

Globalisation and Broadband: The case of the Greek telecommunications market

Apostolos G. Christopoulos^{1*} Lina Kosteletou² Konstantinos P. Vergos³

1. Lecturer, Department of Economics, University of Athens
2. Associate Professor, Department of Economics, University of Athens
3. Ph.D., Certified Analyst

Abstract

The aim of this paper is twofold. On the one hand, we investigate whether the liberalization of telecommunications within the globalization process has benefited all participating countries and on the other hand, we examine within a country, which types of consumer have benefited more. The main question is whether the era of liberalization offers lower prices and better services and whose interests are served the most compared with the previous situation of publicly-owned monopolies. During state ownership, big telephony users like enterprises subsidized households as part of social policy. However, the transition towards competition does not allow the implementation of such social policy. The aim of this paper goes further and argues that in reality the subsidization has been reversed and households pay for advanced services that they do not really need, leading to a decrease in the average cost for users. In this way the big users, who really gain from the advanced services face a lower usage cost. According to our conclusions, either on a state level or at an individual level, liberalization has led the weaker to pay the cost. According to our arguments, the period of public utilities benefited more the weaker consumers, i.e. the households, whereas the era of liberalization has transferred the benefits to the big users, i.e. the business users.

Keywords: broadband, narrowband internet, globalization, liberalization, benefits, disadvantages

***Corresponding Author: +30 6976327536**

E-mail addresses: axristop@econ.uoa.gr, nkost@econ.uoa.gr, kvergos@gmail.com

1. Introduction

1.1 The old era

After the World War II, European nations had to face huge economic problems. At that time, the telecommunications sectors in all the European states had been characterised by strong state monopolies. The private sector had almost collapsed and services like telecoms which were essential for society, could not be financed by private funds. It was therefore obvious that the state sector had to invest heavily, to provide these services and at the same time to create new jobs for the unemployed. This situation began to change in Europe, in the early 1980s, with the introduction of limited competition in the UK. After that, other European Union Member States (EU) followed and finally an agreement was made within the General Agreement on Trade in Services (GATS) negotiation for full liberalisation from the beginning of 1998.

For several decades, in almost all the EU member states, telecommunications were used as an *instrument of social policy*. The structure of such social policy was based on low tariffs for local calls and monthly rental and high tariffs for long distance and international calls. The main idea for this was to subsidise the households, which were considered to make more local calls, by the enterprises, which were considered to make most of the long distance and international calls. The low monthly rental was also a part of the social policy since governments treated it like a lump-sum tax which had to be low.

1.2 The needs of MNCs during 1980s

The *new era* was established in a more distinct way during the 1980s when liberalisation became the new trend for telecommunications. This was mainly the result of increasing international trade as well as the increasing role of multinational companies (*MNCs*), which saw the opportunity to enter new markets, not only in terms of consumption but also in terms of low labour cost, raw materials and capital. *For those MNCs, it was important to acquire advanced communication and information systems in order to expand their operations by minimizing at the same time their costs.* In other words, multinationals need computers to process large amounts of data information that will be manipulated by any subsidiary, anywhere in the world. Therefore, the electronic communications became of vital importance for MNCs.

1.3 Expansion of public operators

Since the end of 1980s, an increasing number of former public telecom operators from all the countries started to expand their geographical coverage to provide their services to multinational companies. In order to be able to offer the required advanced technology services, those telecom operators formed alliances. Such alliances, though, were accused that eventually *led to regional oligopolies rather than promote competition* whereas globally it was

possible to create cartels. In order to avoid such negative effects, it was necessary to develop a *new set of common rules facing the internationalisation of national telecommunications policies*, (Yoshiko Kurisaki, 1993).

1.4 The GATT, liberalisation and discussion issues in telecoms

It was in 1982, when the USA began to push, initially unofficially, for a new Round, the eighth in GATT's history. It was in Davos Symposium of the European Management Forum that the American ideas were laid out officially for the first time. The US Trade Representative, William Brock called for a Ministerial meeting to launch a new Round, dealing with new issues like investments, free movement of capital and liberalisation of trade in services. The Uruguay negotiations, considered as the most ambitious Round to date, were finally launched in September 1986 at Punta del Este of Uruguay with 116 participants.

During the 1980s, the proponents of free trade in services were increasing and finally succeeded in including the liberalisation for telecoms in the agenda of the Uruguay Round for GATT trade negotiations. *These developments were initially driven by the so called convergence of information technology with telecommunications, computers and broadcasting, which allowed potential investors to build alternative networks with lower initial (fixed) costs.* The advanced computer industry had pushed back the intensive limit of the market by reducing the costs of generating more and more types of data. During the Round, talks for telecoms were controversial and *serious conflicts between the trading partners took place, mainly between the developed and the less developed nations.*

At that time, the differences between the trading blocs were not concentrated on the advantages of the advanced technology, but on the question who could afford it. In other words, those opposing more liberalised international trading arrangements, argued that even though production becomes global the consumption does not follow the same direction. In the case of internet, which becomes faster year after year, the question is who can afford to use it and of course who really needs it. Is it therefore rational for consumers to pay the subscription for fast internet and of course for the relative equipment (modem, PC) even at the first stage of its development, when the prices are very high?

1.5 Broadband expansion discussion issues

The last decades, broadband has been considered as an increasingly significant aspect in affecting the global competitiveness of a country, (Lee, Chan-Olmsted, 2004). A critical question though is whether fast internet can be considered essential for countries which at the same time can not offer to their citizens even a minimum level of education and health or other social services. The same question is also addressed within a country concerning the

different groups of people who can buy fast internet and other advanced technology services. Do they really need fast internet or they can satisfy their needs with a dial-up connection which might be slower but cost very cheap. On the other hand, the argument of the proponents of international trade that advanced technology will increase the rate of development for poor countries which will be able to compete in the global environment, needs a further discussion.

1.6 Issues discussed in the paper

Taking the above into consideration, initially on this paper we examine the importance of fast internet for the poor countries¹. The effects of globalisation on the less developed countries include both cultural and economic issues. During globalisation era, less developed countries have been concerned about the flow of information to them whilst being unable to export their cultural products (e.g. ethnic music, movies, history) to the developed countries. Meanwhile, technological outburst, advertising techniques and media products were expected to affect national cultures and homogenise them, through promoting common trends and standards. It is then not surprising that ADSL was faced with hostility by the less developed countries.

Second, we investigate whether fast internet even in developed countries is as much important for every category of consumers, i.e. households, business users and the state authorities. In the case of the second stage analysis, we focus on the case of Greece, which is the last among the EU-25 Member States in ADSL connections and analysts, politicians and regulators have put great efforts to increase the national per user connection rate.

¹ Mainly the least developed countries where there are problems of clothing, food and housing.

2. Telecommunications liberalisation and globalisation

Telecommunications deregulation developed first in the USA where policy makers realised that regulation of monopolies limits competition and creates barriers to technological development. Alternatively, deregulation allows firms to become involved in new areas of activities. It was in 1934 when policy makers in the USA decided to relax the rules and bureaucracy surrounding telecoms. At that time the Federal Communications Commission (FCC) was established to regulate radio, television and telecommunications. In 1984 the most important decision against monopoly was taken in the USA with the divestiture of AT&T and the establishment of seven regional holding companies, the so called Regional Bell Operating Companies.

The first issue is how lifting import barriers affect the balance of trade among countries. The economic effect in the long run of lifting import barriers is questioned. What is the effect in the long run, if a particular country can not raise its exports by the same rate it increases imports? It is then possible, according to the opponents of the free trade that not everyone gains from free trade. In fact, developed countries with their powerful multinational companies can benefit from the advantages of liberalisation whereas the less developed countries may be losers.

The goal for the extension of GATT principles into service industries was to institutionalise further the doctrine of free trade, which was first formulated by David Ricardo², and which was initially advocated mostly by the US and the other developed countries followed after the World War II. On the contrary, the development of Internet, was not into the agenda³.

Proponents, consisted of an alliance between the modernising conservatives and the new post-socialist left, argue that the world is benefiting from faster technological process, historically unprecedented opportunities for the relief of

² Ricardo's theory for free trade based on the principle of comparative advantage was further developed by Paul Samuelson, who added capital flow to the cost of labour in order to determine the comparative advantage of a nation's economic production. Samuelson found that it made little difference whether capital was free to move between richer and poorer countries. Ordinarily, under free trade, we would expect capital to flow to the countries that have cheaper labour-cost, thus raising the standards of living in low income countries. Samuelson though, concluded that under free trade, wages would be expected to fall, and profits to rise in the rich countries, just as would happen if large amounts of capital were shifted overseas. Therefore it does not necessarily mean that the developing countries are at all benefited by the economic doctrine of free trade. Therefore, it seems that free trade does not automatically make every participant better off compared with an environment of protectionism.

³ The 20th century has been characterized by new technologies, including Internet, is maybe the most innovative century ever, since enterprises and individuals connect without limitations of time and space, (Sprano and Zakak, 2002). The Internet will become the vehicle towards an e-commerce based global economy. Schumpeter's theories that technologies will play the most important role for the future trade competition (1950) had promoted the so called neo-technological trade theories of 1960s according to which a country's trade is correlated with its technological capability, (Dosi, Pavitt, Soete, 1990). More recently, Porter (1990), in order to analyse the competitive performance between countries, developed a framework where the primary role of the nation is to ensure the availability of technologies and advanced skills for the domestic enterprises in order to become competitive in the long-run. Porter's "diamond model" (to depict the dynamics of an industry, he uses four dimensions (like diamond), namely the industry factors, the nature of the demand in home country, the supporting industries and the national conditions) analysis for the industrial performance at a national level has contributed to the theory of competitive advantage at the firm level (Lee, Chan-Olmsted, 2004). However, the studies which investigate the development of the Internet or even more of the broadband on a country level are limited.

global poverty, and greater freedom for millions of people across the globe. On the other hand, opponents, frequently a coalition between the populist conservatives the assorted communitarians and the old left, argue that it is essential to have a balance between an effective state and the economic efficiency that market forces can provide. In their opinion, market forces have the upper hand because of the new technologies' evolution and the result is that although benefits have derived from globalisation, these benefits are distributed unfairly within the society. In this sense, globalisation widens inequalities, in favour of the more skilled workers who are going to gain more whereas at the same time the unskilled will be driven to social "exclusion", (The Economist, 20.9.1997).

Proponents argue that unskilled workers will benefit from free trade especially in countries where wages are very low. That is because the free movement of capital flows and the huge advances in telecommunications have increased international competition and made it easier for firms to shift their production to low-wage LDCs (less-developed countries). At the same time though, analysts think that while economies shift from "the industrial age of steel and cars" to the "era of information and computers", advanced technology will destroy more jobs than it will create. Therefore, eventually the benefits from higher productivity rather increase the profits of the enterprisers than the income of the workers, whose wages will not increase by the same rate.

Therefore, the mobility of technology and capital flows put the theory of comparative advantage into question, since companies from developed countries can locate in places that have lower production cost, (The Economist, 28.9.1996). Policy makers must find ways to protect workers, perhaps by make it harder for firms to fire employees; or to put trade barriers or subsidise the national companies to protect them from international trade. In other words, the governments need to agree in order to set an international framework consist of strict rules and regulations, within which the global trade will take place. If this will not happen then it is possible to end with more protectionism measures on a national level than before liberalisation.

In conclusion, it can be argued that according to the comparative advantage, developed countries should specialise in high technology whereas the less developed countries should follow a low-wage policy and concentrate on labour-intensive industrial production.⁴ If this happens, one could argue that there is a perfect model of interdependence; but still the balance of dependency between the two parties might not be equally placed. It is true though, that less developed countries need the developed ones in order to enjoy the benefits derive from the advanced technology. Whereas, the less developed countries have neither the capitals needed nor the required skilled

⁴ It is argued that developed countries need the unskilled and semiskilled labour force of the less developed countries because technology develops rapidly and products become obsolete fast. Therefore, the labour cost becomes very important for the production and in this sense less developed countries have an important role to play.

personnel to promote their own production. On the other hand, the developed countries need new markets to invest because their countries have reached the saturation point. The less developed world is a good opportunity to their plans due to the low economic development and the low consumption for new technologies⁵.

At the same time, analysts and representatives of the developed countries argue that new technologies will bring several benefits also for the less developed countries that will participate in the international trade. They say nothing though, for the socioeconomic contribution of such foreign direct investments (FDIs) for these countries and the fairness of the distribution of benefits between the developed and the less developed countries. It is true that investors are expected to be the big multinationals from the USA, Europe, Japan and the other developed countries and their financial profits are expected to increase fast. On the other hand, it is also true that unemployment would be reduced in the less developed countries but this will mainly concern the unskilled workers. Specialised personnel are expected to come from the developed countries where people are better educated and have already the experience from the use of such technologies. It becomes therefore understandable that the so called "know-how" will not be transferred to the less developed countries and the technological gap between them and the developed countries will not close, at least in terms of human capital which becomes very important in the globalisation era.

⁵ For instance, in the case of the "wired telephony" which is developing very fast in developed countries, in less developed countries and especially in the African nations, such penetration is from poor to non-existent.

3 The development of new technologies and general issues about the usefulness of broadband

The development of advanced technologies in a country has certain benefits for its national economy or its social and political life. The absence of these benefits will widen the gap between this country and countries that have already developed advanced technology. It is therefore obvious that this paper does not challenge the sole development of advanced technology in a country. Instead, we examine whether the efforts by the developed countries to make consumers believe that benefits of the development of the broadband telecoms will mainly concentrate on them are based on solid ground. In our views, broadband will benefit the firms and mainly the big ones, whereas the households will benefit less. The state is somehow obliged to use broadband in order to ensure that also households will receive key benefits.

If we agree that public surplus is maximized at the point where the available national factors of production and technology advances are used in such a way to produce those goods and services that the society asks more, then a Pareto optimization can be achieved only if public decisions about broadband will be made with confidence, taking into consideration that the social and economic impact of broadband may be surrounded in controversies, (Firth, Mellor, 2005).

3.1 Benefits and threats for individuals

Why households need to replace the narrowband internet by bit stream broadband access? Do households really need to download large achieves from the web or the use of ADSL will allow them only to download with greater speed MP3 clips for music and movies? Furthermore, if they wish to navigate for several hours on the net without their telephone being busy, then why is ISDN not enough? If for such questions there are no convincing answers, then it has been to admit that skepticism is necessary.

Benefits from broadband for individuals focus in the areas of entertainment, communication, information, and electronic use of public services, health, education, and work. In particular, the broadband (BB) services offer higher data transfer speed that enables for individuals the smoother implementation of teleworking, e-banking, e-gaming, e-gambling, e-learning, e-health, e-commerce and e-government.

Concerning the BB entertainment and communication, it is interesting to mention that BB applications include among others, video on demand, gaming, streamed video and voice over the internet, (Bauer, Gai, Kim, Muth and Wildman, 2002). If benefits are restricted to the above mentioned set concerning entertainment and communication, it becomes doubtful, whether the benefits for the individuals are so important, compared with their real needs. Furthermore widespread BB services provide easy access to any

“entertainment” content, by any user regardless of their age that brings other issues into discussion, including morality issues (allowance of children to visit indecent sites that contain nudism) or social issues (should gambling be so easily accessible to every individual).

Therefore, we have to examine benefits from broadband for individuals in the areas of information, and electronic use of public services, health, education, and work.

It is generally accepted that broadband improves the quality of education and health services, with those benefiting most being those living in more isolated rural areas. However, irregardless whether it is true or not, it is not definite enough to explain how this is related with the needs of a household to pay for broadband access at home (Wales, Sacks and Firth, 2003).

Furthermore, even though teleworking offer savings in travel, congestion and pollution costs, (Firth, Mellor, 2005), at the same time the worker isolation will increase with people socializing less, leading progressively to a society where personal communication will decrease with all the negative effects for the society.

At the same time, the negative impact of new technologies for the labour market must not be ignored. Therefore, questions for the unemployed like whether technology will create more new jobs than will cancel, how the employed will secure their current jobs, or in which way employees will maintain their working status when technology allows the companies to work with less labor force in order to increase their efficiency, are open.

3.2 Benefits and threats for businesses

In the globalization era, big companies have to become as efficient as possible in order to expand their operations and increase their market shares worldwide. To become efficient, these companies concentrate their efforts in minimizing their operational costs so as to decrease their per unit (average) cost. In order to succeed this, companies have to use the most advanced technology in their production chain. However, especially in the beginning, such advanced technologies are very expensive, since it is needed to install network infrastructure in the entire geographic area, where the companies are located and operate.

In this way, the most benefited from the roll out of the new technologies, will be those who really need such services. The need for information services is higher, the higher the proportion of information cost in the company Value Chain.

In the past, the longer the distance and the larger the number of production/sales units, the larger was the cost of communication for a company. At that time, the possibility of large MNCs to acquire the cheapest

available services/materials among the countries they operated was partly outweighed by higher information costs compared to domestic companies. The transfer of invoices, documents, people and ideas (business meetings among country officials) required significant operational costs and one-off expenditures (e.g. the installation of private telecommunication networks required huge investments).

On the contrary, domestically operated companies did not have to invest in these services to that extent, so their cost differential from large MNCs was smaller.

In recent years, the increasingly rapid change of customer tastes and further differentiation among consumers made information cost a gradually larger part of the Value Chain⁶.

Therefore, although changing social trends made information cost high, domestic companies, even small ones, could still partly outweigh the cost differential to large MNCs based on their relatively lower information cost in their own Value Chain.

On the contrary to the past situation, where MNCs had to invest enormous amounts of money just to connect one business unit with another, or they had high operation costs to move personnel from one unit/country to another for business meetings, now they have succeeded in transferring their cost directly to the citizens of the respective countries! Concerning data transfer, this happens, because whilst in the past the telecom investment for fast data transfer was a company issue, today telecom operators and their government are obliged to develop rapidly a broadband (BB) network that will be funded eventually by a large mass of consumers.

Moreover, studies confirm that the benefits from developing rapidly that BB network favor mainly the larger companies. Indeed, based on the findings of Varian and Litan (2002), broadband promotes growth at the company level, in terms of saving costs and also increasing revenues. Furthermore, Stanford (2002), shows that most small and medium enterprises have not made broadband a central point in their operations, since they do not participate in the business to business e-commerce and therefore its contribution to the sales and revenues will be minimum. One may argue then, that the larger the company the more participates in the business to business e-commerce and the more it benefits by broadband internet cost spread among citizens⁷.

⁶ The value chain as described in Porter (1985)

⁷ Taking findings into consideration, we can say broadband has not much to offer in terms of growth that the Greek economy which is dominated by approximately 800 thousands SMEs. Maybe this can also explain why initially the tariffs for ADSL in Greece offered by the incumbent operator HTO were high on average, since the subscribers which are used as the denominator basis were around one hundred for the first three years. However, analysts argue that the regulatory authority EETT, pushed HTO to increase its forecasts for subscribers and make it more realistic. In this way prices were going down but at the same time it was shown how the producer's surplus was increased and who paid the cost.

If benefits are expressed in efficiency terms, efficiency will be higher if the replacement cost of technology is low. Consequently, the cheaper the cost of broadband for the MNCs, or for any other large company, the more efficient these companies can be. Speaking in terms of average cost, the more the subscribers can be, the lower the average cost will be. So, instead of having some thousands of business users⁸ to share the investment cost of broadband services, now the cost will be shared among million of users. In other words, effectively the households eventually subsidize the enterprises.

So, either new technology services like ADSL, are really so important for every consumer or consumers are trapped through the modern Trojan horse of "entertainment", and they finance MNCs competitiveness whilst undermining the competitive position of other domestic companies and finally their own working future.

Even if we assume⁹ that all companies are favored evenly by BB technology, we argue that in order for national economy to become more efficient, governments will try to minimize the cost for broadband in order for the businesses to buy it. The question though is how the increase of Gross National Product is distributed in the economy. Is it expected that the increase of GDP will be distributed fairly to the society or it will merely increase the profits of the businesses? If the latter will be the case, then companies will increase job positions or improve labour productivity with new investments, or they will just invest in the stock exchange?

3.3 Policy issues

If the benefit of BB technology is merely more profits for corporation, then we can come to the conclusion that in the case of the EU Member States' governments decided to move to an opposite policy than they did till the late 1990s. It seems from the facts that almost in every case in history there are winners and losers. More specifically, the EU member states¹⁰ have moved from a social policy through telecoms which begun after the World War II, towards liberalization and competition with privatisation. In other words, we have moved from a situation where businesses were subsidizing households, by paying expensive international calls contrary to the cheap local calls and monthly rental, towards a case where households buy advanced services that it is questionable whether they really need¹¹.

Having in mind that the above mentioned governmental efforts have asymmetric economic and social effects on the society, then it is not surprising to put on dialog the willingness of their intentions. Our point of

⁸ In Greece, there are 24,452 SA and LTD companies, according to ICAP 2007 *financial and economic directory*.

⁹ By following the probably naive argument used by government officials

¹⁰ Some EU member states asked for a further deadline. Greece was one of them and finally received an extension till 1/1/2001 with which it became the last member state which fully liberalized the fixed voice telephony.

¹¹ At the end of the day, increasing consumption leads to a decrease of the average cost for business and in this way we can conclude that the households' subsidies them.

view is that investors from developed countries seek to minimize operational (per unit) cost and this can be made by increasing the number of the users of the technology they need to use in the value chain. *On a country level, the more users will be, the larger the allocation base and the quicker the investment cost will depreciate.*

So, it is interesting to investigate why policy makers make so many efforts to extend the broadband usage by putting the countries in a racing list. Especially in the EU, after the Lisbon Treaty for a competitive Europe, all the member states are forced to achieve high national penetration rates rather than to focus on a broadband policy where the surplus of the society will increase as much as possible. As Bauer shows, the methods by which governments seek to grow broadband may disrupt the economic and social dynamics, (Bauer et al., 2002)¹². It is rather expected for a new service initially to be used by the companies and the state and then, when the usage cost will decrease and the households will begin to consume it also.

In this study we intent to show that the liberalization era has reversed the subsidization in favor of the powerful, i.e. the business users, while in the era of the state monopolies, the subsidization was in favor of the weaker, i.e. the households.

In more detail, as the liberalisation process begun and competition went ahead with privatization of the telecom state monopolies, cross subsidization was forbidden. A smooth process of price rebalancing was completed in order for the incumbents to compete fairly with the alternative operators which were expected to enter the market. In this way, especially in low-income countries, where telecoms were used as a social policy instrument, residential users were about to be priced at much higher tariffs than before.

Therefore, we believe that it is not well justified why such advanced services are considered essential for every user and in particular for every individual. Alternative, It can be argued that households will pay excessive price compared with the benefits they receive.

At the same time, even for the estimation of the indirect benefits for individuals, the social and economic impact of broadband needs to be identified in order for decision makers to take the proper actions, and maximize the social utility (Firth, Mellor, 2005).

On the other hand, for big business users the benefits are clear enough and are related with their competitiveness which increases their profits. The competitiveness of those companies though will increase only if the cost for acquiring the new technologies becomes as low as possible.

¹² At the same time, we must not forget that new technology services become obsolete in a short period of time and therefore depreciation period must be short in order to move to the next technology. In this sense, the more the users are, the quicker the depreciation is and therefore the pass to a newer technology is possible. Facing though with hostility this process, the gains for those producing the new technologies are endless.

4. The case of the Greek telecommunications market

In the case of Greece, the telecoms sector was a state monopoly till the beginning of 2001 when full liberalization was completed. Like in all the other EU Member States, the rebalancing process resulted in both monthly rental charges and local call charges to become more expensive. Additionally to the rebalancing process which was in favor of the businesses which decrease their communication costs, the BB technology appeared to increase further their ability to communicate better and cheaper at any place in the world.

Concerning the use of telecoms for informative and educational reasons, alike in other countries, in Greece internet services when firstly became available to the public, constituted a great innovation at a low cost. Internet would offer significant changes in people's every day life, free access to the most recent news, accurate weather information, almost free access to information on any aspect, ability to money transactions, and communication by e-mail at a small cost. It is interesting though that for access to internet services the only extra requested equipment for a telephone subscriber was a modem. Anywhere that PSTN was available, a telephone subscriber could buy a modem, pay a small, if any, subscription¹³ to an Internet Provider (ISP) and surf by paying a very low usage fee, just 0.3 EUROS per hour.

On the contrary, high-speed data transferring has required important investment by companies, mainly MNCs and large state owned organisms. In the case of ADSL, broadband services are addressed mainly to the businesses which will become more efficient and to the public, i.e. the state authorities, via which the citizens will gain most of its benefits.

The difference of ADSL with dial-up internet is that for the provision of ADSL it is needed to roll out expensive capital investments, mainly paid by the incumbent. Most of these investments concern the network infrastructure which is a fixed cost. Therefore the more ADSL users share the cost the less the average (unit) cost will be for each user. On the other hand the modem for dial-up internet costs the same for every subscriber no matter the number of subscribers. Since, it was demonstrated previously that the needs of the individuals can not satisfactorily justify the need for ADSL access, while benefits for business users are straightforward and large, we argue that in Greece subsidization has been reversed in favor of the business users.

Furthermore, having in mind the cost differential observation between dial-up and BB, we may be able to explain why the international organizations, the EC and the national authorities push subscribes to use ADSL whereas they did not do the same, at least with the same intense, in the case of the narrowband internet. It can be argued, again, that big multinationals which at a first stage drove the States to the globalization era, now, at a second stage,

¹³ Some telecom or internet providers provide free access to most of their customers, as part of their marketing policy.

they try to find ways to access new markets with the lower possible cost for them. In this way the new technology with broadband services becomes the means that will carry them to the new markets where they will be able to compete with the established national companies.

In particular in Greece, nearly 1 million of customers are expected to pay to cover annual investment of 400 million EUROS in broadband networks within FY 2008. Given that annual pre-tax profits of companies operating in Greece, excluding banks, were approximately 6 billion EUROS¹⁴, and 75% of these profits, approximately 4.5 billion EUROS, come out from MNCs, it is obvious that the enormous cost saving that represents BB customer subsidization by customers is important even for the already high profit figure of these large companies.

In order to examine who really needs ADSL more, first we must divide users into categories. Initially, the users can be distinguished into the public sector, the business users and the individuals (households). At the same time, we must not ignore that BB is only an improved form of the narrowband internet and therefore it offers an added value to the users who already use the dial-up internet or the ISDN internet.

We argue that citizens can enjoy the public services and the services of the private sector also by dial-up internet. For them the only real benefit will be the speed with which they will be able to download large archives. However, at present such archives for individuals are mainly movie films, available at low resolution/quality, and on-line video games¹⁵. In reality the availability of the content for individuals, proves that they have the role of the financiers for enterprises, since the more they become, the lower the cost for the enterprises will be.

One may argue that network competition generate several advantages for the sector. However, this is possible when alternative networks are already available. For example, in the case of the Netherlands, or the UK, the cable networks which were available from before have been upgraded to offer broadband services. However, in Greece there are no alternative networks apart the copper one, which constitutes the basis for all the offered services.

¹⁴ In particular, according to *ICAP 2007 financial and economic directory*, the pre-tax profits of all the SA and LTD companies in Greece in FY 2005, excluding banks, totalled 5.9 billion Euros, and their sales totalled 153.7 billion EUROS. Pretax profit and Sales of MNCs totalled 4.5 billion Euros and 63.4 billion EUROS respectively, so nearly 40% of Turnover and 75% of profits of Greek companies are attributed to MNCs.

¹⁵ There are people arguing that without broadband a kid's sword is not fast enough and will not be able to fence on the World Wide Web. In our view this can not be considered an important service for an average kid. Also the downloading of MP3 songs with dial-up may create delays to the other users and as a result they may ignore him/her. However, even if this happens we believe that it is not an important reason for considering ADSL essential for the individuals. Besides, the quality of video movies that somebody can download is by far lower than the new Video standards set. Even if movies at high resolution standards were available through internet to download, the task of downloading would be somehow a slow process (the download of one movie at the standards of HD-DVD or Blue Ray DVD requires more than 30 hours of download, assuming the ideally highest available DSL bitrate available globally! Assuming the actual average bitrate available by DSL 2 providers in Greece, downloading the same movie requires between 200 and 600 hours.

Therefore, what is needed is to see the extra cost of moving from narrowband to BB compared with the added value for the society. In addition we must have in mind that added value is not guaranteed, since it is mainly referred to speed which is only indicative.

Even for those arguing that speed is very important for every one and therefore they must use ADSL, taking into consideration the case of Greece, where the speed is indicative the money that users pay does not reflect the value they receive. Taking into consideration that speed depends mainly on two factors, the distance between the user's residence and the provider's telephone center and to the number of the subscribers in the particular area who share the same spectrum, whereas, the price is set according to the maximum speed of the connection, a reasonable question is why the governments do not take any action to protect user rights. In other words, it is expected for someone to wonder why DSL price does not set according to the minimum (guaranteed) speed the users will be able to use.¹⁶

Another issue to discuss is how EU and Greek policy makers handled the proper use of the licensing fees for broadband (3G) which paid by the mobile providers in Greece¹⁷. Did the governments use at least some of the licencing fees in order to make broadband more useful for the citizens? What is the content of the broadband services for the citizens today? Is broadband supply site oriented or demand site oriented? The authorities keep saying for the advantages of using ADSL but the question is which of these advantages are available today? The companies and the authorities make people believe that if they use BB automatically the next moment will have access to anything they can imagine. In reality they will not be able to finish any bureaucratic paper work, since the public has not completed the necessary works.

If, then, most of major services advertised are not available, while the content is still poor, then why the individuals have to pay for ADSL at its first stage of deployment? Why they have to pay for something that at present is not prepared to meet the needs of an average individual? Why the international organizations do not push the state to use the licensing fees in order to prepare the infrastructure and to increase the content on the web? Why the organizations do not push the companies to invest on alternative infrastructures and why the local loop and the leased lines became the last parts to be solved among the regulated topics. Isn't it true that if all these things had happen, the prices would be much lower without any regulatory intervention but by the market law of the market? So, why all these things have not happen but everybody asks the citizens to become users of fast internet?

To further examine if the individuals are benefited, we concern the so called social and economic benefits of a broadband-based information society.

¹⁶ Since the providers know the distance between the center of the provider and their clients' premises, and the overbooking (for example 1:20) they can estimate the minimum speeds which can be achieved.

¹⁷ In Greece, the licensing fees for broadband (3G) amounted half million euros.

Education is the first sector which is supposed to benefit from the use of broadband, but at the same time, the Ministry of Education in Greece has no authority on the issues surrounding the ADSL. On the contrary, the Ministry of Transport and Communications is the only responsible for every aspect. This makes it easy to understand that ADSL is considered a business service and not a service which aims to promote education.

According to Bauer et al., (2002) narrowband internet is adequate for asynchronous e-learning education so broadband is useful only to make synchronous, i.e. in real time, the communication between instructors and the students. In this case though, connection of individuals with ADSL has nothing to do. On the contrary, the schools should proceed with all the required investments in order to make possible the real time distance-learning education. However, such investments have not taken place by the Greek schools, not even by the Universities.

Therefore, the question is why the State push the citizens to subscribe for ADSL, when at the same time the state itself does not invest in the schools in order for the citizens to benefit from such advanced technology services. Even on the argument that broadband will allow students to have access to libraries and therefore to high quality international bibliography, the answer is that, students can have this access also with narrowband internet¹⁸.

Another argument towards citizens to become broadband subscribers is to use more advanced health services. Again, alike in the case of education, health can become more helpful only if hospitals invest in information technology. On the other hand, citizens will gain nothing by investing in fast internet. Even when talking for hospitals, in the case of telemedicine, narrowband is in most cases adequate for their needs, except in some cases like with tele-radiology where more bandwidth is required, (Firth, Mellor, 2005). As far as the individual is concerned, internet is very useful for them, in order to gather massive information for diseases and therapies. However, such information can be obtained by narrowband internet and therefore, once again, the motivation given by the states to their citizens to become ADSL subscribers, i.e. for better quality of health services, has nothing to do with households. On the contrary, even though broadband is useful for telemedicine, hospitals in Greece do not carry on with the expected network investments.

Going further, as Katz and Rice (2002) argue, narrowband or broadband internet are another type of passive activities after the reading of books, which in the long-run may change the adolescent youth, having a great impact on their health. According to Firth and Mellor, (2005) passive leisure, especially be young males, like virtual games and downloaded movies and

¹⁸ As Firth and Mellor (2005) argue, if education relies on technology, there is a danger to reduce further the pluralism of ideas, analysis and judgments, and therefore, undermine the creative problem solving.

songs, could lead to greater childhood obesity with long-term health and social consequences.

Nevertheless, one may argue that especially in a country like Greece, with the thousands of islands and the rural areas, it would be expected that broadband investments were going to take place, in order to build a broadband-based information society which will close the distance of the isolated areas with the mainland. Furthermore, one may argue that broadband could be a part of a strategic national plan for Greece, as a decentralization policy which is one of the most important problems of Greece. Half of the population has been moved to the big cities, especially the capital city due to the lack of medical and educational services in the remote areas.

As far as the labour market is concerned, broadband is expected to have two effects. First, the income effect and second the work substitution effect. More specifically, BB expansion is expected to back the growth of the GDP which by definition increases the demand for new goods and services and therefore it creates new jobs but at the same time technology substitutes the labour force, at least to some extent. The final outcome in the labor market, i.e. whether the new jobs will be more than the lost jobs is unknown. What we should expect, though, is new jobs to be for well specialized workforce, whereas the lost jobs will be mainly for the unskilled. The latter though, in the globalization period of information technology are already in a very difficult situation, especially in the developed countries, since their companies move overseas. Re-employment of fired workers in the labour market, through educational programs is criticized as ineffective. Even trainees, after finishing their training had to find a job by their own, something very difficult in an era of high unemployment even among university degree holders.

Another problem for Greece is the social relations deficit that internet addiction leads to. Young people isolate themselves in front of their computers and they do not communicate even with their family members. Technology era, and internet use in particular, transforms gradually communication among friends from what it used to be, a natural discussion and physical presence, to a pile of sms and e-mails. There are close friends that have never met or relations that grow via the net. Even though for some people such services may be very helpful, at the same time they lead to social isolation which makes people more suspicious and hostile. In a tourist country like Greece, the problem can be even bigger, since Greek hospitality along with the attractive natural environment used to be part of Greece strong point as a tourist destination.

Further discussion could even raise issues about whether internet communication promotes friendship or democracy¹⁹. Going further,

¹⁹ One may go further and argue that, even though nowadays is easier to meet more people from any place in the World by surfing the net, it is also true that this type of communication does not make real friends. It is rather exchanging of views, many times even for national issues like in the case of Greece with Turkey, where special chat rooms host young people from both countries, not in order to promote friendliness but to raise abhorrence.

demographic problems are expected to increase for reasons that initially have to do with interpersonal relations between people²⁰.

According to others, there is also a fear that democracy may be fragmentised into numerous interest groups that will lack power, (Turkle, 1996).

²⁰ Divorces in Greece increase dramatically in recent years, i.e. the years of information technology, when people know each other from distance and decide to get married based on the written views of each other, which may be cheating though, based on absolute lies. Of course, demographic problem needs also adequate economic standards. However, although broadband is supposed to increase the rate of economic and social development in the countries that use it, we can not find any significant results for correlation between births and income. Of course even though some try to correlate broadband and income it is not proved that such relation is real and which of the two variables influence the other.

5. Conclusions

It is striking that when the Internet initially was launched in the early 1980s, there was not particular force by international organisations on the States, and beyond to their citizens, for extensive use. It seems that today, States have entered in a race with a prize which is unclear whose interests will serve more. In the case of Greece, the prize is given by the European Commission which publishes on a constant basis the list with the penetration rates for ADSL among its Member States, in a way to push every state to try harder in order to convince their citizens to use broadband services.

The governments, in almost all the countries, have made their plans to extent the broadband usage, instead of dedicating considerably smaller amounts of capital in making available the narrowband, dial-up internet to every citizen.

We believe that governments have been driven by the multinationals once more, whereas consumers are absent again from the decisions. After the globalization enforcement, multinationals need some means to explore into other countries. In order to do that they need secure transportation and communication means. The liberalization of these two sectors became of vital importance for MNCs which pushed for a legal agreement within a global framework. Such agreement would be valid only under the World Trade Organisation (WTO). Indeed, in WTO framework services were liberalized, despite controversies between the participant countries. While, liberalization of banking and insurance made funding easier and liberalization of transport made these types of services cheaper, the advance of communications costs a lot of money since it requires vast network investments. Therefore, in order for the companies to become competitive, they try to convince individuals that they need broadband services as much as they do and therefore, they have to pay the same money to use it.

The modern Trojan horse for individuals to enter fast internet is called content, in the areas of entertainment, health and education, something ambiguous in quality and diversity. This is also the case in Greece. Whilst promises of fast internet for citizens are more of a science-fiction movie, the benefits for MNC are material, if not enormous.

A study by Organisation for Economic Co-operation and Development (OECD, 2003) argues that broadband offers some new applications and allows existing services to be accessed quicker. This does not mean though that broadband access is essential. It rather provides an easier way for access which is not enough for residential users to see the need for using it. According to our views, broadband will bring benefits but will also have negative effects for the users. We believe that winners and losers can be identified based on the fact that broadband is only a progressed form of the narrowband internet. Therefore, when investigating the benefits for users of broadband, we must have in mind the added value from this progression.

Theoretically, according to International Telecommunications Union (ITU, 2003), people's lives will improve as they have access to better information and applications concerning health, education, finance, etc. This could be the case if considerably high amounts of money had been invested in hospitals, schools and other social services, something that is not evident.

In short, broadband is like an expensive box without valuable content for citizens at the moment whilst being currently highly valuable for large, powerful corporations. Broadband expansion can be literally described as a Trojan horse that, gives the means to large MNCs to deteriorate domestic, smaller companies, while interestingly it allocates the cost of their expansion among households. This is the case in Greece where the big companies that really need BB as a means in their production chain are not many and therefore if they had to pay the cost for the deployment of BB it would be very high.

Other studies could in the future examine various policy issues that are raised for the recent role of policy makers in the telecommunication sector and the consequences of this policy for the society. We argue that the telecoms subsidization policy that prevailed till the 80s has been reversed. Whilst in the past, telecom policy had subsidized the weak parts of the society today it is promoting wealth asymmetry. If our conclusions are correct, this policy should be examined, if it is the desirable one.

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