

# Telecommunication Deregulation: The Case of Greece

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## **Abstract**

*In the early 1990's important structural policies began in Greece in the telecommunications sector. A gradual opening of the telecommunications market to competition, along with the establishment of a regulating framework, was adopted. The privatization and the reorganization of the public telecommunication organization (OTE) were also adopted.*

*In this article we examine the reforms in the telecommunications sector in Greece. Especially, we examine if the Greek telecommunication market reforms, a) intensified the competition and b) affected the tariff of the services offered (fixed telephony, mobile telephony and internet).*

*The data refers to 44 of the most prominent companies of fixed telephony, mobile telephony and internet services and was compiled by means of interviews with the help of a questionnaire. We evaluated these data descriptively using SPSS program.*

*From the empirical research conducted, it was found out that the reform of Greek telecommunication market, firstly caused the entrance of new enterprises to the market and increased the competition and secondly reduced gradually the tariff of the services offered.*

**Keywords:** Greece, telecommunication, privatization, market structure, competition, pricing.

## **Introduction**

The efforts to create a competitive environment in the telecommunications market in Greece began in the early 90's with the liberalization of both the mobile telephony market (Law 2075/92) and the terminal telecommunication equipment (Law 2246/94) and were completed through a strenuous process at the end of 2000. Law 2867/00 provides for the abolition of the exclusive rights of OTE (Hellenic Telecommunication Organization), namely installation, operation and exploitation of the public telecommunication network and the provision of voice telephony, thus resulting in the full liberalization of the market and its opening to competition. The gradual lifting of the OTE monopoly, the introduction of competition and the establishment of the EETT (Hellenic Telecommunication and Post Commission) as an

independent regulatory authority have brought about significant changes to the operation and performance of the market. In this article we examine the consequences of the above mentioned reforms in connection with specific market indices, which have been grouped by separate categories based on international bibliography (ITU 2005, OECD 2003, OECD 1999). These indices are grouped according to:

- market structure (market competition, market regulation and market trends and prospects),
- pricing policy of the services offered (fixed telephony, mobile telephony and internet).

As a sample we use 44 companies, which were active in the Greek telecommunications market during the time period 1992 - 2005. We collected the primary data about these companies by means of interviews.

### **Methodology and Data**

From the Companies' Register of the Hellenic Telecommunications and Post Commission (EETT) we identified a total of 108 providers of basic telecommunications services. Primary research was conducted in 2005, during three phases. During the first phase, the questionnaire was edited and improved with the help of a pilot interview. During the second phase telephone contact was made with every company in the field followed by the questionnaire which was sent by e-mail. During the third phase telephone contact was resumed in order to finalize the meetings with the competent company executives.

Finally, 44 companies (41%) took part in the research. The reliability degree of the sample is considered high,<sup>1</sup> likewise the information quality, which resulted from interviews with top management, marketing, public relations' and personnel's executives.

The data was evaluated descriptively using the Statistical Package for the Social Sciences (SPSS).

### **Results and Discussion**

The applied policy caused a wide range of changes not only in the structure of the market but also in the enterprises' pricing policy. More Specifically:

#### **Market Structure**

##### ***Competition***

The complete deregulation of the Greek telecommunication market provoked a successive entry of new telecommunications enterprises. Since 1992, when there was just one enterprise in the Greek

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<sup>1</sup> A reliability analysis was conducted with the use of Cronbach Alpha coefficient, the value of which was 0.6456. This fact confirms the cohesion of questions asked, which had the same object. Consequently, the statistical analysis results (that follow) are deemed safe.

telecommunication market (O.T.E. - Hellenic Telecommunication Organization), we identified now - 2006 - a total of 108 telecommunications enterprises in all the fields of relevant services. Our findings are in accordance with the findings of some other researches that were conducted in various countries. Indicatively, we mention Min (1999) who, studying the telecommunication sector of Japan, concluded that the sector reform led to the entry of many new enterprises and particularly to the presence of many multinational telecommunications enterprises. Athreya (1996) and Sinha (1996) conclude, also, that the reform of the Indian telecommunications sector generated the entry of foreigner enterprises. In the case of Ghana, the reorganization of the telecommunications sector caused, also, the entry of four new enterprises in the field of mobile telephony (Haggarty & Shirley, 2003).

The gradual entry of new enterprises and the existence of various products and services called forth the intension of market competition. Specifically, by the use of "Herfindahl indicator", we see that the concentration indicator for the fixed telephony from value "1" (monopoly) in 2001, was decreased to the value "0,51" - in 2005 (lower market concentration). In the field of mobile telephony, the above concentration indicator was decreased from value "0,40" - in 1988 - to the value "0,31" - in 2005. Finally, as for Internet, the level of market concentration was decreased from "0,50" - in 1998 - to "0,26", in 2005 (Table 1). As a result, we have more intense competition in the fields of fixed telephony and Internet. On the contrary, in the field of mobile telephony we have the lower intensity of market competition degree.

**Table 1: The level of market concentration regarding fixed telephony, mobile telephony and Internet (Herfindahl indicator).**

	1998	1999	2000	2001	2002	2003	2004	2005
<b>Herfindahl indicator</b>								
Fixed telephony	-	-	-	1	0,92	0,77	0,57	0,51
Mobile telephony	0,40	0,34	0,33	0,33	0,33	0,32	0,31	0,31
Internet	0,50	0,50	0,50	0,44	0,37	0,30	0,27	0,26

(Source: Fixed telephony enterprises, Mobile telephony enterprises, Internet enterprises)

In the following Table 2, 41 out of 44 enterprises of our survey (92,3%), indicate that the main characteristic of competition is the tariff policy (answers' mean 4,60). The second most important characteristic is the advertising and marketing policies (answers' mean 4,37), as 92,3% of enterprises evaluate this factor as a significant one. More than half (52,2%), evaluate, as the third most significant element of market competition, the quality of customers' service (answers' mean 3,47). The level of competition with regard to technology and to experienced and specialized personnel were evaluated as less important factors of competition, having answers' mean of "3,28" and "2,91", respectively. Generally, 35 out of our 44 enterprises, rate the competition in the Greek telecommunications market as "very intense" up to "extremely intense" (answers' mean 3,88). The element of competition intension was also indicated in the preceding researches. Indicatively, we mention the research by Guttierrez & Berg (2000), who, based on the data from 19 Latin America and Caribbean countries, underlined the growth of investments only in those countries that tried to reform their telecommunication market.

In the same direction were the findings of Fink et al. (2003) research examining 86 developing countries from Africa, Asia, Middle East, Latin America and Caribbean countries, who concluded that the deregulation of markets led to the increase both in the main telecommunications lines and in the level of labor productivity. Madden et al. (2003), examining the case of 12 Asian-Pacific countries, concluded that the element of market competition in the telecommunications sector promoted the level of sector productivity.

**Table 2: The conditions and characteristics of competition in the Greek telecommunications market (high/low evaluations and answers' means).**

	very little or little	much or very much	answers' mean
Competition intensity	2,3%	79,6%	3,88
Competition in technology	11,4%	36,3%	3,28
Competition in advertising and marketing policies	0,0	93,2%	4,37
Competition in quality of customers' service	11,4%	52,2%	3,47
Competition in tariff policy	0,0	93,2%	4,60
Competition in experienced and specialized personnel	27,3%	20,5%	2,91

(Source: data research)

#### **Market Regulation**

The transition from monopolistic to competitive market conditions, generated the need to create a set of prescriptive rules in order to achieve a normal transition and also an organized development and operation of the telecommunications market.

The outcome of our survey data is that a regulating policy in the Greek case presents some special problems. This observation came out also from other preceding researches. Specifically, Lee & Ypsilantis (2002) studying the Polish telecommunication market were led to the conclusion that the applied process reform produced mediocre results due to insufficient regulating context. It's the same as in the cases of Hungary, Ghana, Malawi, and Cote d' Ivoire as we can point out in the researches by Vanyai (1998), Haggarty et al. (2003), Clarke et al. (2003), and Laffont & N' Guessan (2003), respectively.

Specifically, only 27,3% (12 enterprises) consider that the EETT is "much" or "very much" independent authority. An extremely high percentage (22,8% of enterprises) considers that the EETT is "very little" or "little" independent (answers' mean 3,00). With regard to the competences of EETT, 27,3% of them (12 enterprises) consider that it is deprived of the appropriate competences that would ensure the normal and effective market function (answers' mean 2,95). The notion of enterprises' mistrust against the EETT authorities could be mainly explained by the predominant market perception that the EETT is ruled by government, which is also the basic shareholder of the dominant sector enterprise (O.T.E)(Table 3).

In conclusion, the majority of our sample (77,3%), namely 34 out of 44 enterprises, consider that O.T.E., as the leading enterprise of the Greek telecommunications market, behaves in a way that causes

predicaments with regard to the competition and sets barriers to the entry of new enterprises in the sector. Only 6,8% (3 enterprises) considers the opposite, that is, O.T.E. operates in conformity with the instructions of the EETT in order to promote market competition (answers' mean 1,28). Mainly, the problem emanates from the fact that O.T.E. operates contrary to the law regulations on free access of its local telecommunications centers to the advantage of alternatives providers. This process could offer to competitors the opportunity to render a variety of services (telephone calls, Internet access, etc), without the obligation on part of the customers to pay constantly a fixed charge to O.T.E., but simply to deal with the enterprise that offers these services (Table 3).

**Table 3: Regulating policy in the Greek telecommunications Market (low/high evaluations and answers' mean).**

	very little or little	much or very much	answers' mean
EETT's Independence	22,8%	27,3%	3,00
EETT's Competences	27,3%	27,3%	2,95
OTE's Conformity	77,3%	6,8%	1,28

(Source: data research)

#### **Prospects of the Greek Telecommunication Market**

As for the prospects of the Greek telecommunication market, in the context of a continuously intensified competitive environment, the processing of the answers revealed a sense of optimism among the enterprises, as far as the prospects of the Greek telecommunication market is concerned. More specifically, 29 out of 44 enterprises of our research (65,9%) believe that the dimensions and the growth rate of the Greek telecommunication market is going to increase in the next years "much" up to "very much" (answers' mean 3,74), whereas 36,4% of the enterprises (16 enterprises) considers that the Greek market falls short comparatively to the dimensions and growth rate of the other E.U. members states (Table 4).

The vast majority of the enterprises of our sample, expects major changes regarding the structure and the environment of the Greek telecommunication market. Specifically, 79,6% (35 enterprises) considers that, the existent enterprises in the telecommunication sector are going to be involved ("much" up to "very much") in processes of corporate takeovers and mergers (answers' mean 4,14), in the near future (Table 4).

**Table 4: Prospects of the Greek telecommunications market (low/high evaluations and answers' mean).**

	very little or little	much or very much	answers' mean
Today dimensions and growth rate	36,4%	20,5%	2,88
Future dimensions and growth rate	6,8%	65,9%	3,74
Corporate takeovers and mergers	2,3%	79,6%	4,14

(Source: data research)

Furthermore, our research shows that the enterprises' outlook about tariff policy is quite definite. Specifically, the processing of our data research reveals that 84,1% (37 enterprises) consider that, in the next years, the price of provided telecommunications services is going to decrease (Table 5).

**Table 5: The prospects of Greek telecommunications market.**

	increase	decrease	unchangeable
Tariff policy outlook	9,1%	84,1%	6,8%

(Source: data research)

#### **Pricing of Telecommunications Services Offered**

As the result of the entry of new enterprises and the intension of market competition, a revision of tariff policy took place towards a progressive reduction of prices. Our conclusion is consistent with the conclusion of major existing researches. Indicatively, we refer to the research by Boyland & Nicolletti (2002) who, examining 23 OECD countries, concluded that the intension of competition led to lower pricing. Also, Madden & Savage et al. (2003) examining the telecommunication sector in 12 Asian-Pacific countries, concluded that the reform of the market and the investment in digital technology caused price reduction. The same was the conclusion of various researches concerning the telecommunication sector both in developed and developing countries. The same conclusions share the researches conducted by Min (1999) for Japan, Ypsilantis (2000) for United Kingdom, Xavier & Ypsilantis (2000) for Spain, Yamada & Ypsilantis (2001) for Ireland, Heracleous (2001) for Singapore, Dia et al. (2002) for Senegal. Specifically:

#### **Fixed Telephony**

As we can see in Table 6, the prices of all relevant subcategories of fixed telephony (local, trunk, international calls and calls to mobile phones) have decreased. The only exception has to do with the monthly fixed rental which has increased. The major reason for this appears to be connected with the monopolistic role of O.T.E. within the Greek telecommunication network. In the same direction were the conclusions of the research conducted by Min & Ypsilantis (1999) studying the telecommunication market of Nederland. They found that the introduction of competition in Nederland's telecommunication market caused the reduction of prices, especially in the case of international calls. Also, we mention the research of Xavier (1996) and Sato & Ypsilantis (2000), who examining the case of Australian and Danish telecommunication market respectively, has reached to the same conclusions as well Hughes & Philips research (1999) in point of USA telecommunication market. The common result of all the above conducted researches is the significant reduction of international and long-distance calls. Similarly, Wallstein (2001) based on a sample of 30 African and Latin America countries reached to the conclusion that the introduction of market competition led to price reduction of 3 minutes duration local calls.

**Table 6: Fixed telephony's price development (in €-cents, VAT is excluded)**

	2002	2003	2004	2005
Fixed rental (Monthly)	9,98	10,49	11,40	11,90
Local calls (1 minute)	0,025	0,025	0,024	0,024
Trunk calls (1 minute)	0,049	0,050	0,048	0,048
International calls (1 minute)	-	-	-	-
a) EU country	0,181	0,177	0,177	0,166
b)Euro-pean country outside EU	0,216	0,217	0,214	0,193
c) USA	0,181	0,179	0,176	0,166
d) Japan	0,196	0,191	0,186	0,170
e) South Africa	0,420	0,430	0,416	0,382
Calls to mobile (1 minute)	0,214	0,219	0,207	0,181

(Source: data research)

### **Mobile Telephony**

The prices of mobile telephony are also on the decrease. Particularly, the cheapest monthly fixed rental program of each enterprise has considerably decreased (66,18%). We have to mention that the increase of the monthly fixed charge, since 2003, is due to some programs providing extra free time for calls, which is to the advantage of the consumers. Similarly, the minimum call charge, in the period 1993-2005, is on the decrease. The high prices during the first years of mobile telephony could be explained, according to the business executives, as the result of huge investments in order to participate in the acquisition process of 2<sup>nd</sup> and 3<sup>rd</sup> generation certifications, the development of the telecommunication network, and the expenses for research and the rendering for new services and products (Table 7). This finding validated by various conducted researches on the telecommunication market in Denmark (Sato & Ypsilantis, 2000), Italy (Ypsilantis & Min, 2001 and Sacripanti, 1999), USA (Hughes & Phillips, 1999), Hungary (Vanyai, 1998), Czech Republic (Xavier & Ypsilantis, 2001), and Ghana (Haggarty et al., 2003).

In contrast, the SMS cost since 1996, when this particular service was offered for the first time, has increased. The reason for this could be the low pricing of that service when it was originally offered in order to attract new costumers (Table 7).

**Table 7: Mobile telephony's price development (in €-cents, VAT is excluded)**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Monthly fixed rental	27,88	27,88	27,88	22,75	18,34	13,21	10,76	8,02	7,72	7,72	9,44	9,44	9,43
Minimum charge (1 second)	0,0052	0,0054	0,0056	0,0069	0,0060	0,0041	0,0054	0,0043	0,0043	0,0043	0,0040	0,0040	0,0037
1 SMS	-	-	-	0,079	0,079	0,078	0,082	0,084	0,083	0,085	0,081	0,081	0,083

(Source: data research)

### **Internet**

In the Greek internet market, significant competition dominates only regarding the fixed subscription charged by every company for the provision of internet services, which decreases significantly (Table

8). On the contrary, the monthly fixed charge paid by the subscribers is exclusively set by OTE (the only company with an integrated network), which doubled during period 1998-2005. The use charge stays the same for 7 consecutive years since 1999. This is attributed to the fact that internet access is made possible via the use of a Single National Access Number (ΕΠΑΚ) or Regional Access Number (ΠΕ.ΑΚ), which are charged every time according to the respective rates set by OTE. To the extent that our research confirms price downfalls, it agrees with the research conducted by Ypsilantis and Min (2001) and Sacripanti (1999), who, after having studied the Italian telecommunications market, have observed that prices in internet services have fallen.

**Table 8: Internet price development (in €-cents, VAT is excluded)**

	1998	1999	2000	2001	2002	2003	2004	2005
Monthly fixed rental	6,02	6,75	6,75	8,22	9,98	10,49	11,40	11,90
Usage rental (per peak hour /non peak hour)	0,458/ 0,229	0,352/ 0,176	0,352/ 0,176	0,352/ 0,176	0,352/ 0,176	0,352/ 0,176	0,352/ 0,176	0,352/ 0,176
Fixed subscription charge (PSTN 56k)	15,20	15,01	13,09	13,74	13,64	11,87	10,68	10,34

(Source: data research)

## Conclusions

In this article we have investigated if and to what extent the liberalization of the telecommunications market in Greece has influenced its structure and pricing. In order to achieve this, we conducted an empirical research in 44 of the most important companies in the sector in 2005 and we gathered data for period 1992-2005. We elaborated these data descriptively using SPSS program.

Our descriptive research has shown that market liberalization indeed increases competition, decreases the concentration degree (based on Herfindahl index) and results in lower prices. In this way, our results confirm those of other research studies conducted in developed as well as in developing economies.

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