SIPARUNTON
International Journal of
Interdisciplinary Research

ISSN 2337-0556 (Print)
ISSN 2337-0572 (Online)
Vol 1, Issue 5, October 2015

==========

Quantitative analysis of the mobile phone market in Albania. Panel Analysis

Xhuljeta Meçaj [1]

[1].Ph.D.Candidate Faculty of Natural Sciences University of Tirana, Albania,e-mail: xhulimecaj@yahoo.com

Valentina Sinaj [2]

[2]. ***Prof.As.*** ,Department of Applied Maths,Faculty of Natural Sciences,University of Tirana,Albania.E-mail: sinajv@yahoo.com

Abstract

The purpose of this paper is the identification of income and the factors affecting the determination of this part. The achievement this goal will be done through the analysis of panel data for the mobile companies market for the period 2008-2013. In this analysis are included only three of the companies operating in this market, Vodafone, AMC and Eagle Mobile mainly to have a balanced panel. In Albania is increasing the use of internet 3G telephone services in cellular networks and this has caused a reduction in fixed line broadband access, which is always falling. This has led to the increase of the revenues of mobile companies. For such a work can be build a analysis on the panel data. So we are trying to do a modeling of the mobile phone market, The term panel data refers the to multi-dimensional data that include measurements in time. So,through the models that we will build , we will try to answer the question that:

• Do the companies income depend on market share that they own.
• Does the companies income depend on the number of their subscribers and non-subscribers?

==========

Keywords: Revenue. Users. Fees mobile . Panel analysis

1.Introduction

Here are some of the history of the development of three mobile companies in Albania:

a) AMC (Albanian Mobile Communication JSC) is the first company Albanian mobile phone. It was founded in 1996 as a state investment realized by the basic capital of 8 million, of which $ 7 million loan was obtained by the Savings Bank JSC

The company had about 20 thousand clients in 1999. In May 2000, the government of the Republic of Albania sold 85% of AMC through an open international tender. Buyer, Cosmote Greek company, paid 85.6 million dollars. After the investment and the new products, the company grew over the following years, while scored over 1 million customers in 2006. Its revenues totaled EUR 151 million in 2006 while net profit was 49.9 million euro.

b) Vodafone Albania Sh.A.is part of Vodafone Group Plc - the world's leading company in the field of electronic communications . Vodafone brand is ranked as the seventh most valued in the world. Vodafone is present in more than 30 countries and partners, with other networks in over 40 countries.

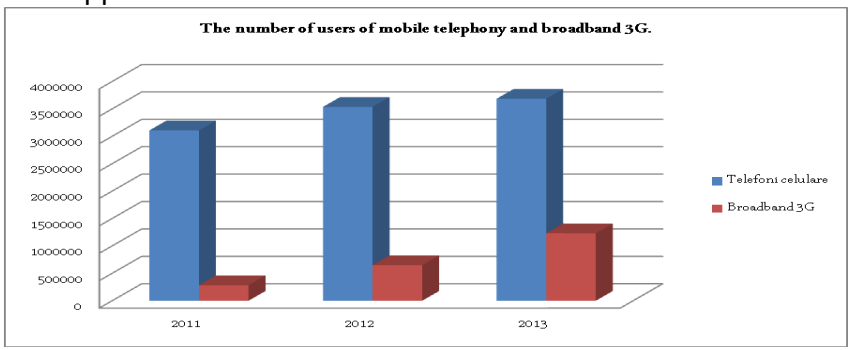
Vodafone was introduced in the Albanian market in August 2001 through one of the fastest processes in the world for network installation based on the experience of Vodafone networks worldwide.

Vodafone is the first operator that introduced 3G services in Albania in January 2011. Currently Vodafone covers 99% of the population with its 3G network.

c) The third operator Eagle Mobile is the newest mobile phone that is inserted in the Albanian telecommunication market. With the signing of the privatization contract between the Albanian government and the Turkish consortium consisting of Calik Group and Turk Telekom,. Eagle Mobile was founded on October 23, 2003.It was set at 12 March 2008 under the direction of Albtelecom, which was privatized in October 2007 with large sales of shares by the Albanian government two Turkish companies Calik Holding and Turk Telekom.

2013 has brought increased uses of internet telephone services and 3G cellular networks and this has caused a reduction in fixed telephony broadband access, which is more and more falling. According to AEPC number of active mobile phone users in 2013 went to 3.7 million from 3.5 million that was in 2012. This represents an annual increase of 4% for the four operators, while the number of mobile phone users under active SIM cards , was reduced by 6%, reaching 5.3 million compared to 5.6 million at the end of 2012. The penetration rate (users per 100 inhabitants) in 2013 was 130% under active users and 187% according to the SIM card. The number of mobile subscribers using broadband access 3G services in 2013 totaled 1.2 million, up by 90%, number of subscribers to broadband 3G USB cards / modems grew by 101%, while the number of subscribers with broadband access 3G from mobile devices grew by 88%. Below is presented the figure rising number of mobile phone users in our country. The figure seems clear that the growth rates 3G broadband access are greater than the growth telephone rates.

Figura1: The performance of the numbers of mobile and broadband access 3G. applicants.

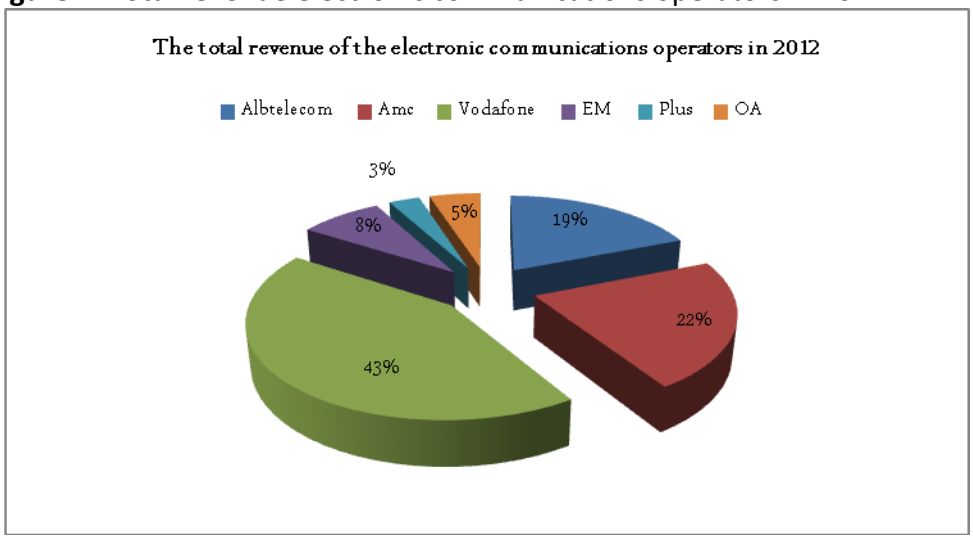


Source: AEPC 2013.

Financial indicators

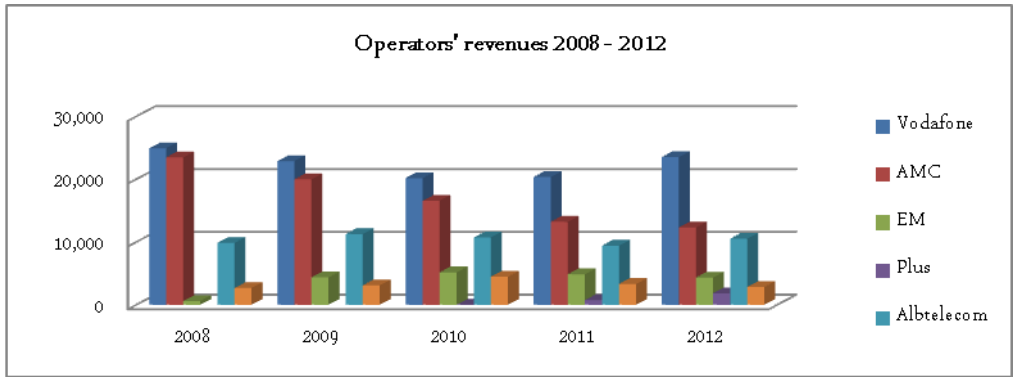
Total revenues in the mobile phone market in 2012 were 55,377 million and in 2011 was 51,922 million so an increase of about 6.65%. Increased revenues came mainly from revenue growth of the mobile operators. Most of the revenues come from wireless networks which in 2012 were 40.01 billion and in 2011 were 39.2 billion so 7.2% more in 2012.

Figure 2. Total revenue electronic communications operators in 2012.

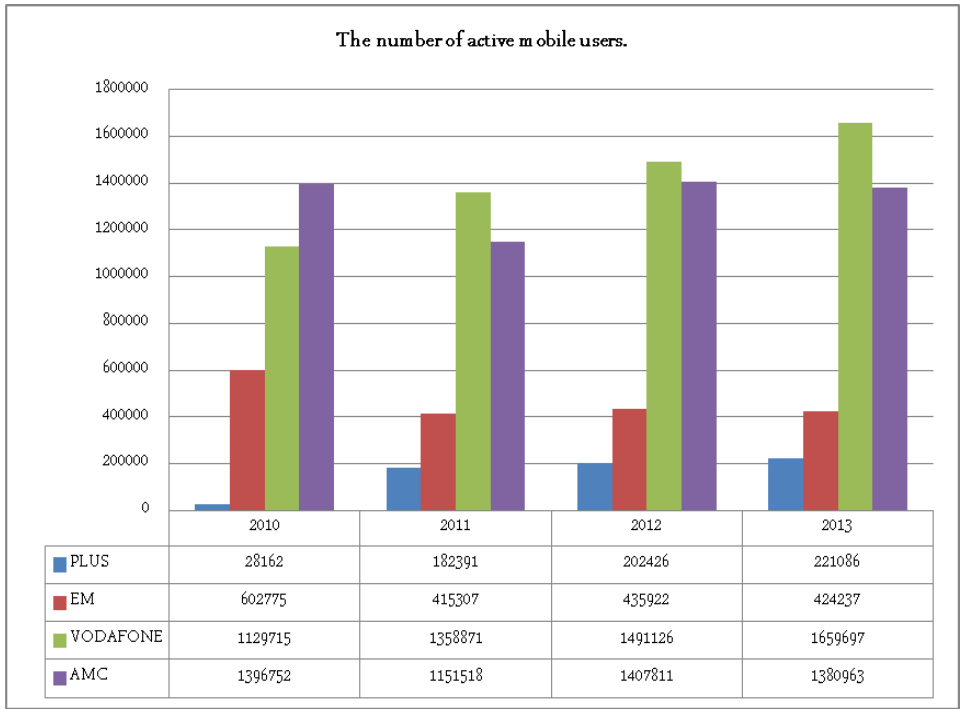


Source: AEPC 2013.

Figure 3.The Performance of the total income of operators of electronic services 2008-2012



Source: AEPC 2013.



	2010	2011	2012	2013
PLUS	28162	182391	202426	221086
EM	602775	415307	435922	424237
VODAFONE	1129715	1358871	1491126	1659697
AMC	1396752	1151518	1407811	1380963

Source: AEPC 2013.

In 2013 the number of mobile phone users under active SIM cards reached up to 5.3 million when in 2012 was 5.6 million. This represents an annual decrease of 6% for all operators together and for each operator change is as follows:

1. AMC has had annual growth of 10%.
2. Vodafone has had annual growth of 11%.
3. PLUS has been growing less than other operators only 2%.
4. Eagle Mobile has had bigger discounts than other operators 56%.

Large fall that has undergone Eagle Mobile is the reason why for the first time the number of mobile phone users has decreased. This happened as a result of changing the way of reporting the number of active SIM cards from Eagle Mobile.

Market shares.

The above table shows the trend of market shares for 2010-2013 for the number of subscribers, outgoing calls and SMS for the incomes (2009-2012). The data noted that:

For the indicators of the number of users, Vodafone in 2013 market share of 42-45% levels for the active user and SIM, which increased by 3 and 6 percentage points compared to 2012. The 2013 AMC has increased its market share to SIM

card users by 6 percentage points, reaching 39%, while for active user has 37% share of the market. In the segment of contract users the majority of the market share is of the AMC with 37% (an increase of 6 percentage points from 2012), while Vodafone has a market share much smaller (22%) compared with the total number of users. Plus market parts had no change in 2013, while maintaining the level of 6% in active users and SIM cards. Eagle has 12% market share in active users, which is relatively stable since 2011, while there is significant fall in market shares of the users according to the SIM card (from 25% to 13%) and user contract (from 36 % to 21%). Sharp fall in market shares of the Eagle has been due to changing the way of measuring the SIM card users.

- Market shares for outgoing calls and SMS in 2012-2013 have not changed significantly, and Vodafone has the largest market share in 2013 to 51% in 73% outgoing calls and SMS. Market shares in revenues for 2012 increased resulting in Vodafone, which owns 56% market share, while AMC has decreased by 5 percentage points to 29% market share. Eagle and possess 14-15% Plus together in 2012-2013, and in 2013, Eagle has been a decline in market share while Plus has been growing.

Literature Review

Sinaj & Leka have built a panel model for mobile telephone in Albania until 2012 using models with fix effects. The authors showed that in Albania, the number of subscribers is crucial in revenue cellular companies.

3. Empirical analysis

3.1 Data

The paper considers the period between 2008 and 2013, during which the mobile phone market is composed of only three companies: Vodafone, AMC and Eagle Mobile. So the paper observed three companies, each for a period of five years. For such a work can build a data analysis on the panel. So we are trying to do a modeling of the mobile phone market, but certainly to achieve a truly reliable model , the information must be complete. However, we are taking the first steps of a modeling.

The term panel data refers to multi-dimensional data include measurements in time. For example: selecting the three countries with the same three economic variables: cost, income per capita and unemployment, for a period of ten years. This way of presenting the data is called appearance in time series data (cross-sectional). According to this way variables are presented in their two-dimensional development. So, they are cross-sectional unit observation, which in our case is the model of companies and they have a reference to the times, which in this case are the years. Error term also has two dimensions, one for place , and one for time. If the same person has the same number of observations we , have to do with

balanced panel data. If the same person has a different number of observations then we are dealing with unbalanced panel data. Unbalanced data are more difficult to processing or require more advanced techniques for data imputation lost from the database.

So, through models that we will build, we will try to answer the question:

• Do the companies income depend on the market share that they own?

• Do the company's incomes depend on the number of their subscribers and non-subscribers?

In the first stage of analysis we will try to choose the functional form of the model. We will judge between the two classic forms: Full linear form, it is easy for interpretation and evaluation and final full logarithmic form , because it goes better with the interpretation of selected variables for modeling.

3.2 Ramsey Test

A very useful test for the selection of functional form is the Ramsey test Reset test. This test is used as a model on the selecting form adding in the model the dependent variables the assessed values of the dependent variable and if according to test results that variables should be in the model then say that the selected form is not appropriate.

Statistics Fisher used for testing which is given by the following expression:

$$F_v = \frac{(SKR_Y - SKR_{Y^2}) / m}{SKG_{Y^2} / (n-k)} = \frac{(SKR_m - SKR_p) / m}{SKG_m / (n-k)} \sim F_{\frac{m}{n-k},\alpha}$$

m is the number of variables that we added in the second model.

n number of observations

k the number of parameters estimated in the first equation.

If the observed value of Fisher statistics is greater than the critical value then the basic hypothesis falls.

We will use the test on log-log the form of the model.

Firstly we will assess the regression whereas the dependent variable we have got the revenue, while as independent variables: mobile rates and market share, expressed in logarithm. Logarithmic form is very relevant to economic models as the logarithm reduces the degree of variability, reduces variances and if the variances are down then have statistically significant coefficients and the model becomes more stable, so this model coefficients are elasticities.

Use Ramsey Reset test and the results are shown in the following table:

Ramsey RESET Test

Omitted Variables: Squares of fitted values

	Value	Probability
t-statistic	1.294394	0.2316
F-statistic	1.675455	0.2316
Likelihood ratio	2.281809	0.1309

Table 2.1 The author's work.

If we look the Fisher test values in the table are less than the critical value obtained from the Fisher distribution tables, so we can say that the basic hypothesis is true. Such a thing seems clear and the other tests Students or log affinity fn the table the value of p favor the basis hypothesis So as a conclusion to this case we say that the relevant form of modeling is the log-log form.

3.3 Granger causality test

The first attempt to test the direction of causality is proposed by Granger (1969). Granger test is a very good way to detect the presence of a causal link between two or more variables. A time series (X) is said to cause Granger in another series of time (Y), if the error of the predicted Y falls using the past values of X in relation to past values of Y.

Use our test variables always in the form log, to understand what variable is the cause and which the effect. Test results are presented in the following table:

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGMARKETSHARE does not Granger Cause LOGREVENUE	12	11.3396	0.0083
LOGREVENUE does not Granger Cause LOGMARKETSHARE		1.58698	0.2394
LOGRETAILTARIFFS does not Granger Cause LOGREVENUE	12	0.13469	0.7221
LOGREVENUE does not Granger Cause LOGRETAILTARIFFS		0.17752	0.6834
LOGRETAILTARIFFS does not Granger Cause LOGMARKETSHARE	12	0.74206	0.4114
LOGMARKETSHARE does not Granger Cause LOGRETAILTARIFFS		0.02999	0.8663

Table 2.2 Test results Granger. The author's work.

The main hypothesis in this case are:

1. Ho: The market does not cause income

Ha: Market share that causes income

Observed Fisher is 11:33 and according to the value of p that is 0.0083 we have H0 swoops. So we can say that the market share causes income, in other bigger the market share covered by the company, the higher will be the company's revenue.

2. Ho: Fee does not cause income

Ha: Fee causes income

Observed Fisher 0:13 and by the value of p that is 0.72 so we have Ho that stands. So are not the tariffs that causes the income of a company.

In the case of our model, the incomes do not cause the market share, so that the incomse are taken as a dependent variable. So the model resulted as we wanted.

3.4 Evaluation of models

Our analysis is based on panel data and on them can be built these types of models:

1. Models with constant coefficients (or without effects or pooled regression)
2. Models with fixed effects
3. Models with random effects

Fixed effect under cross-section

Fixed effect allows for heterogeneity or individuality among companies allowing each having its value according to the constant.

Fixed term has to do with the fact that although the constant term may vary between companies, it does not change with time, so it is time-invariant.

logrevenue = -3.66 + 1.237 logmarketshare + 0.629 logretailtariffs

(3)

n = 15 R^2= 0.84 dw = 1.92

The effect of the case under cross-section

Random effect allows that companies have an average value common to interceptin.

logrevenue = -3.49 + 1.211 logmarketshare + 0.601 logretailtariffs

(4)

Effect fixed by period

In analysis addition to cross-section (three mobile companies), is taken the effect obtained by the period. For this we write the regression of the fixed effects according to the period:

logrevenue = -5.19 + 1.048 *logmarketshare* + 1.336 *logretailtariffs*

(5)

n = 15 R^2= 0.9 dw = 1.64

The Random effect according to period

The regression according to the random effects for the period:

logrevenue = -3.79 + 1.182*logmarketshare* + 0.734*logretailtariffs*

(6)

n = 15 R^2= 0.85 dw = 1.85

Interpretation of Effects

Random EFFECT BY PERIOD

	1/1/2008	-0.070204	
	1/1/2009	0.018020	
Table 2.3	1/1/2010	-0.021150	The author's
work.	1/1/2011	0.031987	
	1/1/2012	0.041347	
	1/1/2013		
	0.054231		

The assessment of the model with random effects are taken the above effects by period and cross-sectional. In random effects by period 2008 shows that this year was less good about income for all the companies. This is the worst effect for the 5 years of the study. This result does not have to do much with the economic and financial situation of the country but with the fact that 2008 is an ancient year than the others. In 2010, mobile companies are settled badly, but this time as a result of adverse economic and financial conditions. 2013 is the best year with the best performance in terms of the income levels as a result of technological improvements to its companies.

Random EFFECT According to CROSS-SECTION

CROSSID	Effect
Vodafon	0.004359
Eagle	-0.00212
AMC	0.000283

Table 2.4 The author's work.

The assessment of the random effects under cross-section shows that Vodafone has been positioned better than two other companies included in the study, AMC and Eagle Mobile. Note that AMC, despite having considerable share in the market (second only to Vodafone) it presents a low level of income. It seems that a good performance has had Eagle Mobile despite it's new life in this market.

Conclusions

The mobile market in Albania is a relatively new market, but it is a growing dynamic market .According to the results of this study shows that the income of the companies have been increased from 2008-2013 as a result of technological improvements to the Vodafone companies that has been positioned better than the two other companies in the study, AMC and Eagle Mobile. This has come as a result of most of the biggest space that the company occupies in the market, its powerful marketing , the best performance among the years .So from the study results the biggest the portion of the the company in the market , the higher will be it's income .So the fees does not cause it's income .Each best thing has a service, but does not mean that the higher the price of that service, then the revenue will be higher. In the Albanian market it is not played with the customers absorption with higher prize , but in the contrary throwing different offers absorbing as many subscribers as they can.

Literature:

1. Sinaj& Leka Panel analysis of telephone mobile Albania.www.mcser.org/journal/index.php/ajis/article/.../2988
2. AKEP (2013), " Report about the AKEP actions for 2012", Url: http://www.akep.al/images/stories/AKEP/publikime/2013/RAPORTI-VJETOR-2012.pdf, Access date 20.02.2014
3. AKEP (2011), "Annual Report 2010", Url: http://www.akep.al/images/stories/AKEP/publikime/raporte/Raporti-Shqip-10-10-11.pdf, Access date : 21.02.2014
4. Cullen International (2012), "Supply of services in monitoring regulatory and market developments for economic communications and information society services in Enlargement Countries, Cullen international Report 2.
5. Cullen International (2013), "Supply of services in monitoring regulatory and market developments for economic communications and information society services in Enlargement Countries, Cullen international Report 3.