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**INTERNATIONAL INFRASTRUCTURE COMPETITION:
TOWARDS A POLICY FRAMEWORK**

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FOREWORD

As national telecommunication markets open to competition, it is important to have in place a framework for international infrastructure competition. This report examines some of the relevant issues in this context. The report was examined by the ICCP Committee at its 14th Session on 6-7 December 1994 and it was agreed to make it available to the public on the responsibility of the Secretary-General. The report was prepared by Mr Dimitri Ypsilanti from the Directorate for Science, Technology and Industry.

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INTERNATIONAL INFRASTRUCTURE COMPETITION: TOWARDS A POLICY FRAMEWORK

1. Introduction

In recent years there has been an acceleration in the liberalisation of OECD national telecommunication markets. Value added service markets and terminal equipment markets have, for the most part, been opened to national and international competition. The elimination of restrictions has meant that the areas reserved to monopoly or restricted provision in the telecommunications sector are mainly for the construction and operation of telecommunication infrastructure and so-called basic telecommunication services (mainly voice communications). Recent regulatory changes in a number of OECD countries, and especially developments in the European Union, will result as well in the elimination of telecommunication service monopolies. These progressive regulatory changes have meant that the last major barrier to competition in the telecommunication sector is the restrictions on the competitive provision of communication infrastructure.

In the past there has been a close linkage between telecommunication services and infrastructure. This linkage has been eroded mainly because of the digitalisation of signals which has meant that the differentiation between types of messages is no longer valid, and that services once considered basic can become feature rich. Thus, regulatory difficulties in differentiating between value-added network services and basic services have become compounded. As well, this process and other technological developments have blurred distinctions between different types of communication infrastructures and have made available at relatively low prices means to access and by-pass existing infrastructures.

Linked with these technological and service developments is the requirement by global corporations for communication services and facilities. Many large corporations, faced with intensive international competition and economic pressure to enhance internal efficiency and reduce costs, have followed a strategy of concentrating on their main line of business. In turn, the combination of competitive and economic pressure, is leading these corporations to intensify their use of communication systems and services, to place pressure on service providers to reduce communication costs and to outsource their communication requirements. The importance of these corporations in global demand for communication services has meant that public telecommunication operators are actively bidding for their business.

The above mentioned developments have brought increasing attention to bear on the question of eliminating barriers to entry for the provision of the hardware and software for switching and transmission that constitute the telecommunication network and support telecommunication services. The ICCP Committee and the Working Party on Telecommunication and Information Services Policy have already examined the issue of infrastructure competition from the perspective of national markets. The aim of this paper is to consider the question of infrastructure competition in the context of international telecommunication markets.

Two main issues require examination in the context of international infrastructure competition: the benefits of such infrastructure competition and the "organisation" of such competition. This paper will examine the latter issue while the first will be the subject of a separate paper. It is, however, useful to be reminded of the main conclusions reached in previous ICCP work on "The Benefits of Infrastructure Competition" (DSTI/ICCP/TISP(93)13/REV1) where it was concluded that:

- "facilities competition can bring substantial benefits to users, in terms of increased choice, greater innovation and higher quality of services at reduced prices;
- liberalisation stimulates significant gains in the size of the telecommunication market;
- universal service has not been impaired by market liberalisation, on the contrary facilities competition can be applied to complement and enhance universal service;
- competition encourages improvements in the efficiency of public telecommunication operators and opens up new employment opportunities in and beyond the telecommunication sector."

These conclusions are equally valid in the context of the international provision of telecommunication services. The increasing integration of national economies at the global level through trade in goods and services, through foreign investment and through strategic alliances among corporations, requires as support the globalisation of communication services. Indeed, many governments have in the last year emphasised the importance of national information infrastructures for economic growth and development and the importance of open markets in this context. Clearly these economic benefits will be enhanced through increased international markets as well.

2. Coverage and definitional Issues

The term "infrastructure competition" in this paper covers communication infrastructures, wire-based or wireless, which can be used for the provision of telecommunication services, as well as satellite facilities and satellite earth stations. With regard to satellite communications, the opening of international markets to competition would require changes in the structure and status of the existing International Satellite Organisations. The trend toward the merging of the telecommunication and broadcasting industries is well established. This is taking place through the merging of services as well as the merging of infrastructures. By implication the coverage of infrastructure competition should not exclude infrastructures, such as used for the provision of cable television. Here, however, the process is complicated by the fact that most countries have separate regulatory frameworks for broadcasting and for telecommunications.

Different facets of infrastructure competition can be envisaged:

- based on international simple resale;
- between fixed-link infrastructures;
- between mobile infrastructures;
- between mobile and fixed-link infrastructures;
- between fixed-link and cable distribution or broadcasting infrastructures.

The first is fairly simple to implement on a fairly widespread basis; the last is more complicated in terms of regulatory requirements and with regard to transition periods.

This wider coverage noted above is at odds with existing practice in a number of OECD countries where presently segmentation by technologies and service forms the basis of regulatory practice. For example, a number of countries have accepted limited competition for cellular mobile telephony services but not for wire-based or satellite-based telephony services. Only a few countries have moved toward allowing the cross-provision of services between their broadcasting and telecommunication sectors.

The wide coverage of the term "infrastructure competition" does not imply that different technologies have no specific characteristics. On the contrary. For example, spectrum availability may impose certain restrictions on the number of operators for satellite and mobile services and questions of content, although separate from infrastructure issues, are likely to remain closely linked with broadcasting infrastructure questions. But it is important to recognise that the different technologies and the services they provide can be complementary as well as competitive with each other. Areas of complementarity or competitiveness also change as new technologies evolve, as different services emerge, and as price structures change. There is also the question of what constitutes the infrastructure. It is becoming increasingly apparent that the definition of the network should only include transmission capacity and not switching; the latter has become software-intensive and has become more and more linked with service capability. For example, resellers can own switching capacity in several countries.

The term "competition" with regard to communication infrastructure competition implies that no market entry restrictions exist; that is the number of participants in the market, the types of technologies they use to provide service, and their geographic coverage are determined by the market. In reality, at least in the transition period from monopoly to competition, most countries would impose different restrictions on investors and operators of communication infrastructures. These restrictions could be of several types: first, limitations on entry (quantitative restrictions in GATS terminology); second, broad safeguard type restrictions which may be imposed on incumbent or dominant companies, new entrants, or both; and third, restrictions with regard to geographic coverage.

Entry restrictions can also arise because of inadequacies in regulatory frameworks. These may be just an effective in preventing economic competition to emerge. For example, if new entrants cannot obtain interconnection terms with a dominant carrier then they will be effectively barred from offering service.

3. Pressures for change

The concept of competition for the provision of international telecommunication services has until recently been alien. For the most part the provision of international telecommunication services has been viewed as requiring joint provision of services, on a co-operative basis, between different national carriers. The concept of co-operative provision has been adopted as well in areas such as satellite services and for the construction, maintenance and operation of undersea cable facilities. The concept of joint provision was used at the beginning of the Uruguay Round to argue that basic services should not be considered as traded services.

Technological, service, and regulatory developments have been breaking down existing concepts and frameworks. The reality of competition in the provision of international telecommunication services has emerged, and it is accepted by most industry analysts that such competition will continue to grow, even though at present there is very little "head-on" competition.

There are several ways that this competition is emerging. First as domestic infrastructure liberalisation has taken place this necessarily covered the provision of outgoing international traffic for most countries given that the former monopolies were integrated service operators (with the exception of Australia and Japan where domestic and international service were separated). There are now eight OECD countries (United States, Japan, United Kingdom, New Zealand, Australia, Sweden and Finland) who no longer have monopoly service provision for international telecommunication services (Canada still has a monopoly for inter-continental facilities, which accounts for only 30 per cent of its international traffic, but allows for resale of overseas circuits).

Second, with regulatory changes it has become possible in a number of countries to provide telecommunication services on a resale basis. The elimination of reserved telecommunication services which will become effective in the European Union in 1998 (for at least nine countries) will stimulate national and intra-Community resale markets. The emergence of resale markets also reduces significantly much of the rationale countries (and operators) have put forward to justify maintaining infrastructure monopolies.

Resale was initially limited to domestic markets, because it was argued that it was inappropriate to allow international simple resale (ISR) to take place given the structure of the international telecommunication tariffication system (the accounting rate system and the settlement rate structure). The arguments put forward were based on the fact that ISR by-passed the accounting rate system. However, support for ISR among regulators has increased as policy sensitivity grew to the fact that accounting rates were significantly out of line with costs and that the system of bilateral negotiations for inter-continental accounting rates did not provide an appropriate mechanism to reduce accounting rates and collection charges. Now, international simple resale is considered as appropriate for the provision of international telephone service in a number of countries, such as Australia, Canada, Denmark, New Zealand, Sweden, the United Kingdom, and the United States. A number of European Union countries are at an intermediate stage whereby for closed user groups the resale of voice services is allowed.

Third, the role of communications has become a key factor both within enterprises and in their national and international competitive strategies. Enterprises with global activities have been placing significant pressure on governments to open markets and loosen regulatory restrictions, and on operators to provide them with the services they require to carry out their business. In turn, competition has emerged from operators to provide the integrated telecommunication service needs of multinational enterprises. As regulatory barriers recede it has become possible to include voice services and switched data services as part of the integrated package offered to these companies. Domestic regulatory barriers are also being altered by national emphasis on information highways and multimedia which is likely to impact on industry entry barriers and lead to more widespread liberalisation of the industry.

Fourth, technological developments are providing possibilities for new entrants to take advantage of price asymmetries, to serve niche markets, and in general to by-pass existing operators. These different techniques allow hubbing to take place at the level of PTOs as well as different alternate calling procedures which can by-pass existing routes and pricing structures.

Finally, developments related to regional trade agreements and the General Agreement on Trade in Services will in the longer term impact on the liberalisation of the provision of telecommunication network infrastructures. Although the present Annex on Telecommunications in the GATS is unlikely to have an impact on eliminating restrictions on reserved telecommunication services and infrastructure, the agreement to continue negotiations on basic services provides significant momentum to this end.

4. An open market for international communications

Full domestic and international infrastructure competition entails that operators from one foreign country would be able to invest in another country to provide telecommunication services on an end-to-end basis. This means that they would be able to construct a national, and local network if this was required, as part of their business strategy. A completely open market environment would not have any specific industry regulations on entry, that is, there would be no licensing limitations although licensing as a means of imposing quality, performance and other requirements may be necessary. The New Zealand example is relevant in this context given that no entry barriers are imposed. In that country, companies wishing to offer service to ten or more people can be declared a network operator in order to take advantage of provisions which would assist in the construction of the network. However, registration is required for the provision of international telecommunication service because of existing provisions to prevent whipsawing in accounting and settlement rates and ensure proportionate return for traffic. These latter provisions are essentially in place because of asymmetric international market opportunities. Similarly, Finland, Sweden, the United Kingdom and the US have no or few restrictions on new entrants.

Competitive provision of telecommunication facilities and services on an international basis would need to put in place the type of regulatory structures and procedures being used in those countries where competition is relatively developed. The type of issues which would need to be resolved would include: the present system of tariffication and settlements; national restrictions on investment; foreign ownership restrictions; greater harmony between national regulatory concepts and practices. These issues cover market access and require that there is some mutual recognition of different regulatory practices and may require a greater co-ordination in policy frameworks; or a framework based on trade principles.

It should be recalled that existing progress in the opening of international telecommunication markets has taken place outside a trade framework. Experience with trade frameworks to date with regard to the telecommunication sector is that they have been useful to consolidate gains rather than open markets. But, also it can be envisaged quite easily that through greater equivalency in the types of safeguards used in domestic telecommunication regulations sufficient equivalency in market access opportunities would arise. This has already occurred for value-added network services, is true to a certain extent for customer premises equipment, and can be expected to occur fairly quickly for access to and use of leased circuits.

There are those who have argued that trade frameworks covering the liberalisation of basic services and facilities may not be very successful, at least in the short-term. Partly because by their nature such frameworks are implemented gradually and, partly some have argued, because government bodies with a regulatory mandate would be reluctant to be subjugated to trade frameworks; this implies that only once national market frameworks have opened sufficiently to competition would it then be possible for greater international liberalisation to take place. Others have argued that more rapid international liberalisation is likely to take place outside of trade frameworks; this is because the process of telecommunication liberalisation is being implemented by policy-makers and regulators convinced by the benefits of competition for users and service suppliers as well as reacting to market demands which have been unleashed by the availability of inexpensive, easily interconnected, technology and carriage.

The two processes (trade frameworks and domestic regulatory structures) can be both conflicting and complementary. They can conflict because there is a possibility that in some countries domestic change may be slowed down in order for trade frameworks to be finalised. Policy makers must ensure that this does not take place. In effect there is a need to push on both fronts: to convince countries of the benefits which more open telecommunication markets can have for users and to work towards an

embedded set of rules and an appropriate international framework for international infrastructure competition.

5. The system of tariffication and settlements

The present market structure for international telecommunication services based on the concept of the joint provision of services has been largely responsible for shaping the structure of the existing accounting rate system and settlement practices. The structure of the existing payment system is not conducive to a market structure based on multiple network-based service providers. "Joint provision" is a structure suited for monopoly provision; the bilateral negotiation of accounting rates (or collective determination in the case of TEUREM), and joint traffic stimulation schemes, are characteristics which derive from such structures.

The difficulty in using the existing system of service provision and payments is evident from the experience of those countries which have allowed new facilities-based international service providers to enter the market. These new entrants are dealing with a dominant operator in a terminating country who already has well established relations with the dominant operator in the originating country. It is clearly difficult for the new entrant, who cannot at the early stages of competition provide significant traffic to a foreign operator, to negotiate on a bilateral basis an accounting rate which is favourable. As well, if the foreign operator is a monopoly it would be relatively easy to use this market power to gain advantages from operators from a foreign country competing with each other.

To avoid the situation where foreign monopolists discriminate or take advantage of their dominant position, regulators from countries where international service competition is allowed have implemented regulatory safeguards. These safeguards require adoption of similar accounting rates by operators in the competitive country with the monopoly operator in another country, and proportionate return policies for traffic. Although necessary, these safeguards tend to restrict competition between operators from the same country who should be competing on price and for traffic. Where there is international competition it is appropriate to eliminate these safeguards. For example, UK and US international carriers are no longer required to adopt similar accounting rates in their bilateral negotiations.

In an international telecommunications market in which there are a large number of network-based operators, resellers and mobile operators providing roaming capability the payments system which would be feasible is one based on access charges, that is a fee charged by facilities providers for access and use of their networks either to transmit or to terminate a message. A number of OECD countries have gained sufficient national experience on interconnection pricing to be aware that such charges should be based on certain principles. These include non-discrimination, transparency and cost orientation.

Increasingly, as well, it has been recognised that when an incumbent operator with market power maintains control on bottleneck facilities, in the transition period to increased competition, then regulators may need to take a more active role on ensuring that interconnection is undertaken on a fair basis consistent with the previous principles. An effective interconnection framework is essential in stimulating competition, as well as ensuring that competition in a multi-carrier international service environment would drive the level of these charges toward costs.

The pricing problem is relatively easier to handle from a regulatory perspective than the requirement to ensure that a new entrant obtains return traffic. One solution in this case would be to allow

by-pass through international simple resale and hubbing. However, the problem in this case would be to gain market access in the country with a monopoly carrier.

Discussions on international infrastructure competition should not focus on accounting and settlements policy as a main issue. Rather this issue will be the outcome of introducing competition. This does not imply that the pricing issue is not important. On the contrary it is important to ensure that in a multi-operator environment that the focus should be in ensuring that interconnection frameworks are based on similar principles. Since in the initial phase of introducing international infrastructure competition it could be expected that resellers would play an important role, it is important that regulators ensure that carriers practice accounting separation, that is, the interconnection charge should be the same as the carrier "pays" itself. Regulators should also mandate more liberalised resale of other services suitable for interconnection in order to ensure the viability of these resellers.

Liberalisation of international telecommunication services and infrastructures would impact on revenues of many operators. This is because the prices for international calls are high relative to costs resulting in earnings from international traffic providing a disproportionately high contribution to total income. Although a number of countries are beginning to rebalance their tariffs this has in many cases not occurred in a significant way. Competition helps in accelerating tariff rebalancing. Experience has shown that arguments that tariff rebalancing needs to occur before competition is introduced inevitably tend to slow down the change in market structure and do not usually result in progress either in rebalancing or in the introduction of competition. At the same time, however, users while welcoming price reductions should to the extent feasible not be subject to sharp and unexpected price increases.

6. Restrictions on investment and foreign ownership

Market opening for telecommunication services has taken place in some countries by following a duopoly policy supplemented by allowing simple resale. Allowing a second operator has of course lifted the restriction that only the monopoly carrier can construct and operate a telecommunication infrastructure. By limiting the market to a duopoly the easing of investment restrictions is also by definition limited.

A second type of investment limitation has been through placing restrictions on foreign investment. Discrimination against foreign investment has usually been undertaken through limitations placed on ownership by foreign entities. There is little consistency among countries with regard to these limitations (Table 1). In certain cases while no limitations on foreign investment exist, safeguards have been put into place to allow the government to take steps to protect the public interest as it sees it. These safeguards have included a "golden share", or providing government members of the Board of the operator with special powers.

Governments have also, de facto, diluted foreign ownership by limiting in the privatisation process the percentage of shares that can be owned by any one entity. Since this measure impacts equally on potential national and foreign investors it is non-discriminatory.

The issue of limitations on foreign ownership and foreign investment in communication infrastructures is key to the process of international infrastructure competition and liberalisation. At present, only a handful of OECD countries have stated restrictions on foreign investment. For other countries, the fact there has been traditionally state-ownership of the operator (and for many countries until recently the operator was a government department), the question of foreign ownership did not arise. In that national investors were equally excluded from the market there was non-discrimination.

Tables 1 and 2 show the present restrictions on foreign ownership in Member countries with regard to wire-based facilities and mobile radio facilities. A distinction needs to be made between allowing foreign investment in facilities and strategic investment by a foreign entity in the existing operator. Several OECD countries may allow a foreign operator to become a strategic investor in the incumbent carrier. The reasons differ, for example, to increase management efficiency and accelerate investment through access to foreign funds, or to reduce the government deficit. Such strategic investment tends to be an one-off transaction and does not introduce a new legal framework with regard to foreign investment in the sector. It does, however, assist in eventually reducing barriers which have tended to view foreign investment in telecommunications in a negative light.

It is also interesting to note that mobile communication services have been treated quite differently than fixed-link services, even though it now appears to be quite likely that the two technologies will be competitive (though at present they may have more complementary aspects). First, there has not been a great reluctance to allow foreign operators to participate in the construction and operation of mobile services. Second, in some countries the infrastructure issue with regard to the provision of mobile services seems to be ignored; that is, mobile service provision is determined through a licensing scheme for the provision of services and the granting of a licence is sufficient to allow for investment.

6.1 Privatisation

Is privatisation necessary for effective international market access and competition? The corporatisation of operators has, up to recently, been viewed as sufficient to implement the basic requirement for regulation, which is the separation of regulatory from operational functions. However, it can be argued that recent developments in market structure are bringing into conflict: i) the state as owner (share holder) of assets and the market (competition); ii) the state as owner of assets and the state as regulator; iii) a national state-owned and operated telecommunication infrastructure with foreign state-owned entities wanting to obtain market entry; iv) aspirations of state-owned operators and their perceived interest in national and international markets, and the perceived interest of their owners (the state).

In terms of the European Union, for example, the abolition of reserved services in 1998 (with perhaps a relatively rapid shift to a form of facilities competition thereafter) implies that there will be, in principle, no borders restricting the provision of services within the EU (with the exception of those countries which have been exempt from the immediate implementation of the directive). This means that the main business of state-owned enterprises (voice telephony) will be subject to competition and that probably the strongest competitors to these entities will be other state-owned telecommunication operators. Many of the potential new entrants into the sector may also be state-owned enterprises (electric utilities, railway enterprises). The potential conflict that could result would be best defused through privatisation or at least by transferring state-owned assets into an independent holding company. The appropriate application of competition law as a control mechanism could also be useful in this context.

Similar arguments apply to broadcasting. The process of convergence between carriage (facilities) in the broadcasting and telecommunication sector involves integrating two different, but government-owned infrastructures. In the move towards multimedia and competition integration would in such instances be difficult to achieve as long as government ownership remained. Privatisation offers one of the most appropriate solutions.

6.2 *Landing rights*

Effective market access for international facilities-based competition requires, in addition to investment in a country, the right for operators to land submarine cables in a country and to obtain interconnection to public switched networks. The same arguments would apply for satellite earth stations.

6.3 *National security*

The most common reason that countries provide to oppose foreign investment in telecommunications relates to national security. However, it is quite clear that in national emergencies and other situations where national security considerations are called into play, most governments have already general provisions to harness national economic resources as required. Furthermore, most Telecommunication Laws have specific provisions empowering governments in cases of national emergency and requiring operators to provide assistance. Concerns over foreign-owned telecommunication service providers also tend to decline in multiple service provider markets.

7. **International simple resale**

In recent years a number of OECD countries have allowed international simple resale, although these countries are not similar in terms of market liberalisation for services and infrastructure. Resale has been viewed as providing a rapid means to supplement competition in markets. Authorisation for the provision of ISR has differed among OECD countries. Some countries have allowed ISR only with other countries which provide equivalent opportunities to resellers. For example, the UK has permitted ISR to countries designated as equivalent for this purpose (i.e. these countries allow for equivalent freedom to provide such services in the opposite direction). To date these include Australia, Canada, Sweden and the US. In Australia and Canada the belief is that the advantages of resale are sufficient to justify its introduction on a unilateral basis. In the case of the United States ISR applicants are required to demonstrate, for each country to which they are requesting to provide service, that these countries afford resale opportunities equivalent to those in the USA; the interpretation of equivalency tends to be strict, and the regulatory process allows third parties to stall the decision process without at the same time requiring a deadline to respond to applications. As a result the implementation of ISR has been slow.

The fact that ISR policies have been different has been unfortunate since the effect has been to reduce the potential for more competition internationally which in turn would have helped to break down the resistance to change. The difference in implementation has not been based so much on differences in the overall goals of telecommunication policy, but rather on beliefs as to the impact that different procedures would have on incumbent operators or on how best to stimulate wider market opening internationally.

ISR provides service competition but it is also useful in the process of introducing infrastructure competition because it assists in bringing downward pressure on accounting rates. This in turn would help in the process of national tariff rebalancing where it is required. International resellers will be able to engage in traffic rerouting and accounting rate by-pass, and through price arbitrage will tend to eliminate any discriminatory pricing that exists in markets for international telecommunication service. But ISR is essentially a transition mechanism and should not be viewed as a substitute for infrastructure competition, nor would it provide the same benefits.

8. Toward a policy framework for international infrastructure competition

The process toward international telecommunication infrastructure competition will necessarily be evolutionary given differences in the rate of structural change in national telecommunication markets. As international competition increases, and as more countries realise the benefits of such competition the process will accelerate. What type of policy framework will be required? Essentially, the international framework need not differ very much from national frameworks which are already in place. A key objective will be to conciliate different perceptions on market entry, on regulatory practices and on limitations on foreign investment.

A second requirement will be to decide on the process which will be used to encourage progressive liberalisation. One approach would be a formal trade framework, the other to follow existing informal practices where regulation provides certain freedoms to service providers with countries which also allow corresponding practices. Obviously, given the time that may be necessary for the first approach to be negotiated and made operational, the second approach provides the required flexibility and speed to open specific markets but lacks an overall framework.

8.1 *Market access*

Market access restrictions will be an important focus in the transition toward international infrastructure competition. These restrictions which cover market entry, rather than imposing restraints or requirements on construction and operation of infrastructure, include limitations on the number of operators allowed in different market segments, the procedures required to obtain permission to operate a telecommunication network and offer services to the public at large, the time required to obtain regulatory approval, the ability to obtain rights of way, access to radio spectrum, and access to numbering.

There is no scientific way to decide on how many public telecommunication operators, facilities-based or otherwise, a particular market can bear. The market is perhaps the best judge. When competition has adjusted prices so that they are cost-based the incentive for new entry will be low. The experience of countries which have allowed open entry has shown that many new entrants have targeted niche markets, or are providing service to specific geographic locations or customers. There have also been cases where operators have had to withdraw service because the continued provision of service was uneconomical. The issue of the number of facility-based operators that a market can sustain is complicated by the fact that the different technologies available in the market are becoming increasingly competitive with each other.

Despite the above arguments it can be expected that many countries will place limitations on the number of infrastructure licences they offer. Some will argue that their country is too small, others that it is necessary to allow time for the dominant operator to restructure, and others that limitations are necessary to protect the consumer. These differences in market access are potentially problematic; in the case of the European Union this issue may need to be addressed in the forthcoming Green Paper on Infrastructure Competition.

8.2 *Regulatory safeguards*

Most OECD countries, even though they may maintain a monopoly for basic services and infrastructure, have implemented regulatory safeguards. These may cover access to reserved services and infrastructure, social safeguards, and those concerned with public resources. The first type may cover access and use of leased circuits, conditions of access to infrastructure and basic services, interconnection,

etc. The second type may cover, for example, universal service, and the third type numbering, radio spectrum allocation, etc. These safeguards are essentially national in focus, or regional in the case of the European Union (even in this case there is wide variation with for example, the UK which has much more developed safeguards given its open market, and other countries which are allowed to lag in the implementation of different Directives). Experience has shown that effective market access can be hindered without effective safeguards.

As yet there are no international regulatory safeguards. With international service and infrastructure competition the necessity of having international safeguards needs to be examined. It cannot be expected that, at least in the short term, countries will be able to sufficiently alter domestic safeguards in order to have harmonious safeguards. National regulatory frameworks, legal traditions and administrative practices may differ too much.

Some illustrative examples are useful in this context: for example, in the case of universal service there are differences among countries in definition of the concept, as well as in the regulatory requirements for implementation. In some countries targeted subsidies may be given to compensate for high costs of providing service in certain areas (or to certain income groups); in other countries the responsibility of providing universal service is given only to the incumbent monopoly carrier (usually the dominant carrier); in other cases the burden of universal service may be distributed across operators each of which is required to make a contribution to deficits incurred in the nation-wide provision of telecommunication service. In the latter case it may be viewed as fair by some countries to require foreign companies providing service in the country to make contributions as well, even though the service coverage of these foreign companies in that country may not be national. As countries move at varying speeds toward implementation of broadband communications (and national information infrastructures) new concepts of universal service may be introduced which create even greater gaps among countries. Another example is the differences in allocating licences and spectrum for the provision of mobile services. There are also important differences with regard to interconnection frameworks and in dealing with the issue of accounting separation of operator activities.

There are some safeguards which, while specific to the national regulatory framework, can impose restrictions on foreign companies. For example, US regulators prohibited Telmex (Mexico) to directly or indirectly provide goods or services in the United States or Canada because of the shareholding in that company by Southwestern Bell (and the restrictions imposed on the RBOCs from the Modified Final Judgement).

Differences in national regulatory safeguards should not necessarily be viewed as slowing down the process of international infrastructure competition, even though they can cause misunderstanding or can be used by parties on either side to slow down the process of change. There is, however, an evident convergence in terms of the main principles and main requirements that regulators are implementing in different OECD countries. For example, most recognise that an interconnection and equal access framework need to be set down by government, and most countries recognise that numbering should be treated as a national resource; at the European level there is a distinct movement toward greater coherence between regulatory frameworks, largely as a result of European Community initiatives and bodies such as ECTRA which have embarked on a harmonisation process. The European Public Telecommunications Network Operators' Association consider that a certain number of problems rising from telecommunication liberalisation could be solved by introducing safeguards which they have defined as including the termination of all non-telecommunication related burdens on operators, the implementation of timely and adequate tariff rebalancing, fair competition especially by avoiding any form of cross-financing from competitors who may be monopolists in other sectors, avoiding a ban on CATV network (co-)ownership

by telecommunication operators, and allowing operators to carry any form of video or multimedia services on their networks. These safeguards may not coincide with those that regulators may wish to implement.

8.3 *Non-discrimination*

A fundamental trade and regulatory principle is that of non-discrimination. This is also a key principle for infrastructure competition. One of the main requirements would be that new entrants should not be discriminated against because of their country of origin. This relates back to the issue of foreign ownership and investment restrictions. The concept also is relevant to the issue of reciprocity referred to in the next section and in the context of ISR.

Non-discrimination in an environment with infrastructure competition clearly must encompass the application of regulatory practices and safeguards. Non-discrimination in this context pertains to the application of regulations to national and foreign-owned enterprises in a particular country. Thus, regulatory proceedings including licensing, terms of interconnection, access to radio frequency, etc. must be equivalent between national and foreign entities.

Limitations imposed on the number of licences issued for the construction and operation of a specific infrastructure are not necessarily discriminating if the process for allocating these licences is transparent and based on objective and non-discriminatory criteria. Limitations on foreign ownership are, in themselves, discriminatory, even though the process through which foreign entities obtain ownership may be fair and transparent.

The momentum toward privatisation of public telecommunication operators may, over time, lessen the importance of the foreign ownership issue especially with regard to incumbent operators. In the short-term, however, as competition is being introduced in different OECD countries it is more important to address the issue of whether foreign ownership restrictions will be imposed on new entrants rather than with respect to existing operators. Given the fact that at present there is greater sensitivity in many countries with regard to foreign ownership in broadcasting, the technological and ultimately economic merger of broadcasting and telecommunication infrastructures and services will heighten interest in this issue.

Non-discrimination requirements may also require a review of a number of national laws. For example, in Canada the recent telecommunications law confirms existing policies which maintain Canadian ownership and control of Canadian carriers by Canadians.

The application of non-discrimination as a concept does not call for conditions; it does not demand reciprocity. It relates to the treatment of entities in the provision of services and infrastructure, in seeking entry into markets and in their treatment once they have achieved entry. There has been an unfortunate tendency to link non-discrimination and reciprocity in debates, and this has tended to slow down the market opening process rather than assist in liberalisation. This is discussed in the next section.

8.4 *Reciprocity*

In discussions during the Uruguay Round some countries were reluctant to apply the most favoured nation principle (MFN or non-discrimination) to basic services (and infrastructure) on the grounds that there are considerable differences in the extent of market opening among GATT signatories. This could result, according to those countries, in service providers from countries with closed markets obtaining unconditional and immediate access to open markets without any pressure for them to in turn

open their own markets. Conditional MFN would, therefore, be viewed by some countries as a preferable principle. This argument is linked to the type of question being debated in the United States as to whether greater global telecommunication liberalisation is obtained through denying access to the US market to operators from countries with more closed markets, or whether it would be more effective to influence the opening of foreign markets by showing other countries and companies the concrete benefits of liberalisation.

The debate on reciprocity is fundamental to the process of further liberalisation in telecommunications for two reasons. At the general level, if it is argued that market access will be on the basis of reciprocity, that is allowed only to entities from those countries that have open markets, then the process of international competition in telecommunications will be evolutionary since there may be insufficient pressure on lagging countries to change. Any pressure that occurs through inefficiencies in service markets and high costs may only be felt in the medium to longer term. Some US operators have argued that denying access to the US telecommunication market (the world's largest) will pressure countries to open their markets. However, this shows a misunderstanding of why some markets remain restricted. It is to protect their own market rather than to obtain new business in foreign markets. The second reason is that if reciprocity is defined strictly (mirror-reciprocity) then liberalisation will slow down to a snail's pace as parties attempt to define and demonstrate equivalency.

It seems evident that at the international level, given national differences in legislative frameworks, legal frameworks, regulatory practices, accounting laws, and a whole myriad of other economic and social factors, "mirror-equivalency" does not provide a basis for an international framework for telecommunication competition. Nor would it be tenable in a GATT framework. "Mirror-equivalency" would lead to a syndrome where all potential foreign competitors are considered as blemished. For this reason arguments have been made for having only broad equivalency rather than mirror-like reciprocity before market entry is allowed. Similar arguments can be made for the concept of "comparable access". But, if a regulator is required to define and demonstrate comparable access or even equivalency for each request for market access, and if different national regulators use different criteria, then it is unlikely that much market access would occur. A better understanding of different terminologies is helpful: for example some countries use the term "comparable access" to describe the ability of carriers in country X to discriminate in favour of a partner in country Y relative to the ability of carriers from country Y to compete or have partners in country X."

An example can illustrate difficulties raised by concepts of reciprocity. A country may place limits on the number of licences it extends to facilities-based operators and once this limit has been reached no new licences will be issued. An operator from this country tries to gain market access to another country where there are no limits on licences; the operator is denied access because in its country reciprocal access is not available. The example may be exaggerated but indicates difficulties in using concepts which have no role when the end goal is to maximise international market liberalisation for infrastructure and services. The end goal of public policy should be to maximise consumer welfare. Market liberalisation is a major step among several options in the welfare maximising process.

In examining the issue of reciprocity it needs emphasising that there are only a handful of operators who have the investment capability to access financial resources and have the technological depth to undertake on a significant scale international investment in other OECD countries. Most of these potential companies are from countries where markets are open or are likely to open relatively fast. Given the reasons most governments/operators give to maintain a monopoly position it would be incongruous if their operators (and their governments) were to invest in competitive infrastructures in other countries. If there is evident abuse by foreign companies of the market opportunities being offered then appropriate action can be taken. It should not be presumed a priori that this will occur.

The fact that the legal and policy frameworks of different countries may not be amenable to change in the short-term and require a transition period is also an important argument against reciprocity. For example, in the US it may require legislation before local competition is allowed on a general basis, whereas in some countries this could be introduced relatively quickly through administrative procedures. In the Community the provision of competitive infrastructures on a trans-European basis requires agreement and the determination of an appropriate framework among the 12 Member states. In areas such as rate rebalancing transition periods will differ among countries according to the extent that prices are out of line with costs.

Asymmetric regulations will inevitably continue as countries go through different stages in the regulatory process. Late beginners in the liberalisation process cannot always catch up with the early starters.

9. Conclusion

In the OECD there are a sufficient number of countries with competitive market frameworks to allow the reality of international competition to emerge. Concrete steps could be taken rapidly to stimulate the movement towards international open markets. A first important step is to allow international simple resale across these countries. ISR places immediate pressure on tariff rebalancing, and enhances efficiency in operators. Trans-OECD networks can relatively quickly become a reality. Once these have become established among several countries they will place considerable pressure on other operators to participate, and implicitly to pressure their own governments to open national markets.

A number of telecommunication operators are increasingly viewing themselves not as a national utility charged with switching and transmitting traffic, but as a multinational business enterprise aimed at meeting market demand (irrespective of the national identity of the market) and maximising profit. They are therefore willing to enter in joint ventures, and allow these ventures to take telecommunication traffic from the founding companies if this can be done more cheaply and therefore increase profits. This focus on commercialisation will radically change the industry.

With the rapid disappearance of service monopolies, the pressure from mobile cellular services, and the pressure from convergence between broadcasting and telecommunication, the present structure of the telecommunication industry is no longer tenable. It is also naive to believe that dynamic competition can be created only from service competition in the longer term.

Technological change and innovation have led to the proliferation of ways to send, receive and manage information over telecommunication networks. The resulting new products and services have meant that it has been increasingly difficult for public telecommunication operators to satisfy totally all types of users under traditional monopoly arrangements. For some users access to a telephone service at reasonable rates remains the highest priority. For others the priority has become access to new services, made possible by the convergence of telecommunication and information technologies. At the same time alternative service suppliers want the opportunity to meet growing demand in competition with incumbent PTOs. Experience in a growing number of Member countries shows the application of facilities competition to be a valuable tool in taking advantage of such developments.

Table 1. **FOREIGN OWNERSHIP RESTRICTIONS IN TELECOMMUNICATIONS**
Wire-Based Facilities

Australia	There is a duopoly up to end of June 1997 and each of the present carriers have a 25 year licence. Telstra is 100 per cent government-owned. Foreign ownership of Optus is restricted to 49 per cent. Simple resale at the national and international level is allowed.
Austria	Only PTV, the public telecommunication operator, can construct telecommunication network infrastructures to provide public services. Construction of networks for use within an organisation is permitted if customer demand cannot be satisfied by existing facilities. PTV is legally part of government. Foreign ownership is not relevant.
Belgium	Belgacom has an exclusive right to construct and maintain the public telecommunication infrastructure. Belgacom is an "autonomous public enterprise" with no shares issued. The Government is planning partial privatisation; 51 per cent ownership will be maintained and the remaining 49 per cent sold partially to a foreign strategic investor and partially placed on the stock exchange.
Canada	Facilities-based carriers limited to 20 per cent foreign ownership. This level can rise to 33 per cent of those companies which hold an interest in a telecommunications carrier. In addition, at least 80 per cent of the sitting members of the board of directors must be Canadian citizens. With the passage of the Telecommunications Act (October 1993) a "grandfathering" clause was included for the 51 per cent ownership by GTE Corporation of the USA of both B.C. Tel and Quebec Tel. Foreign ownership restrictions also exist for Teleglobe Canada which include provisions preventing non-residents from owning more than 20 per cent of the voting shares and designated telephone companies from owning more than 30 per cent of the voting shares.
Denmark	Tele Danmark has a concession for installation and operation of the transmission routes and exchanges linked to public services. The government owns 89 per cent of the operator's shares; this will be reduced to 51 per cent in 1994 with no restrictions on foreign ownership.
Finland	The provision of telecommunication facilities is open to competitive provision (a licence from government is required). Telecom Finland is a joint-stock company with 100 per cent government ownership. There are no restrictions on foreign ownership.
France	France Telecom has a monopoly concession for the provision of communication infrastructure open to the public. FT is a government enterprise operating under commercial law. It has no shares issued. Foreign ownership is not relevant.
Germany	The Federal Government has the exclusive right for the provision of the network (defined as the provision of transmission lines); it has transferred this right to Deutsche Bundespost Telekom which has a monopoly concession. Under the Telecommunication Installations Act the Federal Government may confer authority to set up and operate individual telecommunication installations. DBP Telekom is part of the federal administration and is organised as a company.
Greece	OTE, a government-owned corporate entity, has the exclusive right as regards the installation and operation of the fixed public telecommunication network. The government is considering privatising a share of OTE.
Iceland	Public telecommunications networks in the context of infrastructure for telecommunications and voice services remain the exclusive right of the State and are vested in the P&T.
Ireland	Telecom Eireann has a statutory exclusive privilege to provide the public telecommunication network. TE is not a joint-stock company. Foreign ownership not relevant. TE may seek a foreign strategic investor.

Italy	Concession for network infrastructure provided to monopoly carriers. All concession holders are companies regulated by commercial law. Two concession holders are partially privatised (quoted on the stock exchange). The majority of the share capital is owned by Italian and foreign shareholders (the latter accounting for about 20 per cent). The merger project of the companies Iritel, Italcable, Sirim and Telespazio with SIP was approved in May 1994 (the new company is called Telecom Italia). The government approved a decree in May 1994 to accelerate the privatisation procedure in the public services including telecommunications. This decree will be approved by parliament in a short time.
Japan	Foreign entities allowed to hold shares in NTT and KDD up to 20 per cent of voting shares, but other Type I carriers may include foreign participation up to 33 per cent. Type I operators require authorisation from government. NTT has about 66 per cent government ownership.
Luxembourg	The operator is a government-owned monopoly. Foreign ownership is not relevant.
Netherlands	Only KPN, which has an exclusive concession, is allowed to construct and operate network infrastructure. KPN (not PTT-Telecom) is a joint stock company. The government has decided to partially privatise KPN with no restrictions as to the foreign ownership of shares placed on the market. Under active discussion is a proposal to set-up a second fixed link carrier. It is also possible to install, use and operate satellite earth stations from Dutch territory.
New Zealand	There are no restrictions on the construction of network infrastructures. Foreign ownership is restricted to 49.9 per cent of the shareholding of any single company (an initial exemption was granted to Bell Atlantic and Ameritech to exceed this limit provided that within three years their shareholding was reduced within the limit -- this has now occurred). The Government holds a single class share (Kiwi share) to ensure TCNZ's compliance with universal service.
Norway	Only the monopoly public operator can construct infrastructure. Foreign ownership is not relevant.
Portugal	There are three operators (in the process of being merged into a single operator). Two of these are stock companies 100 per cent government owned, and the third is 51 per cent owned by government. The state holding is through a holding company. Foreign investors' direct or indirect participation in the capital of public telecommunication operators cannot exceed 25 per cent (foreign is defined as outside the European Community).
Spain	Carrier services can be provided on a limited competition basis by any of the three public operators (depending on the type of service). Carrier operators need to obtain a licence for each one of the services provided. Foreign investment can exceed 25 per cent of capital for Telefónica but it is necessary to obtain permission from government. The state owns 33.61 per cent of Telefónica's shares. The legal status of the other two public operators, Retevisión and Organismo Autónomo Correos y Telégrafos, is such that it does not allow foreign investment.
Sweden	No restrictions on organisations establishing or constructing telecommunication infrastructures. A licence is required for certain telecommunication services within a public telecommunication network which will normally be granted unless the applicant is obviously not capable of pursuing the activity with adequate capacity and quality. The government owns 100 per cent of the dominant carrier, Telia, and is the only permitted owner.
Switzerland	The infrastructure is maintained as a monopoly of the PTT. Foreign ownership is not relevant.
Turkey	PTT maintains a monopoly and is considered a state economic establishment. A review of the monopoly market structure is underway.

United Kingdom Any entity may apply for a licence to install and operate a fixed telecommunications system. There are no restrictions on foreign investment. The government holds about 1 per cent of shares in BT which it intends to dispose of, and Kingston-on-Hull city council owns 100 per cent of Kingston communications

United States Foreign-owned providers can provide common carrier services. US law, however, limits direct foreign ownership of radio licenses to 20 per cent. Indirect ownership is limited to 25 per cent, but there is a provision that permits ownership above this benchmark where particular circumstances warrant. Foreign-owned US carriers can build and operate their own wire facilities for the purpose of competing in the provision of basic services with the US and internationally. However, a US carrier may be regulated as "dominant" in its provision of US international service on particular routes where it is affiliated with a foreign carrier that has the ability to discriminate against unaffiliated US carriers at the foreign end.

Table 2. **FOREIGN OWNERSHIP RESTRICTIONS IN TELECOMMUNICATIONS**
Mobile Radio Facilities

Australia	Three Public Mobile Telecommunications Services licenses have been issued (including one to each of the fixed link competitors). A determination will be made in 1995 on whether to issue further licences. The third mobile carrier will be required to have majority Australian ownership after 10 years.
Austria	Only the PTO is authorised to provide mobile infrastructure and services.
Belgium	Only Belgacom is authorised to provide mobile infrastructure and services, but it has a joint venture a foreign company.
Canada	Licences for radio communication services are approved by Industry Canada. The 20 per cent maximum foreign ownership restriction exists also for mobile radio facilities.
Denmark	Two public mobile communications (GSM) licenses granted.
Finland	Competitive provision of mobile services with no restrictions on foreign ownership. Service providers need to apply for a licence.
France	There is no monopoly on mobile infrastructures. Operators who wish to establish and operate a mobile network must request authorisation from the regulator. At present there are three mobile operators who have obtained such authorisation: SFR, France Télécom and Bouygues Télécom. The participation of foreign capital in these operators has been limited to 20 per cent. This limitation does not apply to operators from the European Union. This limit has already been attained for Bouygues Télécom and other companies are preparing to join SFR.
Germany	The Federal Government has the exclusive right to set up and operate radio communications. Mobile Communications have been opened to competition. There are no restrictions on foreign ownership.
Greece	Two licences for mobile cellular mobile networks have been awarded for a 20 year period. No foreign ownership restrictions were imposed on the licensees.
Iceland	Only the P&T is currently licensed to provide public mobile services.
Ireland	Only the monopoly fixed link operator provides mobile services.
Italy	TACS services are provided, at present, by SIP. GSM services will be provided by two operators: SIP/Telecom Italia and Omnitel/Pronto Italia (a consortium established by Olivetti, Bell Atlantic, Cellular Communications, Telia, Lehman Brothers, Mannesman, Pacific Telesis, Banca di Roma and other private investors).
Japan	Mobile operators are treated as Type I carriers with limits on foreign ownership of 33 per cent.
Luxembourg	Only the monopoly fixed link operator provides mobile service.

Netherlands	There is at present a monopoly on public mobile services although by the end of 1994 a second licence for GSM will be given. The construction, use and maintenance of infrastructures for private mobile services is allowed under a licensing regime.
New Zealand	No restrictions are imposed on foreign ownership and no licensing is required. Companies obtain management rights to spectrum and on this basis can provide a service.
Norway	Only the two licensed GSM operators may construct networks.
Portugal	The provision of mobile cellular services (complementary telecommunication services) may only take place after the granting of a licence and these are restricted by limitations of radio spectrum.
Spain	When Mobile services are used for third party service provision foreign investment limitations are the same as for wire-based facilities.
Sweden	There is no specified number of mobile operators allowed but spectrum constraints will place a limit on numbers. A licence is required to operate and a licence shall be granted unless the applicant is obviously not capable of carrying out the activity.
Switzerland	PTT has a monopoly for voice communications and is the only GSM service provider. No foreign investment in this market segment but no restrictions in other market segments.
Turkey	PTT has a monopoly on analogue cellular radio and is the operator of the GSM service on the basis of revenue sharing with two consortia.
United Kingdom	Mobile operators require a licence. They may apply to provide fixed service and incorporate fixed links into their network. There are no restrictions on foreign ownership.
United States	Section 310 of the Communications Act prohibits the grant of a radio license to a foreign government or its representatives and restricts "alien" ownership of a radio license used for common carrier service. These restrictions apply to any alien; any corporation chartered under the laws of a foreign country; a US chartered corporation with more than 20 per cent of its stock owned by aliens; and to any corporation in which an officer or more than one-quarter of its directors is foreign. Section 310 however gives the FCC flexibility to grant a radio license to a foreign-controlled applicant when that applicant invests through a subsidiary that holds the license. In such a case FCC discretion can allow foreign ownership to exceed 25 per cent. There are no foreign ownership restrictions for private (non-government) foreign companies seeking to obtain Title III licenses in the US for providing private, non-common carrier services either within the US or between the US and foreign points.
