, or industries.

The supportive nature of indirect means of public R&D support, and the competitive advantages they add to beneficiaries are less visible and clear. The prices for services provided to industry by intermediary R&D institutions usually do not cover the costs they generate. In the case of R&D contracts, the rules governing the appropriation of intellectual property rights that result from such contractual research are often attributed to the contracting firm or shared with the public contractor. Defence equipment and defence R&D contracts can give supplying firms a competitive advantage in various ways. In particular, spillover effects of defence research and dual-use possibilities of equipment procured for defence purposes can strengthen the competitiveness of suppliers in technological, financial and commercial terms. The rules governing the contracting and the procurement of space agencies differ among Member countries. However, for all the member countries of the European Space Agency, the ESA statutes guarantee, at least in terms of overall return coefficients, that a sum equivalent to national contributions to its Scientific Programme will be contracted out to national manufacturers. Thus, the return coefficient is, in effect, an instrument for supporting national suppliers.

The difference between direct and indirect means may be summarised as follows. In the case of direct support the subsidy element inherent in a given programme or scheme is measurable. Formulae exist for the various grants, interest rate subsidies, loans, guarantees, equity capital infusions and tax concessions. Generally, direct support provides a financial transfer from a public budget to business without any equivalent. In case of R&D contracts, the activities of public R&D institutions and space agencies, and procurement, government expenditure yields an equivalent service or good, but, at the same time, these means may equally serve as instruments of R&D policies. A methodology for measuring the subsidy element for indirect financial support measures has not yet been developed.

IV. PUBLIC SUPPORT TO INDUSTRIAL R&D IN THE OECD AREA

Public support to R&D is a domain in which the financial flows from governments to industry increased in the period from 1989 to 1993. R&D contracts are the only category of support with a declining expenditure. The figures shown in Table 3 illustrate the strong weight of R&D contracts and R&D defence procurement expenditures in R&D support policies of OECD Member countries. While the figures for the indirect means of public R&D support are gross values, direct R&D support figures were measured in terms of the net cost to government which is one possible method of calculating the subsidy element. In terms of gross expenditure, direct support would have been considerably higher.

269 direct support programmes were reported under the policy objective of R&D and technological innovation net expenditure increased strongly between 1989 and 1992 from US\$6.4 billion to US\$10.0 billion but decreased to US\$8.7 billion in 1993, perhaps owing to reporting gaps. Almost 50 per cent of the net expenditure was spent on programmes using grants as financing instrument. The other big block are R&D tax concession schemes representing roughly 25 per cent of direct R&D support.

To the extent to which the expenditure can be traced to beneficiaries, the following observations can be deduced from the reporting by Member countries:

- As one would have expected, the flows that go to SMEs lie far below their representation in the business sector. A few national champions gather the lion's share of direct R&D support.
- Microelectronics/information technology, energy savings, space and aeronautics, and biotechnology clearly lead other technologies in terms of the programmes launched and the expenditure spent.

Table 3. **Direct and indirect support to manufacturing industry**

	Reported expenditure in billion US dollars					
	1989	1990	1991	1992	1993	Total 1989-93
Direct R&D support (269 programmes)	6.4	7.9	9.1	10.0	8.7	42.1
R&D contracts to manufacturing industry	19.3	17.8	17.5	16.7	17.2	88.5
Space agencies: contracts awarded by/ procurement of	4.9	5.9	5.6	6.5	6.4	29.3
Public support to intermediary R&D institutions	0.8	0.9	0.9	1	1	4.6
R&D defence procurement expenditures	28.9	30	28.4	29	29.5	145.8

- While only 4 per cent of the R&D programmes limit public support to national enterprises, the current status of foreign firm participation in technology programmes, and, more specifically, the funding of foreign firms participating in these programmes, reveals an enormous discrepancy between the *de jure* and the *de facto* approach. Non-domiciled foreign companies still receive a very modest funding. Only domiciled foreign companies may participate in R&D programmes on a basis almost equal to that of national enterprises.

More than 70 per cent of the reported R&D contracts are defence-related. Civilian R&D contracts focus on energy and information technology.

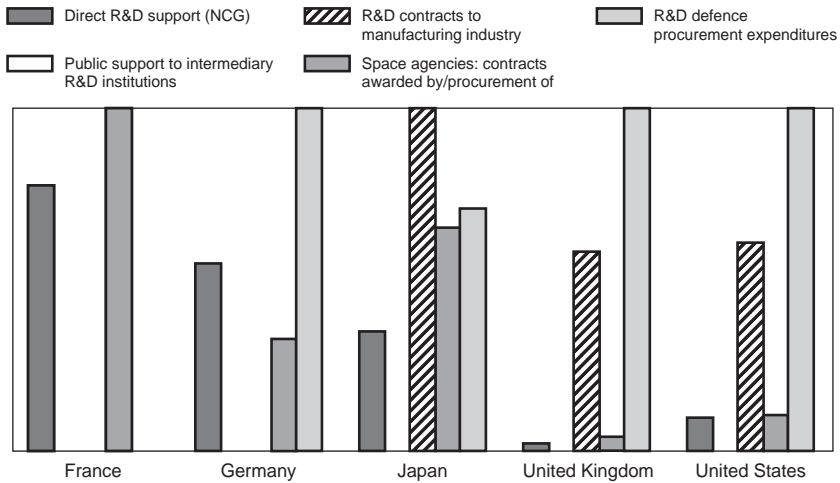
The services provided by intermediary R&D institutions cover a broad range of technological fields. In some countries, the R&D institutions cover all sectors; in others, several institutions specialise in technologies related to pulp and paper, fish -processing, computer science or wood research. All these services include testing, secondment of R&D staff to manufacturing enterprises, training, consulting, and R&D co-operation with firms. In many cases, intermediary R&D institutions restrict their services to domestically established firms.

In the area of defence-related R&D procurement aerospace, electronics and telecommunications account for the largest share of total expenditure.

The borderlines between the various categories of direct and indirect R&D support are fluid. Some countries use R&D contracts to promote selected technologies, while others prefer direct financing programmes, or have established intermediary R&D institutions specialised in a certain technology. They all may provide equivalent support to manufacturing industry by different means of support. The borderlines are even more opaque in the context of R&D defence procurement, military R&D contracts and direct support programmes benefiting the defence industry. This underlines the necessity of a coherent review of all these categories in order to better understand the role of governments in supporting industrial R&D activities.

At the same time, these differences in the policy approach explain to a large extent the existing differences in the structure of direct and indirect support to industrial R&D in OECD Member countries. Figure 1 shows how much the relative importance of direct and indirect support instruments varies between the United States, Japan, Germany, France and the United Kingdom. In France, the emphasis is on support to space agencies, in Japan, on R&D contracts, and in Germany, the United Kingdom and the United States, on R&D defence procurement expenditures. Direct R&D support plays an important role only in France and Germany, and, to some extent, in Japan.

Figure 1. The structure of direct and indirect R&D support in selected OECD Member countries



V. THE INTERNATIONAL RULES OF THE GAME

In light of the international “subsidy race” in high-tech industries such as aircraft, space, computers and semi-conductors, policy efforts since the late 1980s were directed towards the strengthening of subsidy discipline in the multi-lateral trading system. The new WTO “Agreement on Subsidies and Countervailing Measures”, signed in Marrakech in 1994, imposed a stronger discipline for existing and future R&D support programmes. However, driven by the overriding economic justification for innovation and technology policies, which is the “market failure” argument, R&D subsidies were not generally forbidden, but instead classified in different categories according to their possible impact.

Firstly, the provisions of the agreement do not apply to public support to fundamental research activities conducted either by higher education or research establishments as long as such research is directed towards an enlargement of general scientific and technical knowledge not linked to industrial or commercial objectives.

In the case of industrial research, aiming at the generation of knowledge that may be useful in developing new products, processes or services or in bringing about a significant improvement in existing products and processes, public sup-

port programmes should not cover more than 75 per cent of the R&D activity. In case of pre-competitive development activities, this share may not exceed 50 per cent. Pre-competitive development activities are understood as the translation of industrial research results into a plan, blueprint or design for new, modified or improved products, processes or services including demonstration or pilot projects and prototypes. If duly notified, industrial research and pre-competitive development programmes that do not exceed the respective ceiling of public funding are in accordance with the WTO Agreement and thus immune from disciplinary action.

If subsidy programmes were to exceed the ceilings established for industrial and pre-competitive research they would be classified as actionable subsidies and, consequently, be exposed to disciplinary action. The remedy provided for in the Agreement is the withdrawal of the programme or the removal of the subsidy's adverse effects. Parties to a dispute could likewise agree on compensation by means of countervailing measures.

It appears that there are no trade-distorting side-effects of R&D support programmes implemented by OECD Member countries. OECD Member countries notified R&D programmes which were classified as non-actionable. Furthermore, none of these programmes were multilaterally challenged to qualify as an actionable programme.

As a reaction to the new provisions of the WTO Agreement some OECD Member countries and the Commission of the European Communities adapted the support intensity of existing technology programmes and changed the regulatory framework for providing R&D support. However, it is hard to conclude whether the international discipline is sufficient or whether the trade-distorting potential of R&D programmes is negligible.

VI. THE ECONOMIC RATIONALE FOR PUBLIC SUPPORT TO INDUSTRIAL R&D

The empirical evidence of high levels of government support to industrial R&D, the concentration of such funding on a few selected technologies, and, even more important, the fact that public R&D expenditure particularly benefits a few national champions in manufacturing industry, on the one hand, and the possible conclusion that existing R&D programmes of OECD Member countries operate according to the rules of the multilateral trading system, on the other, may merit further consideration. Obviously, these rules are an international compromise

which does not impose major restrictions for the design of national technology policies.

In the most evident case, where public support to industrial R&D obviously made a difference – the aircraft sector – trade ministers apparently capitulated to improve international discipline. In face of extremely complex support strategies based on a mix of national security and industrial policy objectives involving a broad variety of direct and indirect means of government assistance, they excluded the aircraft sector from the multilateral provisions of the WTO Subsidy Agreement. In information technologies, the intensity of public R&D support is much higher than for other technologies. However, in this area almost all OECD Member countries provide public support in one way or another, which makes it difficult to say whether public R&D support has distorted competition at the national and international levels.

From an economic point of view, R&D subsidies could be justified to the extent to which they cope with market failure. Markets may fail to operate efficiently for a variety of reasons (uncertainties, asymmetric information, economies of scale, indivisibilities, externalities in knowledge production). The result typically is a difference between social and private returns. If left alone, market forces generate too little private investment in R&D, causing a sub-optimal allocation of resources and a reduced potential for economic growth. By subsidising private R&D activities, governments can increase the willingness of firms to invest in research and development, lower the risk and raise the expected private return of such investment, thereby bringing the level of private R&D closer to what is socially desirable.

If we had evidence that a public support programme reduces the gap between the private and social return to R&D, it could be justified from an allocative perspective. If such a programme, in addition to its positive impact on the allocation of resources, were to generate social benefits which would outweigh or exceed the public funding involved, it could furthermore be justified from a distributive perspective as the R&D subsidy could be interpreted as a compensation for the social benefit generated. On this premise, discrimination, at the firm level, between recipients and non-recipients of R&D subsidies would not exist.

The measurement and methodological problems associated with the application of such a theoretical concept to the reality of public support to industrial R&D are obvious: in particular with respect to the time lag between the policy measure and the estimated impact on the R&D performance of the supported business. However, when designing new technology programmes or evaluating existing subsidies these considerations should be addressed. Governments need to know whether their technology programmes make a difference and deliver value for money; whether these programmes are implemented with the right tools; whether they are well administered; whether they are achieving the desired results and at

what cost. Some OECD governments have recently established procedures which require a formalised and obligatory statement on the rationale, objectives, appraisal, monitoring and evaluation of public support programmes before they are implemented. This is an important step towards “best practice” in technology policy, which will reveal a better design and delivery of programmes.

DEFINING SUBSIDIES FOR R&D AND INDUSTRIAL INNOVATION

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I. INTRODUCTION

Financial governmental interventions in support of industrial R&D and technological innovation are particularly complex. Their measurement is crucially dependant on the underlying definitions and concepts. At both the national and international level, figures are generated from a variety of such definitions and concepts. The interface between these definitions and concepts and the associated surveys is often not well known; neither is their common coverage. In the public domain, and, more specifically, in national and international policy discussions, the detachment of figures from their conceptual context remains a main source of misunderstanding and a barrier to improved transparency and comparability.

The OECD's project on Public Support to Industry, the WTO's Agreement on Subsidies and Countervailing Measures, and the *Frascati Manual* (OECD, 1994) on proposed standard practice for surveys of research and experimental development, have emerged as three widespread concepts for the measurement and reporting of financial public interventions in support of industrial R&D. Further relevant definitions are given in the OECD/Eurostat *Oslo Manual* (OECD/EUROSTAT, 1997) on measuring technological innovation. While the rationale behind each of these conceptual frameworks is different, spanning industrial policy considerations, the trade-distorting potential or the impact on innovation policy of financial support to industrial R&D efforts, they all have become international references for collecting and interpreting support data, subsidies, R&D and/or technological innovation data. Moreover, experts in the fields concerned have explicitly requested that the refining of international definitions, in particular of R&D subsidies, should build on the definitions and concepts developed by the OECD.

This article provides a short description of the OECD and GATT/WTO subsidy exercises and how they define and treat subsidies for R&D (and innovation), as well as some information on the relevant definitions in the *Frascati* and *Oslo Manuals* and on the data collected by OECD on government-financed industrial R&D.

II. THE ELEMENTS OF AN R&D SUBSIDY DEFINITION IN THE OECD'S "PUBLIC SUPPORT TO INDUSTRY" PROJECT

The purpose of the "Public Support to Industry" project

Member governments of the OECD have committed themselves to making their industrial support policies transparent, and information concerning them more internationally comparable, by the means of a reporting project.

During 1993, the Working Party of the OECD Industry Committee elaborated a new questionnaire on industrial subsidies. This questionnaire, which has been published as *Industrial Subsidies: A Reporting Manual* (OECD, 1995), is the outcome of collective efforts to develop new concepts and methodologies for reporting industrial support programmes according to agreed OECD-wide principles. It is an instrument permitting improved monitoring of industrial support practices based on harmonized definitions, methodological conventions and calculation schemes. On the basis of this questionnaire, information was collected from OECD countries and the Commission of the European Union for the period 1989-93.

General features of the Industry Committee's subsidy definition

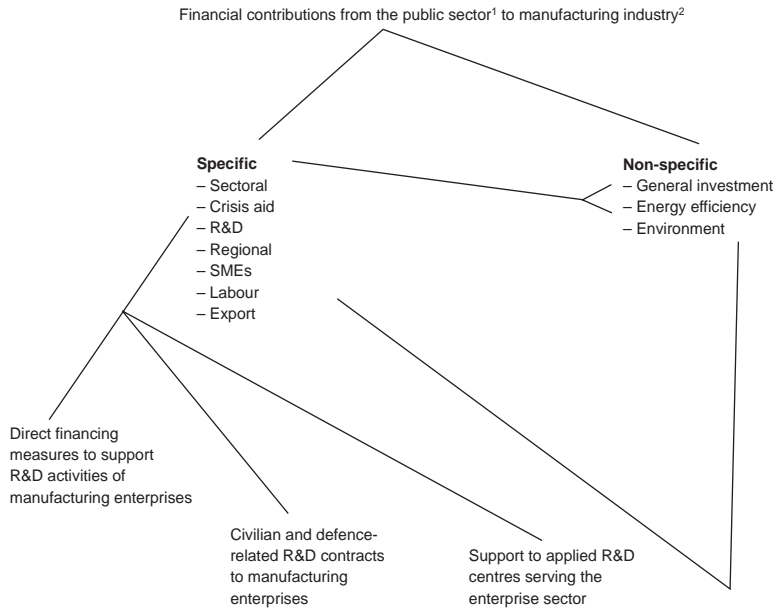
The "Public Support to Industry" project covers financial transactions between the public sector and manufacturing industry, with manufacturing referring to the activities covered in the International Standard Industrial Classification under category D, and including the areas of biotechnology and its relevant products. Support to software development and production is included to the extent that it is provided to manufacturing firms and/or is part of "systems" built around manufacturing products.

Reporting requirements apply to all direct support programmes and indirect measures of public support through public supply of R&D and technological services to manufacturing firms, R&D contracts and public procurement of manufactured goods, including military procurement.

The public sector generally is understood as central government and the layer immediately below the central level (sub-central). Support measures in favour of manufacturing industry managed through public or private intermediary institutions are also included.

A further criterion is specificity. Only those financial assistance measures that can be accessed by particular economic entities (firms, groups of firms, industries) are considered as direct support. An exemption is made for all programmes

Table 1. The OECD definition of direct support



1. Central government and the layer immediately below the central level and intermediary institutions.
2. ISIC category D + biotechnology + systems built around manufacturing.

supporting general or specialised investment. Here, even generally available measures have to be included.

Quantitative reporting requirements refer, first, to Gross Government Budget Expenditure figures, which measure the total amount of funds transferred to benefiting companies, and, second, to Net Cost to Government (NCG) figures, which measure the difference between the cost of funding a programme in any given year and the revenue generated for the public budget by the same programme.

Undoubtedly, the NCG figures provide the more interesting information, as for all direct support measures the support element of many particular practices is calculated relatively accurately. NCG figures, therefore, show whether or not and to what extent a subsidy element is inherent in a programme or measure, and

they also allow for the aggregation of programmes and measures using different financing instruments.

In some other areas (e.g. public procurement, R&D contracts, technology transfer centres), transparency may be increased at this stage mainly by describing the institutions and practices as rigorously as possible rather than calculating the subsidy element in them. Here, figures reported always refer to gross values.

The definition of public support in this project can be summarised as follows:

Specific direct and indirect financial support measures of central or sub-central governments in favour of manufacturing industry resulting in a net cost to government.

Support to R&D and technological innovation

Public support to R&D and industrial innovation is a prominent area of industrial policy which is evident in terms of public financial flows directed to manufacturing industry. These include a multitude of direct expenditure programmes and tax concessions, indirect means of support (R&D contracts, public R&D services, civil and military procurement) and an increasing number of “grey zone” measures built around the vague borderlines between “fundamental research” and “support to R&D and technological innovation”. A wide range of measures is covered here in order to foster transparency across the complete set of institutional arrangements and mix of support tools.

In principle, all government measures for supporting research and development and technological innovation in and for the manufacturing sector are covered. In consequence, reporting under the heading “support to R&D and technological innovation” is more diversified than under the others. The reporting on public support to industrial R&D covers five main categories of measures:

- direct financing measures to support R&D activities of manufacturing enterprises;
- civilian and defence-related R&D contracts granted to manufacturing enterprises;
- support to applied R&D centres serving the enterprise sector;
- contracts awarded by and procurement of space agencies; and
- defence-related R&D procurement.

Direct financing programmes can resort to the set of direct financing instruments (including tax concessions) identified in the project. They can be conducted by central and sub-central governments, intermediary institutions or any combination of these. Support to R&D carried out in the framework of consortia should also be reported whenever they include one or several manufacturing firms. R&D

support programmes with explicit sectoral objectives or clearly delineated sectoral impacts (*i.e.* support to the design of a particular type of industrial equipment produced in a specific sector) should be reported with their primary policy objective being “sectoral policies” and with “R&D support” as their secondary policy objective. All such direct financing projects should be reported on an individual programme basis using the Standard Reporting Format of questions common to the project (see Table 2).

Civilian and defence-related R&D contracts granted to manufacturing enterprises should be reported using the format appropriate for this type of instrument (see Complementary Reporting Format II, Part A, in Annex 1). Only R&D contracts are included here. In the case of information originating from organisations or agencies (if any) which undertake different types of R&D, some separating of data may be required.

Intermediary R&D institutions are defined as organisations “in which the main purpose is to make equipment, research personnel or research results available to manufacturing enterprises by the means of direct co-operation or transactions with manufacturing firms”. Be they autonomous or established within the basic or university research system, such organisations are relevant to this project when they reduce R&D costs which would otherwise have to be borne by the enterprises themselves by supplying R&D resources (equipment and personnel) and research results (technologies and patents) available to manufacturing firms at prices below economic costs. This occurs when such institutions are partly or entirely financed by public sources such as central or sub-central governments or other intermediary institutions. A specialised Complementary Reporting Format has been developed to take account of the need to report more extensive information on the larger organisations and more aggregated information on smaller units (see Complementary Reporting Format II, Part B, in Annex 1).

For reasons of transparency, and as a result of the “peer review” procedure which was implemented to collectively review the information reported, contracts awarded by and procurement of space agencies were grouped as a separate category of indirect R&D support. Thus, contributions to national and international space programmes or R&D contracts which were awarded to the space industry, were included here.

Question 4 in the Complementary Reporting Format III deals with defence procurement data (Annex 2). Here, information on the sectors that are the main suppliers and beneficiaries of R&D expenditures should be reported. The percentage of foreign-sourced R&D expenditures is also expected to be reported.

Table 2. **Content of information in the database**

TABLE-A

Country name: xxxxxxxx	Programme code: xxxxxxxx	A – MANAGING STRUCTURE				
Name of programme	: Title of the programme	1. Central				
Ministry/Agency	: Ministry/Agency in charge	2. Local				
Managing structure (A)	: Status of managing authority: (7 options)	3. Regional				
Legal basis	: Information on legal basis (Act of Parliament, date, etc.) of scheme	4. Joint central/sub-central				
Costs covered	: Company activities being supported and details on leverage rates (cost-sharing percentages) and ceilings applicable for such support	5. Private institution				
Advantage offered	: Benefits offered and quantitative data on subsidisation rates	6. Public institution				
Statutory entitlement	: Criteria applied for potential population of beneficiary enterprises	7. Public/private institution				
Actual beneficiaries (optional)	: Summary data on numbers of firms participating in the scheme	B, C – POLICY OBJECTIVE				
Market conditions	: Availability and cost of equivalent financing and services from the private sector	1. Sectoral				
Taxability of benefits	: Are benefits received under this programme subject to corporate taxes and at which rate?	2. Crisis aid				
Special features for SMEs:	Does this programme offer any special arrangements for SMEs?	3. R&D and technological innovation				
Policy Objective	B: 10 options	4. Regional				
2nd Policy Objective	C: 10 options	5. Investment				
Instrument	D: 9 options	6. SMEs				
		7. Labour				
		8. Export				
		9. Energy				
		10. Environment				
		D – INSTRUMENT				
		1. Regular grant (G)				
		2. Reimbursable grant (G)				
		3. Interest rate subsidy (G)				
		4. Regular loan (G)				
		5. Conditional loan (G)				
		6. Guarantee (G)				
		7. Equity capital (G)				
		8. Tax concession (G)				
		9. Mixed (G)				
		E – COSTS SUBSIDISED				
		1. Production				
		2. Investment				
		3. Specialised investment				
		4. Transportation				
		5. R&D				
		6. Non-profit institution				
		H – DATA				
		1. Expenditure figures				
		2. Blank = not available				
		3. "pn" not implemented				
		I – NATIONAL TREATMENT				
		1. All domestic				
		2. National only				
		3. World-wide				
		J – INDICATOR				
		1. GGBE				
		2. NCG				
		3. GII (as applicable) ¹				
		4. IIE (as applicable) ²				
		5. (see formats for additional underlying data requested)				
Instrument	Indicator	1989	1990	1991	1992	1993
D	GGBE (J)	H	H	H	H	H
	NCG					
	GII					
	IIE					

1. Government financing of intermediary institutions.

2. Flows from intermediary institutions to beneficiary enterprises.

Source: OECD, Standard Reporting Format, "Public Support to Industry" project.

III. THE DEFINITION OF R&D SUBSIDIES IN THE NEW WTO AGREEMENT

General criteria

The general definition of a subsidy in the new WTO “Agreement on Subsidies and Countervailing Measures” relies on three alternative elements:

- a financial contribution by a public body;
- an income support; or
- a price support.

Subsidies are then distinguished as “specific” or “non-specific” subsidies. The former refer to those targeted measures available only to an enterprise or industry, or group of enterprises or industries, within the jurisdiction of the GATT Member granting the subsidy. “Non-specific” subsidies are those which are in effect generally available to all economic entities in a country. Only specific subsidies are subject to the disciplines set out in the Agreement.

Following the former Tokyo Round “traffic light” approach, specific subsidies are classified in different categories according to their possible impact on trade.

Prohibited subsidies are those contingent on export performance or on the use of domestic over imported goods. If a subsidy is found to fall in the prohibited category, the remedy provided for is its immediate withdrawal. If this is not done within the specified time period, the Dispute Settlement Body will authorise counter measures.

Actionable subsidies are those that cause adverse affects to the interests of other countries by injuring their domestic industry, nullifying or impairing their benefits under the WTO, or causing them serious prejudice. Relating to R&D subsidies, serious prejudice may arise when the effect of the subsidy is a significant undercutting by the subsidised products as compared with the price of foreign competitors, including when the total *ad valorem* subsidisation of a product exceeds 5 per cent, or, in the case of primary products, when the effect of the subsidy is to increase the world market share of the subsidising country. If a subsidy is found to fall in the actionable category, the remedy provided for is the withdrawal of the subsidy or the removal of its adverse effects. Parties to the dispute may also agree on compensation

Non-actionable subsidies are specific subsidies involving assistance to industrial research and pre-competitive development activity, assistance to disadvantaged regions, or certain type of assistance for adapting existing facilities to new environmental requirements imposed by law and/or regulations. As is the case for all specific subsidies, non-actionable subsidies are to be notified, but under more stringent procedures. In particular, a notification in advance of the

implementation of the programme is required, thus allowing for the evaluation of the consistency of the programme with the criteria and conditions for non-actionability. Non-actionable subsidies, if duly notified, are immune from disciplinary action.

The provisions relating to non-actionable subsidies may also be applied to non-specific subsidies.

Where a GATT Member believes that an otherwise non-actionable subsidy is resulting in serious adverse effects to a domestic industry, it may seek a determination and recommendation on the matter.

Specific provisions for subsidies in the area of R&D

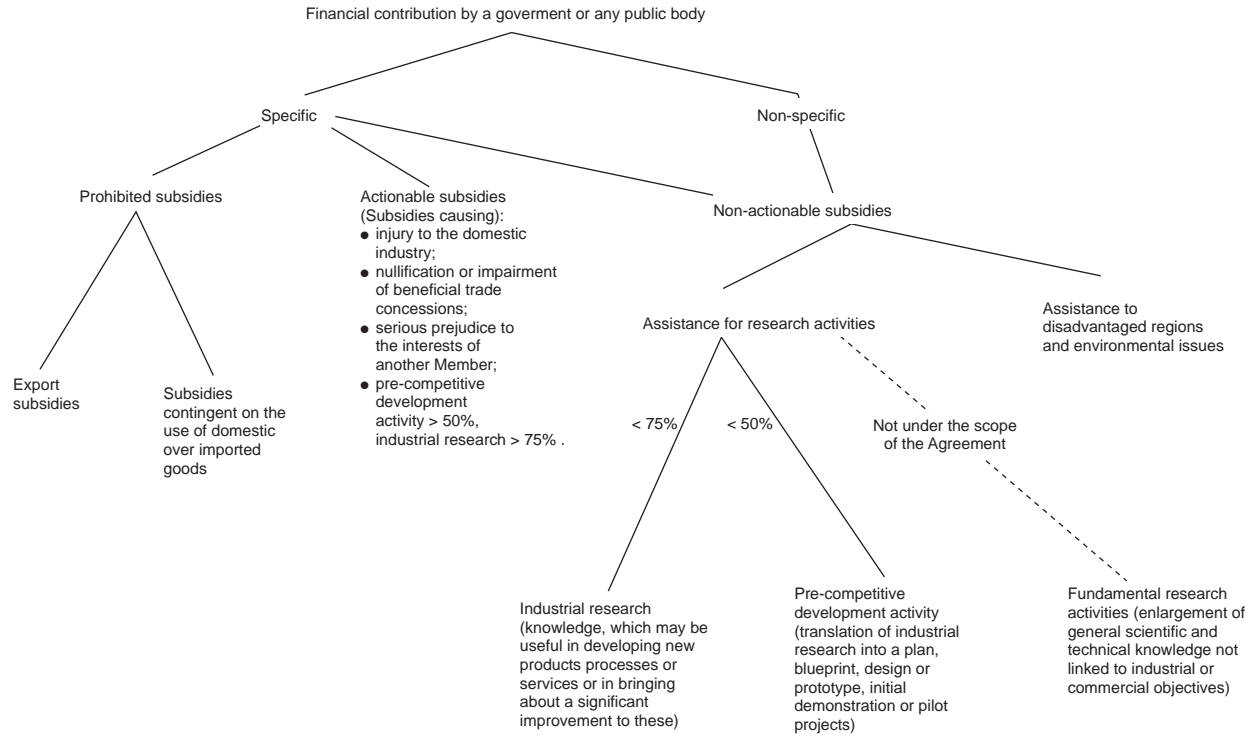
The provisions of the agreement do not apply to public support to **fundamental research** activities conducted either by higher education or research establishments. The term “fundamental research” means “an enlargement of general scientific and technical knowledge not linked to industrial or commercial objectives”.

Public support to other R&D and industrial innovation undertaken by firms or by higher education or research establishments on a contract basis by firms may fall into the category of actionable, non-actionable and specific subsidies depending on the type of activity and the share of the costs covered by public support.

In the case of **industrial research**, defined as “planned search or critical investigation aimed at the discovery of new knowledge with the objective that such knowledge may be useful in developing new products, processes or services or in bringing about a significant improvement in existing products and processes”, assistance is considered to be non-actionable if it does not exceed 75 per cent of the costs.

In the case of **pre-competitive development activity**, the share may not exceed 50 per cent of the costs. The term “pre-competitive development activity” means “the translation of industrial research findings into a plan, blueprint or design for new, modified or improved products, processes or services whether intended for sale or use, including the creation of a first prototype which would not be capable of commercial use. It may further include the conceptual formulation and design of products, processes or services alternatives and initial demonstration or pilot projects, provided that these same projects cannot be converted or used for industrial application or commercial exploitation. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, services, and other ongoing operations even though those alterations may represent improvements.”

Table 3. R&D subsidy definitions in the WTO Agreement



Furthermore, such assistance is limited exclusively to:

- “personnel costs (researchers, technicians and other supporting staff employed exclusively in the research activity);
- costs of instruments, equipment, land and buildings used exclusively and permanently (except when disposed of on a commercial basis) for the research activity;
- costs of consultancy and equivalent services used exclusively for the research activity, including bought-in research, technical knowledge, patents, etc.;
- additional overhead costs incurred directly as a result of the research activity;
- other running costs (such as those of materials, supplies and the like), incurred directly as a result of the research activity.”

If the allowable levels for non-actionable assistance are exceeded then the programme would be an actionable subsidy. (However, these provisions do not apply to civil aircraft which it is anticipated will be covered by specific regulations.)

The structure and scope of the GATT subsidy definition with special regard to R&D is summarised in Table 3.

To conclude, the OECD’s concept of public support to industry goes far beyond the subsidy definition in the new WTO “Agreement on Subsidies and Countervailing Measures”. While the latter exclusively focuses on specific direct financing measures – fiscal incentive schemes or expenditure programmes –, public support also encompasses support to intermediary R&D institutions and space agencies, R&D contracts and R&D procurement which are all considered as indirect measures of public support. Moreover, the OECD’s concept includes some direct financing measures which are not specific in terms of the WTO Agreement.

IV. RELEVANT DEFINITIONS DERIVED FROM MANUALS ON SCIENCE AND TECHNOLOGY ACTIVITIES

The purpose of the OECD work on S&T Indicators

The aim of this activity is to assist in reducing the uncertainty of policy making by providing statistics and indicators which describe significant aspects of national innovation systems and how they interact with the economy and society. Undertaken under the aegis of the Group of National Experts on Science and Technology Indicators, which reports to the OECD Committee for Scientific and Techno-

Table 4. **OECD Manuals on the measurement of scientific and technological activities**

Type of data	Title
R&D	Proposed standard practice for surveys of research and experimental development (<i>Frascati Manual</i> 1993)
R&D	Main definitions and conventions for the measurement of research and experimental development (R&D) (A summary of the <i>Frascati Manual</i> 1993)
Technology balance of payments	Proposed standard method of compiling and interpreting technology balance of payments data ¹ (TBP Manual)
Innovation	OECD proposed guidelines for collecting and interpreting technological innovation data (<i>Oslo Manual</i> 1997) (with EC/Eurostat)
Patents	Using patent data as science and technology indicators ¹ (Patent Manual 1994)
Human resources	The measurement of human resources devoted to S&T ¹ (<i>Canberra Manual</i> 1995) (with EC/Eurostat)

1. Dealing mainly with the problems of classifying and interpreting existing information.

Source: OECD.

logical Policy, it involves the establishment and updating of the “Frascati Family” of manuals on the measurement of scientific and technological activities (see Table 4), the collection of internationally comparable data based on them and the analysis of these data in policy and economic studies.

In 1994 the fifth edition of the *Frascati Manual* of proposed standard practice for surveys of research and experimental development was issued, and the OECD R&D questionnaire was revised in consequence. After a first round of surveys, OECD and Eurostat issued the second edition of the *Oslo Manual* of proposed guidelines for collecting and interpreting technological innovation data in 1997. Neither of these Manuals nor the associated surveys deal specifically with subsidies. They do, however, contain some definitions which are relevant and also some categories of interest when compiling data on the wider concept of public support to R&D and/or innovation.

The rest of this chapter presents the relevant definitions and recommendations from the two Manuals with their original paragraph numbers: FM = *Frascati Manual*; OM = *Oslo Manual*. Comments by the author are in italics. It also provides some information on how the corresponding data are collected in OECD R&D surveys.

Defining R&D and industrial innovation

Research and experimental development (R&D) and their components

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications. (FM 57)

R&D is a term covering three activities: basic research, applied research and experimental development. **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. **Applied research** is also original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific aim or objective. **Experimental development** is systematic work, drawing on existing knowledge gained from research and/or practical experience, that is directed to producing new materials, products or devices, to installing new processes, systems and services or to improving substantially those already produced or installed. (FM 58)

The basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, *i.e.* when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned. (FM 79)

The activities to be excluded are:

- *education and training;*
- *other related scientific and technological activities;*
- *other industrial activities;*
- *administration and other supporting activities;*

For the present paper, the third item, “other industrial activities”, is the most relevant.

Care must be taken to exclude activities which, although undoubtedly a part of the innovation process, rarely involve any R&D, *e.g.* patent filing and licensing, market research, manufacturing start-up, tooling-up and redesign for the manufacturing process. Some activities, such as tooling-up, process development,

design and prototype construction, may contain an appreciable element of R&D, thus making it difficult to identify precisely what should or should not be defined as R&D. This is particularly true for defence and large-scale civil industries such as aerospace. Similar difficulties may arise in distinguishing public technology-based services such as inspection and control from related R&D, as for example in the area of food and drugs. (FM 111)

Possibly the greatest source of error in measuring R&D lies in the difficulty of locating the cut-off point between experimental development and the related activities required during the realisation of an innovation. (FM 23)

It is difficult to define precisely the cut-off point between experimental development and preproduction developments, such as producing user demonstration models and testing, and production that is applicable to all industrial situations. It would be necessary to establish a series of conventions or criteria by type of industry. The basic rule originally laid down by the US National Science Foundation (NSF) provides a practical basis for the exercise of judgement in difficult cases. Slightly expanded, it states:

“If the primary objective is to make further technical improvements on the product or process, then the work comes within the definition of R&D. If, on the other hand, the product, process or approach is substantially set and the primary objective is to develop markets, to do preproduction planning, or to get a production or control system working smoothly, then the work is no longer R&D.” (FM 112)

The Frascati Manual gives further guidelines on a number of common problem areas including software development, mining and prospecting, large-scale (defence) projects and the cases summarised in Table 5 (Table 2.2 of the full text).

Table 5. **Some borderline cases between R&D and other industrial activities**

Item	Treatment	Remarks
Prototypes	Include in R&D	As long as the primary objective is to make further improvements
Pilot plant	Include in R&D	As long as the primary purpose is R&D
Industrial design and drawing	Divide	Include design required during R&D Exclude design for production process
Industrial engineering and tooling-up	Divide	Include "feedback" R&D and tooling-up/industrial engineering associated with development of new products and new processes. Exclude for production processes
Trial production	Divide	Include if production implies full-scale testing and subsequent further design and engineering. Exclude all other associated activities
After-sales service and trouble-shooting	Exclude	Except "feedback" R&D
Patent and licence work	Exclude	All administrative and legal work connected with patents and licences (except patent work directly connected with R&D projects)
Routine tests	Exclude	Even if undertaken by R&D staff
Data collection	Exclude	Except when an integral part of R&D
Public inspection control, enforcement of standards, regulations	Exclude	

Source: OECD, *Frascati Manual* 1993.

Industrial innovation

Technological product and process (TPP) innovations comprise implemented technologically new products and processes and significant technological improvements in products and processes. A TPP innovation has been **implemented** if it has been introduced on the market (product innovation) or used

(continued on next page)

(continued)

within a production process (process innovation). TPP innovations involve a series of scientific, technological, organisational, financial and commercial **activities**. **The TPP innovating firm** is one that has implemented technologically new or significantly technologically improved products or processes during the period under review. (OM 130)

The minimum entry is that the product or process should be new (or significantly improved) to the firm (it does not have to be new to the world). TPP innovations relating to primary and secondary products are included as are process innovations in ancillary activities. (OM 131, 132)

TPP innovations can be broken down between product and process, and by the degree of novelty of the change introduced in each case. The term “product” is used to cover both goods and services. (OM 133, 134)

TPP innovation must be distinguished from:

- organisational innovation;
- other changes in products and processes. (OM 155)

Organisational innovation in the firm includes:

- the introduction of significantly changed organisational structures;
- the implementation of advanced management techniques;
- the implementation of new or substantially changed corporate strategic orientations. (OM 156)

In principle, organisational change counts as innovation only if there is a measurable change in output, such as increased productivity or sales. But this section is not designed to clarify the borderlines between innovative and non-innovative organisational change. It is described here with the aim of distinguishing it from TPP innovation. Fuller description for those who may wish to collect data on organisational innovation is given in Annex 2 to the *Oslo Manual 1997*. (OM 157)

Whereas the complete reorganisation of a firm is “organisational innovation”, the re-organisation of its production facility can be considered as TPP innovation. The introduction of *just-in-time systems*, for example, should be treated as process innovation as it has a direct effect on the production of products for the market. (OM 158)

Table 6. **Technical product and process innovation activities****1. Acquisition and generation of relevant knowledge new to the firm**a) *Research and experimental development*

Defined as in the *Frascati Manual*

b) *Acquisition of disembodied technology and know-how*

Acquisition of external technology in the form of patents, non-patented inventions, licences, disclosures of know-how, trademarks, designs, patterns and computer and other scientific and technical services related to the implementation of TPP innovations, plus the acquisition of packaged software that is not classified elsewhere. (OM 185)

c) *Acquisition of embodied technology*

Acquisition of machinery and equipment with improved technological performance (including integrated software) connected to technological product or process innovations implemented by the firm. (OM 186)

2. Other preparations for productiona) *Tooling-up and industrial engineering*

Changes in production and quality control procedures, methods and standards and associated software required to produce the technologically new or improved process. (OM 187)

b) *Industrial design n.e.c.*

Plans and drawings aimed at defining procedures, technical specifications and operational features necessary to the production of technologically new products and the implementation of new processes. (OM 188)

c) *Other capital acquisition*

Acquisitions of buildings, or of machinery, tools and equipment – with no improvement in technological performance – which are required for the implementation of technologically new or improved products or processes. (OM 189)

d) *Production start-up*

This may include product or process modifications, retraining personnel in the new techniques or in the use of the new machinery, and any trial production not already included in R&D. (OM 190)

3. Marketing for new or improved products

Activities in connection with the launching of a technologically new or improved product. These may include preliminary market research, market tests and launch advertising, but will exclude the building of distribution networks to market innovations. (OM 191)

Other changes in products and processes not TPP innovation are changes which:

- are insignificant, minor, or which do not involve a sufficient degree of novelty;
- make “other creative improvements” where the novelty does not concern the use or objective performance characteristics of the products or in the way they are produced or delivered but rather their aesthetic or other subjective qualities. (OM 160)

TPP innovation activities are all those scientific, technological, organisational, financial and commercial steps, including investment in new knowledge, which actually, or are intended to, lead to the implementation of technologically new or improved products or processes. Some may be innovative in their own right, others are not novel but are necessary for implementation. (OM 177)

The list of activities *in Table 6* is not exhaustive. Its aim is to explain when certain activities should be included in TPP innovation. (OM 181)

Of all the above types of work, only R&D and the acquisition of machinery incorporating new technology are by definition TPP innovation activities. The others may or may not be, depending on the reasons for which they are carried out. (OM 192) *The Oslo Manual gives further guidelines on the treatment of design, training, marketing and software which are the main borderline cases.*

Measuring government support for industrial R&D

As noted above, the Frascati Manual does not set out to measure the amount of subsidy for industrial R&D. The nearest it comes is two different measures of government support for industrial R&D which result from the two ways of measuring how much governments spend on R&D:

- *government-financed R&D in the business enterprise sector;*
- *government budget outlays or appropriations (GBAORD) for industrial development.*

Government-financed R&D in the business enterprise sector

This measures the amount of R&D carried out in a given year, as reported by the performing firm or institute in the business enterprise sector which is directly financed by federal, central, regional or local government.

The **business enterprise sector** includes all firms, organisations and institutions whose primary activity is the market production of goods or services (other than higher education) for sale to the general public at an economically significant price, and the private non-profit institutes mainly serving them. (FM 145)

The core of the sector is made up of private enterprises (corporations or quasi-corporations) whether or not they distribute profit. Among these enterprises may be found some firms for which R&D is the main activity (commercial R&D institutes and laboratories). Any private enterprises producing higher education services should be included in the higher education sector. In addition, this sector includes public enterprises (public corporations and quasi-corporations owned by government units) mainly engaged in market production and sale of the kind of goods and services which are often produced by private enterprises, although, as a matter of policy, the price set for these may be less than the full cost of production. (FM 146, 147)

When comparing with intermediary R&D organisations, it should be noted that this sector also includes **non-profit institutions** (NPIs) who are market producers of goods and services other than higher education. These are of two kinds. (FM 148)

The first are NPIs whose main activity is the production of goods and services for sale at prices designed to recover most or all their costs. Such research institutes, clinics, hospitals, medical practitioners in private, fee-paying practices, etc., may be able to raise additional funds in the form of donations or own assets generating property income which allow them to charge below average cost. (FM 149)

The second are NPIs serving business. These are typically created and managed by associations of businesses whose services they are designed to promote, such as chambers of commerce and agricultural, manufacturing or trade associations. Their activities are usually financed by contributions or subscriptions from the businesses concerned which provide "institutional" support for their R&D. However, any NPIs carrying out similar functions but controlled or mainly financed by government – for example, if they depend for their existence on a block grant from government – should be included in the government sector. (FM 150)

Finally, this sector includes units associated with the higher education and government sectors whose main purpose is development of and contribution to the business enterprise sector except those controlled or mainly financed by government. The criterion for the classification of the unit is the sector it mainly

serves and not co-operation related to projects or use of equipment or of personnel belonging to or used by higher education or government sector institutions. (FM 151)

The relevant tables from the OECD R&D questionnaire are given in Annex 3. Data is collected for government-financed R&D in the total Business Enterprise sector (as in Table M1 in Annex 3) in the short form survey for the biennial Main Science and Technology Indicators publication. This table is filled by all responding countries. The more detailed rolling R&D questionnaire contains two other tables on government-financed R&D in the BE sector, the first (Table S2) by industrial sector which is returned by the majority of countries and the second on government support for R&D in firms and institutes in the BE sector in (Table T6) which is entered by about half a dozen countries.

R&D in the business enterprise sector is generally broken down by industry at the level of the enterprise. *Where an enterprise carries out R&D for several economic activities, the R&D may be distributed between them.*

When the R&D is carried out in a legal entity specialising in research and development, that unit will be classified in research and services for enterprises [ISIC Rev. 3, para. 73 (UN, 1990)]. It is therefore desirable for the purpose of R&D analysis to identify for it an additional classification reflecting the division(s) in the family of industries which benefit from its R&D activities. This may be based on activity or product data obtained in R&D surveys. (FM 161) *This instruction is similar to that in the subsidies questionnaire that private R&D and engineering firms should be included in the manufacturing sector in the table on R-D contracts (see Annex 1).*

Data on government-financed BERD by industry is collected by means of Table I.4 of the R&D questionnaire.

The definition of government finance differs considerably from that in the subsidies exercise, as do the use of the terms "direct" and "indirect" and "net" and "gross".

According to the Frascati Manual, for such a flow of funds to be correctly identified, two criteria must be fulfilled:

- there must be a direct transfer of resources;
- this transfer must be both intended and used for the performance of R&D. (FM 368)

Such transfers may take the form of contracts, grants or donations and may take the form of money or of other resources (e.g. staff or equipment lent to the performer). When there is a significant non-monetary transfer, the current value has to be estimated since all transfers must be expressed in financial terms. (FM 369)

Contracts or grants paid for the performance of current or future R&D are clearly identifiable as a transfer of funds. Transfer of funds from the government to other sectors is particularly important to the users of R&D data. (FM 370)

Two categories of such government funds may be identified:

- a) those which are specifically for the procurement of R&D, *i.e.* the results of the R&D belong to the recipient of the output or product of the R&D, who is not necessarily the funder of the R&D;
- b) those which are provided to the performers of R&D in the form of grants or subsidies, with the results of the R&D becoming the property of the R&D performers. (FM 372)

In theory, when a government allows a firm or university to use, free of charge, facilities such as a wind-tunnel, observatory or launching site while carrying out R&D, the value of the service (an imputed rental) should be identified as a transfer. In practice, the beneficiary would not normally be able to make such an estimate, and the donor might not be able to do so either. (FM 14 374)

In some cases, a firm's R&D project may be financed by loans from a financial institution, an affiliated company or a government. Loans which are to be repaid are not to be considered transfers; loans which may be forgiven are to be considered transfers (by convention). (FM 375)

There are also a variety of other government incentives for R&D in the business enterprise sector. Examples are the remission of income taxes for industrial R&D, the payment by a government, on demand and after audit, of a certain portion of some or all of a firm's R&D expenditures, bonuses added to R&D contracts to encourage a firm in its own R&D, remission of taxes and tariffs on R&D equipment, and the reimbursement of part of a firm's costs if it hires more R&D staff. For the present, even where these transfers can be separately identified, they should not be counted as direct support for R&D. The statistical units should therefore report gross expenditures as incurred, even when their actual costs may be reduced because of remissions, rebates or post-performance grants. (FM 376)

Information is also requested on defence R&D. Countries with modest defence R&D efforts are only requested to supply a national total, but those with more substantial efforts are requested to return the equivalent of Table M.1. A number do so on a regular basis, notably France and the United Kingdom, thus permitting one to see what share of government-financed R&D in the business sector is defence contracts/procurement. An annex to the Frascati Manual gives substantial guidance on the measurement of defence R&D.

Government budget outlays or appropriations (GBAORD) for industrial development

This type of analysis essentially seeks to ascertain government intentions or objectives when committing money to R&D. R&D funding is thus defined by the funder (including public GUF) and may be both forecast (forward budgets) or retrospective (final budget or outturn). Whereas R&D statistics proper are collected by means of especially designed surveys, government R&D funding data generally have to be derived at some stage or another from national budgets which have their own standard national methods and terminology. Although the links between survey and GBAORD data have improved in recent years, the resulting analysis will always be a balance between what is desirable from the R&D point of view and what is available from the budget or allied sources. (FM 54)

For the purposes of GBAORD, it is recommended that:

- a) central or federal government should always be included;
- b) provincial or state government should be included where its contribution is significant;
- c) local government funds (*i.e.* those raised by local taxes) should be excluded. (FM 431)

GBAORD covers not only government-financed R&D performed in government establishments, but also government-financed R&D in the other three national sectors (business enterprise, private non-profit, higher education) and also abroad (including international organisations). (FM 432)

GBAORD includes both current and capital expenditure.

GBAORD clearly includes all outlays to be met from taxation. A problem arises with money spent on R&D by government but financed from other sources. In some countries this may be included in the government budget, on the grounds that the agency concerned needs government permission to spend it (gross approach). In others it may be excluded and only newly voted money included (net approach). When dealing with these "extra-budgetary" sources, a distinction should be made between:

- contracts or grants from other sectors for the performance of R&D by government establishments, which should always be credited to the sector of origin and should not be included in GBAORD;
- other extra-budgetary funds such as the retained receipts of government laboratories, receipts from levies, etc., for which no guidelines can be suggested, but their treatment should always be made explicit in accompanying notes.

Loans and indirect funding of industrial R&D

As far as possible, the instructions in Chapter 6 regarding both loans and indirect funding apply (see FM Section 6.3.2.1). Thus, loans that may be forgiven should be included in GBAORD, but loans that are to be repaid and indirect support of industrial R&D via tax rebates, etc., should in principle be excluded. Nevertheless, when such indirect support programmes are undertaken as part of an integrated R&D policy (for example, when the sources are documented and are included in interministerial discussions of a science budget), they may be included in GBAORD. However, indirect funding should always be declared separately so that it can be excluded when making certain international comparisons. (FM 440)

Distribution by socio-economic objective

The aim of classifying GBAORD by socio-economic objective is to assist government science and technology policy formulation. Consequently, the categories have to be broad, and the series are intended to reflect the amounts of resources devoted to each primary purpose (defence, industrial development, etc.). Governments in OECD countries generally pursue science policies and thus distribute their R&D funds in ways which match, to a large extent, the 11 broad categories used by the OECD. Nevertheless, the fit is never perfect and always reflects the policy intentions of a given programme rather than its precise contents. Because of this and because of methodological constraints on the way they are compiled, the strict level of international comparability is probably lower for GBAORD data than for most of the other series discussed in the Manual. (FM 55)

The list of objectives is shown in Table M6 in the annex. The one most relevant to the study of public support is "Promotion of industrial development", defined as follows:

"This group includes R&D programmes whose primary objective is to support the development of industry. The core of this class will consist of R&D programmes in favour of manufacturing industry (ISIC Rev. 3, Divisions 15-37). However, it also contains R&D for the construction industry (ISIC Rev. 3, Division 45); wholesale and retail trade, restaurants, and hotels (ISIC Rev. 3, Divisions 50-52 and 55); banking, insurance, and other commercial services (ISIC Rev. 3, Divisions 65-67 and 70-74); or industry in general. It does not include R&D performed by industry (principally financed from public funds) in support of other objectives – for example, in the fields of space, defence, transportation and telecommunications – although these obviously have an important secondary effect on the development of the industries concerned. If R&D is supported for a communal project, it should be excluded from this class and included under the relevant objective. For example, the development of a new type of rolling stock as

part of a reorganisation of the nation's railways should be classified under "transport". Redevelopment of similar rolling stock in view of export sales belongs under the present heading. Similarly, R&D in support of tourism as a cultural activity should be included under the objective described in Section 8.7.4.7, but R&D mainly intended to improve the commercial prospects of the hotel and tourism industry should be included here."

Nearly all Member countries report data annually to OECD on GBAORD by socio-economic objective (Table M.6). A few also supply a cross table between the objectives and the sector of destination of the funds as (Table 0.1) which allows one to distinguish between funds destined for the business sector and those for other sectors, including abroad. Countries reporting the corresponding series to Eurostat are requested to supply a more detailed breakdown of "industrial development" by economic sector supported.

Current developments in R&D reporting

It is now recognised that the omission of tax incentives from the measurement of government-financed R&D in the *Frascati Manual* and in the associated surveys leads to incomplete data on public R&D support. A small group of experts is working on solving the technical problems of crediting such spending to government in the performer-reported series.

Steps have already been taken in the series to break down funds from abroad in order to distinguish R&D support received from the European Commission.

Annex 1

COMPLEMENTARY REPORTING FORMAT II

R&D Contracts and Intermediary R&D Organisations

NOTE: R&D contracts should be reported under A below. R&D grants should normally be reported in Annex I: General Reporting Format. "Internal R&D" relevant to manufacturing should be reported under II.B below. In the case of information originating from organisations or agencies (if any) which undertake different types of R&D, some breakdown of data may be required.

A. Research and Development Contracts

Q 1 Name of the Department, Agency or Intermediary Institution:

Q 2 What is the total amount of R&D contracts awarded to all sectors of the economy (including non-profit R&D and education organisations) and to manufacturing (including private R&D and engineering companies) in the following years:
(please provide estimates if direct data is not available)

National currency and unit: (Example: millions of US\$)

Research and development contracts

Year	1989	1990	1991	1992	1993
All sectors ¹					
Manufacturing ²					

1. Including non-profit R&D and education organisations.

2. Private R&D and engineering companies are included in the manufacturing sector.

Q 3 What are the main types of R&D contracts awarded and what are their main characteristics? Is a breakdown by main technology area, product groups,

or contracting industries available? If yes, please provide summary information on a separate sheet.

Q 4 What are the rules which generally govern the appropriation of intellectual property rights between parties to the contract: the awarding agency and the contracting enterprise(s)?

Q 5 Are there special rules governing the award of contracts to particular categories of enterprises (*i.e.* “licensed” companies)? Are there any such rules or facilities in favour of particular groups of firms (*i.e.* those located in particular areas, SMEs, etc.)?

Q 6 Are there “national treatment”-related criteria governing access by enterprises to R&D contracts?(contracts awarded only to nationally-owned enterprises; to all domestically-based enterprises; to all enterprises including those from abroad, etc.)

<p>B. Intermediary Research and Development Organisations</p>

NOTE: An Intermediary R&D Organisation is “an organisation in which the main purpose is to make equipment, research personnel or research results available to manufacturing enterprises by the means of direct co-operation or transactions with manufacturing firms”.

Q 1 Name of Intermediary R&D Organisation (Generic name for groups of smaller institutions)

Q 2 What kind of R&D services are offered to manufacturing enterprises?

Q 3 Is R&D equipment made available for access and use by manufacturing enterprises? Please provide summary information on such services:

Q 4 Is R&D personnel made available and are customised services offered to manufacturing firms? Please provide summary information on such services:

Q 5 Are research results, patents, process know-how owned by the Intermediary R&D Organisation made available to manufacturing enterprises? Please provide summary information on such services:

Q 6 Are there special groups of manufacturing enterprises having more particular access to these services? Please specify these groups in terms of location, size of enterprise, sector of activity:

Q 7 Are the Intermediary R&D Organisations’ services priced and invoiced? What are the principles governing pricing?

Q 8 What is the total annual budget of the Organisation (or group of smaller organisations) for the following years:

(please provide estimates if direct information is not available)

National currency and unit: (Example: millions of US\$)

Annual budget of intermediary R&D organisation

Year	1989	1990	1991	1992	1993

Q 9 What is the contribution by central and/or sub-central government or other education and research institutions to the annual budget of the Intermediary R&D Organisation?

National currency and unit:

Contributions to the annual budget of intermediary R&D organisation by

Year	1989	1990	1991	1992	1993
Central government					
Sub-central government					
Other education and research institutions					

Q 10 What other resources (*i.e.* buildings, equipment, personnel, patents) are put at the disposal of the intermediary R&D Organisation by Central and/or Sub-Central Government and other education and research institutions?

Annex 2

COMPLEMENTARY REPORTING FORMAT III

Civil and Defence Procurement

The reporting requirements for public procurement cover qualitative and quantitative information. Questions 1 and 2 are of a qualitative nature and refer to public procurement in general, including procurement by sub-central agencies and public utilities. Question 3 asks for quantitative information at the central and sub-central government level. Question 4 refers to defence procurement.

Q 1 Please report for the years 1989 to 1993 on the:

a) Written laws, implementing regulations, and/or policy papers, instructing procuring agencies and contracting officers how to tender, receive and evaluate bids, and award procurements contract.

For all items, below, please indicate the extent to which and the way in which they apply in your national procurement system:

- public notice or advertisement of upcoming procurements;
- all necessary information regarding the procurement to be made available to all bidders at the same time;
- invitation to bid made available to all interested bidders (or in the case of selective tendering, invitations to bid made available to all suppliers on the qualified suppliers list);
- in the case of selective tendering systems, how are the lists of qualified suppliers actualised? Are the same criteria used for domestic and foreign suppliers?
- adequate time for submission of bids (a minimum of 40 days);
- are the procedures used in the tender, bidding and award process predictable? Do procuring agencies have any discretionary authority to alter procedures in the course of the procurement process?
- same bid deadline for all bidders;
- prices of the winning bids made available to the public;
- reasons for not being selected communicated to the unsuccessful tenderers;
- means of protest/redress, available to suppliers with grievances;
- review of protest/complaint by separate agency or provision for judicial review;

- how are laws/regulations on procurement enforced? Do individual bidders have any rights to challenge procedures during the course of the procurement process?

b) The procurement procedures and their respective field of application (discretionary choice or legally defined rules for applying specific procedures):

- describe in detail how these procedures ensure competition in the bidding, evaluation and award process;
- sole sourcing limited to a few, justified cases (urgency);
- what guarantees on transparency in procurement procedures exist to ensure open and redressable procurement?
- under what circumstances can a shortlist be used in the award process? Can a contracting officer negotiate with less than all of the shortlisted finalists?

c) Administrative guidance or review for procurement by public agencies and public utilities (in the areas of water, transport and electricity) and enterprises that are not covered by laws, regulations and policies.

d) Special treatment and/or procedures for national security:

- how is national security defined?
- how do procurement procedures that apply to national security differ from procedures used for other procurement?

e) The treatment of domestic, national and foreign suppliers and products:

- do the laws, regulations or policies identified in your answer to question a) specifically require national treatment/non-discriminatory treatment:
 - for all potential national bidders?
 - for all potential bidders, regardless of nationality of supplier or origin of the product?
- do the laws, regulations or policies:
 - require discrimination against foreign suppliers?
 - allow discretionary discrimination against foreign suppliers/products?
 - provide for preferential treatment for domestic suppliers/products?

If yes, please describe the nature of the discrimination, particularly the product area and/or type of procuring entity involved. Also specify whether sub-federal/sub-central entities have the same or similar requirements or discretion;

- how is the origin of a product or service determined? Is it specified in writing? Is it applied in a predictable and transparent manner? Is there one rule of origin that applies to all public procurement? Do procurement rules of origin differ from rules of origin used for customs purposes? Do federal and sub-federal procuring entities use the same rule of origin?

f) Reference to national standards and specifications:

- non-discriminatory standards and specifications used for requirement;

- are technical specifications reported in the notice of tender sufficiently detailed to allow all potential bidders the opportunity to submit responsive bids?
 - are specifications established and reported in procurement notices in terms of performance or design?
 - do procuring agencies ever consult with individual suppliers before setting the technical specifications for a particular procurement? If specifications are changed after the notice of tender but before bids are received, are they promptly reported to all potential bidders?
- g)** Other preferential treatment schemes/procedures.
- the preference rates for the different preference schemes (drawn from the regulation or estimated).
- Q 2** Please describe the structure of the national public procurement system covering:
- the level of centralisation;
 - the degree of independence between agencies.
- Q 3** Please report for the years 1989 to 1993:
- the figures for government (central and sub-central) procurement.
- Q 4** Defence expenditures, please report:
- on defence procurement expenditure for the years 1989 to 1993. Where defence procurement data are separated into equipment procurement and R&D expenditures, these should be reported separately. In each case, report also the percentage of foreign-sourced procurement or expenditure;
 - on the sectors that are the main suppliers and beneficiaries of equipment procurement expenditures. If only data by firms are available, please indicate the sector classification of the firm;
 - on the sectors that are the main suppliers and beneficiaries of R&D expenditures. If only data by firms are available, please indicate the sector classification of the firm.

Annex 3

**EXTRACTS FROM THE INTERNATIONAL SURVEY
OF THE RESOURCES DEVOTED TO RESEARCH
AND EXPERIMENTAL DEVELOPMENT BY OECD COUNTRIES**

Table M.1.
(Total Table T.1 of the 1989 ISY Questionnaire)

Country

GROSS DOMESTIC EXPENDITURE ON R&D (GERD)
BY SECTOR OF PERFORMANCE AND SOURCE OF FUNDS
UNIT: NATIONAL CURRENCY

	1989	1990	1991	1992	1993	1994	1995
BUSINESS ENTERPRISE SECTOR							
SOURCE FUNDS							
*1. BUSINESS ENTERPRISE							
*2. DIRECT GOVERNMENT							
*3. HIGHER EDUCATION							
*4. PRIVATE NON-PROFIT							
*5. FUNDS FROM ABROAD							
*6. TOTAL BERD							
GOVERNMENT SECTOR							
SOURCE OF FUNDS							
7. BUSINESS ENTERPRISE							
8. DIRECT GOVERNMENT							
9. HIGHER EDUCATION							
10. PRIVATE NON-PROFIT							
11. FUNDS FROM ABROAD							
12. TOTAL GOVERD							
HIGHER EDUCATION SECTOR							
SOURCE OF FUNDS							
13. BUSINESS ENTERPRISE							
14. DIRECT GOVERNMENT							
15. GENERAL UNIVERSITY FUNDS							
16. SUB-TOTAL GOVERNMENT							
17. HIGHER EDUCATION							
18. PRIVATE NON-PROFIT							
19. FUNDS FROM ABROAD							
*20. TOTAL HERD							
PRIVATE NON PROFIT SECTOR							
SOURCE OF FUNDS							
21. BUSINESS ENTERPRISE							
22. DIRECT GOVERNMENT							
23. HIGHER EDUCATION							
24. PRIVATE NON-PROFIT							
25. FUNDS FROM ABROAD							
*26. TOTAL							
GERD							
SOURCE OF FUNDS							
*27. BUSINESS ENTERPRISE							
28. DIRECT GOVERNMENT							
29. GENERAL UNIVERSITY FUNDS							
*30. SUB-TOTAL GOVERNMENT							
*31. HIGHER EDUCATION							
*32. PRIVATE NON-PROFIT							
*33. FUNDS FROM ABROAD							
*34. TOTAL GERD							
*35. <i>OF WHICH: DEFENCE GERD</i>							

DEFINING SUBSIDIES FOR R&D AND INDUSTRIAL INNOVATION

Table M1.4 (S1.4) (Total Table 5.1 of the 1989 ISY Questionnaire)

Country

BUSINESS ENTERPRISE R&D EXPENDITURE BY INDUSTRY AND SOURCE FUNDS

UNIT: NATIONAL CURRENCY

	1991	1992	1993	1994
1. AGRICULTURE				
2. MINING				
3. MANUFACTURING				
4. Food, Beverages and Tobacco				
5. Food, Products and Beverages				
6. Tobacco Products				
7. Textiles, Fur and Leather				
8. Textiles				
9. Wearing Apparel and Fur				
10. Leather Products and Footwear				
11. Wood, Paper, Printing, Publishing				
12. Wood and Cork (not Furniture)				
13. Pulp, Paper and Paper Products				
14. Publ., Print and Repro. of Rec. Media				
15. Coke, Petroleum, Nuclear Fuel, Chemicals and Prod. Rubber and Plastics				
16. Coke, Ref. Petrol. Prod. and Nuclear Fuel				
17. Chemicals and Chemical Products				
18. Chemicals (less Pharmacy)				
19. Pharmaceuticals				
20. Rubber and Plastic Products				
21. Non-metallic Mineral Products				
22. Basic Metals				
23. Basic Metals, Ferrous				
24. Basic Metals, Non-ferrous				
25. Fabricated Metal Products				
26. Machinery Equip., Instrument and Transport Equip.				
27. Machinery, nec				
28. Office, Account., and Computing Machin.				
29. Electrical Machinery				
30. Electro. Equip. (Radio, TV and Commun.)				
31. Electro. Comp. (Inc. Semi-Conduc.)				
32. TV, Radio and Communications Equipm.				
33. Instruments, Watches and Clocks				
34. Motor Vehicles				
35. Other Transport Equipment				
36. Ships				
37. Aerospace				
38. Other Transport nec				
39. Furniture, Other Manufacturing nec				
40. Furniture				
41. Other Manufacturing nec				
42. Recycling				
43. ELECTRICITY, GAS AND WATER SUPPLY				
44. CONSTRUCTION				
45. SERVICE SECTOR				
46. Wholesale, Ref. Trad., Mot. Veh. Repair etc.				
47. Hotels and Restaurants				
48. Transport and Storage				
49. Communications				
50. Post				
51. Telecommunications				
52. Financ. Intermediation (Inc. Immer.)				
53. Real Estate, Renting and Busin. Activ.				
54. Computer and Related Activities				
55. Software Consultancy				
56. Other Computer Services nec				
57. Research and Development				
58. Other Business Activities nec				
59. Comm. Soc. and Pers. Serv. Activ. etc.				
60. GRAND TOTAL				

Total Table 6. (T.6)
(Revised table T.10 of the 89 ISY Questionnaire)

NATIONAL GERD AND R&D PERSONNEL
BY SECTOR OF PERFORMANCE AND TYPE OF INSTITUTION
UNIT: NATIONAL CURRENCY AND FULL TIME EQUIVALENT
YEAR: 1993 (or the closest available year)

SECTOR OF PERFORMANCE TYPE OF INSTITUTION	Total Intramural Expenditure		R&D Personnel	
	1 Total	2 Government	3 Total	4 RSE or Univ.
BUSINESS ENTERPRISE				
Private enterprises:				
1.				
2.				
	(at least 50% foreign ownership of capital)			
3.				
4.				
5.				
BUSINESS ENTERPRISE SUB-TOTAL				
GOVERNMENT				
Institutes:				
6.				
7.				
8.				
9.				
	with the Higher Education Sector			
10.				
GOVERNMENT SUB-TOTAL				
HIGHER EDUCATION				
University teaching units:				
11.				
12.				
13.				
14.				
	with the Government Sector			
15.				
16.				
	Sector not elsewhere classified			
17.				
HIGHER EDUCATION SUB-TOTAL				
18.				
PNP SUB-TOTAL				
19.				
NATIONAL TOTAL				

DEFINING SUBSIDIES FOR R&D AND INDUSTRIAL INNOVATION

Table M.6

Country

(Objective Table 0.1 of the 1989 ISY Questionnaire)

GOVERNMENT BUDGET APPROPRIATIONS OR OUTLAYS FOR R&D

BY SOCIO-ECONOMIC OBJECTIVE

UNIT: NATIONAL CURRENCY

	1990	1991	1992	1993	1994	1995	1996
<hr/>							
OBJECTIVE							
*1. AGRICULTURE, FORESTRY AND FISHING							
*2. INDUSTRIAL DEVELOPMENT							
*3. ENERGY							
4. Transport and Telecommunications							
5. Urban and Rural Planning							
*6. SUB-TOTAL INFRASTRUCTURE							
7. Prevention of Pollution							
8. Identificat. and Treatment of Pollution							
*9. SUB-TOTAL ENVIRONMENT							
*10. HEALTH							
*11. SOCIAL DEVELOPMENT AND SERVICES							
*12. EARTH AND ATMOSPHERE							
*13. Advancement of Research							
*14. General University Funds							
15. SUB-TOTAL ADVANCEMENT OF KNOWLEDGE							
*16. CIVIL SPACE							
*17. DEFENCE							
*18. NOT ELSEWHERE CLASSIFIED							
*19. TOTAL							

Objective Table 0.1
 (Objective Table 0.2 of the 1989 ISY Questionnaire)
 GOVERNMENT BUDGET APPROPRIATIONS OR OUTLAYS FOR R&D
 BY SOCIO-ECONOMIC OBJECTIVE
 UNIT: NATIONAL CURRENCY
 YEAR: 1993

Country

	1	2	3	4	5	6	7	8	9
	Business Enterprise	Government	Higher Education	PNP	Intern. Organ.	Other Abroad	Sub-total Abroad	Not specified	Total

OBJECTIVE

1. AGRICULTURE FORESTRY AND FISHING
2. INDUSTRIAL DEVELOPMENT
3. ENERGY
4. Transport and Telecommunications
5. Urban and Rural Planning
6. SUB-TOTAL INFRASTRUCTURE
7. Prevention of Pollution
8. Identificat. and Treatment of Pollution
9. SUB-TOTAL ENVIRONMENT
10. HEALTH
11. SOCIAL DEVELOPMENT AND SERVICES
12. EARTH AND ATMOSPHERE
13. Advancement of Research
14. General University Funds
15. SUB-TOTAL ADVANCEMENT OF KNOWLEDGE
16. CIVIL SPACE
17. DEFENCE
18. NOT ELSEWHERE CLASSIFIED
19. TOTAL

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