

Superiority: China Mobile in the Competition

Fu Si-bao, Lv Ting-jie

School of Economics and Management, Beijing University of Posts and Telecommunications, Beijing, 100876, P.R.China

Abstract: China Mobile is in a superiority in the competition with China Unicom, the scissors movement trends between its revenue and cost indicates that there is spacious room for China Mobile to lower its price. The trends of the ratio between its price and marginal cost indicates that there is a floor for China Mobile to lower the price, but, it is far away. China Mobile didn't use the price weapon abundantly although its demand is obviously elastic to its price. The market balance between China Mobile and its rival may collapse if China Mobile to provoke a price war.

Key Words: China Mobile, Superiority, Revenue-Cost development, Ratio of Price to Marginal Cost, Elasticity .

Preface:

Mobile communication market in China is typical duopoly , China Mobile and China Unicom are the only two operators in this market. We analyzed the market structure development via calculated the ratio: 1) Number of users of China Mobile/Number of users of China Unicom and 2) Revenue of China Mobile/Revenue of China Unicom. Excepted the data of year 2006 was predicted, the data of year 1999 to 2005 was real.

The ratio development of Number of users and Revenue between the two operators are shown in Figure 1:

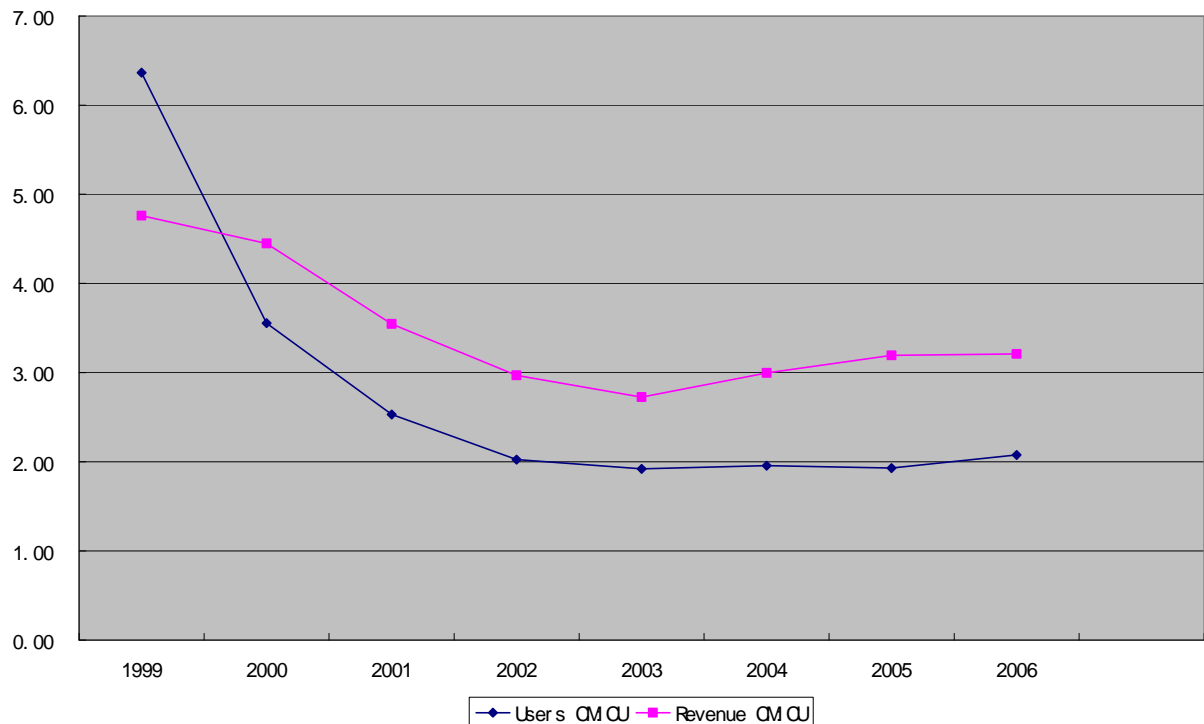


Figure 1: Users of China Mobile : China Unicom; Revenue of China Mobile : China Unicom

From the above analysis, we could obtain the following conclusions:

--The ratio between the number of users of China Mobile to China Unicom was greater than 2:1 before 2002, but was near to 2:1 gradually. The ratio reached 2:1 in 2002, and hadn't changed since then for nearly 5 years.

The ratio of revenue of China Mobile to China Unicom was greater than 3:1 before 2002, but was near to 3:1 gradually. The proportion reached 3:1 in 2002, and hadn't changed since then for nearly 5 years.

It is clear that in the China Mobile communication duopoly market, the end of year 2002 was a milestone, the market structure was unstable before that and it became stable since that time point, there has been nearly no change on the market shares measured by subscriber base and revenue since the end of year 2002.

China Mobile is the forerunner of the market, and it is also always the dominator of the market, we should try to find the reasons for the stabilization of the market by analyzing China Mobile's market activities.

For analyzing China Mobile's performance, we selected 3 provincial branches from the 31 provinces of China, one from the east, one from the center, and the other one from the west, we assume that these three provinces will be able to represent the huge

diversity of the different provinces in different economic development levels. If any study results from these three provinces are consistent, we can assume that this result is applicable to the whole country.

We studied the reasons for the stabilization and find that China Mobile didn't use the price war very much during the past years.

We analyzed the revenue/cost trend of China Mobile and found that there is spacious room for it's future profit to develop.

We also analyzed the price/marginal cost relationship of China Mobile, predicted that there is a floor for China Mobile to lower the price, although it is far away from the time being.

We found that the change of ARPUs of China Mobile was very small compared with the changes of the price per minute call, it means China Mobile used moderate price war in the competition .

1. Revenue vs Cost development of China Mobile

For the purpose of analyzing and predicting China Mobile's competition ability in the Chinese communication market, analyzing and predicting the development trends of the company, analyzing and predicting the impact of the China Mobile on the whole communication market in China, we need to analyze the relationship between the revenue and cost of the company, to analyze the elasticity of the cost to the revenue, this elasticity reveals the development speeds of the revenue and cost respectively, if the revenue increases faster than the cost, it means the company will not meet a "break even point" and it will become more and more powerful, it may sooner or later dominant the market and kick the competitors with it out, in the other hand, if the revenue increases slower than the increases of cost, it means the cost will reach the revenue some time in the future, a "break even point " will occur and the company has to take pre measures to prevent or post phone this happening.

Here we take the revenue and cost data of the three provincial branches of China Mobile, the period is 01/2004 to 06/2006, totally 30 months, both the revenue and cost data includes detailed break down information, such as the revenue data includes the "long distance call revenue", "local call revenue", "other revenue", etc., the cost data includes the "depreciation", "personnel cost", "warranty expenses", "sales promotion cost" etc., a better way is to analyze the constitutes of the revenue and cost, to simulate the "production function", the kind of function can reveal the relationships among the different "cost details" and different "revenue details", such as the relationship between the "sales promotion cost" and "long distance call revenue", this

kind of functions can also mostly use the “Telecom features “ in the cost concept, such as the “fixed assets accounts for a very big proportion of the total cost”, etc., but, with a restriction of time availability, here we only take the “total revenue” and “total cost” as the study objects.

We use the monthly revenue and cost data of three periods to predict the revenue and cost development trends, the three periods are: 01/2004 – 12/2004, totally 12 months,
 01/2004--12/2005, totally 24 months,
 01/2004—06/2006, totally 30 months.

“Y” as the revenue and cost are both in Chinese Yuan (RMB) 10,000.00
 “X” as the monthly serials, e.g., “01/2004” as number “1”, “02/2004” as number “2”,....., “06/2006” as number “30”.

1). For the eastern province, the results as following:

Take one year period 01/2004 – 12/2004, the result as shown in Figure 2:

$$Y(\text{revenue}) = -887.64x + 1235996.05,$$

$$Y(\text{cost}) = 3813.87x - 4698080.72$$

We can find clearly that the cost developed faster than the revenue. With this trends, The cost will reach the revenue level in a certain period , at that “break even point”, there will be no profit at all.

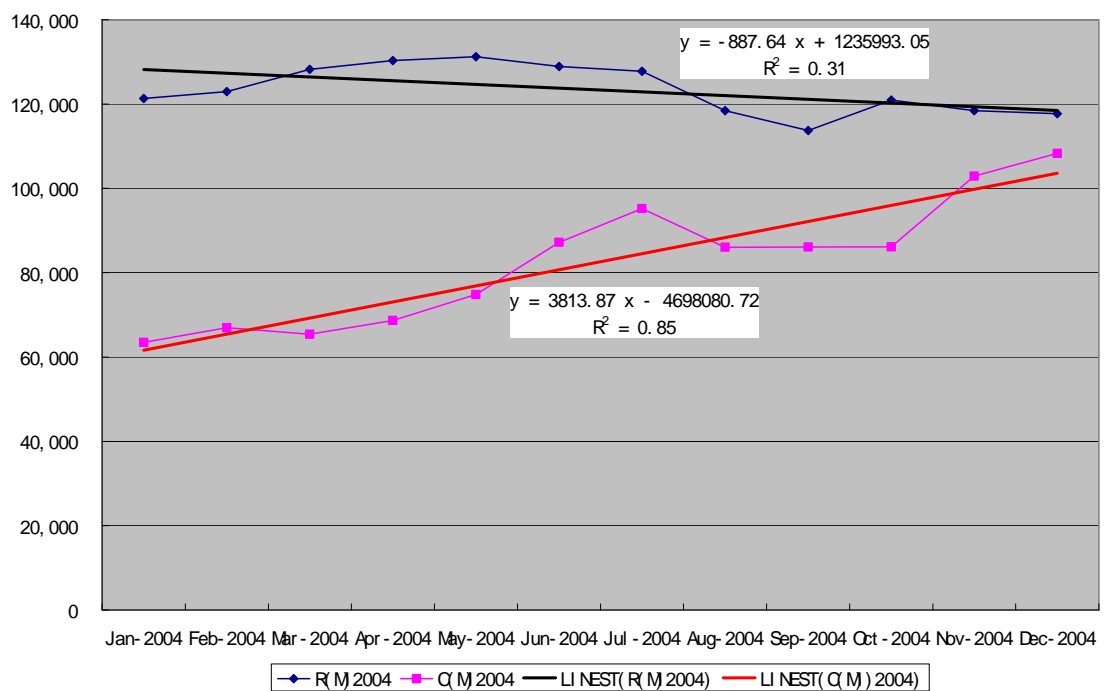


Figure 2: Revenue-Cost development province east (01/2004 – 12/2004)
 Take two years period 01/2004 – 12/2005, the result as shown in Figure 3:

$$Y(\text{revenue}) = 1472.2 x - 1717561.49$$

$$Y(\text{cost}) = 1928 x - 2338063.56$$

With the two years period data, we find that the revenue and cost developed nearly parallel..

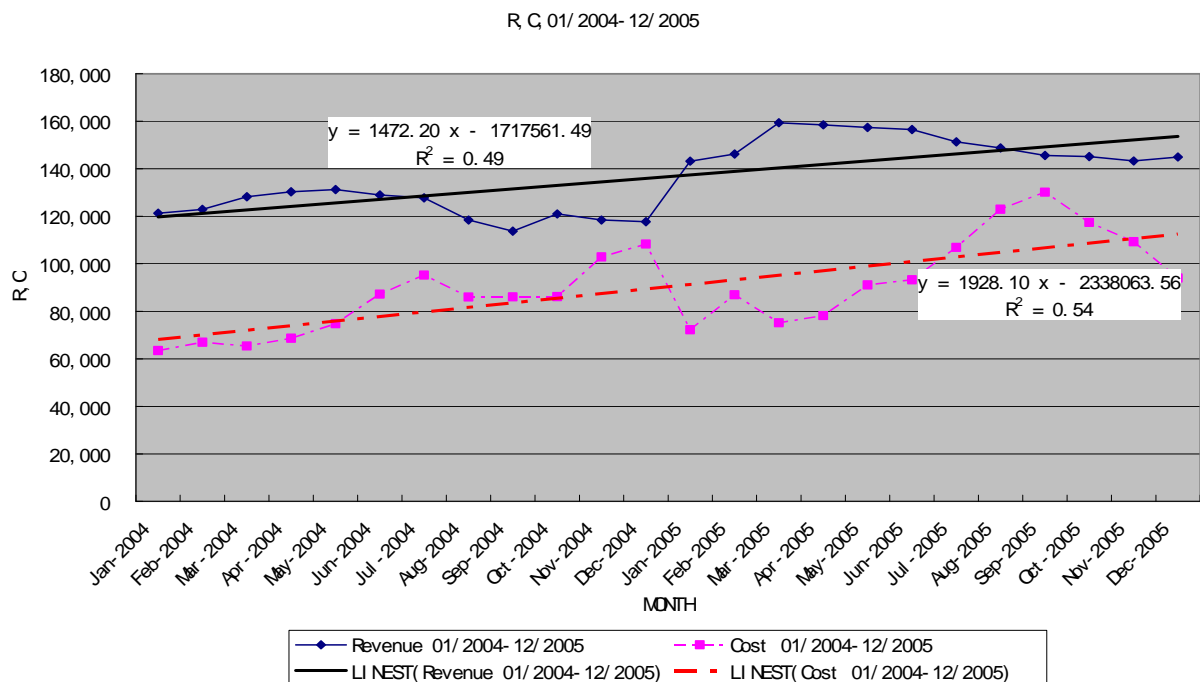


Figure 3: Revenue-Cost development province east (01/2004 – 12/2005)

Take two and half a years period 01/2004 – 06/2006, the result as shown in Figure 4:

$$Y(\text{revenue}) = 2196.67 x - 2627554.64$$

$$Y(\text{cost}) = 1160.96 x - 1374402.54$$

With the two and half years data, we found that the revenue develops faster than the cost.

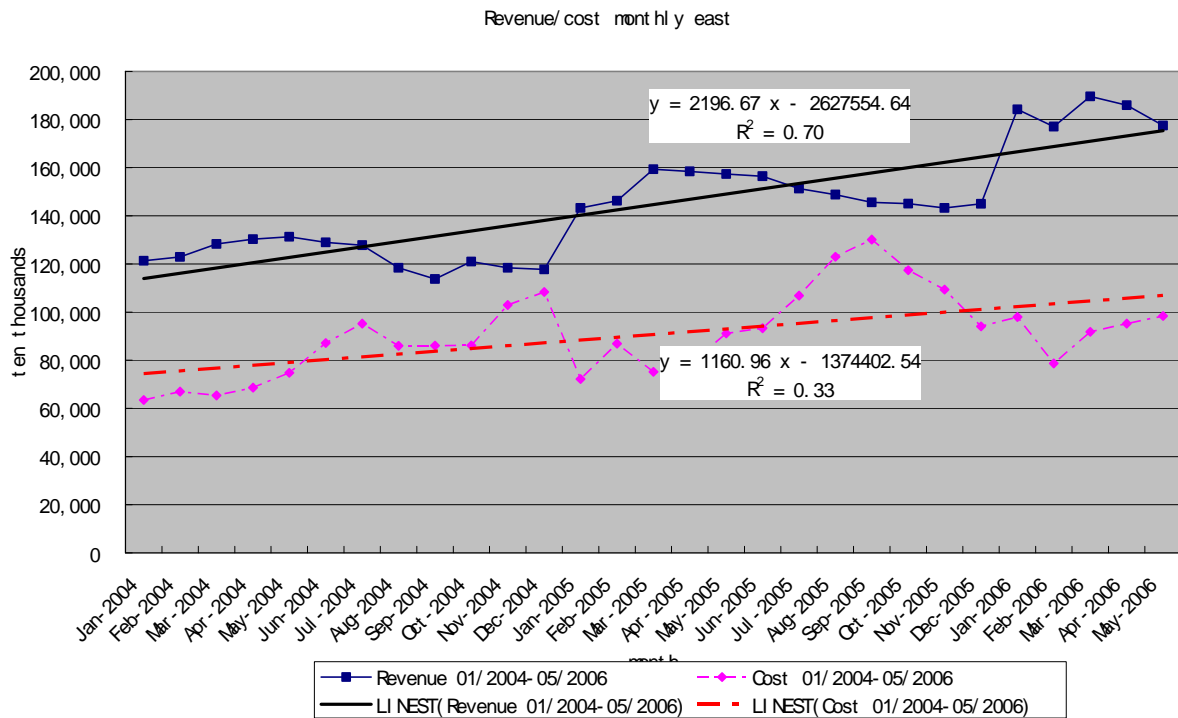


Figure 4: Revenue-Cost development province east (01/2004 – 05/2006)

As a conclusion, we find that with the “data period” lasted longer, e.g., 12 months, 24 months to 30 months, the scissors difference between the “revenue line” and “cost line” become bigger, this means that the revenue developed speed was higher than the cost, this also means that the province east is becoming more and more stronger in financial aspects, more and more stronger in competition.

Reason for the phenomenon of “the longer the period of the data, the bigger the scissor difference of the revenue and cost lines” might be that, province east’s performance was improving with the time went on, the more near the data to the present, the more accurate of the prediction we use it, and also the “artificial adjust data”, e.g., as listed companies, we doubt that the mobile companies always narrow the revenue and cost to reduce the profit when needed, especially in the mid and end of the years.

2). For the province middle, the results as following:

Take one year period 01/2004 – 12/2004, the result as shown in Figure 5:

$$Y(\text{revenue}) = 111.45x - 66894,$$

$$Y(\text{cost}) = 1131.35x - 1364975.20$$

We can find clearly that the cost developed faster than the revenue. With this trends, The cost will reach the revenue level in a certain period, at that “break even point”, there will be no profit at all.

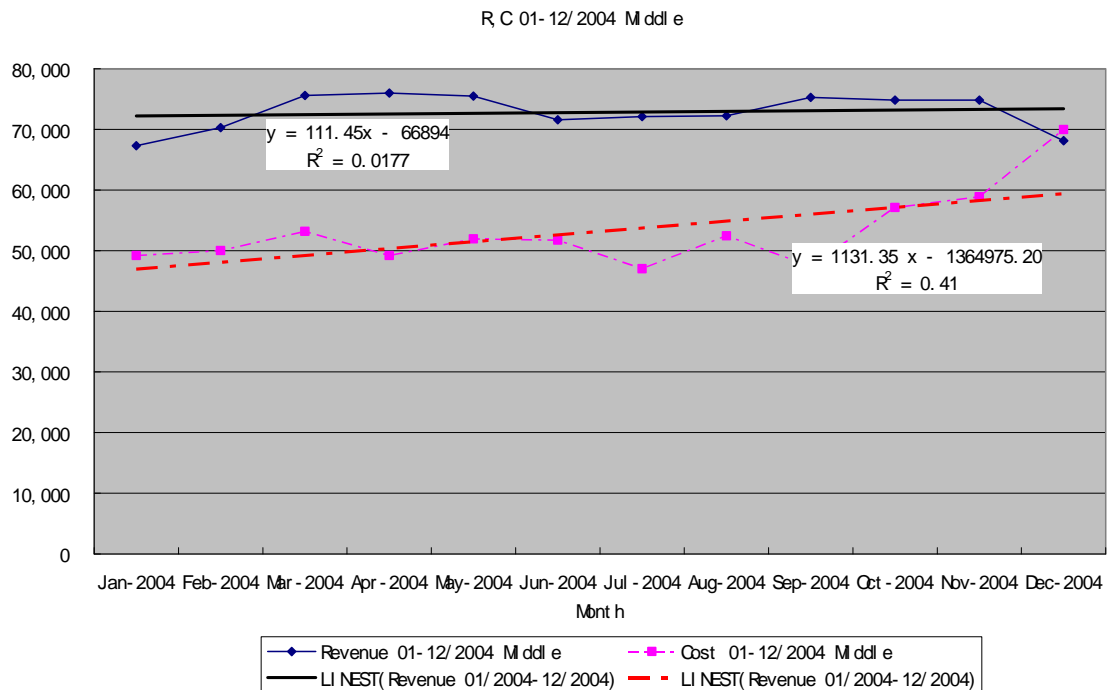


Figure 5: Revenue-Cost development province middle (01/2004 –12/2004)

Take one year period 01/2004 – 12/2005, the result as shown in Figure 6:

$$Y(\text{revenue}) = 1534.98 x - 1849152.75$$

$$Y(\text{cost}) = 1300.59 x - 1578017.78$$

With the two years period data, we find that the revenue development shows a little bit faster than the cost .

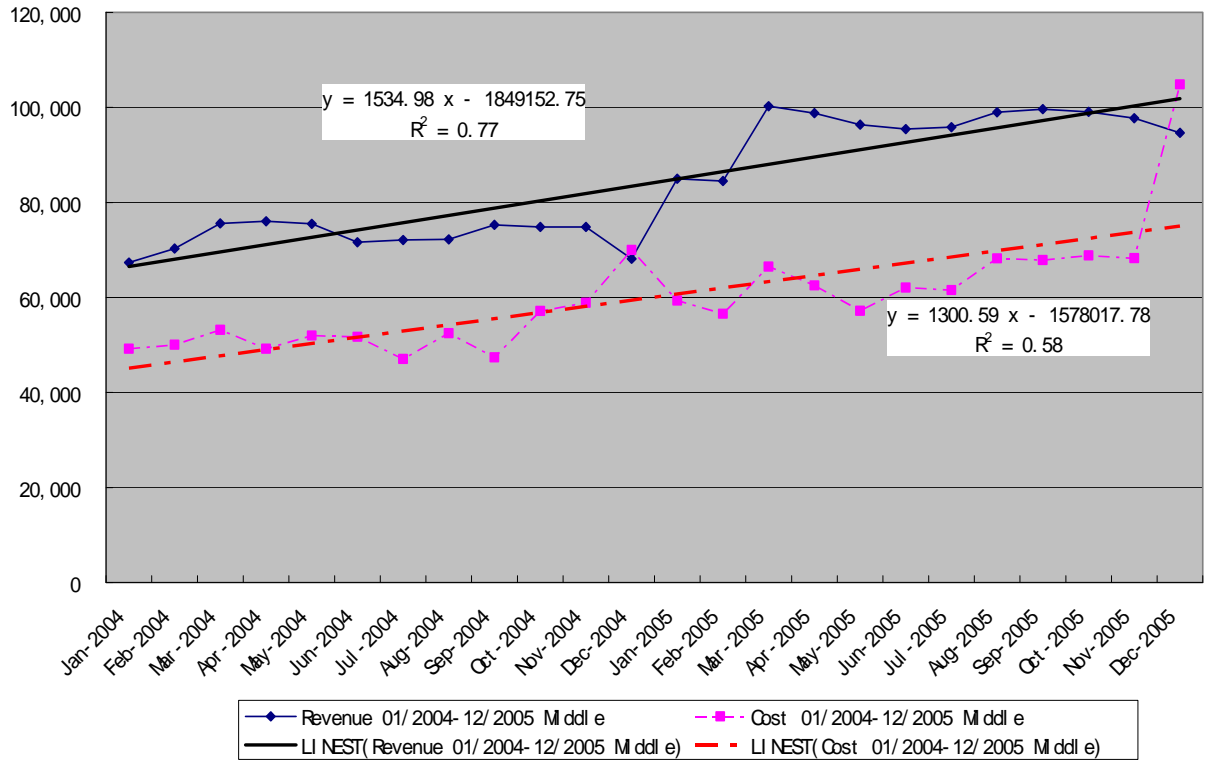


Figure 6: Revenue cost development province middle (01/2004—12/2005)

Take two years period 01/2004 – 06/2006, the result as shown in Figure 7:

$$Y(\text{revenue}) = 1823.44x - 2211490.06$$

$$Y(\text{cost}) = 970.51x - 1163310.18$$

With the two and half years data, we found that the scissor difference between the revenue and cost lines is obvious, the situation of the province middle is nearly the same as the province east.

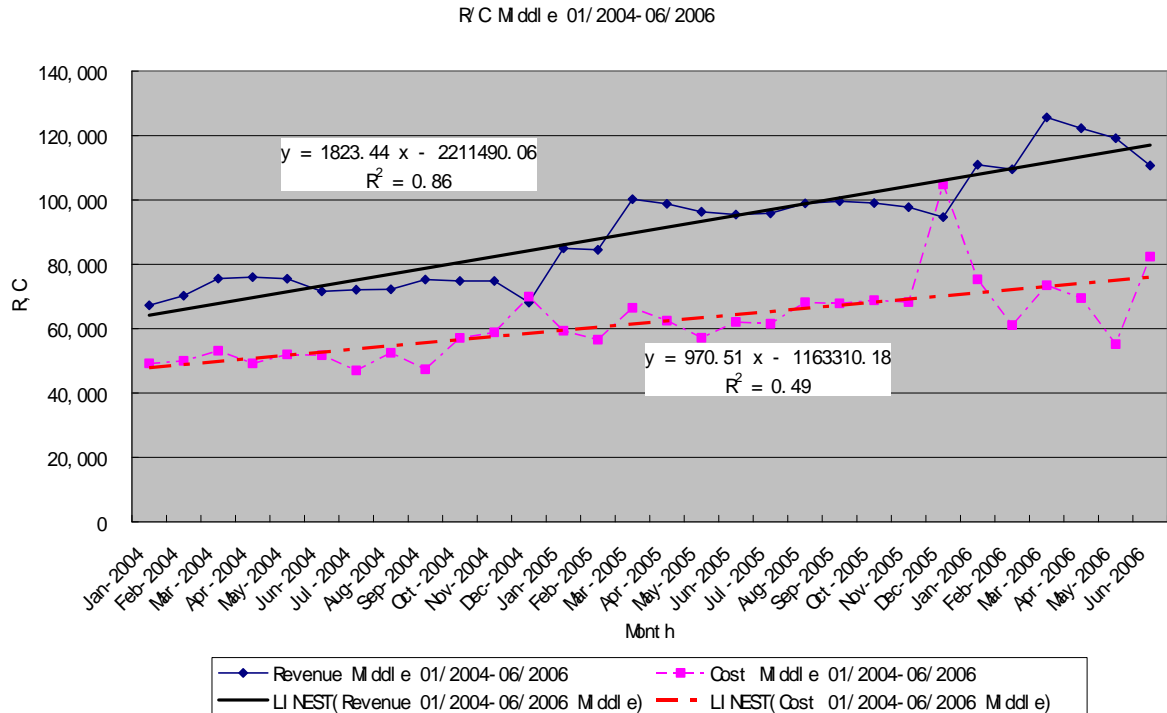


Figure 7: Revenue cost development province middle (01/2004—06/2006)

As a conclusion, we find that with the “data period” lasted longer, e.g., 12 months, 24 months to 30 months, the scissors difference between the “revenue line” and “cost line” become bigger, this means that the revenue developed speed was higher than the cost, this also means that the province east is becoming more and more stronger in financial aspects, more and more stronger in competition.

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3) For the province west, the results as following;

Take one year period 01 – 12/2004, the result as shown in Figure 8:

$$Y(\text{revenue}) = 418.81x - 488719$$

$$Y(\text{cost}) = 1512.00x - 1867227.97$$

With the data of year 2004, we found clearly that the cost developed much faster than the revenue, this means that this province branch will reach the “break even point” very soon, they were in a relatively not so good financial position and certainly, their competition situation was not good.

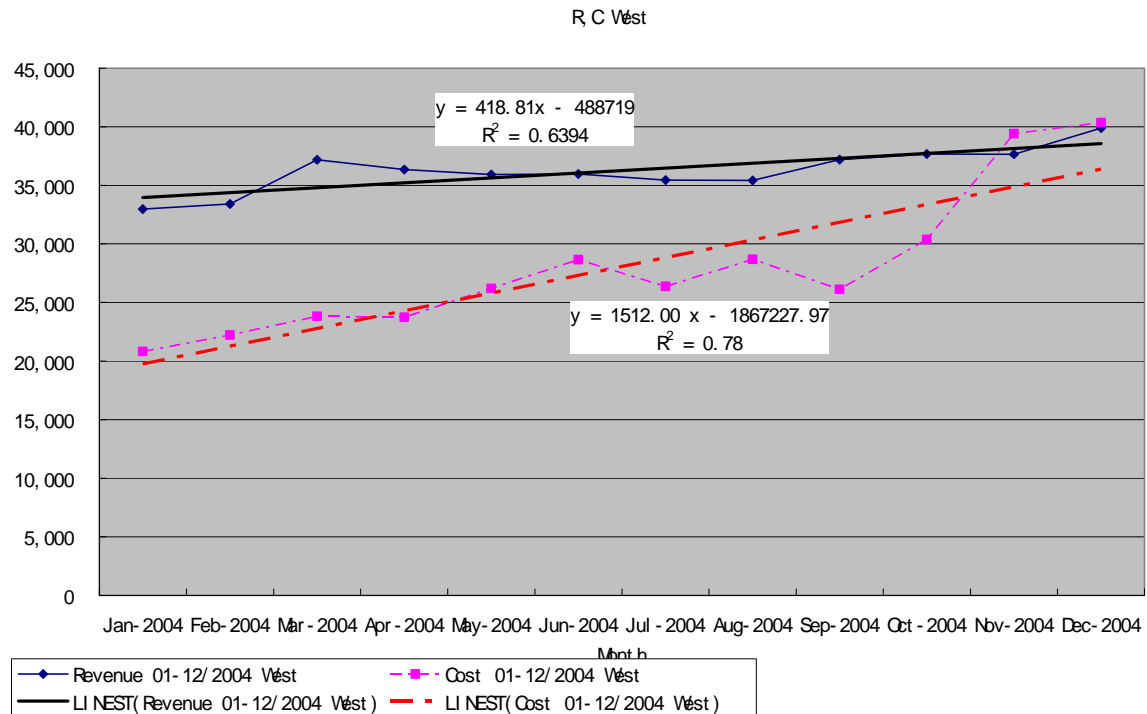


Figure 8: Revenue-Cost development province west(01/2004 –12/2004)

Take two years period 01/2004 – 12/ 2005, the result as shown in Figure 9:

$$Y(\text{revenue})= 551.36x - 654915$$

$$Y(\text{cost}) = 782.96x - 955032$$

With the two years data, we can see that the situation in this province was better, the scissor difference between the revenue and cost became narrower, although the cost still developed faster than the revenue, this province made a big progress in year 2005.

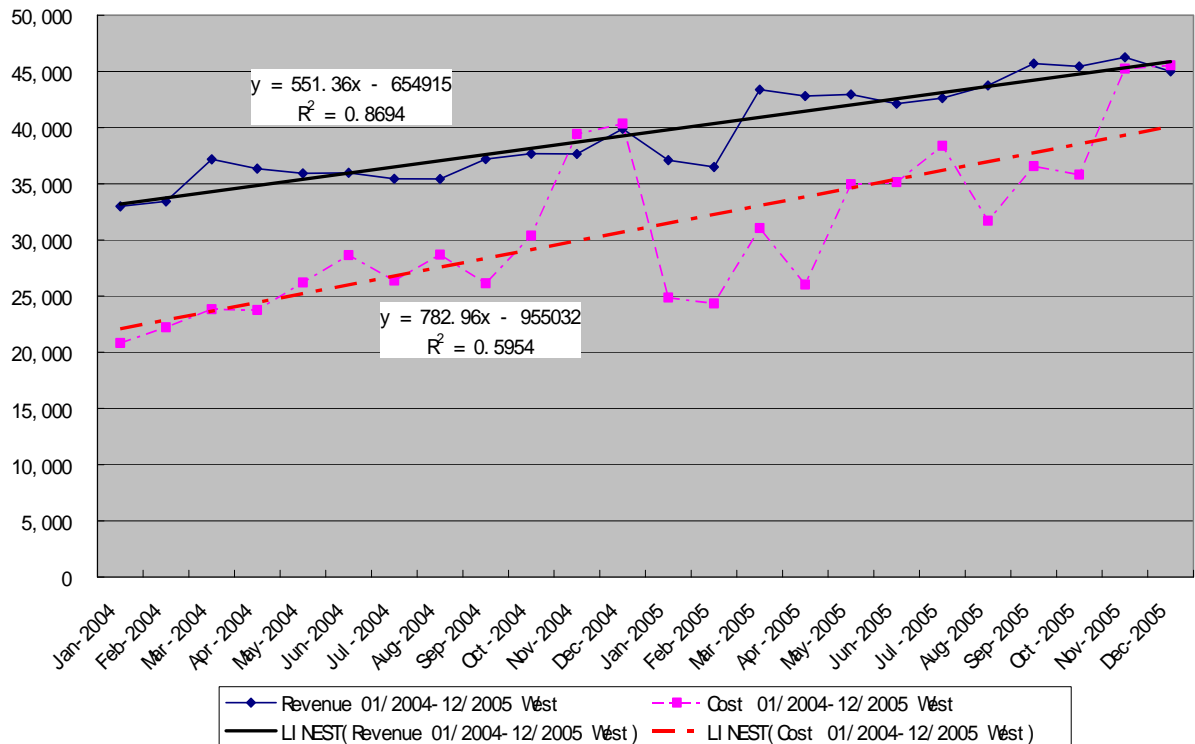


Figure 9: Revenue-Cost development province west(01/2004 –12/2005)

Take two and a half years period 01/2004 – 06/2006, the result as shown in Figure 10:

$$Y(\text{revenue}) = 655.41x - 785678$$

$$Y(\text{cost}) = 813.08x - 992950$$

With the 30 months data, we found that the scissor difference between the revenue and cost was nearly parallel, although the cost still developed slightly faster than the revenue, this means province west made further improvement in the first half of year 2006, with this trends, we assume that the two lines will become parallel soon and the revenue line will be even more inclined to above than the cost line.

monthly revenue cost west

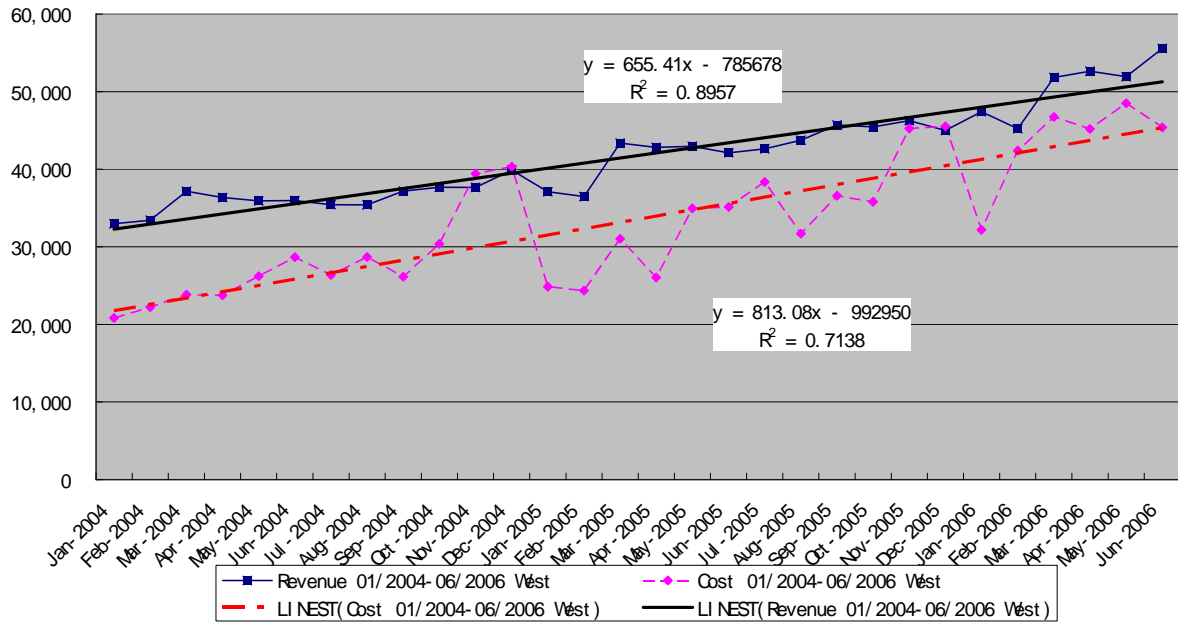


Figure 10: Revenue-Cost development province west(01/2004 –06/2006)

As a conclusion, we find that with the “data period” lasted longer, e.g., 12 months, 24 months to 30 months, the scissors difference between the “revenue line” and “cost line” become bigger, this means that the revenue developed speed was higher than the cost, this also means that the province east is becoming more and more stronger in financial aspects, more and more stronger in competition.

Reason for the phenomenon of “the longer the period of the data, the bigger the scissor difference of the revenue and cost lines” might be that, province east’s performance was improving with the time went on, the more near the data to the present, the more accurate of the prediction we use it, and also the “artificial adjust data”, e.g., as listed companies, we doubt that the mobile companies always narrow the revenue and cost to reduce the profit when needed, especially in the mid and end of the years.

conclusion: From the above analysis, we can find that the revenue and cost developments of all the three provinces are scissor movement, the eastern and middle provinces shares the same feature of revenue grows faster than the cost, e.g., the gross profits of this two provinces increase continuously in the past years and will keep the increasing trends in a foreseeable period, the situation in the western province is slightly different, the cost developed faster than the revenue, but, with the predicted period lasted longer and longer and nearer and nearer to the present, e.g., 01/2004-

12/2004, 01/2004-12/2005 to 01/2004 – 06/2006, the two lines of revenue and cost approached more and more “parallel”, the increasing speed of revenue was approaching that of the cost very quickly. It is very clear that China Mobile improved its market situation a lot in the recent 3 years, it strengthened its financial and market ability very obviously, strengthened its competition position very much, it made serious trouble to its rival-China Unicom. Generally speaking, there is enough space for China Mobile’s profit development, China Mobile is very strong financially for the future price war. But, situation in the three different provinces are slightly different, the eastern province is the most profitable one, the middle province is less profitable than the eastern one but better than the western province, this phenomenon is exactly coincident with the macro economy situation in China, huge difference exists in the different areas from the eastern coastal provinces to the dry western provinces, economy in the coastal area is always better than the dry areas. the scissor difference between the revenue and cost clearly shows that the difference in the eastern province is larger than the middle province and the middle province is larger than the western province. In this case, the western province, e.g., the western provinces, will be relatively weak in the future competition in case some operational pre-conditions changed, China Mobile should take some balanced measures to protect the “weak” provinces.

2 . Movement of the ratio -- Price to Marginal cost

Price/Marginal Cost (here after P/MC) is a very important concept for analyzing the dynamic trends of company’s profiting ability.

P/MC indicates that how much revenue can be generated by providing one additional unit of product or service, for China Mobile, it means, how much revenue can be generated by providing one more minute call. Generally speaking, the price is always declining, if the MC is increasing, the P/MC will also declining, the declining movement of P/MC means that the profit space will be reduced, further study of the declining of P/MC will also predict the floor for the price lowering, measures must be taken to tackle the challenge, to protect the price will not reach the floor, there will be no profit at all if the price reaches the floor..

For a telecommunication company, the fixed assets accounts for a very big proportion of the total cost, the variable cost is only a small part of the total cost, the marginal cost should be also small under normal circumstances, but, at least in two cases, the marginal cost may jump: network scale expansion or new technology adopted, such as new switches installed or 3G technology introduced; market approaches saturated .

It is a very difficult task to calculate the marginal cost exactly, we all assume that the marginal cost of telecommunication industry is tiny, but, we failed to identify a

reasonable solution for the calculation. It is easy to record one more additional unit of the out put in a mobile network, such as to record one more user enrolled into the network or to record one more minute call made via the network, but, it is impossible to record the input for the purpose of fulfill the additional one user connection or one minute call. We can be sure that the marginal cost is nearly no connection with the fixed cost, only if the network scale needed to be expanded. The marginal cost is only related to the variable cost, such as part of the personnel cost, inter network fee, and sales promotion fee.

Here we propose a way for the estimation of the marginal cost, we assume that the marginal cost is only related to the variable cost (Cv), which includes the following three parts 1), inter network connection fee, 2), sales promotion expenditure, and 3), Personnel cost (50%). We can get the monthly variable cost (Cv) from the monthly cost detailed table, then the Cv divided by the average number of users of the respective month as the marginal cost per user.

We take the Average Revenue per User (ARPU) as the price, the marginal cost (MC) calculated as described above, then we get the $P/MC = ARPU/MC$.

1), For province east, the results as shown in Figure 11:

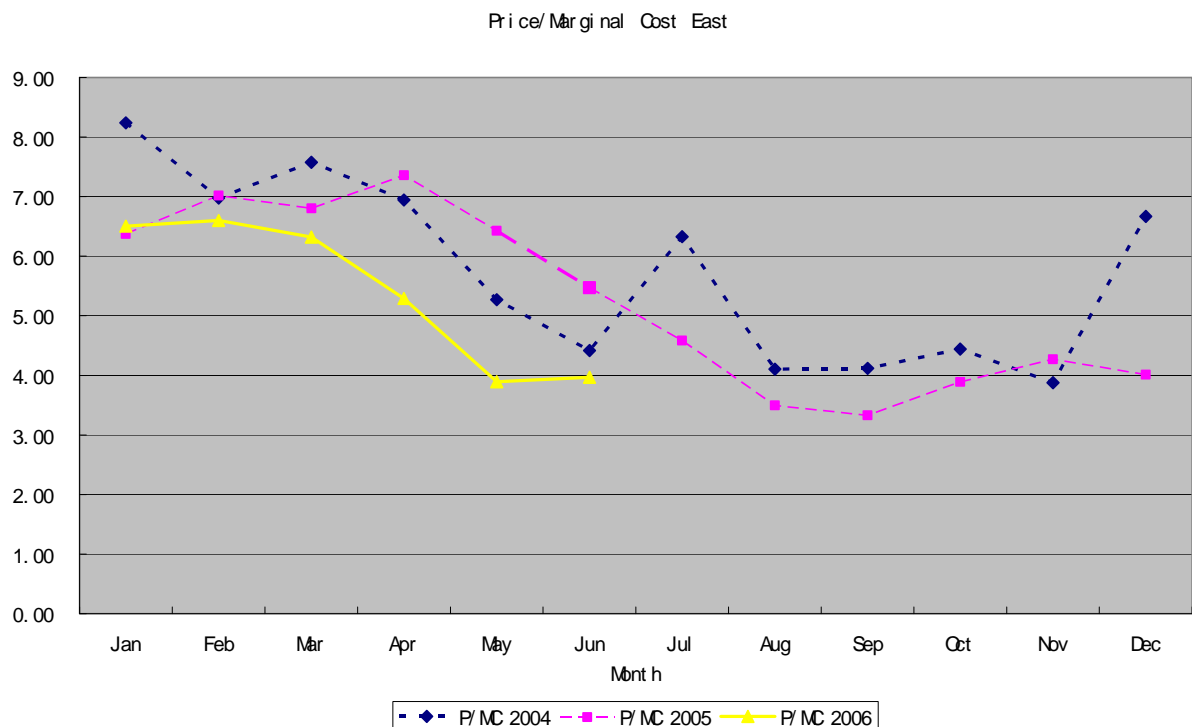


Figure 11: Price-Marginal Cost development province east

We found that, for the total 30 months, the average monthly $P/MC=5.485$; for the year 2004, the average monthly $P/MC=5.746$; for the year 2005, the average monthly

P/MC=5.25; for the year 2006, the half year average monthly P/MC=5.42. We can reach the following assumptions:

- The P/MC is very high, it means the more users connected to the eastern provincial network, the more profit it can get; the more users connected to the network, the higher profit percentage the operator can be achieved.
- The P/MC shows a declining trend within one year, January is always the highest, then the February....., the last month's is always the lowest. Reasons for that are, first, we believe the cost figure is manipulated some how, although the yearly total cost is almost no false, the cost figure is normally manipulated higher and higher with in a year, due to China Mobile is always under a high profit pressure.
- The P/MC is declining slightly year by year, it means the P/MC is convergent, there is a floor for the price lowering, but time for the floor might be far away, province east has a very long way for it's profitable business .

2),For province middle, the results as shown in Figure 12:

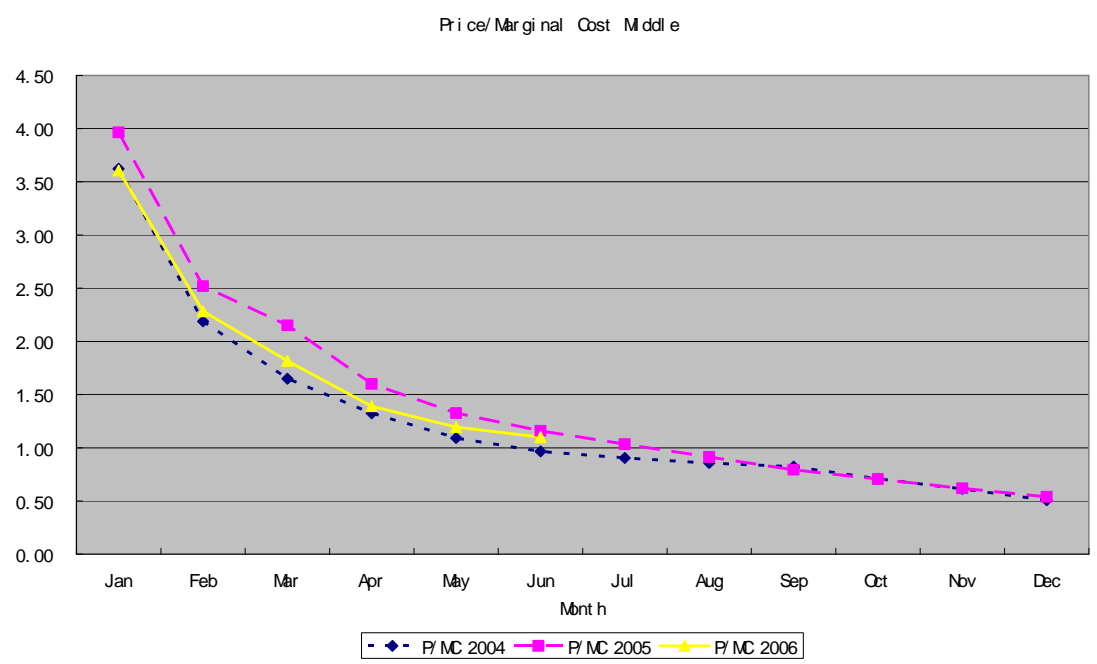


Figure 12:Price-Marginal cost development province middle

We found that, for the total 30 months, the average monthly P/MC=1.47; for the year 2004, the average monthly P/MC=1.27; for the year 2005, the average monthly P/MC=1.44; for the year 2006, the half year average monthly P/MC=1.9. We can reach the following assumptions:

- The P/MC is not high as we expected, but, the average P/MC (either average 30

months, or average yearly) is still >1.0 , it means province middle can still get more profit from connecting more users to its network; as the same as province east, the more users connected to the network, the higher profit percentage the operator can be achieved.

- The P/MC shows a declining trend within one year, January is always the highest, then the February....., the last month's is always the lowest. Reasons for that are, first, we believe the cost figure is manipulated some how, although the yearly total cost is almost no false, the cost figure is normally manipulated higher and higher with in a year, due to China Mobile is always under a high profit pressure.
- The P/MC is increasing slightly year by year, reason for that is the current P/MC is too low compares with the province east, we assume the P/MC will increase within the following coming years. We can not reach a conclusion that the P/MC is no-convergent, possibly the P/MC movement trend is caused by some artificial reasons.

3), For province west, the results as shown in Figure 13:

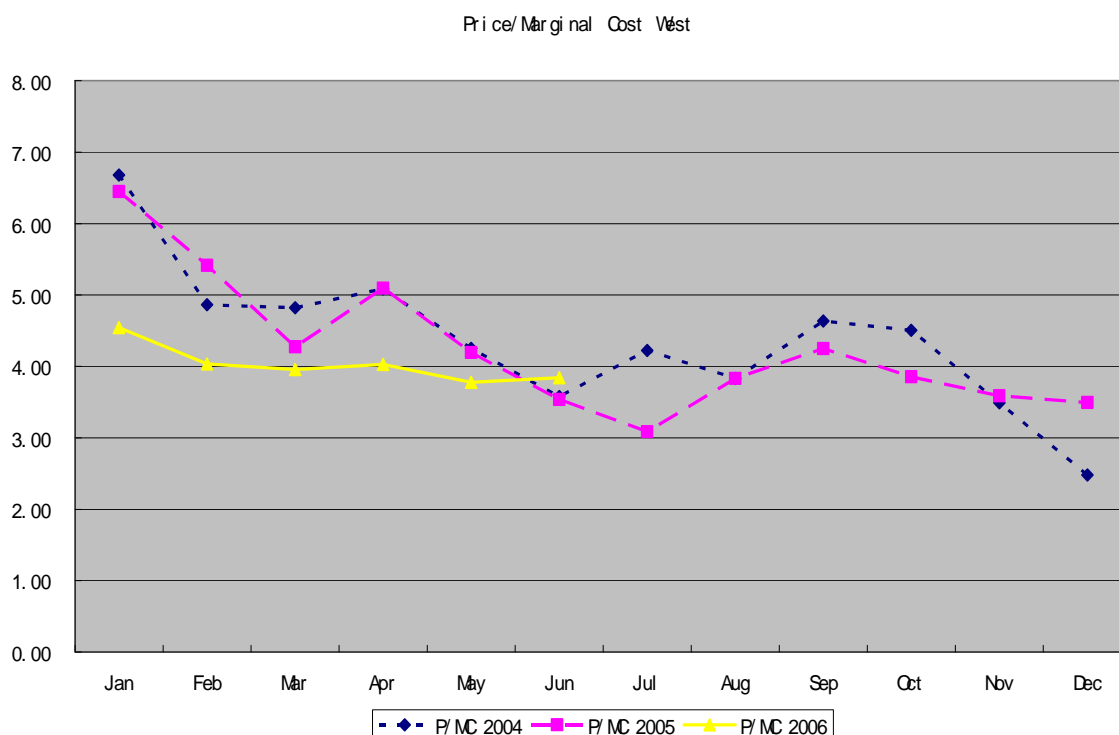


Figure 13: Price-Marginal cost development province west

We found that, for the total 30 months, the average monthly P/MC=4.26; for the year 2004, the average monthly P/MC=4.37; for the year 2005, the average monthly P/MC=4.26; for the year 2006, the half year average monthly P/MC=4.03. We can reach the following assumptions:

- The P/MC is very high, it means the more users connected to the western provincial network, the more profit it can get; the more users connected to the network, the higher profit percentage the operator can be achieved.
- The P/MC shows a declining trend within one year, January is always the highest, then the February....., the last month's is always the lowest. Reasons for that are, first, we believe the cost figure is manipulated some how, although the yearly total cost is almost no false, the cost figure is normally manipulated higher and higher with in a year, due to China Mobile is always under a high profit pressure.
- The P/MC is declining slightly year by year, it is also convergent, it means there is a floor for the price lowering, but time for the floor might be far away, the same as province east, province west also has a very long way for it's profitable business .

Generally speaking, the P/MC is slightly convergent for China Mobile, it means there is a floor for it's price lowing activities, although the floor might be very far away from the time being.

3. ARPU and Price per minute call development

ARPU(Average Revenue Per User per Month) and Price per Minute Call are the two most important indicators for the measuring the price level of the mobile communications, the ARPU is more perceptible to the customers and the price/minute call is more technical and always used by the operators itself to judge the price level.

1). We take the period of two and half years figure 01/2004 – 06/2006, of all the three provinces, the ARPU as shown in Figure 14.

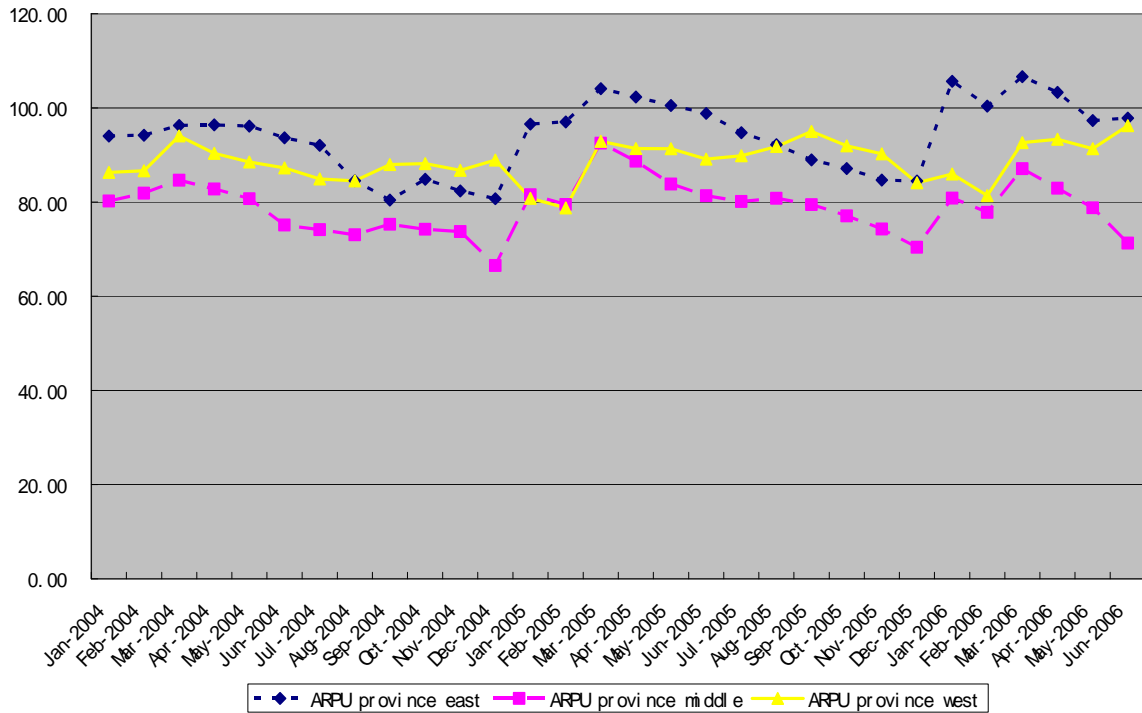


Figure 14: ARPU provinces east, middle, west

A conclusion can be derived from the above results that the ARPUs of all the three provinces are not changed too much during the 30 months development, it means the general price level of China Mobile was not changed too much, the price war was not fierce. As we said, the ARPU is more perceptible to the customers, it means that the users of China Mobile didn't feel a big change of the price.

2). We take the period of two and half years of 01/2004 – 06/2006, of all the three provinces, the Price per minute call as shown in Figure 15:

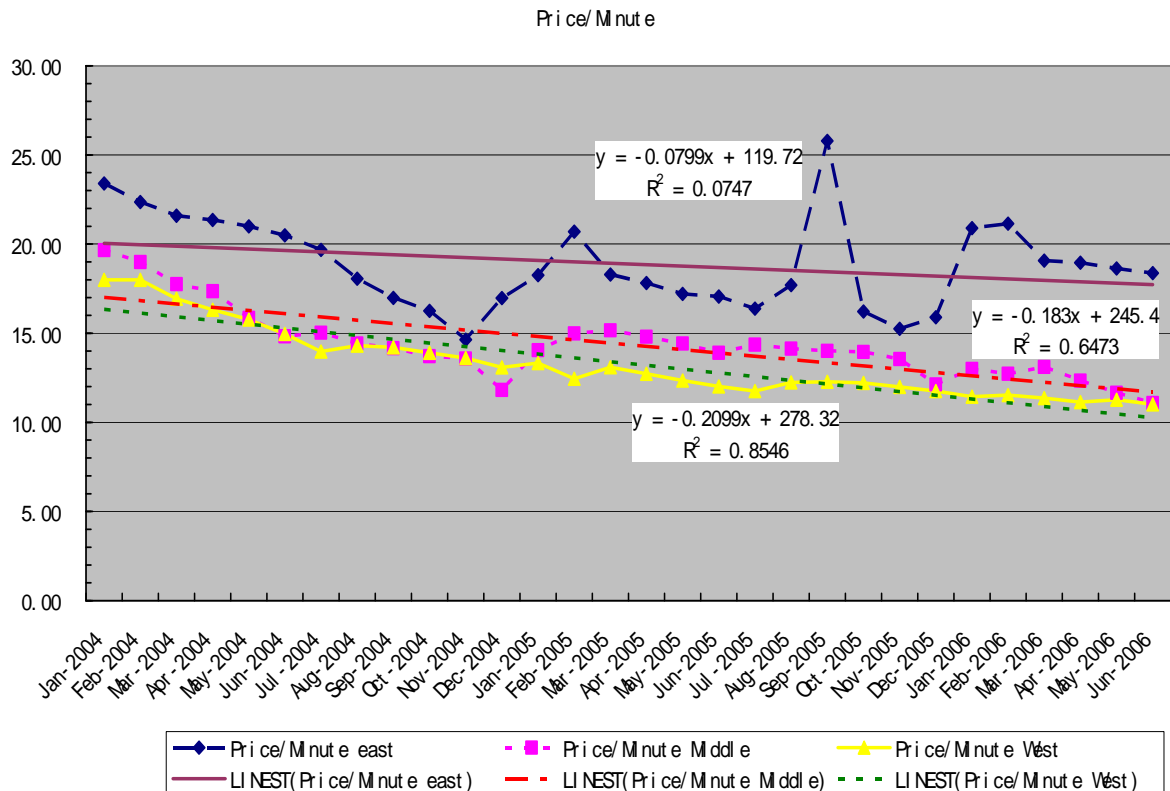


Figure 15: Price per minute province east, middle, west

we can find that the price per minute call experienced declining in all three provinces, the declining in the province middle and province west was more dramatic than the province east.

China Mobile kept the general price level of ARPU, which is more perceptible to its customers, with no big change .In the meaning time the price indicated by “price/minute call” declined a lot.

Generally speaking, the changes of the ARPU of all the three provinces were much smaller than the changes of the price per minute call.

It means China Mobile used the price war very wisely and moderately.

4. Effects of price lowering—Elasticity of Price Demand.

How the price lowering measures taken by China Mobile in the competition will effect its market situation, is price lowering helpful to its profit target? We need to study the elasticity of the demand to the price t answer these questions. We select two types of piece – demands for the elasticity calculation:

- ARPU – Total number of users,
- Price per minute call – Total length of voice calls (MoU)

The ARPU- Total number of users indicates how the users base of China Mobile is elastic to the ARPU; the price/minute – MoU indicates how the MoU is elastic to the price/minute.

We use $e = P/(P-MC)$. e: elasticity of demand to price, P: price, MC: marginal cost, the elasticity was calculated based on the monthly data..

--When the $P=ARPU$, $MC=Vc/\text{number of users}$, (Vc: variable cost, as defined in **2.**), The elasticity(ARPU) indicates how the total number of users is elastic to the ARPU;

--when the $P=\text{Price per minute call}$, $MC=Vc/\text{total length of the voice call}$, the elasticity(MoU) indicates how the total length of call is elastic to the price/minute call.

We calculated the two types of the elasticity for the province east and province west, we didn't adopt the data source from the province middle. The calculation results as following:

1). For province east, the elasticity calculated by ARPU and Price/Minute are shown in Figure 16::

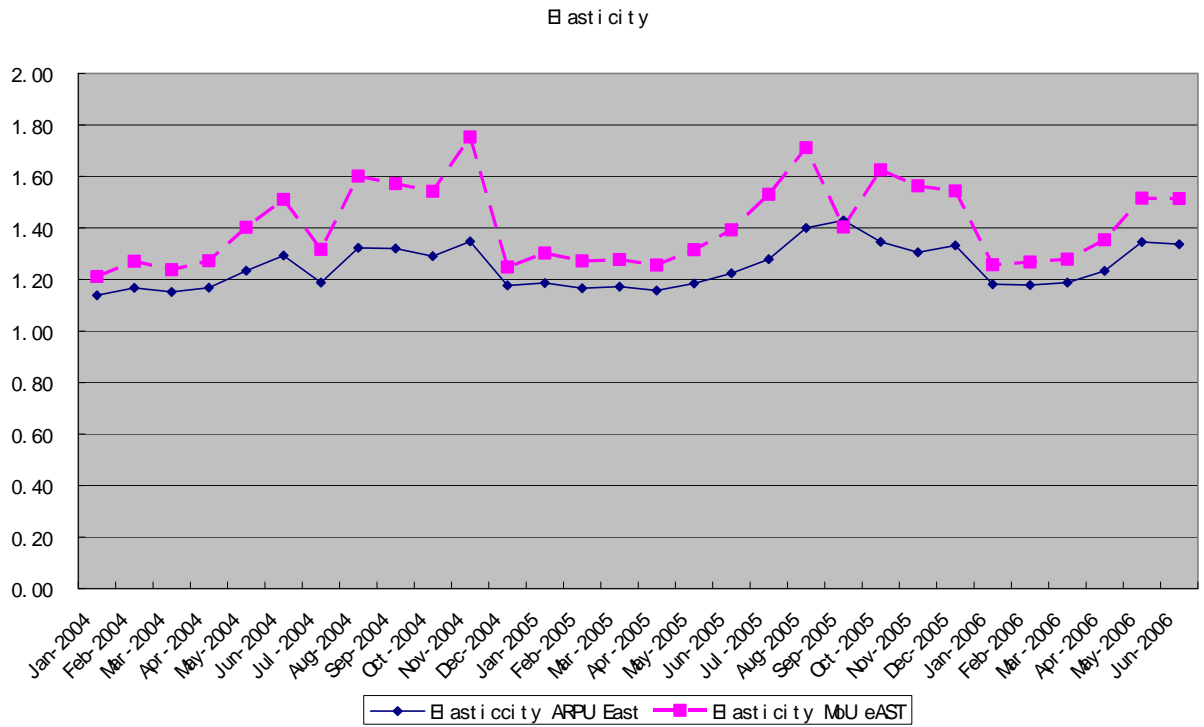


Figure 16: Elasticity province east

2). For province west, the elasticity calculated by both ARPU and “Price/Minute” are shown in Figure 17:

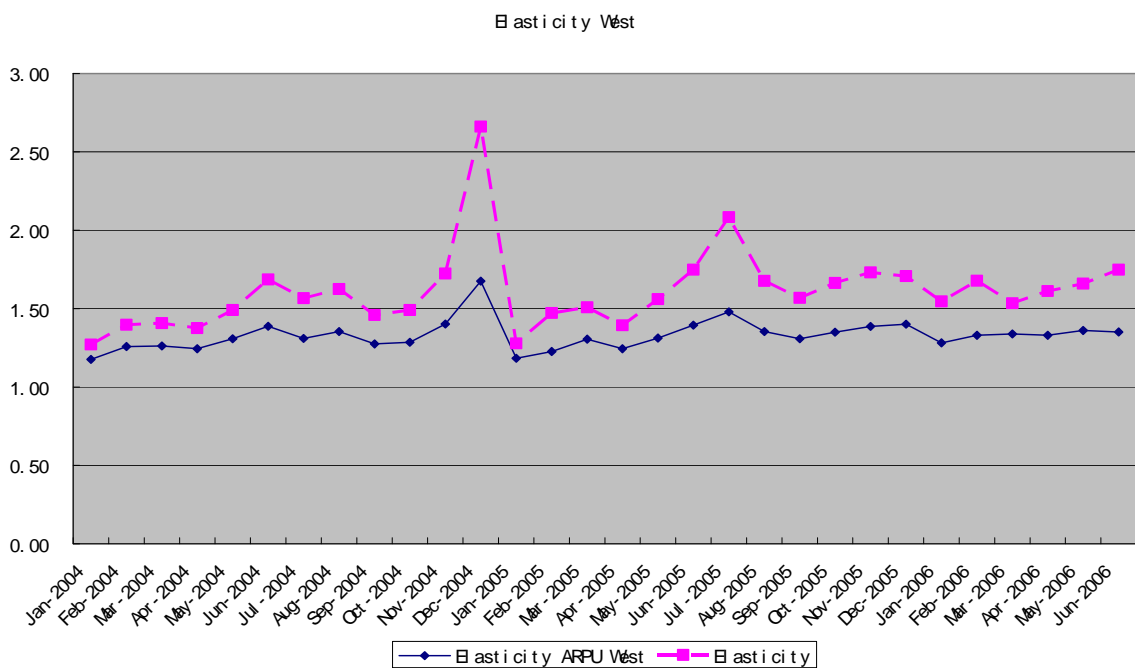


Figure 17: Elasticity province west

From the above results, we can draw the following analysis:

The two provinces share a same situation for the elasticity development.

Both of the two types elasticity of all the months in province east and west are >1.0 , it means, the demands, both number of users and total length of the voice calls, are elastic to the price. The Mobile companies can increase their customer quantities and usage of their services by reducing the prices, in the meaning time, their revenues and profits will be also increased.

The elasticity shows a nearly flat development, they changed not much during the two and half years, it means that there is still a big room for China Mobile to use the price tools to improve their business.

An interesting phenomenon is that we found the elasticity always increased from the beginning of the year to end of the year, November and December are always the highest of the elasticity, so that we believe the end of the year is the best time for China Mobile to use the price tools to stimulate the demands.

5. Conclusion

From the above analysis, we can draw the following conclusions:

- 1). The revenue of China Mobile develops faster than it's cost, this leads to a spacious room for China Mobile to lower it's price,
- 2). The ratio of price to marginal cost of China Mobile is slightly convergent, it means that there is a floor for the price lowering activities, but, it is far away.
- 3). The demand of China Mobile, either in number of users, or in the length of the calls, is elastic to the price.
- 4).The price lowering process of China Mobile , is not significant, it means the competition between China Mobile and China Unicom, is insufficient.

So that, we believe in ,

- 5). China Mobile is in a superiority in the competition, the Mobile communication market in China has already fell into unbalance.
- 6). China Unicom, the riot of China Mobile in the market, has no way but collapse if China Mobile to play the game with it's full power.
- 7)We assume the main reason for China Mobile's superiority is the technology, Mobile communication represents the future, China Mobile can also beat the fixed line operators, too, if the regulator pays no attention in the future competition.

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