HOME

Production Theory to Analyze Human Wisdom and Global Phenomena Operations

A Disproof of Walras' General Equilibrium Theory

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Abstract

In Reference [1], the author showed that, in an enterprise, fixed costs including manufacturing overheads do not vary with respect to the amount of sales X but vary with respect to an independent variable operation the enterprise's will to make decision. This paper broadens the scope of the independent variables operations to include those of human wisdom in research and development activities, various business activities and also external, unexpected and uncontrollable events on earth in addition to the enterprise's will. All the operations will be referred to as the Ω operations.

In a break-even chart, we can express the volume of the Ω operations and the monetary value comparing them. An exchange of goods exchanges the Ω operations added to the goods in business activities. Final adjustment between the value of the Ω operations and the monetary value is done using managed operating profit π^{MO}.

The results of Reference [1] and this paper show that profit maximization does not hold for enterprises' production because of the existence of the independent variables enterprises' will to make decision; that an equilibrium state never occurs in economies between production factors and produced goods because of continuous social changes, innovations due to knowledge and creativity or human wisdom, and influences from global phenomena in adition to the enterprises' will. Consequently, this paper will be that of a disproof of Walras's general equilibrium theory.

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1 Introduction

In Reference [1], the author presented correct break-even charts, for an income statement under standard costing, where the net carryover manufacturing overhead applied in inventories η were taken into account. The charts included the 45-degree break-even chart and the managed gross profit chart (or the managed operating profit chart). The fluctuation of Japan's economic conditions drove the author to further develop and apply the managed gross profit chart to actual business management.

The result of this research was presented in Reference [2]. According to the reference, the profit maximization does not hold for an enterprise, because both total wages in manufacturing overhead and the number of workers in direct costs are independent variables that vary according to the enterprise's **will to make decision**.

On the other hand, when the author tried to apply his break-even chart theory to national economic accounts, there emerged a never-before-seen chart in economics. This chart implied to contradict J.M.Keynes' investment multiplier effect chart. The author examined and compared both theories, and disproved mathematically **J.M.Keynes' investment multiplier effect theory** or the **principle of effective demand** ([3]).

In this process, he knew that J.M.Keynes' investment multiplier effect formula was derived from the equilibrium theory which caused the formula's fallacy. It created a suspicion in his mind that there might be a mathematical defect with the logic in the equilibrium theory. Thus, he began to research **Walras' general equilibrium theory** ([4]) which was the foundation of the equilibrium theory. Hereafter the term **Walras' theory** is used in place of the term Walras' general equilibrium theory.

The logic of Walras' theory does not clearly fit to the reality of economy as far as the analysis of the cause of unemployment is concerned. In this regard, it seems that the logic (nominal wage stickiness) of the **involuntary unemployment** by J.M.Keynes is more reasonable than Walras' (changes of prices to satisfy an equilibrium in economies). However, no one could find to disprove mathematically the equilibrium theory logic that was originally given a basic framework by L. Walras and elaborated by his successors with the aim of establishing mathematical methods of analyzing economic problems.

Through researching Walras' theory, the following problems were encountered in the production field: the acceptance of problems (1) accepting the **law of decreasing returns to scale**; (2) accepting the **profit maximization hypothesis in production**; (3) the problem of expressing graphically the conditions of both items (1) and (2); (4) the problem of mathematical treatment for the human wisdom operations, which are added to goods produced including services; (5) the problems of graphically expressing the operations in (4); (6) the problem of fundamental values included in the produced goods which are traded through a barter or a monetary system etc.

Furthermore, the author knew that although **J. A. Schumpeter** ([5]) affirmed Walrasian equilibrium logic, at the same time he created an economic mechanism to shift from a certain equilibrium state (or any equilibrium state that might be attained) to another new equilibrium state destructing the old economic system dynamically by using the concept of **innovation** or "durchsettzung neue kombinationen". Should the innovation's logic not be formulated mathematically?

Production by an enterprise is made by production factors such as workers, facilities etc. We can imagine a production system, through the relationship between some operations (works) done by the production factors to materials (resources) and the payable costs for the manufactured goods. However, beyond the operations, business accounting is surely affected by such operations as invention, brand authority of a good, fashion, financial confidence, business negotiations, coercion, disasters, economic policies, business conditions, good and bad luck etc. Those operations are

reflected in sales and net profit.

It is clear that the operations themselves are not by nature monetary values themselves. How then does an exchange of two items (through barter and monetary exchanges) occur? Through what process are the operations' value and the monetary value of the items finally compatible to allow the exchange? How can one express such operations mathematically and graphically?

When the author looked in detail at the relationship between manufacturing overhead (fixed cost) C_m and manufacturing overhead applied(variable costs) A^{CX} in standard costing in Reference [2], he noticed that this related to the aforementioned 6 problems. The relationship between C_m and A^{CX} explains the relationship between real operations and their payable amount. A cut for fixed costs is made by a decision or a human will operation. These findings can be used to broaden the analysis of all global phenomena which affect business activities. Thus the author has known that this logic is a foothold that connects business' external operations to its accounting and that this is a key which could break the logical system of Walras' theory.

This paper develops the analytical method shown in Reference [2] to present methods analyzing the affects on business management by innovations and global phenomena. At the same time, this paper is that of one disproving the theory of production in Walras' theory.

The terms used in this paper are explained. Results by human thinking will emerge in a form of culture or civilization. This paper considers the operations of exerting brain power in business management and economics. Economics, accounting, social thought, philosophy, art, entertainment, religion etc. as well as technological inventions and scientific discoveries concern an enterprise's development. Thus, the term **human wisdom** is used as a representative term for the "intellectual behavior which affects the production of goods".

The Value of produced goods can be thought of as the gross value added (**GVA**). The author defines produced goods, including services, shown in a production account as follows: production factors (workers, machinery etc.) add some operations or actions to unworthy materials (resources); the operations are combined with each other; they change into a meaningful shape with an expression to become a produced good; the goods produced in GVA are those which are exchangeable with each other. The terms which express such operations will be: physical labor and intellectual activities; operations concerning the running of machinery; providing work areas by buildings. Further, values of social assets are influenced by business transactions, such as those of lands and securities, transactions which are not recorded in the production account; they are also influenced by the events (operations), such as unexpected disasters and revaluation of assets, events which are not business transactions but should be recorded as transactions. The author uses the term **operation** that expresses human activities and global phenomena; those affect the value of the assets. Thus, bad or good luck is considered that a chance operates and causes the result due to the luck.

The author defined the term Ω **operations** in the end of this paper. Concerning the term, note that its definition starts from the human will to make decision in Reference [2] and will be extended to the human wisdom in research and development activities, the operations that affect enterprises operating or net profit and the everything's operation in the global environment. Thus, the term Ω operations, Ω, work, or operation emerged in any section is used as one of these meanings.

2 Basic equations for analyzing an enterprise's production activities

In this paper, only the closed economy is considered. The equations presented in References [1] and [2] are used. Notations are defined as follows: (ε)= data of income statement, X= sales, D_m^X=

direct cost (actual cost), C_m= manufacturing overhead (actual cost), G= selling, general and administrative expenses (actual cost), A^{CX} = manufacturing overhead applied in goods sold, Q^M= managed operating profit, π^O=sales operating profit, π^{MO}=managed operating profit, π^{AC}=allocation profit and η^{CX} = net carryover manufacturing overhead applied in inventories.

The theme of Reference [1] was the treatment of η^{CX} in a break-even chart under standard costing. That of Reference [2] was the relationship between sales operating profit π^O, allocation profit π^{AC} and managed operating profit π^{MO}. This paper discusses the relationship between the themes of an enterprise's production; human wisdom and will; and global phenomena. Therefore, the volume of η^{CX} does not become so much of a problem. The following assumptions, as in Reference [2], are then set up: (1) the 2nd kind of manufacturing overhead department is not set up; (2) $\eta^{CX} = 0$; (3) allocation systems are not adopted for both D_m^X and G departments. When the influence of η^{CX} becomes a subject of discussion, $C_m + \eta^{CX}$ should be used in place of C_m.

Basic equations used in this paper are presented in the following:

$$X(\varepsilon) = D_m^X(\varepsilon) + C_m(\varepsilon) + G(\varepsilon) + \pi^O(\varepsilon) \tag{1}$$

$$Q^M(\epsilon) = X(\epsilon) - \left(D_m^X(\epsilon) + A^{CX}(\epsilon)\right) \tag{2}$$

$$\pi^O(\varepsilon) = \pi^{MO}(\varepsilon) + \pi^{AC}(\varepsilon) \tag{3}$$

$$\begin{aligned} \pi^{MO}(\varepsilon) &= Q^M(\varepsilon) - G(\varepsilon) \\ &= X(\varepsilon) - \left(D_m^X(\varepsilon) + A^{CX}(\varepsilon)\right) - G(\varepsilon) \end{aligned} \tag{4}$$

$$\pi^{AC}(\varepsilon) = A^{CX}(\varepsilon) - C_m(\varepsilon) \tag{5}$$

$$\tan\alpha^X(\epsilon) = A^{CX}(\epsilon)/X(\epsilon) \tag{6}$$

$$\tan\beta^X(\epsilon) = Q^M(\epsilon)/X(\epsilon) \tag{7}$$

$$\tan\gamma^X(\varepsilon) = D_m^X(\varepsilon)/X(\varepsilon) \tag{8}$$

where (ε)= data of income statement, X= sales, D_m^X= direct cost (actual cost), C_m= manufacturing overhead (actual cost), G= selling, general and administrative expenses (actual cost), A^{CX} = manufacturing overhead applied in goods sold, Q^M= managed operating profit, π^O=sales operating profit, π^{MO}=managed operating profit, π^{AC}=allocation profit.

Eq.(1) is shown in Fig.1.

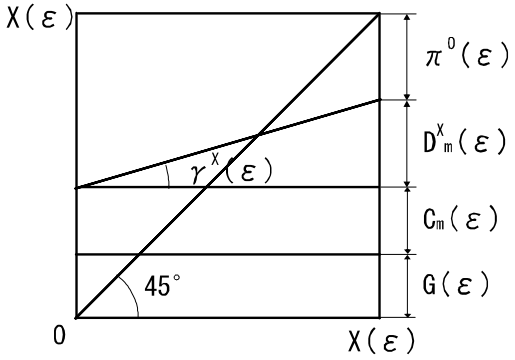

Fig.1 Graph of Eq.(1)

Expressing Eq.(1) with an incremental equation gives:

$$\Delta X = \Delta D_m^X + \Delta C_m + \Delta G + \Delta \pi^O \tag{9}$$

In Eq.(9), C_m and G are fixed costs (constants) for the variable X, but they are independent variables which change depending on the will to make decision of enterprises, therefore $\Delta C_m \neq 0$ and $\Delta G \neq 0$. Each item on the right-hand side of Eq.(9), conflicts with each other in ΔX as shown in Fig.2. From Fig.1 and Fig.2, the profit maximization condition $d\pi^O/dX = 0$ does not hold. Consequently, the equilibrium state does not exist for goods production.

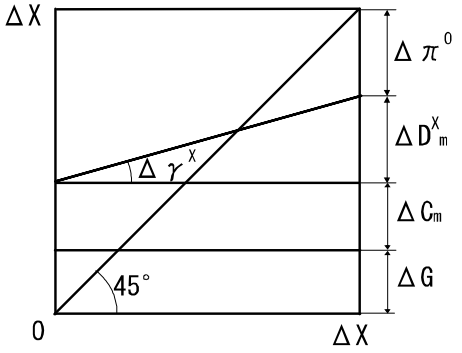

Fig. 2 Graph of Eq.(9)

3 Relationship between an enterprise's accounting and global phenomena operations including human wisdom operations in reasearch and development activities

3.1 Accounting meaning of human wisdom operations in a production account

We will consider the success of the research and development (R&D) activities for an enterprise. The R&D expenditure of an enterprise consists of the wages of researchers and outside-order expenses. Suppose that the R&D costs are included in $G(\epsilon)$. Since a successful result from the R&D activities has no linear relationship to expenditure, we cannot allocate this expenditure to produced goods, even if we lift the restraint that $G(\epsilon)$ is a period cost. Hence, we must regard the R&D costs as typical fixed costs, because although the R&D costs increase and decrease, the amount of R&D costs do not directly relate to the amount of sales.

Consider an enterprise with a normal sales amount of $X(\epsilon)$ with none of the success due to past R&D activities. Further, let $G(\varepsilon)$ and $C_m(\varepsilon)$ be constants, and variable cost ratio $\tan\gamma^X = \nu$ be a constant.

In this situation, the enterprise, in a given year, accomplished an outstanding success by virtue of the effective operations of researchers' wisdom, and as a result, the sales of that year have increased from $X(\epsilon)$ to $X(\epsilon) + \Delta X$ accompanying a profit. Let subscript Ω denote the condition where the R&D researchers' wisdom is effectively producing an increase in $X(\epsilon)$ with a profit. For this state, ΔX_Ω is used in place of ΔX.

Ω is not the monetary amount expended for the R&D activities nor the amount of effort done by the R&D members but the effective R&D operations that could effectively maintain or increase

sales amount with a profit. Consequently, a phenomenon often occurs where an operation due to one person's wisdom is larger than operations accomplished by thousand people together.

Confirming the existence of Ω is possible as follows: suppose that there was an enterprise with yearly sales $X(\epsilon)$ for past years being subjected to yearly effective operations Ω_0 done by researchers under the conditions that $G(\varepsilon)$, $C_m(\varepsilon)$ and $\tan\gamma^X$ are constants, respectively. In the present year, under the above situation, sales $X(\Omega_0, \epsilon)$ has become $X(\Omega_0, \epsilon) + \Delta X_\Omega$ because Ω_0 has become $\Omega_0 + \Delta\Omega$. If $\Delta\Omega = 0$, we have $\Delta X_\Omega = 0$, and so $\Delta\Omega$ has surely done an operation i.e. increasing ΔX_Ω in business.

Let Eq.(1) be the equation in the case where there was no profit gain through $\Delta\Omega$. For this year, we consider:

$$X(\epsilon) + \Delta X_\Omega = D_m^X(\epsilon) + \Delta D_m^X(\Delta X_\Omega) + C_m(\epsilon) + G(\epsilon) + \pi^O(\epsilon) + \Delta\pi^O(\Delta X_\Omega) \tag{10}$$

From Eq.(1) and Eq.(10), we have:

$$\Delta X_\Omega = \Delta D_m^X(\Delta X_\Omega) + \Delta\pi^O(\Delta X_\Omega) \tag{11}$$

Here, when we want to evaluate the success by virtue of only the operation $\Delta\Omega$ with monetary value, it is most reasonable to express $\Delta\pi^O(\Delta X_\Omega) = \Delta\pi^\Omega$, when we have:

$$\Delta X_\Omega = \Delta D_m^X(\Delta X_\Omega) + \Delta\pi^\Omega \tag{12}$$

The graph of Eq.(12) is shown in Fig.3. Here, note that π^Ω is not a proportional function with respect to X.

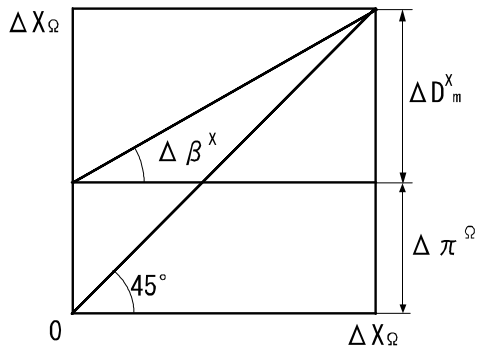

Fig.3 Graph of Eq.(12)

Combining Fig.1 with Fig.3 gives Fig.4 where sales operating profit $\Delta\pi^{O2}$ is defined as follows:

$$\begin{aligned}\Delta\pi^{O2} &= \Delta\pi^O + \Delta\pi^\Omega \\ &= \Delta\pi^{AC} + \Delta\pi^{MO} + \Delta\pi^\Omega\end{aligned} \tag{13}$$

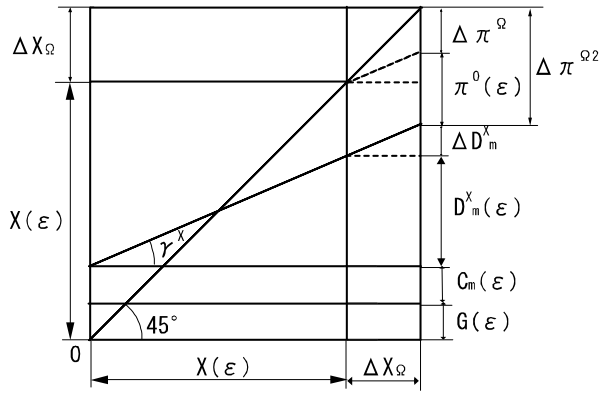

Fig.4 Combination of Fig.1 with Fig.2

Replacing $X(\epsilon) + \Delta X_\Omega$ to $X(\epsilon)$ and $\Delta\pi^\Omega$ to π^Ω in Fig.4 and changing the expression of Fig.4 give Fig.5 where:

$$\begin{aligned} \pi^{O3}(\epsilon) &= \pi^O(\epsilon) + \pi^\Omega(\epsilon) \\ &= \pi^{AC}(\epsilon) + \pi^{MO}(\epsilon) + \pi^\Omega(\epsilon) \end{aligned} \tag{14}$$

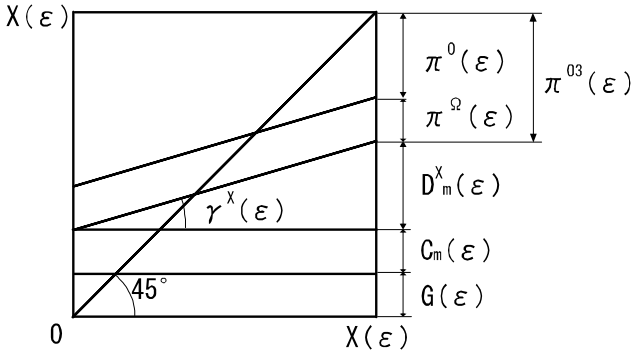

Fig.5 A change of Fig.4

In Fig.5, incremental sales ΔX_Ω gotten by researchers' effective activities are already included in $X(\epsilon)$. Although $\pi^\Omega(\epsilon)$ obtained by the wisdom operation surely exists in a statement of accounts, we cannot just separate $\pi^\Omega(\epsilon)$ from $\pi^{O3}(\epsilon)$. At this time, $\pi^O(\epsilon)$ and $\pi^\Omega(\epsilon)$ are unified to become $\pi^{O3}(\epsilon)$, and Fig.5 becomes the same as Fig.1. Therefore, Fig.5 is a conceptual diagram which shows the existence of $\pi^\Omega(\epsilon)$. The effective operation $\Delta\Omega$ which produced $\pi^\Omega(\epsilon)$ is one that adds attraction or desirability to the relevant goods produced and generates consumer appetite. Fig. 5 illustrates why, even when a sales amount is not so large in an enterprise, it can make a large profit by means of supplying desirable goods.

Machinery production capacity in an enterprise can be increased, even if the depreciation expense is constant, by raising producing efficiency due to invention and ingenuity by business members. The operation of $\Delta\Omega$ in this case increases the quantity of the same kind of goods under constant costs. That is to say, $\Delta\Omega$ has given the goods a desirable quality i.e. cheap price. When Ω produces an amount of increasing sales with a profit regardless of external operations, we can call Ω the "human wisdom operation". However, when Ω causes, due to a folly, decreasing sales with a loss in the same external operations, we should call Ω the **operation of human foolishness**.

We call the "comparatively large technical innovations in the effective success gained by human wisdom's R&D activities", the **innovation**. Acquiring profit due to innovation is first allowed to an antecedent. Next, the condition spreads throughout all industries with the passing of time. As a result, economic growth is realized throughout society. There comes a time when the profit effect of innovation vanishes. At that time, if there is no new innovation, then the growth of the whole society will stop.

The analytical results of this paper indicated that the success of innovations is directly connected to individual profits. However, it did not show that success directly connected to an advance in worker's wages. The amount of success resulted from wisdom operations which are the bases of the innovations is not in proportion to the volume of enterprise's sales. Thus, the following will be pointed out from these analytical results:

- The successes by wisdom operations Ω (acceleration of final goods' high quality, increase in the variety of goods, increase in the quantity of final goods etc.) in an enterprise are not proportional to its sales(GDP in economies). Hence, the successes due to the wisdom operations have the same economic meaning as the results of both dismissal and employment caused by an enterprise's will to make decisions. Consequently, Walras' general equilibrium (Walrasian equilibrium) state does not exist in capitalist societies where there is economic free competition, because of the role of wisdom operations in economics as well as the existence of both dismissal and employment.

- Although success through innovation is directly shared out among profit beneficiaries (enterprises, executives, taxation authorities etc.), workers, as beneficiaries of wages, are not necessarily assured to get their share. Consequently, there is a possibility that the benefits which workers receive from innovation are confined to an increase of quantitative consumption goods due to the innovations as far as that they cannot get wage increases nor can they get increased employment prospects. Let it be that there are enterprises A belonging to a capitalist economy system under free economic competitions and enterprises B belonging to a socialist economy system based on communitarianism. If the enterprises A and the enterprises B compete with each other, enterprises which belong to the society that has more sense of worth for innovation will win, and that society will probably be capitalist economic society. However, there are winners and losers in competitions. Since workers' feeling of satisfaction depend upon employment conditions and social opinion for the quantities of consumption goods, we cannot determine the order of superiority between the two systems.

3.2 Ω operations which affect an enterprise's business activities

■ **Expansion of the Ω operations in business activities.**

When we target the sales operating profit π^O, it is too narrow, from a view point of real economies, to take only the workers' wisdom into consideration. Thus, we expand the Ω operations from those of just workers' wisdom to the whole operations which affect enterprises' business activities as follows:

(Ω1) Inside an enterprise, the following activities are executed every day: production; selling; R&D; cost reduction; increasing sales; price negotiation; advertisement; decisions by managers and members. Ω is the operations, which affect the process of the business activities, done by e.g. wisdom, foolishness, "will to make decision" and coercion by other enterprises concerned.

(Ω2) Competitors' enterprise activities are Ω.

(Ω3) Negotiations between employers and employees are Ω.

(Ω4) Social opinions or atmosphere against and for dismissal is Ω.

(Ω5) Prices, brand strength and performances of goods of each enterprise are Ω. The Ω operations are the desirability of goods.

(Ω6) Level of consumer trust for the quality of enterprises' goods is Ω.

(Ω7) Bad-debt losses by other enterprises is Ω. Its Ω operation is a mutilation of financial credit.

(Ω8) Financial confidence of each enterprise is Ω, because other enterprises do not deliver with fair prices or fair trade conditions as would be expected for such an enterprise.

(Ω9) Good or bad business conditions are Ω.

(Ω10) Natural effects such as sunshine and rain in agriculture are Ω.

(Ω11) Industrial efficiency of infrastructures is Ω.

(Ω12) The condition that protected sites exist or (beautiful spots or famous ruins etc.) exist is Ω for tourist business.

(Ω13) Money has a power that it can, at any time, be exchanged for economic factors, materials or capital goods. So the available supply of money for an enterprise is Ω.

If we define the sales operating profit due to the above-mentioned operations as π^O, a diagram which shows π^O is shown in Fig.6. In Fig.6, each cost and profit item evaluated with monetary value is shown on the left axis adding the notation (ϵ); each item evaluated with operation value is shown on the right axis adding the notation (Ω).

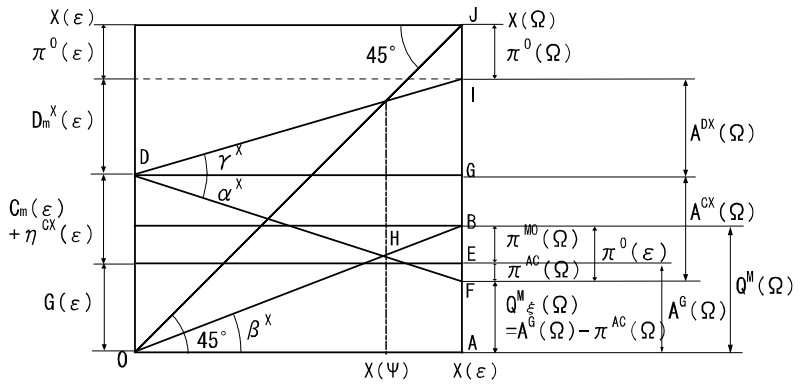

Fig.6 Sales operating profit break-even chart

The goods' value is really evaluated with the value of Ω operations. It is a relative exchangeable relationship between both goods in a monetary as well as a barter transaction. The exchange of both goods reaches agreement through the following process:

(a1) Both sides conjecture the volume of the other side's Ω operations (labor or works) added to goods; both sides conjecture the extent of the desirability of the other side's goods.

(a2) Both sides compare their need for the goods and their purchasing powers. A side's own purchasing power is, after all, the value of works added to their own goods by themselves.

(a3) Both sides check and conjecture the quantity of the other side's goods which were produced in the recent past; which are now being produced ; and those which will be produced in the near future.

(a4) Both sides ponder and finally decide the exchange of goods, to live every day, according to their changing daily preference; limitation of time in a day etc.; being subjected to coercion operations in unavoidable business environments.

Consider a bundle of goods that have been exchanged with the monetary value of $X(\epsilon)$. Let $X(\Omega)$ denote the value of Ω operations added to the goods. The value $X(\epsilon)$ is almost proportional to the value $X(\Omega)$. Fig. 6 has been drawn using the relations $X(\Omega) = X(\epsilon)$, $D_m^X(\Omega) = A^{DX}(\Omega) = A^{DX}(\epsilon) = D_m^X(\epsilon)$, and $G(\Omega) = A^G(\Omega) = A^G(\epsilon) = G(\epsilon)$. For example, the expression $A^G(\Omega) = G(\epsilon)$ means that the value of the Ω operations in the $G(\epsilon)$ department has been regarded as the same monetary value as $G(\epsilon)$.

In a monetary exchange economy, each operation in $X(\Omega)$ of a good is transformed into each monetary term in $X(\epsilon)$ in Fig.6.

(b1) A buying and selling negotiation determines $X(\Omega) = X(\epsilon)$.

(b2) The expression $G(\Omega) \doteqdot A^G(\Omega) \doteqdot G(\epsilon)$ is assumed.

(b3) The expression $D_m^X(\Omega) = A^{DX}(\Omega) \doteqdot D_m^X(\epsilon)$ is assumed.

(b4) The expression $C_m(\Omega) \doteqdot A^{CX}(\Omega) = A^{CX}(\epsilon)$ is assumed. Recovered costs from sales are $A^{CX}(\epsilon)$ and paid-out costs are $C_m(\epsilon)$.

(b5) Let the operation of earning an operating profit by workers be defined as $Q^M(\Omega) = X(\Omega) - \big(D_m^X(\Omega) + A^{CX}(\Omega)\big)$, then we obtain $Q^M(\Omega) = Q^M(\epsilon)$ from the above-mentioned description. As a result, we can express all items replacing (Ω) items with (ϵ) items.

■ **Meaning of the managed operating profit $\pi^{MO}(\epsilon)$**

Here, the meaning of $\pi^{MO}(\epsilon)$ in $\pi^O(\epsilon)$ given by Eq.(3) will be examined. In order to examine the property of $\pi^{MO}(\epsilon)$, we should first examine the condition $\pi^{MO}(\epsilon) = 0$. This condition, from Eq.(3) and Eq.(5), gives $\pi^O(\epsilon) = \pi^{AC}(\epsilon) = A^{CX}(\epsilon) - C_m(\epsilon)$. It stands to reason that $\pi^{AC}(\epsilon)$ actually exists as profit (or loss). The reason is that: $\pi^{AC}(\epsilon)$ is an actual success brought by the production factors' operations which produced more than a standard production capacity level in the $C_m(\epsilon)$ department, ; $\pi^{AC}(\epsilon)$ has been reserved in the enterprise. Thus, $\pi^{MO}(\epsilon)$ serves another role different from $\pi^{AC}(\epsilon)$.

Since the value of $A^{CX}(\epsilon)$ in Eq.(5) slightly varies depending on an allocation basis, $A^{CX}(\epsilon)$ is an internally evaluated value, therefore $\pi^{AC}(\epsilon)$ given by Eq.(5) is also an internally evaluated value. On the other hand, if we regard $\eta^{CX}(\epsilon)$ as a monetary value, $\pi^O(\epsilon)$ determined by Eq.(1) is an externally evaluated value through monetary transaction. Consequently, $\pi^{MO}(\epsilon)$ is a profit value which complements $\pi^{AC}(\epsilon)$ playing a role to fit the internally evaluated value to the externally evaluated value.

In Fig.4, $\pi^{\Omega}(\epsilon)$ was obtained from only the effective R&D activities using human wisdom. In Fig.6, the expression $G(\epsilon) = A^G(\Omega)$ is used regardless of the acquisition of $\pi^{\Omega}(\epsilon)$. Assume that the $G(\epsilon)$ department's operations are comprehensive operations excluding the $A^{DX}(\epsilon)$ and $A^{CX}(\epsilon)$

departments' operations. Then, it will be natural that $\pi^{\Omega}(\Omega)$ obtained by effective human wisdom will be included in $\pi^{MO}(\Omega)$ as far as we assume $G(\epsilon) = A^{G}(\Omega)$. In this way, under the assumption $G(\epsilon) = A^{G}(\Omega)$, the effective success due to the comprehensive operations Ω appear to take the form of $\pi^{MO}(\Omega)$ directly in the case with none of sales variation and indirectly in the case with sales variation.

An enterprise evaluates its own Ω operations done by its own members. For instance, suppose that an enterprise considers that more of these new goods must have been sold, because such a large amount of R&D expenses were paid. In this case, the level of self-evaluation for expected success by the operations is too high. However, exchanges between goods and money are determined through negotiations between buyers and sellers in view of each other's circumstances. The result of the negotiations determines the value of $\pi^{MO}(\epsilon)$. That is to say, $\pi^{MO}(\epsilon)$ plays a roll as an intermediary between the value of operations added to one good and the exchanged monetary value for the good. Alternatively, the buyer assesses the value of the operations added to the good through $\pi^{MO}(\epsilon)$.

In the above description, although the expression $D(\epsilon) = A^{DX}(\Omega)$ was assumed, the value of the labor operation evaluated with wages in $D(\epsilon)$ department might actually be larger than the wages or even smaller. In Fig.6, the intermediary $\pi^{MO}(\epsilon)$ makes the value of $X(\epsilon)$ equal to the value of $X(\Omega)$ which also plays the roll of adjusting errors brought by the assumption $D(\epsilon) = A^{DX}(\epsilon)$.

The meaning of $\pi^{MO}(\epsilon)$ as the role of adjusting errors is important. Fixed costs (although payment is definite, volume of works is indeterminate) are intrinsically included. This gives $\pi^{MO}(\epsilon)$ a character of indeterminacy. Therefore, this implies the following: suppose that we have a goods equation which includes all supplies and demands; we need not seek a unique convergent solution of the equation; an approximate solution or neighborhood solution is allowable. Errors between unique and approximate solutions should be distributed to any goods or treated as abandonment goods. The reason is that the errors are adjusted internally in each transactor by means of $\pi^{MO}(\epsilon)$ changes.

■ Ω operations which affect net income π^{N}

As stated previously, we assumed that Ω operations are the whole operations which affect an enterprise's sales operating profit. Since we cannot evaluate the growth of an enterprise at the stage of the sales operating profit, we need to broaden the Ω operations to the stage of sales net profit π^{N}. In the stage from π^{O} to π^{N}, we assume π^{N} as follows:

$$\pi^{N} = \pi^{O} - (\text{interest expenses+income taxes+asset revaluation losses+ other special losses}) \quad (15)$$

From Eq.(15), the following Ω operations are added:

(Ω14) Occurrence of production interruption due to natural disasters and fires etc. are Ω.

(Ω15) Varying of income taxes rate is Ω.

(Ω16) Changing of interest rate is Ω.

(Ω17) Changing of current asset values such as securities due to revaluation is Ω.

(Ω18) Obsolescence or deterioration of nonoperational equipment is Ω.

$T(\epsilon)$ denotes the expenses including the losses in Eq.(15). It is a variable which varies independently from the variable $X(\epsilon)$. This results in a break-even chart on π^{N} shown in Fig.7. $A^{GT}(\Omega)$ denotes the value of the Ω operations corresponding to the value of $G(\epsilon) + T(\epsilon)$.

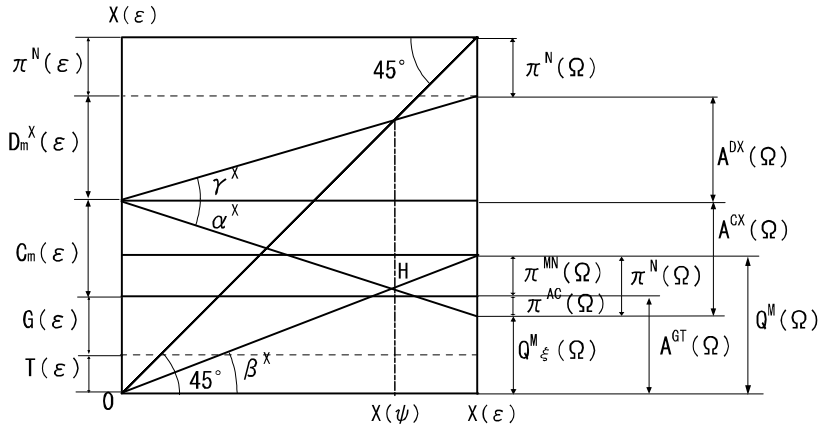

Fig.7 Break-even chart on π^N

3.3 Further expansion of the Ω operations to global phenomena

■Everything's Ω operations

Here, we define the **global environment** as follows: it is a global-scale field, in the present, comprising the existence of everything and its operation. The **everything** comprises: individuals (each has a body and mind); homes; human societies; all animate beings; their ecological chain; all materials on the earth(the atmosphere, the sea, the land); the earth's interior; the cosmos including the sun. Human societies include administrative units such as nations, organizations, produced goods, including "intellectual and physical achievements" and their remains etc. Further we define the Ω **operations of everything** as the operations which have relationships with human activities in the whole operations done by the everything in the global environment. The existence of everything and its operations continue from the past into the future.

A human has a mind. The mind operation (thinking and perception etc.) can recognize, at present, the bygone phenomena(their existence and operations) historical facts. Furthermore, it can forecast or predict a phenomenon, including a promise, which has not yet occurred. Humans make decisions and conduct themselves (operate something), at present, as a member of the whole, observing activities and expecting the next move. Consequently, the period of everything considered as a period as long as humans mind relate from the past to the future.

In the Ω operations of everything, there will be both beneficial and harmful operations as well as those with no influences on humans for now. However, the Ω operations of everything defined by the author cannot exist in the world without human lives, that is, the world where human mental activity does not exist. The reason is that the Ω operations of everything can only be perceived for humans through their mental operations. There is no appropriate term which can express the operations of everything. The author calls such operations the **qui operations of all things in the universe** or the **qui operation of everything**. If one has a resistance to the terms, he can call the operation of everything itself the Ω **operation**. The Ω operation consists of the existence of a thing (e.g. a river) that operates something; its functions (flowing water); and its works or effects (supply of agricultural water or a flood etc.) i.e. the operation.

Economics targets, in the Ω operations of everything, only the operations which relate to monetary values through accounts. In Fig.7, all the operations of everything relate to the chart until π^N is obtained. However, note that the operations which have not been written up in account books have not been taken into consideration on the left axis in Fig.7.

■Unexpected Ω operations

The success of profit management ability in an enterprise can be measured with the angle of $\beta^X(\epsilon)$. Even if an accounting period is different, its profit management ability does not vary so much in an enterprise. However, the Ω operations to the enterprise from external environment always change. The situation where net profit is affected by the Ω operations from outside is shown in Fig.8.

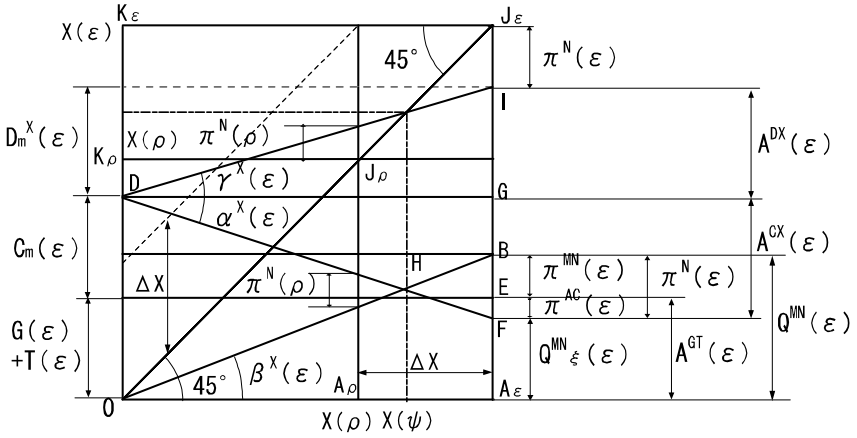

Fig.8 A change of net profit due to a variation of external Ω operations

Fig.8 comprises, in an enterprise under the condition $\alpha^X, \beta^X, \gamma^X$ =constants, a break-even chart (1) shown in the quadrangle $OA_\varepsilon J_\varepsilon K_\varepsilon$ with sales $X(\epsilon)$ and a chart (2) shown in the quadrangle $OA_\rho J_\rho K_\rho$ with sales $X(\rho)$. Both charts show that, at e.g. an economic crisis, a situation might occur where even if business efforts by workers in each chart are equal to each other, a black figure changes into a red figure depending on a big change in the external operations. The enterprise's effort cannot do anything for the situation. On such an occasion, the whole society should deal with such conditions and positively alter the running of business. Thus, we can say:

(Ω19) Business conditions at an economic crisis, big disasters or in wartime are the Ω operations. For these operations, the whole society should deal with the situations.

The essential characteristics of the Ω operations are as follows:

(c1) The Ω operations consist of both human and global-environment's operations (including the operations of other animate beings). Let humans comprise respective individuals and groups. Included in the human operations, there is decision due to free will, feelings, prediction, believing/disbelieving, gambling, instantaneous change of mood and acts of foolishness etc. Therefore, the ways of the phenomena occurring due to the human operations are not consistent with the scientific theories of materials.

(c2) Good luck and bad luck often affect a phenomenon resulted from human operations through the process. The phenomena affected by luck further affect things in sequence. Consequently, all phenomena in human societies due to human operations, fluctuate depending on the luck brought by each phenomenon.

(c3) Even if there were no fluctuations in the human operations side, the operations of everything which surround the human environment always fluctuate, therefore the phenomena which are caused from human side reactions against the everything's operations will always fluctuate.

4 Presentation of basic economic equations including Ω^{Supply} and Ω^{Demand} operations

A basic equation, which aims to analyze production activities in both enterprises and national economic accounts, and has a form including various kinds of the Ω operations described above, is , from Eq.(16), expressed in the following:

$$X^{Supply}(\varepsilon) = D_m^X(\varepsilon) + C_m(\varepsilon) + G(\varepsilon) + \pi^O(\varepsilon) + \Omega^{Supply}(\varepsilon) \tag{16}$$

$\Omega(\varepsilon)$ in Eq.(16) expresses the everything's Ω operations. When Ω operations consist of only human operations, Ω^h is used. $X^{Supply}(\varepsilon)$ in Eq.(16) expresses sales in an enterprise and GVA(=GDP) in national economic accounting. ε expresses an accounting period which can be a yearly, a half yearly or monthly period. Both accrual basis and cash basis are allowed of final settlement of accounts. When the whole amount of $X(\varepsilon)$ increases, $\Omega^{Supply}(\varepsilon)$ is defined as positive. If we reaggregate the right hand side of Eq.(16) with the relationship between GVA and GDP, we obtain Leontief's input-output table.

Since $\Omega^{Supply}(\varepsilon)$ is a symbol which shows only the existence of the Ω operations, the monetary values are expressed in the other items in Eq.(16). Therefore, Eq.(16) can be expressed as follows:

$$X^{Supply}(\varepsilon, \Omega^{Supply}) = D_m^X(\varepsilon, \Omega^D) + C_m(\varepsilon, \Omega^C) + G(\varepsilon, \Omega^G) + \pi^O(\varepsilon, \Omega^\pi) \tag{17}$$

In each item in the right hand side of Eq.(17), Ω operations are independent of each other.

When $X(\varepsilon)$ increases to $X(\varepsilon) + \Delta X$ where ΔX is a difference of X, the difference equation is expressed in the following:

$$\Delta X^{Supply} = \Delta D_m^X + \Delta C_m + \Delta G + \Delta \pi^O + \Delta \Omega^{Supply} \tag{18}$$

On the other hand, since, as everyone knows, demand equals supply, we obtain the following:

$$X^{Demand} + \Omega^{Demand} = X^{Supply} + \Omega^{Supply} \tag{19}$$

It goes without saying that Ω^{Demand} expresses the demand side's Ω operation to consumption goods and capital goods. Denote GVA vector, $\mathbf{V}$, and GDP vector, $\mathbf{Y}$. $\mathbf{V}$ and $\mathbf{Y}$ are related to each other in the value flow matrix $\mathbf{Y}$=$\mathbf{H}$·$\mathbf{V}$ which was originally presented by the author[6]. If we introduce the concept of Walras' pure exchange theory in the distributions of X^{Supply}, we shall have an economic theory where humans' preference i.e. a kind of Ω^h will be reflected in demand.

If we apply a government bond ΔL^{Gov} to ΔX^{Demand} and introduce the concept of the marginal propensity to consume, that is to say, we assume a consumption function as a decreasing nonlinear function, we shall have an economic theory with Keynesian theory's concept. ΔL^{Gov} has been executed by a government's Ω^{h1}operation. Since the production of each enterprise corresponding to the providing of ΔL^{Gov} is included in $\mathbf{Y}$, ΔGDP or ΔGVA is uniquely determined in such a way as to satisfy ΔL^{Gov}= ΔGVA(L^{Gov})= ΔGDP(L^{Gov}), thereby Keynes' multiplier effect does not exist due to the author's examination[3]. In this case, a new Ω^{h2} operation, the citizens' psychological operation which is different from the Ω^{h1}operation might occur taking the form of plus effect due to a temporary income increase or the form of minus effect due to a tax increase in the future. However, this shows only the arising possibility of such a phenomenon, it is not verified. Since these ideas go far from this paper's main subject, further details will be described some time later.

5 Conclusive remarks

(1) In an enterprise, $\pi^{\Omega}(\epsilon)$ denotes successful results by virtue of human wisdom in R&D activities for sales $X(\epsilon)$. $\pi^{\Omega}(\epsilon)$ is an incremental operating profit due to only the wisdom operations. The relationship between $X(\epsilon)$, the costs $G(\epsilon)$ etc., $\pi^{O}(\epsilon)$ (the sales operating profit without wisdom effect) and $\pi^{\Omega}(\epsilon)$ (the sales operating profit only by wisdom effect) is shown in Fig.5. This illustrates that effective wisdom turns into a profit.

(2) In Reference [2], the author showed that incremental fixed costs are not in proportion to the volume of $X(\epsilon)$ but are functions of an enterprise' will to make decisions (a variable). For this reason and item (1) above, the profit maximization condition in production does not hold. If there were an equilibrium state in a production field, human will to make decisions would not exist or would be ineffectual in the field; humans would not hold a sense of value for the development of culture or civilization (human will to improve quality and quantity of goods in production in economy); productivity would completely depend on changes of natural phenomena. Therefore, Walras' general equilibrium (Walrasian equilibrium) state does not exist in capitalist societies where there is free economic competition among enterprises seeking victory and advancement, even if we admit the existence of the equilibrium state as the solution of the utility maximization problem in consumers' demand.

(3) The left axes in Fig.6 and Fig.7 express monetary values in a break-even chart, and the right axes express the Ω operations such as: labor operations; equipment operations; operations by social and natural phenomena. The values of the operations are added to produced goods. The value of a good is exchanged with the value of another good or with money. In a monetary exchange of goods, the managed operating profit π^{MO} serves as an intermediary between the monetary values and the Ω operation values.

(4) The contents of the Ω operations are shown in from (Ω1) to (Ω19).

(5) Basic economic equations including human wisdom, "human will to make decision" and preference operations are shown in Eq.(16), Eq.(18) and Eq.(19).

6 Postscript

The author called the "comparatively large technical innovations in the effective success gained by human wisdom's R&D activities", the innovation. He knows that the name does not have the same meaning as that which was defined by J. A. Schumpeter([5]). However, according to the author's analytical results, there is, by its nature, no general equilibrium state in economics. Thus, the following concept itself does not exist: an equilibrium state exists in economy depending on Walras' theory; an economic state shifts from the equilibrium state or before the state to attain another equilibrium state. Consequently, it would not be improper to name the events as well as including those from comparatively large technical innovations due to human wisdom operations to those accompanying “creative destructions”, the innovations.

The analytical results of this paper and Reference [2] will be one on the bases of an argument for disproving the production theory in Walras' general equilibrium (Walrasian equilibrium) theory. They will also bear out the logic of both involuntary unemployment by J.M.Keynes and the innovation by J. A.Schumpeter, although the consequences of the author's logical claims in his theory are not the same as the logical claims in their theories.

In this paper, the author showed that the equilibrium state in the production field, where people have the will to advance and make decisions, does not exist. However, he did not argue the problems themselves which were included in the analytical method of Walras' theory. However, since this paper targeted to present a method to analyze the effects which were exerted on enterprise accounting by the various Ω operations of enterprise members' wisdom and external environment, the aforementioned problems will be described in other papers. In addition, the author will discuss the operations of financial business after finishing the deliberation for the nature of credit operation.

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