

The Building Motives of Home and Foreign Enterprises Union under the Value Creation Ability

--Research on the Enterprises Decision Behavior Based on the Discrete Variable

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Abstract—On the basis of the definition of value creation ability, the thesis analyzes enterprises decision behavior under the discrete variable, which concludes that the maximization of value creation ability is the unique principle of enterprises decision behavior. Based on this, the analysis of value creation oriented building motives of the Home and foreign enterprises union, which explains the inner mechanism of Home and foreign enterprises volunteering building union. The conclusion from the thesis puts forward the new clues and approaches to explain the building and division of labor of Home and foreign enterprises union.

Keywords—value creation ability; decision behavior; Home and foreign enterprises union; discrete variable

I. INTRODUCTION

With the fast developing of global economy, international companies participate in the Chinese market division of labor more and more on building union. Home and foreign enterprises union put the important role on the economy operating of China: it pushes the development of Chinese economy, which takes smoothly fast economy growth; however, it deliberately positions the local enterprises on the low side of the value chain, on which Chinese economy growth depend mainly capital and labor input, bringing severe environment destruction and resources consuming. As a consequence, the adjustment of building motives and division of labor of home and foreign enterprises is necessary and the systematical analysis of the building motives is needed.

At present, the universal opinion on the building motives of home and foreign enterprises union research is foreign enterprises for market share and local enterprises for technology. However, the actual situation differs from the opinion on two aspects: under the different division of labor pattern, foreign enterprises may outsource the higher profit part to local enterprises; and home enterprises pursue profits far more than technology. The current research on the building motive of home and foreign enterprises union weakly explains the actual situation. On the perspective of value creation ability, the thesis analyzes the enterprises decision behavior under discrete variable, which applies the theoretical basis for explaining the building motives of home and foreign enterprises union.

II. VALUE CREATION ABILITY DEFINITION

Value creation is the main purpose of enterprises activities, the researchers define value from different perspectives, among which the most representative one is from American scholar Michael E. Porter (1985) who defines value as the price customers willing to pay. The financial evaluation of enterprises value takes responsible for the value measurement. The current popular method is economic value added (EVA). The EVA definition derives from the traditional school of surplus value, based on Merton Miller and Franco Modigliani's company value model; the American Stern Stewart company developed EVA to a managerial system of performance evaluation, motivation regulation and management idea. EVA applies the measurement method of economic profits, which better measures the relative annual value company creating for the investors.

As the definition shows: EVA is the net results of net operation profits after tax deducting total capital cost. Capital cost concludes debts capital and share capital. Positive EVA shows the surplus of operation income deducting total costs and expenses, which means wealth added of the investors and the company's value increasing; on the opposite, negative EVA shows the company's value decreasing.

As an absolute quantity index, EVA exists deficiency on the economic effects and ability reflection. The deficiency may hardly truly reflect home enterprises technology ability and value creation situation. Due to the fact that EVA shows the ratio of the input and output, not their balance, the EVA only demonstrates the existing of economic effect, not its quantity. When comparing with different scale enterprises, normally the EVA of larger scale enterprise is bigger than which of smaller scale one. However, whether the difference comes from bigger economic effects or just larger capital input of the large enterprise has no reasonable explanation. Same as home and foreign enterprises union, home enterprise brings large quantity of capital and labor, which may generates higher EVA, while it may not represents higher value creative ability.

Through the analysis, this thesis defines the value creative ability as: the ratio of value creation and input costs of the enterprise, among which value creation equals net operation

profits after tax minus input costs; input costs equals capital costs plus labor costs (the technique of foreign partner which successfully R&D and operating in the foreign country in this thesis equals zero; while if the technique acquired from back into solely or cooperative R&D after home and foreign enterprises union building, the capital and labor costs input is counted).

Assume the production function of an enterprise is $Q = AF(K, L)$, the product market price is P , and then the earnings are:

$$R = PQ = P * AF(K, L) \quad (1)$$

A is technical progress factor; K and L are capital labor input factor respectively, capital input compromises capital and fix capital depreciation.

The net operation profits after tax is:

$$\pi = R - (KC_k + LC_l) - T \quad (2)$$

π is net operation profit after tax; C_k and C_l are unit cost of capital and labor; T is operation tax.

Then the creative value of an enterprise is:

$$EVA = \pi - KC_k \times WACC \quad (3)$$

$WACC$ is weight average cost of capital, normally is bank deposit interests.

According to definition, the value creative ability is:

$$VEA = \frac{EVA}{KC_k + LC_l} \quad (4)$$

Seeing from the value creative ability definition, it has two connotations: one is value creative ability describes the creative value per input unit, which reflects the dependence on profits and production costs of value creation; the other is technology is the necessary factor during the production, while it cannot be shown on the value creation definition. The value creative ability can, on some circumstances, reflect the influence of technology progress factors on value creation.

There exist many chains during the process of actual production and operation, like designing, R&D, producing, manufacturing, assembling, selling and servicing. Every part needs the certain input of capital and labor, and creates certain value. Assume the enterprise includes n production chains; number i creates the value for the enterprise is EVA_i , and the cost is $K_i C_{ki} + L_i C_{li}$. Hence, the value creative ability of chain number i is:

$$VEA_i = \frac{EVA_i}{K_i C_{ki} + L_i C_{li}} \quad (5)$$

The average value creative ability can be counted as:

$$\overline{VEA} = \frac{\sum_{i=1}^n EVA_i}{\sum_{i=1}^n (K_i C_{ki} + L_i C_{li})} \quad (6)$$

From equation (6), the final value is decided by the average creative ability. Some necessary producing chains with low value creative ability would decrease the whole value creative ability. As a consequence, for increasing the whole value creative ability, the enterprise should select professional production with high value creation, not integration production. Normally, among every chain, R&D, designing, maintaining and service creation are the high value creative ability ones, some key equipment and important raw material, due to their irreplaceable character in production, belong to high value creative ability chain as well. Some subordinated equipment and component processing, manufacturing and assembling chains belong to low value creative ability.

The comparative advantage based on value creative ability aims at some inner chains have comparatively high value creative ability within an enterprise, consequently, professional production brings higher wholly value creative ability than integration production. This comparative advantage of value creative ability emerges not only on every inner chain, but among every enterprise. Comparatively, one enterprise has higher value creative ability than the other on some chains.

Under unit factor input situation, value creative ability of an enterprise may show as:

$$VEA = \frac{f(v) - v}{v} \quad (7)$$

v is factor input, $f(v)$ is output.

III. ENTERPRISE DECISION BEHAVIOR UNDER VALUE CREATIVE ABILITY

In microeconomics, rational economic man determine his behavior on profit maximization, which assumes that this rational economic man's decision is under the situation of continuous input factors. However, when encountering two discrete decision gathers, and these two decision gathers have different input, output, profit and value creative ability, the behavior principle of rational economic man differs from continuous input factors situation. This thesis analyzes the decision behavior of rational economic man under discrete decision gathers on the perspective of value creative ability.

Firstly, defining an enterprise as rational economic man, who encountering two strategic combinations: $\Omega_v = \{v, f_v(v)\}$ and $\Omega_u = \{u, f_u(u)\}$, v and u are payments under these two combinations, their decisive variables are $\{v \mid 0 \leq v \leq v_1\}$

and $\{u \mid 0 \leq u \leq u_1\}$, $f_v(v)$ and $f_u(u)$ are their profits, then the profits of the two strategies are:

$$\pi_v = f_v(v) - v \quad (8)$$

$$\pi_u = f_u(u) - u \quad (9)$$

Their value creative ability:

$$VEA_v = \frac{f_v(v) - v}{v} \quad (10)$$

$$VEA_u = \frac{f_u(u) - u}{u} \quad (11)$$

We suppose strategy Ω_v and Ω_u are in the production function $f_v(x)$ and $f_u(x)$, all of which have monotony. That is when $v_1 > v_2$, $f_v(v_1) > f_v(v_2)$; when $u_1 > u_2$,

$f_u(u_1) > f_u(u_2)$. When the production function of the two strategies meeting $v < u$, $f_v(v) < f_u(u)$, it shows more payment strategy brings more profits.

According to profits and value creative ability, the four situations are as followings: ① $\pi_v > \pi_u$, with $VEA_v > VEA_u$; ② $\pi_v > \pi_u$ with $VEA_v < VEA_u$; ③ $\pi_v < \pi_u$ with $VEA_v < VEA_u$; ④ $\pi_v < \pi_u$ with $VEA_v > VEA_u$. To the second situation, due to the former assumption $v < u$ and $f_v(v) < f_u(u)$, ② is invalid; hence we just discuss the other three strategies.

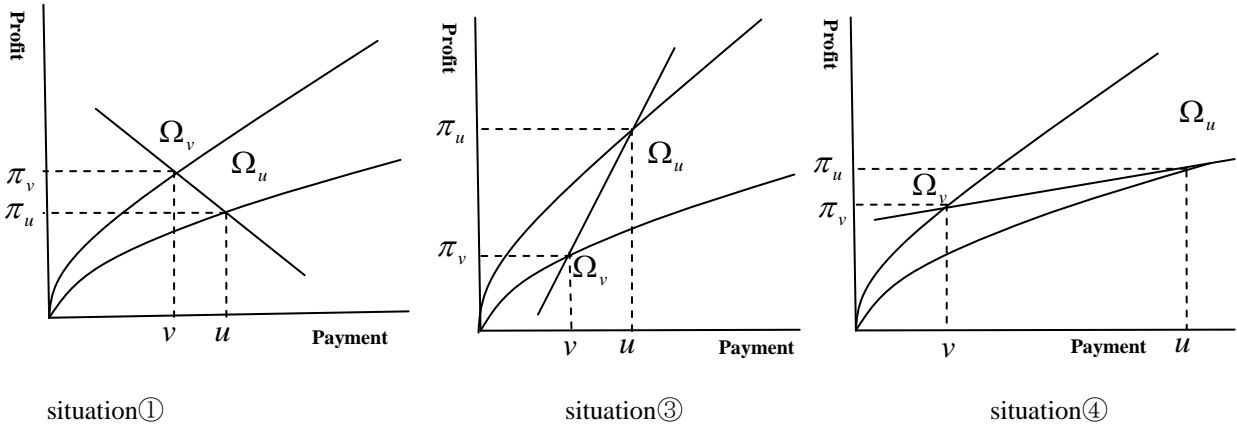


Fig. 1. Decision behavior of rational economic man based on value creative ability

We suppose payment factor is continuous one, may input any payment less than v_1 or u_1 , and getting relative profits. We define the enterprise payable behavior is V , hence to the first and third situations; the enterprise may choose the strategy with both profit and value creative ability maximization. Under the first situation, the enterprise may choose strategy Ω_v , while under the third situation, the enterprise may choose strategy Ω_u , and the profit maximization and value creative ability maximization integrate. Only when the useful payment of an enterprise is larger than the maximum payment of every strategy, it may choose putting the rest payment to another strategy.

As to the forth situation, although the profit of strategy Ω_v is less than the one of strategy Ω_u , its value creative ability is larger than Ω_u . When the useful payment V meeting $u_1 + v_1 > V > u_1 > v_1$, according to profit maximization, the enterprise may choose strategy Ω_u firstly, then put the rest payment $V - u_1$ to strategy Ω_v ; while if according to the value creation ability

maximization, the enterprise may choose strategy Ω_v , then put the rest payment $V - v_1$ to strategy Ω_u .

Under the profit maximization, the profit of the enterprise is $f_u(u_1) + f_v(V - u_1)$, suppose both function f_u and f_v have additivity, the profit is $f_u(u_1) + f_v(V) - f_v(u_1)$. Under the value creative ability maximization, profit is $f_v(v_1) + f_u(V - v_1)$, which is $f_v(v_1) + f_u(V) - f_u(u_1)$. According to the former assumption $v < u$, $f_v(v) < f_u(u)$ and $\pi_v < \pi_u$, $VEA_v > VEA_u$, getting:

$$f_u(u_1) + f_v(V) - f_v(u_1) < f_v(v_1) + f_u(V) - f_u(u_1) \quad (12)$$

This equation shows that when facing different discrete input factors and output, the enterprise has selectable input variable, the decisive behavior under the value creative ability maximization is larger than the one under the profit maximization.

Quantity example: assume two strategies $S1$ and $S2$, $S1$ needs input factor $v = 2$, getting profit $x = 4$, and profit is $\pi = 2$; $S2$ needs input factor $v = 10$, getting profit $x = 15$, getting profit $\pi = 5$. According to profit maximization principle, the enterprise may choose strategy $S2$. However, the value creative ability of $S2$ is 0.5, and the one of $S1$ is 1, and $S1$ may enhance the value creative ability. The advantage is if still exist other choice besides $S1$, moreover, the value creative ability of other choice is not below $S2$, the enterprise may firstly choose $S1$, and then put other factors to the other strategy to get more profits.

The important assumption of the above quantity example is input factor itself is continuous, but different strategies require different input factors. This assumption is under the following two possible situations: ① market demand determines every strategy input may only be fixed v_1 or u_1 , if shrinking input, may getting zero output; if expanding input, then no market place. ② in a collaborative producing organization, if home and foreign enterprise union, the input of certain production chain can only be stable value v_1 or u_1 .

As a consequence, when facing different strategic behavior, rational economic man should adopt value creative ability maximization as the principle. As to the home and foreign technical union, both home and foreign enterprise would value creative ability maximization principle to collaborate and create activities.

IV. HOME AND FOREIGN ENTERPRISE UNION BUILDING AGENT BASED ON VALUE CREATIVE ABILITY

Under the comparative advantage of value creative ability, foreign enterprise has two strategies: when value creative ability of certain chain meeting $VEA_i < \overline{VEA}$, it shows the value creative ability of this chain is below the average value creative ability, and the enterprise may outsource to home enterprise by way of building union. When $VEA_i > \overline{VEA}$, it shows the value creative ability of this chain exceeds the average value creative ability, the enterprise may accumulate the capital and labor to expand the market share of this chain, meanwhile, continuously making R&D, creation to maintain its competitive and value creative ability.

When doing research on home and foreign enterprise building technical union agent, many local scholars focus on imported technology absorbing, technical union knowledge sharing and spilling, and grasping core technology through imitating. These researches ignore the essence nature of pursuing profit and value creation. This thesis thinks: the main purpose of home enterprise building technical union is to increase the value creative ability, and get more profit.

Due to history and enterprise developing causes, the home enterprises universally lack of core competitive ability, the competition among enterprises is just severe price war. Under this situation, some enterprises with low barriers to entry appear complete competitive status, they have very bad profit

earning ability, which leads to low value creative ability. At the same time, building technical union with foreign enterprise, occupying the market through advanced products and technology is the effective way to increase value creative ability. Because of the inner competition among home enterprises, foreign ones play an active role during building technical union. Although the role in technical union is weaker of home enterprise, it may still increase the value creative ability through technical power and market competitive ability in technical union.

When $\max VEA_{ij}^0 > VEA_i'$, showing the chain i of home enterprise is higher than foreign one. During the building technical union process, the value creative ability may act as a advantage to enrich the negotiating position with foreign enterprise, and the home enterprise may get more value in technical union. When $\max VEA_{ij}^0 < VEA_i'$, showing the chain i of home enterprise is higher than home one. Home enterprise may enhance the value creative ability through two approaches: purchasing and absorbing foreign advanced technology and equipment at one time, which forms continuous value creative ability. The other approach is to learn advanced managerial experience and technology of foreign enterprise through knowledge sharing and spilling in technical union, therefore increase the value creative ability. Since the technology of certain chain loses its value, foreign enterprise is willing to share its technology and knowledge with home one, and help home enterprise increase value creative ability, which leads to win-win situation.

V. CONCLUSION

Under the labor division pattern of home and foreign enterprise union, the strategic variable is discrete, through the analysis of strategic behavior, home and foreign enterprise should take the principle of value creative ability maximization. Meanwhile, foreign enterprise takes response of high value creative ability like core technology, key equipment and raw material; while home enterprise takes charge of lower value creative ability chains like producing, manufacturing and assembling. The governing clues of home and foreign enterprise union are: increase the value creative ability through orienting technical creation, and using the political tool to exclude the home enterprises with low value creative ability. On the other side, increase the absorbing ability and consequently fasten the knowledge and technology spilling of home and foreign enterprise union.

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