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# OECD REFLECTIONS ON THE BENEFITS OF MOBILE CELLULAR TELECOMMUNICATION INFRASTRUCTURE COMPETITION

**ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT**

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**OECD REFLECTIONS ON THE BENEFITS OF MOBILE CELLULAR TELECOMMUNICATION INFRASTRUCTURE COMPETITION**

The OECD's Committee for Information, Computer and Communications Policy (ICCP) through its Working Party on Telecommunications and Information Services Policy (TISP) examined issues relating to competition in the provision of mobile telecommunication facilities at the June 1995 Session of TISP, based on a Secretariat background report. In view of the importance of this issue, and the positive reception delegates gave to the results of the report, the ICCP considered that wider dissemination should be given to its findings and the considerations of the Committee and its Working Party. The primary findings of this report are:

- -- markets with infrastructure competition, and in particular where there is competition in both fixed and mobile networks, are delivering best practice performance in terms of market expansion;

- -- while there is evidence that monopoly markets are improved by the introduction of a second operator, developments in duopoly markets have been far from optimal, and substantial gains are being lost by delaying further liberalisation;

- -- competitive mobile markets are delivering the most employment gains;

- -- universal service applications and social gains are being enhanced by the application of competition in mobile telecommunication.

There is a growing recognition in the OECD area of the importance of wireless communication for economic and social development. Mobile telecommunication is fast becoming an essential tool for business users seeking to boost efficiency in competitive markets and increasingly, is being recognised as technology that can enable policy makers to reshape their vision of universal service. While much discussion of information infrastructure is devoted to the new services that can be delivered to business premises and homes, the value of mobile telecommunication largely rests on its ability to empower users outside these locations. Mobile telecommunication is not only proving its worth in an increasing range of business and public sector applications, but more recently for personal communication users in areas as diverse as convenience in social relations, personal security and public safety. In some OECD countries mobile communication networks are also being used to extend universal service to areas not served by fixed networks.

ICCP and its TISP Working Party have been examining issues raised by the liberalisation of mobile telecommunication infrastructure for the past decade. During this time there has been a fundamental restructuring of mobile telecommunication policies. In 1986, 21 OECD countries prohibited competition in cellular mobile telecommunication infrastructure and only four allowed limited competition via duopoly markets (Figure 1) . By way of contrast at the end of 1995 it is expected that only four Member countries will have retained monopolies and 21 will have introduced some degree of competition (11 with duopolies and 10 open markets). Countries to introduce three or more operators include Australia, Canada, France, Germany, Japan, Sweden and the UK while regulation in Greece and New Zealand permits additional operators should they wish to enter the market. In March 1995, the US licensed up to six additional mobile telecommunication operators in each market currently served by two mobile cellular providers.

**Liberalisation momentum**

In 1994, ICCP issued an "OECD Statement of the Benefits of Telecommunication Infrastructure Competition" (http://www.oecd.org/). That statement noted that although monopolies still existed in telecommunication there is a clear momentum toward their elimination, and documented the benefits that had been achieved in liberal markets. At the same time ICCP requested that further work be carried out on the benefits of liberalisation with a view to supporting further reform. The case of mobile telecommunication is of great interest in this context because liberalisation is proceeding faster in this sector than in fixed network infrastructure. Since much of the reform in mobile markets has been carried out over the past three years it raises the question of what lessons can be drawn from this process for wider telecommunication policy reform. It is notable that the most dynamic period of growth in the use of mobile telecommunication has occurred since the wave of liberalisation gathered momentum in 1992.

In 1994 more than 1.2 million customers per month were added to mobile telecommunication networks (double the rate in 1992) and by year's end there were over 44 million subscribers in the OECD area (Figure 2). The recent surge in growth of mobile telecommunication has eclipsed what had previously been regarded as best practice. However success has not been uniform nor have the benefits been evenly distributed across different market structures. The available evidence shows that on average open markets are growing three times as fast as monopoly markets (Figure 3).

This development is highly significant for those governments actively reviewing the structure of their mobile telecommunication markets as part of broader information infrastructure initiatives. There is increasing acceptance that far higher growth rates are possible if reforms to market structures, and in particular increased liberalisation, are implemented. In Australia, a market with three mobile communication operators, average monthly growth in 1994 was four times what it had been with a duopoly in 1992 and nearly eight times higher than with a monopoly in 1991. In the UK, with four operators, monthly subscriber additions in 1994 were six times what they were in 1992 with two operators. Similarly Japan's decision to go beyond a duopoly in 1994 coincided with a six-fold increase in monthly subscriber additions. In Sweden the abolition of the duopoly has seen monthly subscriber additions grow five fold between 1992 and 1994 . Greece, after only three years of service with a competitive market, has a higher penetration rate than several other OECD countries after more than a decade of monopoly operation.

In fact the gap in performance between liberal and monopoly markets is growing, placing some countries at a critical disadvantage. This includes the social gains possible through the application of mobile telecommunication for universal service requirements, such as increasing the independence and security of the disabled or elderly. In competitive markets operators are addressing precisely these types of users with new tariff packages targeting their needs in affordable ways. For a decade until 1992 this market had been ignored by monopoly and duopoly operators. This is not to argue that performance may not improve in shifting from a monopoly to a duopoly but rather it may not be at an optimal rate without open competition. For example, Portugal believes that, given its geography and demographics, the country's duopoly is performing at a high level. Portugal is leaving open the possibility of further market liberalisation. Indeed the growth rates achieved in those countries with full infrastructure competition across all market segments is far superior to those where a monopolist still has bottleneck control over the public switched telecommunication network (PSTN) (Figure 4).

For the achievement of the economic and social gains possible, experience has shown that liberalisation of the mobile telecommunication market is only a first step. A clear separation, either based on regulation or structural separation, of incumbent PSTN operations and mobile operations has shown itself to be imperative to safeguard against anti-competitive practices such as cross subsidisation from monopoly

services. At the very least separation of accounts is a minimum requirement for a competitive market. This is not an onerous requirement. Operators should have this information as a matter of course to efficiently run their business and a growing number of PTOs recognise that structural separation (in the form of a spin-off company or independent subsidiary) best serves their interest in a competitive market. Moreover incumbent mobile operators need efficient access to the PSTN, the right to invest in and construct their own infrastructure, and, it is being increasingly recognised, choice in the provider of fixed network infrastructure.

Mobile telecommunication is one of the fastest growing areas of telecommunication employment. At a time when most PTOs in the OECD area are reducing the size of their work force, mobile telecommunication had generated more than 90 000 jobs in network operators by 1992.[1] In April 1994, the OECD made available to the public a report entitled "Employment Restructuring in Public Telecommunication Operators." That report showed a positive link between market liberalisation in mobile telecommunication and the growth in employees and took as examples the experience in Australia, Japan and the UK after the shift beyond duopoly markets.

**Why has competition been the driver of change?**

Competition is forcing operators to address new markets and in doing so is driving the development of personal communication. This is why markets with open competition are generally not only growing much faster than monopoly, and duopoly markets but changing the nature and characteristics of the subscriber base. Personal communication refers to the mass consumer market as distinct from business applications of mobile telecommunication. For example in Canada the number of women with mobile telephones is growing much more rapidly that the overall market. In 1991 women comprised 17 per cent of Bell Mobility Cellular's customers, increasing to 19 per cent by 1992. However by mid-1994 women comprised nearly 28 per cent of Bell Mobility Cellular's customers.

Yet it was only relatively recently that mobile telecommunication reached a major turning point by breaking out of the business market into the realm of personal communication. In the first decade of its development, 1982 - 1992, mobile telecommunication was overwhelmingly led by business demand. Many businesses were prepared to pay high prices for service, relative to the fixed network, because they recognised the importance mobile telecommunication could have for improving efficiency. By the same token the advantages of mobile telecommunication were clearly not important to all firms, or to the tasks of all employees, and certainly not at premium prices.

Charging relatively high prices to business users resulted in spectacular profit margins for many public telecommunication operators (PTOs), but this was an impediment to the expansion of service beyond a limited range of applications within the business market. Of course the high price of handsets also deterred personal communication users, who could not claim the cost as a tax deduction for business purposes. Yet the high cost was directly related, by today's standards, to the relatively low volume of handsets purchased from manufacturers. In 1994 sales of mobile handsets in the OECD were nearly four times greater than 1991.

The initial demand for mobile telecommunication came from people whose job required mobility (*e.g.* travelling sales, transport, trades people) but had to be in permanent contact with others (*e.g.* office, suppliers, customers). As most mobile users already had a fixed telephone line, initial demand came from

[1] OECD, "Communications Outlook 1995", Paris, 1995.

the development of a new market. Nevertheless this market was still only a relatively small part of the overall market for business communication.

Even though the expansion of mobile telecommunication was relatively slow in the decade to 1992, its pace was still far ahead of most expectations. The fact that demand outstripped expectations meant that there was little incentive to market services in an efficient way. Monopoly PTOs seemed content with the demand they had not envisaged rather than seeking a vision of new demand. For example, the pricing of mobile telecommunication was undertaken on a uniform basis and little differentiation was made for potential users with contrasting usage patterns (*e.g.* corporations, small business users, personal communication users). As a result many of the personal communication applications increasingly evident in a social context (*e.g.* security, safety, convenience) did not develop. However the wave of liberalisation between 1992 and 1994 has radically impacted on this situation.

The stimulus provided by new operators is forcing incumbents to be more responsive to the needs of existing customers and address new markets. Arguably, the greatest benefit from the introduction of competition in mobile telecommunication to date has not been price reductions, although it has certainly brought price discipline to many markets, but in making operators diversify their tariffs in search of new markets. Demand for the range of new tariffs has been little short of phenomenal. During 1994, the two original mobile telecommunication operators in the UK signed up five customers on personal tariff options to every one customer on business tariffs. The growth of subscribers of personal communication tariffs is now the primary driver of market growth (Figure 5). The new personal tariff options were introduced, after eight years of duopoly, just prior to the launch of the third and fourth market entrants. In many monopoly and some duopoly markets there is still one uniform tariff for all customers.

Incumbent operators have torn up pre-existing business and investment plans. In the same way that the advent of new entrants in the fixed link market has forced companies to bring forward digitalisation of their network competition is now driving mobile operators to expand capacity and upgrade their networks at a faster pace than originally planned.

The primary tool being used by operators in the first stage of openly competitive markets has been price differentiation. This has already had a dramatic impact on the growth in the mobile subscriber base in competitive markets and increased the scope for new business and personal communication applications. To date one of the most successful tariff strategies adopted by operators has been to change the balance between fixed and usage charges, by raising call charges and lowering fixed charges. The aim of such an option is to attract users with a lower connection and rental charge than a standard pricing. For users who value the convenience and security of mobile communication, and who can achieve these goals with a limited number of calls, 'low user schemes' can offer tremendous advantages over standard pricing packages.

The growth in the market for personal communication has also been a welcome development for business users. Indeed, some personal communication tariff options are attractive to certain types of business users. However the main gains from an increasingly competitive market are that operators are having to address new business markets. An example is a tariff option that allows a user to be charged at rates comparable to, or less than, the fixed network in a certain place of their choice (*e.g.* office, home) but at the usual mobile rates outside that location.

These new tariff packages are designed to attract personal communication users but not to encourage the total migration of business users from the initial tariff options. In this sense the new tariff schemes represent the first stage of a competitive market with operators seeking to differentiate their products by pricing options rather than competing directly on price. This strategy is optimal from the point of view of

mobile operators because the market is rapidly expanding, due in large part to the availability of these options, lessening the necessity to compete on price. As competition increases it would be expected that operators would compete more on price.

**Mobile Communication for All**

In those OECD countries without openly competitive markets it is demonstrable that the development of mobile communication is less than optimal. Substantial benefits are being lost not only by the contribution an efficient mobile telecommunication market can make for economic development, but in the social gains possible through the application of mobile telecommunication, such as increasing the independence and security of the disabled or elderly. Indeed, in competitive markets operators are addressing precisely these types of users with 'low user schemes' priced in affordable ways.

As recognition increases that efficient telecommunication is a key to economic and social development, the governments of OECD countries with monopolies, or inefficient duopolies, will face a stark choice. Either they introduce more open markets or face slipping further behind the pace setters. It should not be overlooked, based on improved achievements due to other factors, that competition is widening the performance gap between OECD countries. Some countries are harnessing competitive forces to take full advantage of the capability of mobile communication to enhance economic and social development. Other countries that have been slower to come to terms with the dynamics of this market are missing substantial gains. Moreover in an increasingly competitive global market it is notable that a number of non-Member countries, as diverse as Hong Kong, Malaysia and Thailand, are outperforming many OECD countries with monopolies.

The potential benefits for Member countries are very large in terms of lowering the costs of telecommunication for business and personal communication users and, over time, both improving and reducing the cost of providing universal service. It is being increasingly recognised that far greater costs are incurred by operators through inefficiency than in the provision of universal service. In the future mobile communication networks, to the extent that they act as a spur to increase PSTN efficiency, will lower the cost of universal service. As the costs of mobile telecommunication are reduced the scope for using this technology to improve aspects of universal service and achieve social gains in a variety of areas will increase.

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**The report which formed the background to this document is entitled "Mobile Cellular Communications: Pricing Strategies and Competition" and is published in the ICCP series (Number 39) by the OECD. It is available from all OECD publications outlets. Further information is available on this and other OECD reports on telecommunication at http://www.oecd.org/dsti/sti_ict.html.**

**Figure 1: Mobile Communication Market Structures in the 25 OECD Countries**

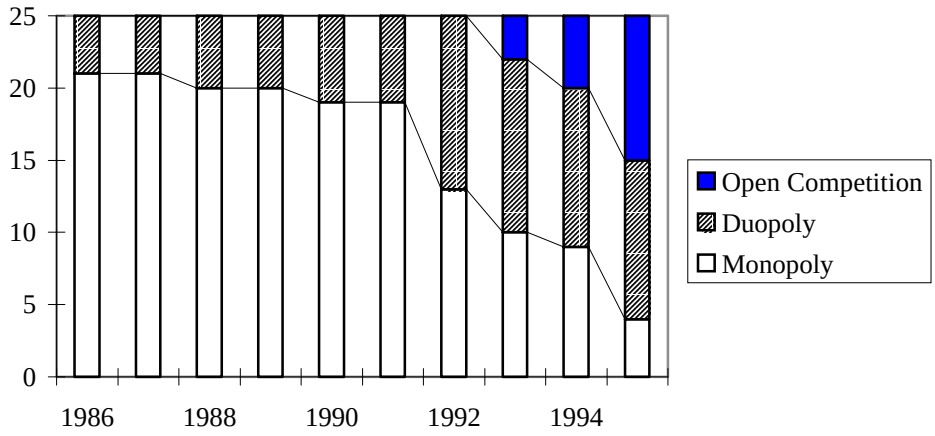


**Figure 2. Mobile Telecommunication in the OECD**

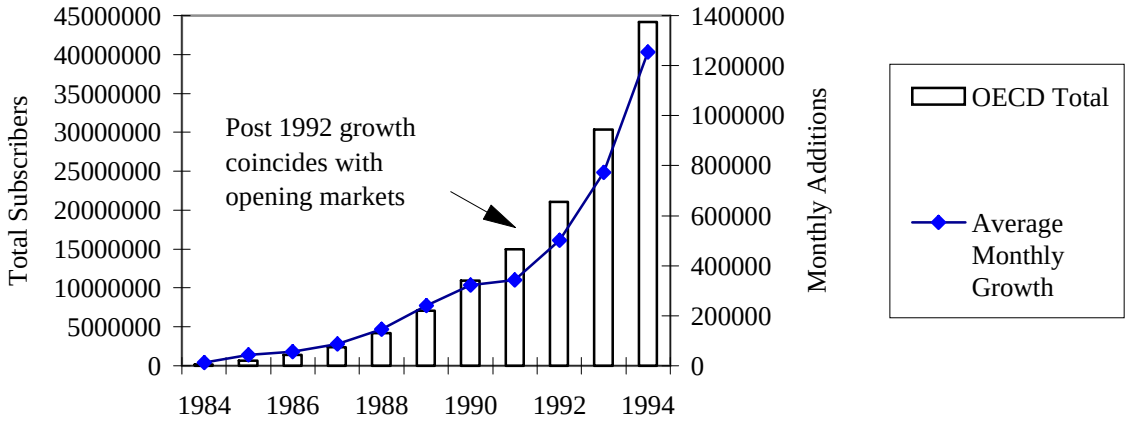

**Figure 3: Monthly Mobile Subscriber Growth per 1000 inhabitants (1994)**

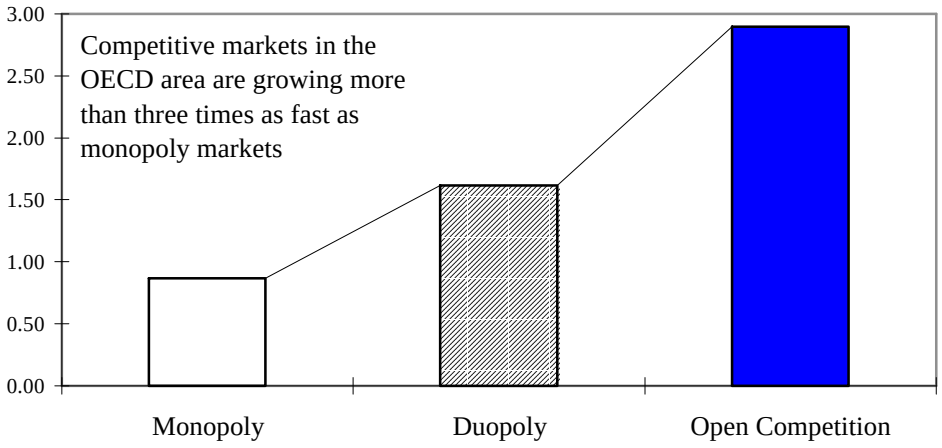


**Figure 4: Monthly Mobile Subscriber Growth per 1000 inhabitants (1994)**

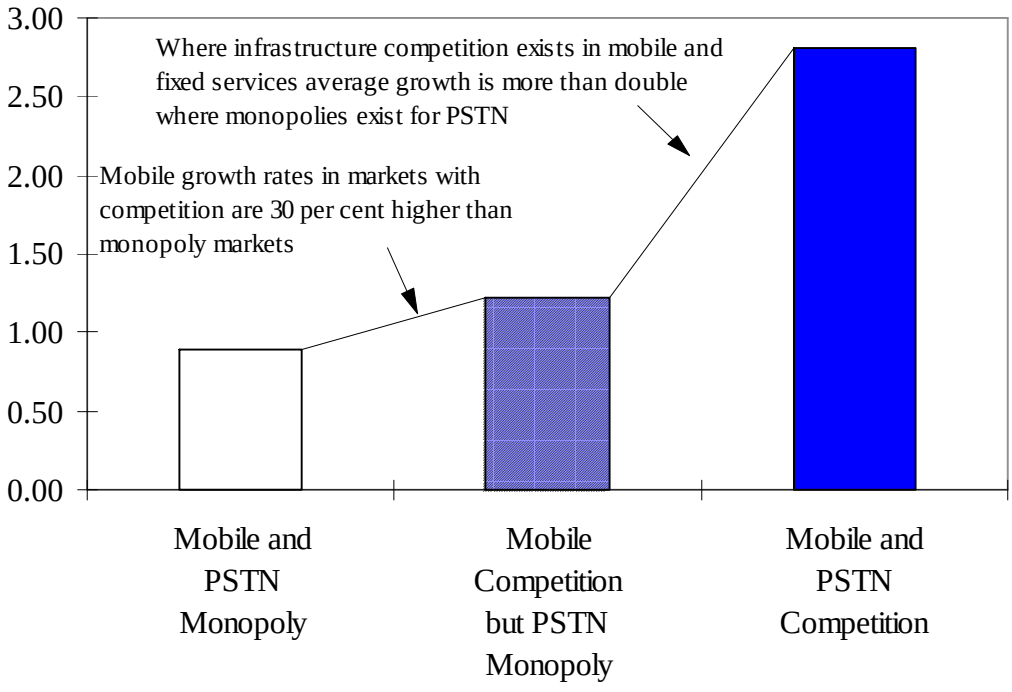

**Figure 5: Tariff Diversification and Subscriber Growth in the UK**