



# The Compare Modelling of Maximum Profit and Its Quantity with Different Cost and Demand in Stock Share on Economics IV

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## Abstract

The trend to different cost and price in simulated stock market is searched in this paper. It is found that the TR increases with parabolic when Q increases. TR changes from 0 Yuan to 235,000 Yuan when Q becomes from 100 to 10,000. Meantime's AR decreases with Q increases. The PR and TC will increase when the Q increases. The PR changes from 0 Yuan to 80,000 Yuan and TC becomes 160,000 Yuan when Q becomes 7,500.

**Keywords:** Maximum profit; Its quantity; Modelling; Economics; Modelling; TR; TC; MR; AR; PR; MC; Higher price

## Introduction

The economics modelling of maximum and its quantity at different cost and price has been established in order to investigate their intrinsic relationship. Meantime it is important to estimate the maximum of them in an enterprise manufacture and finance. In this study the stock share is searched to try to find the intrinsic relationship. For the sake of modeling the maximum profit and quantity in stock market the data is arranged to solve the constant of linear and parabolic equation. Only we know the price and quantity can the share be certain to do investment correctly. The base data is important to determine the constant to model. It will be discussed in detail because of its scientific method. It will give us convenience and rapidness & correct result to help us to determine the investment. The higher price is the destination of this study for us to search further. In short the maximum profit and quantity on stock market is been built in this study. Only if they are calculated can the further other relationship be drawn to discuss further their relationship. The reasonable and scientific value can be solved and other information can be gained for checking the right and more

information. The different cost and price shares have been investigated here to see the difference between them [1-6].

## Calculation course and Discussions

For the sake of solving share in the stock market the modelling of maximum profit and its quantity in this study has been built as following two kinds of linear and parabolic formula according to the economics principle.

To suppose the product demand function as

$$P = aQ + b \quad (1)$$

It has

$$a = \frac{P_1 - P_2}{Q_1 - Q_2} \quad (2)$$

$$\text{So } b = p_1 - aQ_1 \quad (3)$$

To suppose the total cost function as

$$TC = aQ^2 + bQ + c \quad (4)$$

It has

$$b = \frac{(Q_1^2 - Q_2^2)(TC_1 - TC_3) - (Q_1^2 - Q_3^2)(TC_1 - TC_2)}{(Q_1^2 - Q_2^2)(Q_1 - Q_3) - (Q_1^2 - Q_3^2)(Q_1 - Q_2)} \quad (5)$$

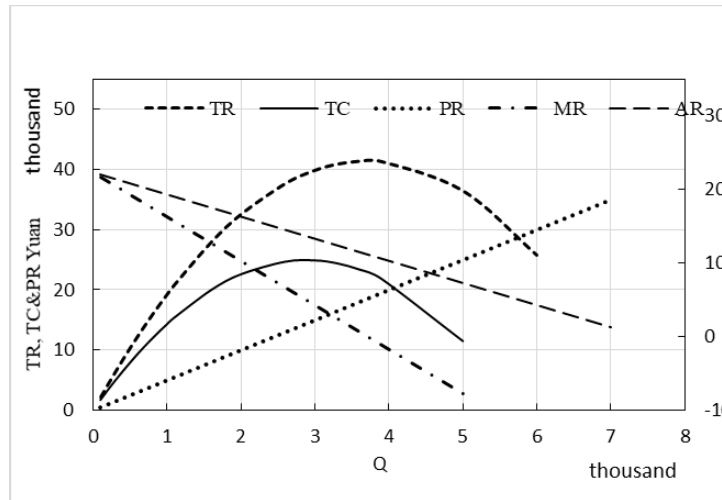
$$\text{And } a = \frac{-b(Q_1 - Q_2) + TC_1 - TC_2}{Q_1^2 - Q_2^2} \quad (6)$$

$$\text{So } c = TC_1 - aQ_1^2 - bQ_1 \quad (7)$$

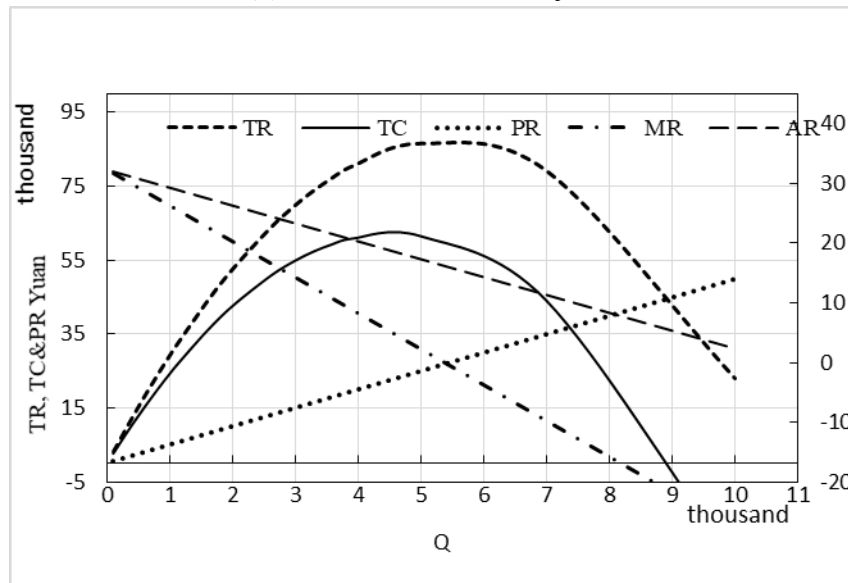
Here P is the demand, Q is quantity, TC is cost, a, b & a1, b1, c1 is the constant (Table 1).

When the condition has been given as 1000 share with cost and price the equation will be completed which is exhibited below. According to the modelling equation the maximum profit and quantity will be calculated. Q=100~3600 is defined as below

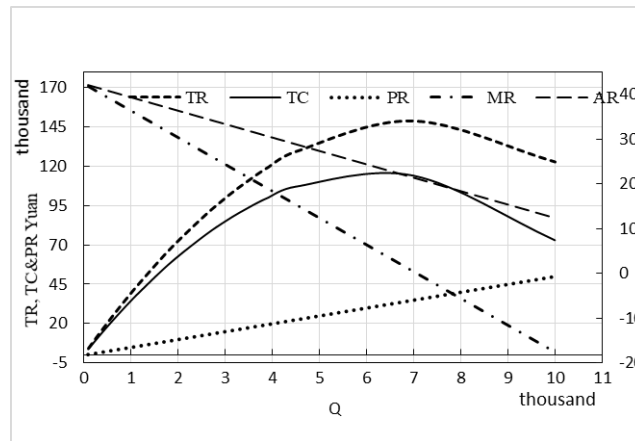
Figure 1 to discuss in detail. It is the predicted curve. In this study TR is total revenue ; TC is total cost ; MR is marginal revenue ; AR is average revenue ; PR is profit ; MC is marginal cost; Q is quantity. According to the Table 1 shown below the coefficient has been related in this paper. There are two conditions as 1 and 2 which differs from the other. The, b and a1, b1 & c1 is the coefficients whilst TC, Q, Pr & P is the terminology as above. The maximum quantity and profit is Solved according cost equations for four conditions which will be discussed in below (Figure 1).



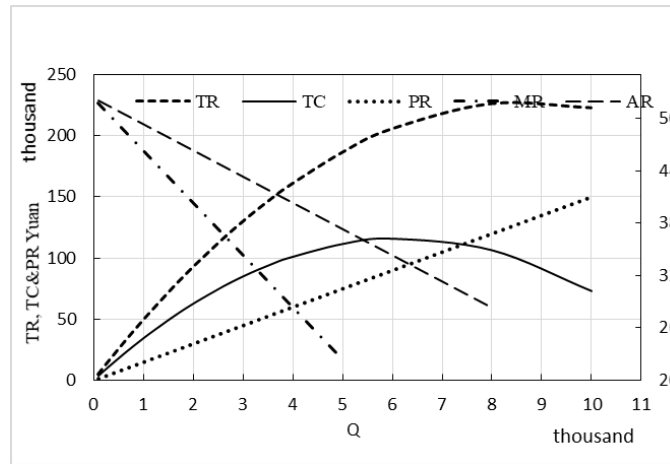
(a) 17Yuan/one cost/ 22 Yuan price.



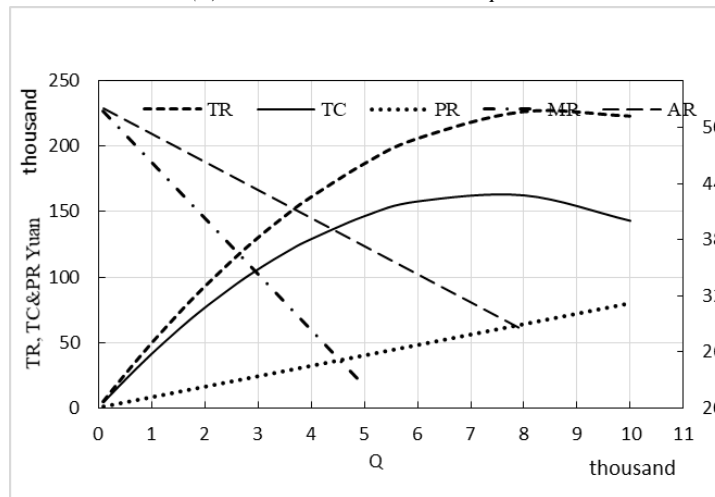
(b) 27Yuan/one cost/32 Yuan price



(c) 37Yuan/one cost/42 Yuan price



(d) 37Yuan/one cost/52 Yuan price



(e) 44Yuan/one cost/52 Yuan price

**Figure 1:** The graph of TR, TC, PR, MR & AR and  $Q=0-7,000$  &  $10,000$  with various cost and price.

The Figure 1(a-e) shows that the relationship between TR, TC, PR, MR & AR and Q with the part from 0 to 7,000~10,000. It is known that when  $Q=3600$  the TR will be 41,000 Yuan which is the highest result in Figure 1(a). MR and AR is little both about 20 Yuan. The maximum price of them is 4166 Yuan and the

quantity Q is 833 from Table 1. Whilst TC is 25,000 Yuan with  $Q=3,000$  according to modelling. Maximum PR attains 35,000Yuan. From Figure 1(b), the maximum is the same to above. TR is 80,000 when  $Q=8,500$  whilst TC is 60,000 Yuan when  $Q=4,500$ . Maximum PR 50,000Yuan. It is included in this

study conclusion however it must be pointed out to find. MR and AR is 30 Yuan. In Figure 1(c) TR is 147,000 Yuan when Q=7,000 meantime TC is 120,000 when Q=7,000. TC is 50,000 Yuan and MR and AR both is 40 Yuan. The maximum is the same to above. In Figure 1(d) TR is 230,000 Yuan with Q=8,000

and TC is 120,000 Yuan with Q=6,000. PR is 150,000 Yuan. The maximum price is 10,666 Yuan with the quantity of 1,333. MR and AR is 50 Yuan. In Figure 1(e) TR is 235,000 Yuan and TC is 160,000 Yuan with Q=8,000 and 7,500. Maximum MR and AR is 52 Yuan. PR is 80,000 Yuan.

**Table 1:** The coefficients and parameters are shown with different conditions.

Parameters Conditions	a	b	a <sub>1</sub>	b <sub>1</sub>	c <sub>1</sub>	TC, Yuan	Q	Pr, Yuan	P /one
1	-0.003	22.3	-0.003	17.3	0	17	833	4,166	22
2	-0.003	32.3	-0.003	27.3	0	27	833	4,166	32
3	-0.003	42.3	-0.003	37.3	0	37	833	4,166	42
4	-0.005	44.3	-0.003	37.3	0	44	1,333	10,666	52
5	-0.005	52.3	-0.003	37.3	0	37	2,500	37,500	52

The maximum price is 2,500 with the quantity of 37,500 Yuan. As it is known that in Figure 1 (a) at the intersection of TR and PR the PR becomes 30,000 Yuan with the Q=5,800. at the intersection of TC and PR the PR value becomes 20,000 Yuan with the quantity Q=4,000. It means the former is the total revenue which is the same to profit, the latter is the total cost which is the same to profit. So the former is bigger than the later. In Figure 1(b) TR and PR intersection value is 50,000 Yuan with Q=9,000 meantime TC and PR intersection one is 36,000 Yuan with Q=7,300. With the TC and demand price increasing the tendency of them will be bigger. From the graph above it is found the maximum profit and quantity is not consistent well. So the other factor will be hidden here which is concluded. The one which is solved in Table 1 is lower somewhat.

### Conclusions

The quantity is 10,000 in maximum profit and the maximum profit is 150,000 Yuan which is concluded in this study. It is predicted that TR and TC is parabolic which maximum is 160,000 Yuan with Q=3600 meantime the TR increase from 0 to 160,000 Yuan with Q =0~7,500. If the data is big enough TR and TC can be solved maximum value to meet PR.

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