

## **Telecommunication Companies with Foreign Capital in Ukraine: Simulation of Economic Activity Effectiveness**

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### **Abstract**

*The paper is devoted to the research of efficiency increase with a view to developing complex measures for telecommunication companies in Ukraine. The authors research the main trends of mobile telecommunication market and property issues in the case of the Ukrainian companies. Following economic modelling researches, the paper develops a model of evaluation of the aggregate efficiency index, which illustrates the performance of the telecommunication company using four kinds of activity. Comparing the results for three main telecommunication companies in Ukraine offers the opportunity to identify the strengths and the weaknesses that must be taken into account when further growth is intended.*

**Key words:** *telecommunication, mobile communication, companies with foreign capital, share capital, economic efficiency*

**JEL Classification:** *M21*

### **Introduction**

Service sectors serve as a key component in determining the level of economic development of any country. In particular, the main trend is the high level of service sector in the economy of developed countries (50%). One of the major industries in this area serves telecommunication. Its role is to provide the means of communication of national and international relations in all spheres of economic activities.

The successful development of the telecommunication industry is important to ensure the effective operation of each company that applies to this sector. It's true that companies with foreign capital have a greater range of alternatives in comparison with companies that work exclusively on the domestic market. Accordingly, there is an increasing demand for the most

effective methodical processes of evaluating the effectiveness of activities and establishing measures for its improvement.

An increase in the efficiency of telecommunication companies is a continuous and permanent process due to the technical progress and development of competition in the market. Because of this trend, attention is required in order to ensure competitive advantage in the market.

The telecommunication companies' efficiency involves a lot of scientists. Here are some of them: D. Boles de Boer [1], O. Boylaud [2], D. Mock [3], H. Gruber [4] and others.

## Problem

The main objective of the research is to study the behaviour of telecommunication companies with foreign capital in Ukraine, to identify the strengths and weaknesses of the market players, to estimate service providing efficiency and to advance recommendations that would enable the more effective operation of the companies.

## Methodology

The methodological basis of research consists in the general scientific research methods, such as comparison, systematization, generalization and synthesis. For the visualization of theoretical expositions the authors have used applied economic and statistical methods: tabular and graphic. The calculation of the integrated performance index was done by means of economic and mathematical modeling methods.

## Research Results

### Market Terms of Mobile Telecommunication in the World

Mobile communication is the most popular and widely used in most countries. Each year the number of mobile users is growing by an average of 17%. High growth rate is achieved primarily due to inexhaustible potential of inactive subscribers in developing countries. For example, comparing the number of mobile subscribers in the world, Ukraine and India are presented in Figure 1 [5, 6, 7].

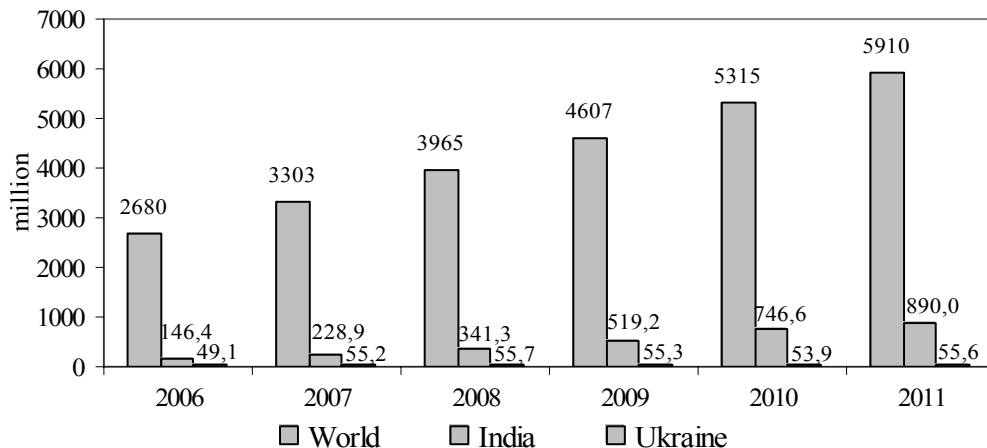


Fig. 1. Number of mobile subscribers 2006-2011, mln

As we can see, the annual subscriber growth in India is corresponding with the same in the world. In Ukraine, the number of subscribers is almost at one and the same level for the past five years. For example, in 2011, the number of subscribers of mobile communication in India

was 16 times higher than the same number of subscribers in Ukraine. However, the level of mobile penetration in Ukraine in 2011 was 121.8%, while in India it was equal to approx. 75%.

This fact shows the great potential for subscriber growth in developing countries.

Despite the fact that the development of world service sector is growing more rapidly every year, the share of telecommunication sector in the overall structure of GDP for several countries decreases annually (Figure 2 [6, 7, 8, 9, 10, 11]). The indicator of the following countries was chosen for comparison: Ukraine, India, Russia, Turkey and Norway. The choice is due to the capital of the last three countries directly involved in the development of the telecommunication sector in Ukraine by Ukrainian companies' ownership of mobile communication.

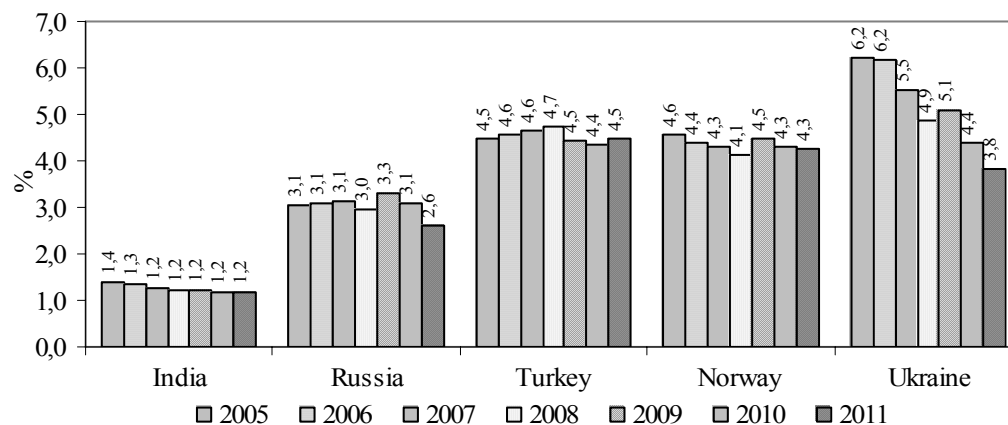


Fig. 2. Dynamics of share changes of telecommunication sector in GDP of countries

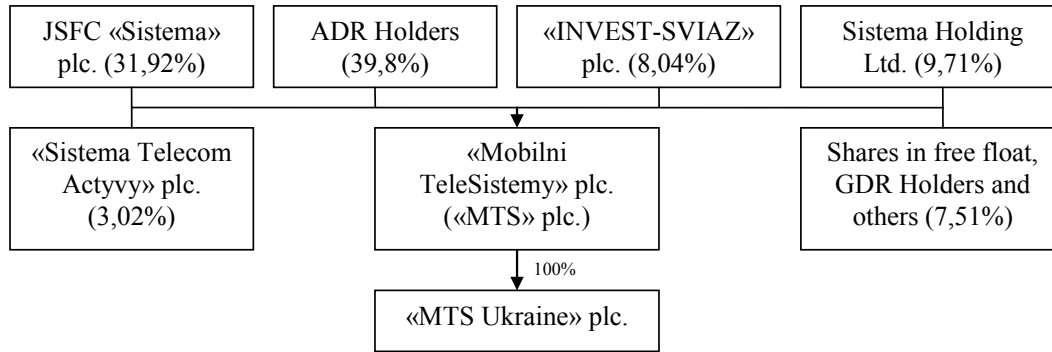
As can we see in Figure 2, the most noticeable fall of the share of the telecommunication sector in GDP occurred in Ukraine (–39% compared to 2005). The share of telecommunication industry in GDP in India is small and unchangeable. But the Indian tendency remains the decrease of this index (–14% compared to 2005). In Turkey, the share of the telecommunication sector in GDP is almost unchangeable. In Russia, the decrease of telecommunication share was held at –16%, and in Norway – up to –6% compared with 2005.

Thus, the growth of the telecommunication market is not provided by the corresponding increase of industry share in GDP in the case of the countries under study.

### Property issues for Ukrainian mobile communication companies: structure of share capital

The key players down the Ukrainian telecommunication market are PJSC “Kyivstar”, PJSC “MTS Ukraine”, LLC “Astelit”, which are the companies with foreign capital. Their capital links through share capital of other companies that eventually belong to Russia.

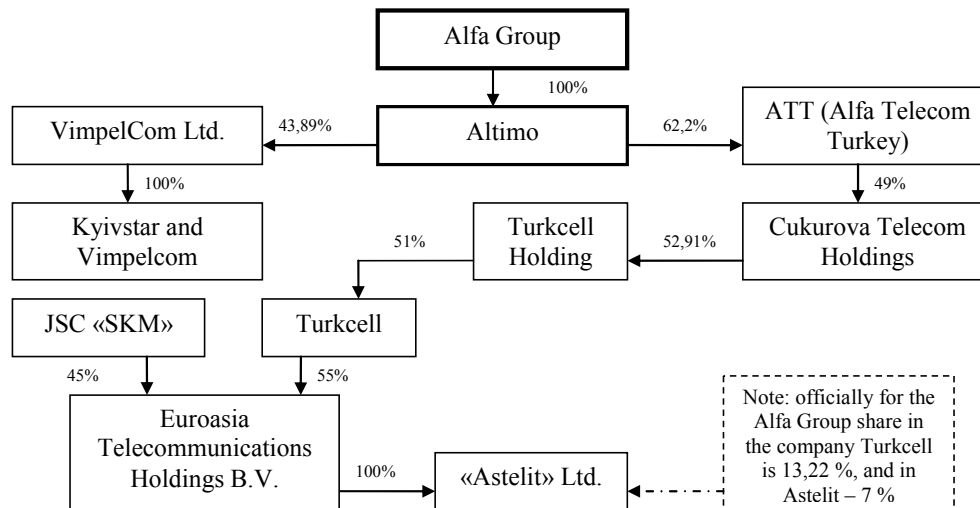
In particular, PJSC “MTS Ukraine” is part of the Russian multinational company “MTS” (Figure 3 [12]) which operates in five countries.



**Fig. 3.** Ownership structure of OJSC “MTS”

The company “MTS Ukraine” has become a complete foreign capital company in 2003 when the Russian company “Mobile TeleSystems” consolidated 100% of the company “Ukrainian Mobile Communication”.

The companies “Kyivstar” and “Astelit” interconnect with other companies through the share capital structure, thus belonging to the Russian group Altimo (Figure 4 [13, 14, 15]).



**Fig. 4.** The ownership structure of Alfa Group

The amalgamation of “VimpelCom” and “Kyivstar” in holding «VimpelCom Ltd.» was held in 2010 by a decision of the Norwegian company Telenor and Russian company Altimo. “Astelit” has worked down the Ukrainian market since 2005 as a company with foreign capital as a part of its shareholders’ funds of Ukrainian and Turkish owners [16].

Thus, foreign capital plays a key role in the development of Ukrainian companies of mobile communication. Therefore, we consider it reasonable to analyze the efficiency index of the telecommunication companies with foreign capital in Ukraine by means of the integral index.

### Effectiveness model of the telecommunication companies with foreign capital in Ukraine

The requirement of practical application of theoretical models that are based on a significant number of factors in economic activity requires a rational number of factors. A small number of factors in the case of its significant degree of influence for activity performance defines the efficiency of the theoretical model, which showed most practical applicability of the model.

We proposed to consider four main (main in our opinion, which are based on the results of the analysed companies) activities of the telecommunication companies in these indexes:

- financial activity – revenue and profit;
- operational activity – subscriber base, ARPU and MoU;
- investment activity – value of capital investment;
- marketing activity – marketing costs.

Among the row of specified parameters, it should be chosen only the unique ones that would have better characterized the relevant company activity, but not repeated with each other. So four parameters should be considered for the economic modelling: revenue, subscribers, capital investment and marketing costs.

The effectiveness of three major players in the segment of mobile communication of Ukraine will be calculated using the generalized additive model by the formula:

$$E = 0,28 * F + 0,32 * O + 0,19 * I + 0,21 * M, \quad (1)$$

where E – integral index of the effectiveness of the company; F – financial component activity, normalized index; O – operational component, normalized index; I – investment component, normalized index; M – marketing component, normalized index.

Normalization of financial component is performed by the formula:

$$F = \frac{d_i}{D}, \quad (2)$$

where  $d_i$  is income of each company; D – total revenue of telecommunication industry.

Basic data and calculation of this indicator is presented in Table 1.

**Table 1.** The financial component of analyzed companies

Year	Revenue of industry, bln. UAH	Revenue of company, bln. UAH			Financial component (F)		
		Kyivstar	MTS	Astelit	Kyivstar	MTS	Astelit
2006	33.5	8.64	7.52	0.44	0.26	0.22	0.01
2007	39.9	10.92	8.12	1.29	0.27	0.20	0.03
2008	46.1	12.71	8.64	2.31	0.28	0.19	0.05
2009	46.3	11.59	8.18	2.74	0.25	0.18	0.06
2010	47.4	11.44	8.51	2.69	0.24	0.18	0.06
2011	50.3	13.08	9.1	2.94	0.26	0.18	0.06

Normalization of operational component is performed by the formula:

$$O = \frac{S_i}{P}, \quad (3)$$

where  $S_i$  is a number of subscribers of each company; P – population of Ukraine.

Basic data and calculation of this indicator is presented in Table 2.

**Table 2.** The operating component of analyzed companies

Year	Population of Ukraine, mln inh.	Subscriber base, mln users			Operational component (O)		
		Kyivstar	MTS	Astelit	Kyivstar	MTS	Astelit
2006	46.9	21.5	20.0	5.6	0.46	0.43	0.12
2007	46.6	23.6	20.0	8.6	0.51	0.43	0.18
2008	46.4	23.5	18.1	11.2	0.51	0.39	0.24
2009	46.1	22.0	17.6	12.2	0.48	0.38	0.26
2010	46.0	24.4	18.2	9.1	0.53	0.40	0.20
2011	45.8	24.8	19.2	9.7	0.54	0.42	0.21

Normalization of the investment component is performed by the formula:

$$I = \frac{C_i}{C}, \quad (4)$$

where  $C_i$  is a capital investment of each company;  $C$  – total investment in telecommunication industry.

Basic data and calculation of this indicator is presented in Table 3.

**Table 3.** The investment component of analyzed companies

Year	Investment in industry, bln. UAH	Capital investment, billion UAH			Investment component (I)		
		Kyivstar	MTS	Astelit	Kyivstar	MTS	Astelit
2006	9.89	2.87	2.91	1.01	0.29	0.29	0.10
2007	12.48	2.24	2.75	1.04	0.18	0.22	0.08
2008	10.91	2.20	3.13	0.82	0.20	0.29	0.08
2009	9.57	1.45	2.93	1.68	0.15	0.31	0.18
2010	5.98	2.051	1.23	0.53	0.34	0.21	0.09
2011	5.14	2.26	1.18	0.52	0.44	0.23	0.10

Normalization of marketing component is performed by the formula:

$$M = \frac{C_{mi}}{C_i}, \quad (5)$$

where  $C_{mi}$  is the marketing costs of each company;  $C_i$  – total current costs of each company.

Basic data and calculation of this indicator is presented in Table 4.

**Table 4.** The marketing component of analyzed companies

Year	Total current costs of companies, bln. UAH			Marketing costs of companies, bln. UAH			Marketing component (M)		
	Kyivstar	MTS	Astelit	Kyivstar	MTS	Astelit	Kyivstar	MTS	Astelit
2006	3.73	3.66	0.86	1.20	1.05	0.17	0.32	0.29	0.20
2007	4.76	4.17	1.39	1.19	1.25	0.24	0.25	0.30	0.17
2008	4.14	4.64	2.14	0.99	0.84	0.28	0.24	0.18	0.13
2009	4.89	4.50	2.58	0.64	0.51	0.24	0.13	0.11	0.09
2010	4.94	4.55	2.18	0.50	0.37	0.16	0.10	0.08	0.07
2011	6.13	4.73	2.19	0.56	0.34	0.15	0.09	0.07	0.07

So, using data of tables 1, 2, 3, 4 and formula (1) we can calculate the aggregate index of efficiency of telecommunication companies. A graphical representation of results of the calculations is showed in Figure 5.

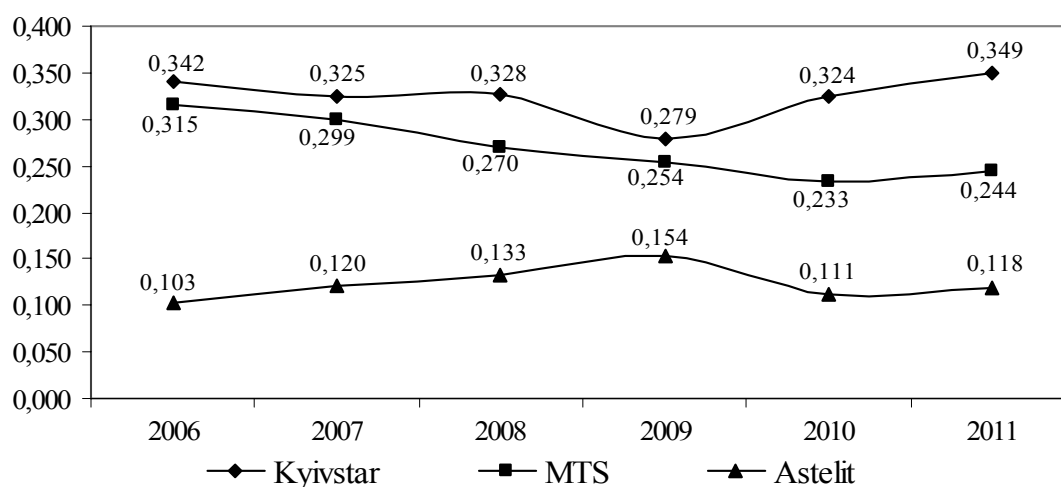


Fig. 5. Dynamics of aggregate index of efficiency of telecommunication companies

According to the calculations we can see that “Kyivstar” company leads in absolute value of aggregate index, and therefore it has the highest effectiveness. “Astelit” operates less effectively in the market in absolute value of aggregate index than the company “MTS Ukraine”. However, the average annual growth of the index in “Astelit” is of 4.3%, and in “MTS Ukraine” – 4.9%.

The minimum value of the aggregate index of efficiency for the analyzed companies is different throughout the years. In particular, “Kyivstar” reached its minimum value in 2009, while the company “MTS Ukraine” and “Astelit” – in 2010 only. It is explained by the fact that reaction of Kyivstar was the fastest on economic crisis of 2008-2009 in Ukraine, because the mentioned company was able to promptly take the necessary measures to prevent the fall of their effectiveness.

Comparing the average value of aggregate index of efficiency for the companies, we can conclude that Kyivstar efficiency is 1.2 times higher than the efficiency of MTS Ukraine and 2.7 times than for Astelit.

Thus, considering the dynamics of the aggregate index of efficiency for MTS Ukraine, it is the only one among the analyzed telecommunication companies that has a negative tendency during the analyzed period of 2006-2011.

The mobile market of Ukraine is oversaturated as compared with the other markets in the developing countries. Therefore, companies have difficulties to restore (after crisis) their activity by attracting new customers. Thus, there arises competition due to cost optimization, to offer customers new and more profitable rates and focus much attention on related services that bring companies additional revenue.

Even five years ago, an effective way to improve the situation of the telecommunication company was compliance to an intensive path of development by increasing the subscriber base. Certainly, today this method is impracticable because the number of mobile subscribers in Ukraine exceeds the total available population (penetration rate consists of 121%).

## Conclusions

1. The world market of mobile communication is the most developed sector in telecommunication industry. Its growth is due to significant potential “unfilled” markets of developing countries. Saturation of telecommunications market by new subscribers in Ukraine is impossible, as the level of mobile penetration is reached 121%.

2. Ukrainian telecommunications companies are closely associated with international companies through share capital structure. Through mechanisms of M&A telecommunication companies in Ukraine became the companies with foreign capital, which gives positive synergies in their activities.
3. There are three main market players in the telecommunication market of Ukraine: PJSC “Kyivstar”, PJSC “MTS Ukraine” and LLC “Astelit”. The most effectively operated among them is Kyivstar. It is the market leader for the largest revenue and subscriber base. “Astelit” is a young company in the market, but its dynamic development shows considerable potential in the future. The least effective is the company “MTS Ukraine” as in absolute terms and in terms of growth outcomes of their activities.

All the companies have to look for new directions for further effective development permanently. This task is entrusted to the marketing departments of the telecommunication companies as the development of new marketing procedures is a complex activity.

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## Companiile de telecomunicații cu capital străin în Ucraina: simularea eficienței activității economice

### **Rezumat**

*Lucrarea este dedicată cercetării creșterii eficienței în scopul propunerii de măsuri complexe pentru companiile de telecomunicații din Ucraina. Autorii studiază principalele tenduri de pe piața telefoniei mobile și probleme legate de proprietate în cazul companiilor ucrainene. În baza cercetărilor de modelare economică, se proiectează un model de evaluare a indicelui de eficiență agregată, care ilustrează performanța companiei de telecomunicații din perspectiva a patru tipuri de activitate. Compararea rezultatelor obținute în cazul a trei companii de telecomunicații din Ucraina ne oferă ocazia identificării punctelor tari și slabe, în vederea dezvoltării ulterioare.*