



Barriers to International Technology Co-operation Involving Enterprises

*Discussion Paper by the BIAC Committee for Technology and Industry
Paris, 1 October 1996*

I. General Points

1. The importance of international technology co-operation

In a statement to the 1995 CSTP Ministerial the Business and Industry Advisory Committee to the OECD (BIAC) noted that:

“... with increasing globalisation of business activities and the diversification of R&D, no single company or government can be self-sufficient... [However,] there is still a tendency to consider international co-operation and competitiveness as a conflict of interest. From the viewpoint of industry, such co-operative alliances greatly enhance the research efforts of individual private sector organisations and are a way of ensuring that economic risks associated with large scale and expensive R&D ventures can be spread, and resources better utilised.”¹

Technological links, networks and alliances between companies² can be seen from two complementary angles. They are essentially business strategies that lie primarily in the purview of industry. At the same time, because they enhance the creation and spread of technology, such links have a public good aspect. To flourish, technology co-operation therefore needs, firstly, an institutional and regulatory environment that is friendly to co-operation between enterprises irrespective of the frontiers that may separate them. In addition, there is a justification for public policy to encourage a larger number and wider range of enterprises to enter into such alliances.

The public good aspect and justification for public intervention have been sufficiently captured by the Recommendation of the OECD Council Concerning Principles for Facilitating International Technology Co-operation Involving Enterprises.³ BIAC now considers that further work at the international level is needed to develop a comprehensive understanding of obstacles to co-operation between private enterprises in research and development (R&D) focused on the impact of public policies in other areas on such co-operation, particularly, policies on international trade and investment, competition, taxation, and immigration of key personnel. On the whole, BIAC welcomes the Recommendation of the OECD Council.

¹ *BIAC Statement For The OECD CSTP Ministerial Meeting* (19 September 1995), page 5.

² Throughout the paper, even where reference is only to “co-operation between enterprises”, it is understood that international technology co-operation can take the form of any combination involving enterprises, their overseas facilities, governments, academic institutions, other public research organisations.

³ C(95)182/FINAL, 7 November 1995.

Following two general remarks on how this subject ought to be tackled at the international level, the rest of this paper outlines the issue areas that are identified as most important by the global business community.

2. Strengthening the Multilateral System

BIAC would like to emphasise from the outset that cross-border technology co-operation between enterprises would be greatly facilitated by further improvement in the following policy areas that are not specifically about technology or co-operative behaviour:

- * *Continuing liberalisation of international trade*, by means of the elimination of non-tariff barriers, particularly in technology-intensive areas;
- * Regulatory reform and regulatory convergence, including the development of a fair and balanced system for the mutual recognition of product standards; and,
- * Multilateral obligations for the protection and full national treatment of tangible and intangible transboundary investments.
- * Predictable and stable systems of taxation.

The impact of improvement in these areas on the ability of firms to enter into technology sharing across national boundaries would be at least as great as that of any specific actions in the area of technology policy along the lines suggested below. BIAC Committee for Technology and Industry therefore applauds the continuing analytical work and deliberations developed at the OECD on regulatory reform and the multilateral agreement on investment, as well as continuing work by the OECD to promote sound tax policy within Member Countries. We believe that OECD can make a significant contribution to facilitating international technology co-operation between enterprises by taking full account of its analytical work and recommendations on the subject of technology diffusion in its broader endeavour in the area of removing obstacles to international movement of goods, services and capital.

3. The involvement of private industry in public policy making

Private enterprise represented by BIAC firmly believes that policy making and regulatory action along the lines of recommendations that are stated or implied below should be carried out in full consultation with industry at the international level. Government policies to facilitate international technology co-operation or to remove and avoid barriers to it must enable, as a general rule, that international agreements for technology co-operation or harmonisation of framework conditions affecting it, be *industry-led* or include strong industry involvement. To ensure this, private industry must be closely involved in the conception and development of initiatives by governments, singly or multilaterally, to develop scientific and technological co-operation programmes across national borders, from the early stages of such initiatives.

In this context, BIAC strongly endorses the principle expressed by the item 7 of ANNEX (Principles for Facilitating International Technology Co-operation Involving Enterprises) of the Recommendation of the OECD Council (C(95)182/FINAL), which reads “Projects should be governed by agreements between partners; formal agreements between

governments should be concluded only when essential to bring about the desired collaboration”.

However, BIAC members also note that the propensity to involve private industry in the development of public policy on scientific and technological co-operation initiatives varies significantly among the governments of developed market economies. Private industry therefore would appreciate the opportunity to continue to present its views, to governments represented at the OECD Committee for Scientific and Technological Policy (CSTP) on an ongoing basis, and to be consulted on the formulation of its work programme and priorities.

BIAC urges this OECD forum to act as a favourable influence on OECD Governments by disseminating the successful experiences of Member countries which entitle and encourage their private sector to be substantially involved in the design and implementation of publicly-sponsored technology co-operation programmes.

II. Issues Facing Enterprises

1. The Role of Intellectual Property Rights

The protection of Intellectual Property Rights (IPR) is a crucial ingredient of co-operation between enterprises which ensures that co-operation does not lead to unacceptable loss of property. At the same time, the sharing of technology by enterprises does entail an element of giving up exclusive rights over property on a contractual basis. From the point of view of business it is crucial that any arrangement which implies a sharing of exclusive rights to the fruits of intellectual property is entered into by voluntary agreement by the enterprises concerned and that such agreements function within a framework of rules and obligations which are clearly identified, and globally applicable. Indeed, an adequate global regime for IPR protection with clearly established international guidelines and a reasonable cost of utilisation is a must, and, that is arguably of even greater significance for medium and small enterprises that are active in R&D, as these are likely to be more constrained in their ability to secure the best available legal defence in situations of legal conflict for their products or protection of their intellectual property rights. However, the wider application and relevance of the IPR protection mechanism outside the developed market economies and amongst smaller enterprises everywhere is severely constrained by a number of difficulties associated with the functioning of the patent protection system and other regulatory barriers. Indeed, the larger and globalised enterprises, which are major producers of intellectual property, also face a myriad of difficulties in this field. The remainder of this section outlines a partial list of obstacles that are most frequently observed by the global business community in several OECD countries.

i) Cost of patent protection and enforcement

Many companies affiliated with BIAC are concerned with the high cost of maintaining and enforcing intellectual property with patents. The components of the cost of patent protection vary significantly across the OECD regions. It is generally observed that, in the United States the cost of defending an IPR through litigation is too high, while in Europe the cost of acquiring an IPR is significantly higher. “A European patent is significantly more expensive to obtain than its counterparts in the US and Japan, in particular because of

translation costs that appear unnecessary.”⁴ Enforcement costs in Japan and the US are significantly more expensive than in Europe, and moreover, inconsistencies do exist in claiming practices, which translates into high transactions costs in Japan, relative to the world average.⁵

The European Patent Office and industry have examined possible ways of reducing the cost of obtaining and maintaining a patent through the European patent system, without compromising the existing level of quality in the examination procedure -- considered as being a generally superior one. This is a very important consideration because, the industry’s purpose in applying for a patent is to reduce the uncertainty in the depth and breath of protection for the IPR in question. The cost reduction necessitates, principally, a better focusing of the role of and service in practice provided by the national patent offices, and a major overhaul of the translation policy required by EPO member states. Eliminating the requirement of translating the full specification would still permit a sufficient understanding of the nature of the invention, and of the claims of the patents in the national language while dispensing with the need to translate material which is only required in rare infringement proceedings.⁶ Conversely, a reduction of litigation costs should be sought urgently in those countries where it is significantly above other OECD areas, including by means of reviewing the legal structures which are the root causes of differences observed. The parallel and symmetrical reduction in different types of costs in patent protection should be a priority for international fora such as WIPO and be strongly advocated by the OECD.

ii) *Patent protection for “new” technologies*⁷

Technologies such as computer software and biotechnology have been developing for some time. However, as far as patentability of products associated with them are concerned, they present cases which existing legal structures have not fully accommodated. While products in these technologies are experiencing an explosive growth in volume and in terms of linkages with other industrial sectors, there is also an important divergence emerging concerning their status vis-à-vis IPRs. This divergence, if unchecked, may become a barrier in itself to co-operation between enterprises in software or biotechnology products across the three broad OECD regions.

Concerning computer software, the principal difficulty emerges from the fact that in the US a computer programme stored on a CD-ROM or other computer-readable medium is considered eligible to patent protection, whereas in Europe and Japan, software can be patented only when combined with corresponding computer hardware. This divergence of approach between major areas of the OECD is already creating legal uncertainties and may lead to difficulties in international trade.

⁴ IRDAC (Industrial R&D Advisory Committee of the European Commission), *IRDAC Opinion on Intellectual Property Rights*, 24 June 1996.

⁵ Source: IRDAC, op. cit., and information provided by the Canadian Council for International Business (CCIB)

⁶ See IRDAC, op. cit., paragraph IV.3.

⁷ This section summarises information contained in IRDAC, op. cit., pp. 4-7.

iii) Differences in patent filing systems

One of the difficulties of present IPR systems, which has a bearing on international technology co-operation, results from the difference of approach between the so-called “first-to-file” and “first-to-invent” systems for establishing a patent. If collaborative R&D involving researchers from a country with first-to-invent rule (e.g., the US) as well as from first-to-file rule (e.g., Europe or Japan) leads to a patentable invention, the different systems would establish different dates for the beginning of the patent right. This would inevitably lead to trade friction. On this issue, while a convergence of systems may be desirable, a special provision enabling the recognition of “invention date” by both types of systems where there has been an international co-operation involved, may ease tensions. These differences are the cause of many difficulties which are to be resolved. The key to solutions should be to minimise the uncertainty period for the company which files for a patent. That is to say, the period between patent application and the granting of the patent during which prior art and disclosures are to be monitored by the patent offices, as well as minimising the uncertainty in litigation from first to invent claims. Reducing uncertainties due to differences in IPR systems is crucial, as companies engaged in R&D also have to face uncertainty inherent to innovation and risks associated with industrial and marketing investment in new products and services.

Another issue concerns the principle of territorial jurisdiction. Some countries require enterprises incorporated under their jurisdictions to file the inventions first in that country, regardless of the location of the business or research in question. Other governments require companies to file first with them, regardless of their corporate nationalities, so long as the invention was made in their jurisdiction. Such conflicting requirements inevitably result in a legal uncertainty when a research facility of a globalised company located away from its mother country makes a patentable invention.

Today, with increasing use of electronic means for communication and data exchange, it is possible for networks of researchers cutting across national jurisdictions to jointly produce patentable inventions. The private sector believes that patent filing systems ought to be thoroughly harmonised at the global level to take full account of the global nature of not only business but also research.

iv) IPR and emerging developing economies

The absence of sufficient IPR-protection in much of the non-OECD world is a long-standing stumbling block to technology co-operation with enterprises based there. This has essentially been a handicap for the non-OECD countries until recently. However, with the rapid economic growth and human capital accumulation in certain formerly less developed countries and their increasing participation in international trade, co-operation with the emerging private enterprise in such areas becomes a priority for business in developed economies.

Against this background, the prevailing dispositions amongst many non-OECD governments, such as imposing upper limits on royalty payments associated with technology transfers or other practices resulting in unconditional transfer of patents and free use of know-how, constrain the willingness of enterprises from the advanced economies to seek partners for technology-based alliances in such areas. Also in this context, the long-standing policies of many less-developed countries to support domestic industry by protective measures based on unclear and loose legal structures for litigation by foreign competitors is an issue of direct concern to private enterprises of the OECD countries. Private business therefore encourages

the OECD governments to treat the rapid completion of the Trade-Related Intellectual Property (TRIPs) agreement as a priority.

v) *IPR: Conclusion*

IPR protection should be seen as a major business issue with a strong legal content; not as a legal issue with business implications. Research and development is an investment; IPR protection safeguards its results, permits access to markets, and is a condition for technology transfer. It therefore contributes to innovation and business generation, and as such, is an economic (growth) policy instrument.

Differences and difficulties in the granting and the enforcement of IPR protection instruments constitutes an obstacle to international technology co-operation involving enterprises.

Both aspects of IPR protection mentioned above need urgent attention. Appropriate international fora exist for discussing the legal aspects of IPR protection and their implications. The OECD has an essential role in terms of focusing the attention of governments -- which operate the regulatory mechanisms and are the signatories of the relevant international agreements -- on their responsibility in the domain of IPR protection and, especially, on the impact of the latter on innovation and growth in a global world economy.

2. Fiscal barriers

Tax systems can sometimes affect international technology co-operation between enterprises. Differential taxation can even be a major determinant of R&D location within a single global corporation or in a collaborative technology development among a number of them.

Tax credits for R&D, which are a major instrument used by governments to support technology generation, vary widely in their amount, coverage and criteria for qualification across countries.⁸ For example, tax credit can be based on the volume of R&D expenditure or its growth, with widely different implications in terms of types of companies that can qualify. Such provisions may actually skew the provision of tax exemptions away from small scale operations or single product companies that cannot and do not need to generate an accelerating rate of R&D expenditure.. However, on the whole, there is an insufficient understanding of the real consequences of fiscal incentives, considered as being generally positive by their proponents, in terms of their true effect on innovation and growth of the different sectors of business.

⁸ See for example, CNPF, Les propositions fiscales du C.N.P.F. pour 1996, July 1995, Annex 2. Draft.

3. The effects of legislation and regulation on consortium agreements

The impact of anti-trust legislation

Consortium agreements involving manufacture/production/sales across international frontiers must comply with national competition law (anti-trust law) requirements. Often this means having to comply with the most stringent of each of the several different standards. A gradual convergence of competition laws among Member countries states would clearly facilitate technological alliances at the international level and BIAC fully supports the efforts of the OECD CLP Committee in this area.

Measures such as the European Commission proposal for review of the EC Merger Regulation could in some cases facilitate companies engaging in international technology co-operation through consortium agreements. Under this proposal, merger agreements which fall outside the scope of EC Merger Control could still be reviewed by the European Commission if they are subject to multiple national jurisdictions. The effect of this measure will be that such agreements can be cleared more quickly and efficiently because they have to follow only one procedure (“one shop” principle). As far as technology agreements are concerned, the new EC group exemption for technology transfer agreements also represents a step in the right direction.

The impact of regulation

The absence of a commonly shared regulatory framework between countries can have a negative impact on the possibilities of international co-operation in research and technology. Under such circumstances, global enterprises often find themselves constrained by the least common denominator of different regulations in different countries. The example of biotechnology, where regulations differ widely, has been extremely detrimental to research being pursued in certain countries, and has in some cases forced companies to relocate their research or testing facilities. This clearly represents a barrier to international collaboration in a fast evolving domain and promising sector of OECD economies. Similar problems may also be affecting certain aspects of medical research. On this issue, BIAC strongly recommends the OECD Governments jointly explore the merits of developing industry-led, market-driven regulatory approaches and harmonisation at the international level in the new or rapidly evolving technology areas.

4. Issues in co-operation with scientific research organisations

Rigidities in the management styles of academic and public research institutions can complicate international technology co-operation initiatives. The experience of one member of BIAC’s Canadian Member Organisation the CCIB illustrates this point:

“Currently *Inco Limited* is involved in an R&D consortium on mines automation with a company in Sweden, and a company and university group in Finland, and CANMET in Ottawa. The consortium tried to involve the National Research Council (NRC) in Ottawa, Vancouver, and Montreal on specific sub-projects, but were unsuccessful in getting the NRC involved. The problem with the NRC was their inflexible approach to R&D management. Even though the consortium adequately defined the scope of the series of projects in sufficient detail for the CEO's of all three companies and CANMET, the NRC was unable to cope with a scope that was not thoroughly defined

in advance of doing the work. This is clearly unhelpful for the innovative R&D of the sort the consortium is doing. The point about R&D rigidity does not apply to all organisations as the consortium did not have troubles getting assistance from CANMET, but rules of public sector R&D management are not being uniformly applied within Canada (and we suppose elsewhere also).”⁹

5. Data exchange networks

Deficiency of globally accessible data exchange infrastructures is recognised by business as an impediment that restricts communication among research groups and enterprises and therefore limits the choices available for a company and/or research institution seeking partners at the international level.

In addition to deficient infrastructure, and especially the difficulty of using public networks for data exchange, due to security and other problems, the use of networks is further constrained by complicated and time-consuming administrative barriers to the international movement of data.

6. International movement of research professionals

In international technology co-operation it is absolutely essential to be able to directly exchange researchers among R&D organisations, as such co-operation cannot be limited to mere exchanges of written literature. However, formalities required for the delivery of visas and work permits for research personnel can be an impediment for such exchanges, as these regulations have often been designed without regard to the importance of exchanging key personnel among countries. Moreover, the efficiency with which the issuance of such documents is managed varies greatly among countries.

On this subject BIAC does not wish to question the responsibility of governments to control the flow of people across their frontiers. However, we invite the OECD to transmit to governments that their regulations in this area, and the efficiency with which they are applied may sometimes act as a barrier increasing the cost of international co-operation.

In addition to restrictions at the border crossings, the international movement of research professionals can be constrained by the different organisation of science and research systems in different countries. Differences between education systems and academic programmes partly reflect different national or regional priorities, and such differences may in themselves foster diversity and division of labour in basic scientific research. However, increasing the ability of scientific institutions to recognise qualifications internationally and recruit researchers educated and trained in different academic traditions according to rapidly changing requirements of research would add stimulus to technological co-operation between countries.

⁹ Source: Information provided by the Canadian Council for International Business (CCIB).

7. Restrictions resulting from Cocom/Wassenaar Arrangement¹⁰

Private business is fully aware of the OECD governments' responsibility, singly and in many cases collectively, to ensure the security of their populations. BIAC does not wish to challenge the notion that technologies which clearly have advanced military applications should be denied to countries whose governments are believed to pursue unfriendly policies towards developed market economies. Therefore, private business is ready to observe the necessary regulations for this purpose.

Global business welcomes the recent revision of the COCOM (Co-ordinating Committee for exports to the former communist block) restrictions, that is, the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies, which is to be effective from November 1996 on. However, in spite of a certain easing of restrictions, private enterprises that are involved in the international exchange of technological information continue to devote considerable time and labour in complying with export control legislation of each different country deriving from this security arrangement. Essentially, private enterprises exchanging potentially sensitive information have to file applications every time with each of the governments.

At least in some countries, private enterprises are trying to reduce the burden by applying for a General Bulk Licence for service transactions and exports. However, in order to obtain this type of Licence, enterprises have to satisfy the requirements self-control systems be secured by establishing a specific department within the company to administer and inspect functions related to sensitive transactions. This requires that such transaction be recorded internally even when business partners are located in OECD countries.

Without intending to question the validity of the concerns underlying the Wassenaar Arrangement, BIAC would like to emphasise that the complexity of the control regime can and does act as a limitation on the smooth flow of technological information and samples, which is what international technology co-operation is about. BIAC recommends that OECD governments took a fresh look at this issue to examine the impact of Export Control Laws on enterprises and identify areas where administrative procedures can be simplified to reduce the heavy burdens placed on international collaboration. This issue should be expected to require urgent attention, as an increasingly larger share of information is likely to flow through electronic data networks.

The difficult task for governments in this area is to find the appropriate balance between encouraging international technology development and establishing restrictions on the basis legitimate national and collective security needs. BIAC encourages governments to examine this issue more fully and develop guidelines for national consideration.

8. Special issues of medium and small-scale enterprises

In recent times the evolution of technology and managerial organisation, on the whole, has been in the direction of helping reduce the importance of scale economies for technology creation and science-based production. This would make technology-based co-operation a priority issue between smaller enterprises. However, whereas smaller companies may see their capacity to engage in R&D or international co-operation improve, their general capacity to deal with complex legislative and regulatory environments of different countries may have

¹⁰ Source: Information provided by the Japan Federation of Economic Organisations (Keidanren).

remained unimproved, as nothing suggests that current technological and managerial developments have contributed to making law and regulation simpler anywhere.

A contrary development has been the relative relocation of the labour force in OECD countries away from large corporations and towards smaller enterprises; a phenomenon that has been particularly marked in some of the economies of Central and Eastern Europe that have recently accomplished a transition to a market-based structure. To the extent small size is a constraint in engaging in R&D and international co-operation, this development may have reduced the share of OECD technological activity that can co-operate on a global basis.¹¹

In relation to medium and small enterprises, governments may consider providing exposure or training to such companies or an IPR expert to help them understand the IPR rules in other countries, as such enterprises often do not themselves have in-house expertise necessary for this and may find it too expensive to acquire it. However, financial help to such companies for participation in technology projects would constitute a subsidy, and, as in all supply-side support measures, may suffer from various handicaps having to do with the displacement of non-recipients or inefficiency of administering small-scale operations.

Under the denomination of medium and small scale enterprises various types of businesses exist with very different capabilities and difficulties linked to their domain of activity, their technology content, the life time of their product(s), their staffing, etc. BIAC is conscious of this diversity, and recognises the need for further work to understand the specific needs of smaller enterprises with respect to R&D, IPR protection and international technology co-operation.

III. Implications for Future Work and Co-operation

* BIAC supports analytical work and deliberation among OECD Governments, under the aegis of the CSTP, and in the general context of OECD's work to strengthen the multilateral nature of the international environment for trade and investment, to improve the comparative understanding of barriers to international technology co-operation, and develop recommendations for the convergence of regulatory and institutional conditions affecting such co-operation among developed market economies.

* BIAC is willing to co-operate with the OECD CSTP on an ongoing basis and provide business and industry expertise to the OECD to develop further some of the issue areas outlined above, where current regulations severely constrain the ability of firms to co-operate internationally. These topics would be selected after consultation between the OECD CSTP and the BIAC Committee for Technology and Industry.

* BIAC recommends that the future OECD work on technology co-operation be developed in close synergy with the Organisation's ongoing work on the Multilateral Agreement for Investment (MAI) and regulatory reform and that MAI give adequate coverage of issues involved in international investment related to R&D.

* Some BIAC Member Organisations may also be willing to organise contacts between their government, research institutions and business to disseminate the understanding of

¹¹ Information provided by the Confederation of Polish Employers identifies the small average size of enterprises as the chief impediment to successful international technology co-operation by the Polish industry.

international issues in scientific and technological co-operation involving enterprises. BIAC Secretariat is willing to be instrumental in identifying, in collaboration with the OECD Secretariat, opportunities for such country-based dissemination initiatives and develop them.

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ANNEX 1

The BIAC Discussion paper is based on contributions by companies and individuals affiliated with BIAC's Member Organisations from Canada (the Canadian Council for International Business -- CCIB), France (Conseil National du Patronat Français -- CNPF), Japan (the Japan Federation of Economic Organisations -- Keidanren), Mexico, (Confederación de Camaras Industriales -- CONCAMIN), the Netherlands (Vereiniging VNO-NCW), Poland (the Confederation of Polish Employers) and the United States (The U.S. Council for International Business).

The Background Report provided by Japanese members was prepared on the basis of consultations with the following organisations, most of which are members of Keidanren: (broken down by sector of principal activity)

- * Electronics: *Fujitsu, Hitachi, Mitsubishi, NEC, Siemens Japan, Toshiba*
- * Automotive: *Nissan, Toyota*
- * Chemicals: *Asahi Glass, Mitsubishi Chemical, Toray,*
- * Heavy industry: *Ishikawajima-Harima*
- * Construction: *Kajima*
- * Energy: *Tokyo Gas*
- * Others: *JRDC (Research Development Corporation of Japan)*

ANNEX 2.

IRDAC Opinion on Intellectual Property Rights:
Executive Summary and Main Conclusions and Recommendations.

June 1996

(Full Report is available from the BIAC Secretariat)