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**Article**

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## GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

# Towards a paradigm on the value

Truong Hong Trinh<sup>1\*</sup>

**Abstract:** This paper explores the value concept to understand the notions of value and price that form the base of value theories. Since value is more appreciate than utility in explaining value creation and value distribution in the today's society and economy, the theory of value is amended to conduct value creation and market behavior in the economy. From the theoretical base, the value added approach is used for GDP measurement that unifies with both the expenditure approach and the income approach. The study result indicates that there is a value balance between the firm and the customer, and the relationship between value balance and market equilibrium. The paper contributes a new paradigm on the value that provides a clearer understanding on value creation and market behavior in the economy.

**Subjects:** Economic Theory & Philosophy; Development Economics; History of Economic Thought

**Keywords:** value concept; value creation; value balance; market equilibrium; market behavior

**JEL classifications:** D24; D46; O40

### 1. Introduction

The value concept has a very long history in economic and philosophical thought that attempt to explain two notions of value-in-use (value) and value-in-exchange (price). The distinct view between value and price is important to form the base of value theories. While classical economists relies on

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Truong H. Trinh is an associate professor at the University of Economics—The University of Danang, Da Nang, Vietnam. He received his MSc degree in 2002 and PhD degree in 2012 at Asian Institute of Technology, Thailand. His research interests include the theory of value, value creation system, market equilibrium, and economic growth. His research appears in internationally respected journals including the *Journal of the Operational Research Society*, *Production & Manufacturing Research*, *Industrial Engineering & Management Systems*, *International Journal of Operational Research*, and *International Journal of Economic Research*. He currently serves as the vice-dean, a faculty of Finance at the University of Economics, and the leader of TRT—Business Innovation at The University of Danang.

### PUBLIC INTEREST STATEMENT

The big challenge is how to measure the value of a commodity and distribute the value between the firm and the customer in the market. Since value is more appreciate than utility in explaining value creation and value distribution in the today's society and economy, the theory of value is amended to conduct value creation and market behavior in the economy. This paper attempts to conduct value balance between firm profit and customer utility in the value creation systems. The value balance is also a necessary condition for market equilibrium that includes both price equilibrium and value equilibrium. From this theoretical base, the value added approach is used for GDP measurement that unifies with both the expenditure approach and the income approach. The GDP formula is much important to form the base for economic growth theories. The paper provides a theoretical background for further researches on market behavior and economy structure.

the labor theory of value, neoclassical economists relies on the utility theory of value. Many earlier economists attempted to explain why commodities are priced as they are, and how the value of a commodity comes from. The explanation on the value is still a big challenge that needs to redefine the value concept and develop a new theory of value.

Classical economists held that the value of a commodity comes from production, in which input factors and production conditions are the base of the value (Marx, 1867/1961; Ricardo, 1821; Smith, 1776/1937). However, classical economists were unable to explain “diamond–water paradox”—water is essential for life and has a low market price, while diamonds are not as essential yet have a very high market price. Since utility concept introduced and “marginalist revolution” initiated in 1870s, marginal analysis allows to explain both value-in-use (value) and value-in-exchange (price), in which price is related to its marginal utility. Neoclassical economists held that the value depends on its utility that comes from exchange and consumption (Bentham, 1789/1907; Dupuit, 1844/1933; Jevons, 1871/1970; Menger, 1871). Later, Marshall (1890) developed a new tool of marginalists in order to explain price in terms of supply and demand, in which the price and output of a commodity are determined by both supply and demand.

Although many economists attempted to explain value derived from production or consumption, there is still not clearer understanding how the value it is. The big challenge is how to measure the value of a commodity and distribute the value between the firm and the customer in the market. For these motivations, this paper explores the value concept toward a new paradigm on the value. The remainder of this paper is structured as follows: the next section explores the value concept and its challenge in the today’s society and economy. Section 3 concerns on value creation and value added method for GDP measurement of the economy. Section 4 conducts value balance between the firm and the customer, and the relationship between value balance and market equilibrium. Finally, conclusions are summarized in Section 5.

## 2. Value concept

The value concept has been discussed and debated since Aristotle (Aristotle, fourth century BC), who first distinguished between two notions of value-in-use and value-in-exchange, he also developed a theory related to the term value, in which value is driven by certain needs that creates the basis of exchange. Value-in-use was recognized as a collection of substances or things and qualities associated with these collections. Value-in-exchange was considered as the quantity of a substance that could be commensurable value of all things (Fleetwood, 1997). The value concept has been embedded in the foundations of economics that reflect different ways of thinking about market exchange and value creation.

There are two broad categories of value theories in the history of economic thought: classical theory of value and neoclassical theory of value (King & McLure, 2014). The classical theory of value reflect increased interest in production of commodities from 1670s, in which William Petty (1861/1899) came close to the idea that the value of a commodity is determined by quantity of labor need to produce it (Meek, 1973). According to William Petty, the actual price (price) of any commodity would fluctuate perpetually around its natural value (value). Adam Smith (1776/1937) followed Petty and explained value as the sum of the costs of production including land and capital in addition to labor. Adam Smith relies on the labor theory of value to explain the relative price of a commodity associated with the costs of the labor went into the commodity as in Figure 1.

According to Adam Smith (1776/1937), the market price as a powerful “invisible hand” directs economic resources into activities where they would be most valuable. David Ricardo (1821) believed that labor and other costs would tend to rises as the level of production of a given commodity expanded. The phenomenon of increasing costs was quite general that refer to his discovery as the law of diminishing returns, the early view on supply curve slopes upward as quality produced

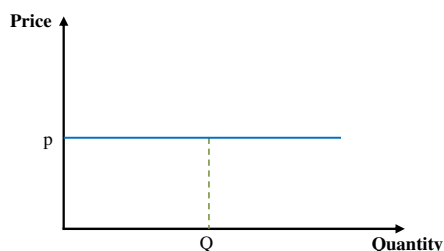
expands. David Ricardo (1821) explained the relative price depended not only by production technology, but also on how much of it produced as in Figure 2.

However, the problem with David Ricardo's explanation was that it really did not explain how prices are determined. Therefore, economists found that it is necessary to develop a more general theory of demand. Just as diminishing returns mean that the cost of the last unit rises as more is produced, so too, the willing of people to pay for that last unit declines. Economists had at last developed a comprehensive theory of price determination.

Jeremy Bentham (1789/1907) brought the principle of utility and distinguished two meanings of decision utility and experienced utility. He has indeed planted the tree of utility (Stigler, 1950). Decision utility has been also called "wantability", it is inferred from choices and used to explain choice. Experienced utility refers to the hedonic experience associated with an outcome. Jules Dupuit (1844/1933) was led to the marginal utility theory by his attempt to construct a theory of price that maximizes utility. He distinguished total utility and marginal utility with great clarity. The price that someone is willing to pay for an additional unit of a commodity related to its marginal utility, while total utility can be derived by adding up marginal utilities associated with each unit of the commodity. Later, William Jevons (1871/1970) and Carl Menger (1871) developed the new tool of marginal analysis as a mean of understanding value, in which value would depend on the utility the buyer expects to receive. Alfred Marshall (1890) developed a new tools of the marginalists to explain value in terms of supply and demand. Alfred Marshall argued that cost of production (supply) and utility (demand) were interdependent and mutually determinant of each other's value as in Figure 3.

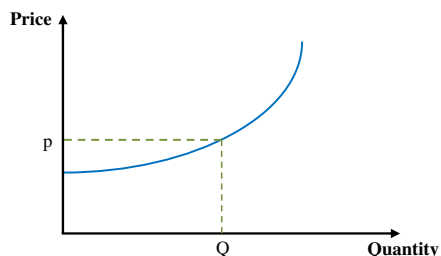
**Figure 1. Smith's model.**

Source: Nicholson and Snyder (2014).



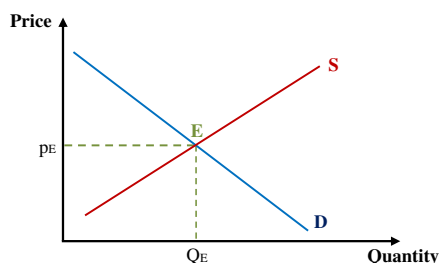
**Figure 2. Ricardo's model.**

Source: Nicholson and Snyder (2014).



**Figure 3. Marshall's model.**

Source: Nicholson and Snyder (2014).



The demand curve shows the amount of the commodity people want to buy at each price, the downward slope of the demand reflect the marginalist principle of decreasing marginal utility. People are willing to pay less and less for the last unit purchased, they will buy more only at a lower price. The supply curve shows the increasing cost of making one more unit of the commodity as the total amount produced increases. The upward sloping supply reflects increasing marginal costs. Price is determined by relationship between supply and demand, in which equilibrium price is at the price that the quantity demanded is equal to the quantity supplied. Although neoclassical economists have used diminishing marginal utility (cardinal utility approach) and marginal rate of substitution (ordinal utility approach) to explain downward sloping demand of a commodity, the big problem is how to use the utility concept in explaining on value creation and market behavior in the today's society and economy.

### 3. Value creation

The classical economists argued that the value comes from production, in which input factors and production conditions determine the value of a commodity. The neoclassical economists argued that the value depends entirely on its utility. It comes from exchange and consumption, in which preferences and consumption conditions determine the value of a commodity. Neoclassical economists have used utility concept and marginal utility to explain the demand for a commodity. The utility is defined as the benefit derived from consuming a commodity, whereas marginal utility refers only the utility obtained from the last unit consumed. The price consumers are willing to pay declines as the quantity purchased increase because of the diminishing marginal utility obtained from additional purchases.

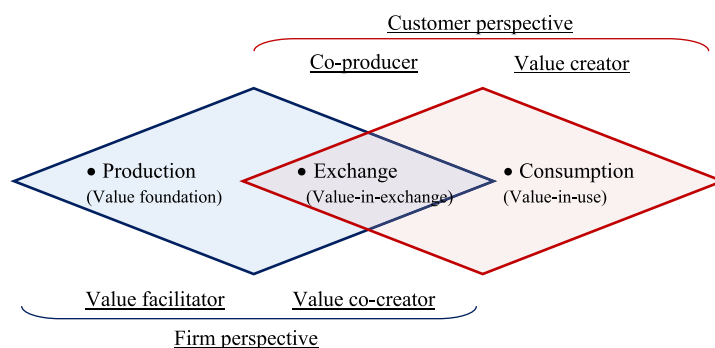
In today' society and economy, the value concept has become a central theme in many disciplines. Most economists tried to make a clear distinction between value and price of a commodity. Baier (1971) offered a broader definition such as "value is the capacity of a good, service, or activity to satisfy a need or provide a benefit to a person or legal entity". Contemporary value concept is something which is perceived and evaluated at the time of consumption (Grönroos, 2008; Vargo & Lusch, 2004; Wikström, 1996; Woodruff & Gardial, 1996). There is a common understanding that value is created in the users' processes as value-in-use (Grönroos, 2011).

Since value concept in contemporary economics has the same meaning as the utility concept in neoclassical economics, and the value is more appreciate than the utility in explaining on value creation and market behavior. Moreover, the foundation of value creation is shifting from firm-centric view to customer-centric view (Ojasalo, 2010; Prahalad & Ramaswamy, 2004; Trinh, Liem, & Kachitvichyanukul, 2014). Figure 4 shows the value creation system involving three processes of production, exchange, and consumption.

In firm perspective, the firm takes on the role of value facilitator in the production process, the firm could take part in the customer's experience of value-in-use and influence it as a value co-creator. Firm's production function is defined under the form of Cobb Douglas production function as follows:

**Figure 4. Value creation perspective.**

Source: Adapted from Grönroos and Voima (2012), Trinh (2014b).



$$Q = f(K_1, L_1) = A_1 \times K_1^{\alpha_1} \times L_1^{\beta_1} \quad (1)$$

where  $Q$  is total output of production.  $A_1$  is firm's total factor productivity.  $K_1$  and  $L_1$  are the firm capital and firm labor, respectively.  $\alpha_1, \beta_1$ , are the output elasticities of input factors of production.

Using the least-cost combination of production inputs, firm's cost function ( $TC_1$ ) can be determined as a function of output, depending on input prices and the parameters of the firm's production function as follows:

$$TC_1 = w_{K_1} \times K_1 + w_{L_1} \times L_1 \quad (2)$$

where  $TC_1$  is the firm's total cost,  $w_{K_1}$  and  $w_{L_1}$  are the unit costs of firm capital and firm labor, respectively.

Firm's profit function is determined by the following formula.

$$\Pi = TR - TC_1 = p \times Q - w_{K_1} \times K_1 - w_{L_1} \times L_1 \quad (3)$$

where  $\Pi$  is the firm profit and  $TR$  is the total revenue ( $TR = p \times Q$ ).

Profit maximizing firm will produce at the quantity where firm's marginal revenue ( $MR$ ) equals firm's marginal cost ( $MC_1$ ).

$$MR = MC_1 \quad (4)$$

In customer perspective, the customer is always a value creator and may take part in the firm's production process as a co-producer. Since the value is created in the consumption process, customer capital ( $K_2$ ) and customer labor ( $L_2$ ) are added in the consumption function as follows:

$$Q = f(K_2, L_2) = A_2 \times K_2^{\alpha_2} \times L_2^{\beta_2} \quad (5)$$

where  $Q$  is the total output of consumption.  $A_2$  is the customer's total factor productivity.  $\alpha_2, \beta_2$ , are the output elasticities of input factors of consumption.

Using the least-cost combination of consumption inputs, customer's cost function ( $TC_2$ ) can be determined as a function of output, depending on input prices and the parameters of the customer's consumption function as follows:

$$TC_2 = w_{K_2} \times K_2 + w_{L_2} \times L_2 \quad (6)$$

where  $TC_2$  is the customer's total cost,  $w_{K_2}$  and  $w_{L_2}$  are the unit costs of customer capital and customer labor, respectively.

Customer's utility function is determined by the following formula.

$$U = TU - TC_2 = (v - p) \times Q - w_{K_2} \times K_2 - w_{L_2} \times L_2 \quad (7)$$

where  $U$  is the customer utility and  $TU$  is the total utility ( $TU = u \times Q = (v - p) \times Q$ ).

Utility maximizing customer will consume at the quantity where customer's marginal utility ( $MU$ ) equals customer's marginal cost ( $MC_2$ ).

$$MU = MC_2 \quad (8)$$

From the value creation perspective, the firm uses resources in the production process to create value foundation and facilitate the customer's value creation, and then the customers use firm resources and add their resources and skills in the consumption process to transform value foundation into value-in-use (value). The joint cost function and the joint value function are determined as follows:

$$TC = TC_1 + TC_2 = w_{K_1} \times K_1 + w_{L_1} \times L_1 + w_{K_2} \times K_2 + w_{L_2} \times L_2 \quad (9)$$

$$V = \Pi + U = v \times Q - (w_{K_1} \times K_1 + w_{L_1} \times L_1 + w_{K_2} \times K_2 + w_{L_2} \times L_2) = TV - TC \quad (10)$$

where  $V$  is the joint value,  $TV$  is the total value ( $TV = v \times Q$ ), and  $TC$  is the total joint cost.  $w_{K_1}$  and  $w_{L_1}$  are the unit costs of firm capital and firm labor, respectively.  $w_{K_2}$  and  $w_{L_2}$  are the unit costs of customer capital and customer labor, respectively.

In value creation system, value maximizing decision will make the quantity of production and consumption where marginal value ( $MV = TV'(Q)$ ) equals marginal cost ( $MC = MC_1 + MC_2$ ).

$$MV = MC \quad (11)$$

In economics, the value concept plays an important role that has influence on GDP measurement and economic growth analysis of the economy. GDP is measured by valuating everything that is produced and adding all the value together. The value added method determines production value of final commodity ( $p_i Q_i$ ) in the industry  $i$  through exchange processes between the firm and the customer as in Figure 5. GDP is measured by summing up final commodity's production value of industries in the economy.

For the intermediate exchanges, intermediate firms play dual roles of the firm and the customer. In the initial exchange, firms provide the commodities to customers. Firm profit ( $\Pi_{i1}$ ) and customer utility ( $U_{i1}$ ) are determined as follows:

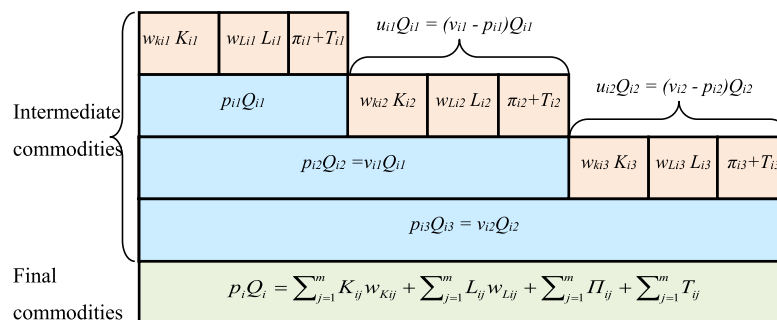
$$\Pi_{i1} = p_{i1} \times Q_{i1} - K_{i1} \times w_{K_{i1}} - L_{i1} \times w_{L_{i1}} - T_{i1} \quad (12)$$

$$U_{i1} = (v_{i1} - p_{i1}) \times Q_{i1} - K_{i2} \times w_{K_{i2}} - L_{i2} \times w_{L_{i2}} - T_{i2} \quad (13)$$

where  $T_{i1}$  is the tax and subsides of the firm and  $T_{i2}$  is the tax and subsides of the customer. The customer utility ( $U_{i1}$ ) in the initial exchange is also the firm profit ( $\Pi_{i2}$ ) in the next exchange.

**Figure 5. The GDP approach for industry  $i$ .**

Source: Trinh (2017a).



$$\Pi_{i2} = (p_{i2} \times Q_{i2} - p_{i1} \times Q_{i1}) - K_{i2} \times w_{K_{i2}} - L_{i2} \times w_{L_{i2}} - T_{i2} \quad (14)$$

$$U_{i2} = (v_{i2} - p_{i2}) \times Q_{i2} - K_{i3} \times w_{K_{i3}} - L_{i3} \times w_{L_{i3}} - T_{i3} \quad (15)$$

where total value ( $v_{i1} \times Q_{i1}$ ) equals total revenue ( $p_{i2} \times Q_{i2}$ ) in the next exchange.

For the final exchange, customers are the final consumers that buy the final commodities from the last firms in the exchange processes. Firm profit ( $\Pi_{im}$ ) is given as follows:

$$\Pi_{im} = (p_{im} \times Q_{im} - p_{im-1} \times Q_{im-1}) - K_{im} \times w_{K_{im}} - L_{im} \times w_{L_{im}} - T_{im} \quad (16)$$

Total profit of industry  $i$  is determined by the following formula.

$$\sum_{j=1}^m \Pi_{ij} = p_{im} \times Q_{im} - \sum_{j=1}^m K_{ij} \times w_{K_{ij}} - \sum_{j=1}^m L_{ij} \times w_{L_{ij}} - \sum_{j=1}^m T_{ij} \quad (17)$$

From above formula, total production value of industry  $i$  ( $p_i \times Q_i + I_i = p_{im} \times Q_{im} + \sum_{j=1}^m I_{ij}$ ) is defined as a sum of production value of intermediate firms, in which total expenditure ( $p_{im} \times Q_{im} + \sum_{j=1}^m I_{ij}$ ) is equal to total income ( $\sum_{j=1}^m K_{ij} \times w_{K_{ij}} + \sum_{j=1}^m L_{ij} \times w_{L_{ij}} + \sum_{j=1}^m \Pi_{ij} + \sum_{j=1}^m T_{ij} + \sum_{j=1}^m I_{ij}$ ), in which  $\sum_{j=1}^m I_{ij}$  is capital investment of industry  $i$ . By setting  $K_i \times w_{K_i} = \sum_{j=1}^m K_{ij} \times w_{K_{ij}}$ ,  $L_i \times w_{L_i} = \sum_{j=1}^m L_{ij} \times w_{L_{ij}}$ ,  $\Pi_i = \sum_{j=1}^m \Pi_{ij}$ ,  $T_i = \sum_{j=1}^m T_{ij}$ ,  $I_i = \sum_{j=1}^m I_{ij}$ , total production value of industry  $i$  can be expressed as follows:

$$p_i Q_i + I_i = K_i \times w_{K_i} + L_i \times w_{L_i} + \Pi_i + T_i + I_i \quad (18)$$

Total production value (GDP) of the economy with  $n$  industries is determined as follows:

$$GDP = \sum_{i=1}^n p_i \times Q_i + \sum_{i=1}^n I_i \quad (19)$$

$$GDP = \sum_{i=1}^n K_i \times w_{K_i} + \sum_{i=1}^n L_i \times w_{L_i} + \sum_{i=1}^n \Pi_i + \sum_{i=1}^n T_i + \sum_{i=1}^n I_i \quad (20)$$

By setting  $\sum_{i=1}^n S_{Fi} = \sum_{i=1}^n \Pi_i + \sum_{i=1}^n I_i - \sum_{i=1}^n D_i$ , in which  $\sum_{i=1}^n S_{Fi}$  is firm savings and  $\sum_{i=1}^n D_i$  is capital depreciation. Thus, GDP from Equation (20) can be rewritten as follows:

$$GDP = \sum_{i=1}^n K_i \times w_{K_i} + \sum_{i=1}^n L_i \times w_{L_i} + \sum_{i=1}^n S_{Fi} + \sum_{i=1}^n D_i + \sum_{i=1}^n T_i \quad (21)$$

From Equation (19), setting  $PQ = \sum_{i=1}^n p_i \times Q_i$  and  $I = \sum_{i=1}^n I_i$ , in which total expenditure on final commodities ( $PQ$ ) includes personal expenditure (C), government expenditure (G), and net export (NX). GDP measurement under the expenditure approach can be expressed as follows:



$$GDP = C + G + I + NX \tag{22}$$

From Equation (21), setting  $KW_K = \sum_{i=1}^n K_i \times w_{K_i}$ ,  $LW_L = \sum_{i=1}^n L_i \times w_{L_i}$ ,  $S_F = \sum_{i=1}^n S_{F_i}$ ,  $D = \sum_{i=1}^n D_i$ , and  $T = \sum_{i=1}^n T_i$ , GDP measurement under the income approach can be expressed as follows:

$$GDP = KW_K + LW_L + S_F + D + T \tag{23}$$

GDP is measured through total income that includes capital interest ( $KW_K$ ), labor wage ( $LW_L$ ), firm savings ( $S_F$ ), capital depreciation ( $D$ ), tax and subsidy ( $T$ ).

#### 4. Market behavior

The value creation system is driven by value ( $v$ ), but monitored by price ( $p$ ) through the exchange process that has influence on the distribution between firm profit and customer utility. The value balance model is developed to conduct the value balance between the firm and the customer as follows:

The value balance model:

$$\text{Max } V = TV - TC \tag{24}$$

Subject to

$$v_j = f(Q); p_j = g(Q) \tag{25}$$

$$Q = A_1 \times K_1^{\alpha_1} \times L_1^{\beta_1}; TC_1 = K_1 \times W_{K1} + L_1 \times W_{L1} \tag{26}$$

$$Q = A_2 \times K_2^{\alpha_2} \times L_2^{\beta_2}; TC_2 = K_2 \times W_{K2} + L_2 \times W_{L2} \tag{27}$$

$$\begin{aligned} TV &= v \times Q; TC = TC_1 + TC_2 \\ \forall Q, K_1, L_1, K_2, L_2 \end{aligned} \tag{28}$$

The objective function is to maximize the joint value of firm profit and customer utility as in Equation (24). Market demand presents the relationship between value ( $v$ ) and price ( $p$ ) with their demand quantity ( $Q$ ) that is shown under constraints (25). Production function and firm's cost function are shown by constraints (26). Consumption function and customer's cost function are shown by constraints (27). Total value and total cost are shown in Equations (28). The value balance model provides a value balance solution that maximizes the joint value ( $V$ ) of firm profit ( $\Pi$ ) and customer utility ( $U$ ).

In order to evaluate the value approach with the profit approach and the utility approach, a simulation experiment is carried out via a hypothetical system with a single commodity, in which the production function and consumption function are assumed to be a well-defined function. Table 1 presents parameters of the value creation system.

Demand function indicates the relationship between value ( $v$ ) and price ( $p$ ) with their quantity demand ( $Q$ ) given as follows:

$$\text{Value demand: } v = -\frac{3}{10}Q + 29 \tag{29}$$

**Table 1. Parameters of the value creation system**

Parameters	Production		Consumption	
	Sign	Value	Sign	Value
Total factor productivity	$A_1$	1	$A_2$	1
Unit cost of capital	$w_{K1}$	10	$w_{K2}$	3
Unit cost of labor	$w_{L1}$	3	$w_{L2}$	1
Output elasticity of capital	$\alpha_1$	0.6	$\alpha_2$	0.2
Output elasticity of labor	$\beta_1$	0.4	$\beta_2$	0.8

**Table 2. Simulation results of the system**

Approaches	Profit maximization	Utility maximization	Value maximization
$K_1$	16.15	21.60	17.97
$L_1$	35.89	48.00	39.92
$K_2$	3.04	4.07	3.39
$L_2$	36.53	48.86	40.64
$Q$	22.23	29.73	24.73
$v$	22.33	20.08	21.58
$p$	16.55	15.05	16.05
$\Pi$	98.80	87.54	97.55
$U$	82.74	88.37	85.86
$V$	181.54	175.91	183.41

$$\text{Price demand: } p = -\frac{1}{5}Q + 21 \tag{30}$$

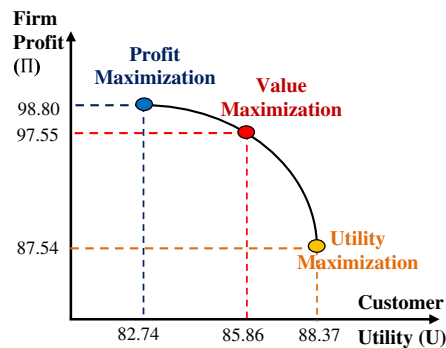
Table 2 presents the simulation results for three approaches. The profit approach provides the optimal solution for profit maximization ( $\Pi_{Max} = 98.80$ ), and the utility approach provides the optimal solution for utility maximization ( $U_{Max} = 88.37$ ). The value approach provides the optimal solution of joint value maximization ( $V_{Max} = \Pi + U = 183.41$ ), which provides the value balance between firm profit ( $\Pi = 97.55$ ) and customer utility ( $U = 85.86$ ). Since there exists a trade-off between the profit approach and the utility approach, the value approach provides a value balance between these two approaches that maximizes the joint value as illustrated in Figure 6.

The experimental simulation indicates the value balance between the firm and the customer that maximizes the joint value. Moreover, there exists the relationship between value balance and market equilibrium (Trinh, 2014a). The market equilibrium status only when there exists a value balance between the firm and the customer in the market. From the value concept and value creation perspective, the theory of value redefines market demand in which it includes both price demand ( $D_p$ ) and value demand ( $D_v$ ) as in Figure 7.

The price demand is the existing relationship between demand's price and its quantity demanded in a given time period, *ceteris paribus*. The value demand is the existing relationship between demand's value and its quantity demanded in a given time period, *ceteris paribus*. Law of demand states inverse relationship between the price and the value with their quantity demanded in a given time period, *ceteris paribus*. An explanation of the law of demand and downward sloping demand is based on the law of diminishing returns, in which marginal value and marginal utility declines as consumption increases, demand's value and utility declines as consumption increases. Since demand's price depends on demand's value and utility, demand's price also declines as consumption

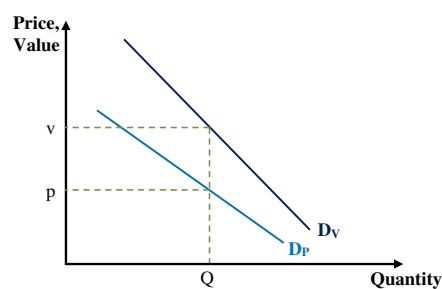
**Figure 6. Value balance between the firm and the customer.**

Source: Trinh (2017b).



**Figure 7. Market demand.**

Source: Trinh (2014a).



increases, which is the law of demand. Determinants of demand are *ceteris paribus* factors that are hold constant when a market demand is constructed. When the determinants change, they cause a change in the market demand. The main determinants of demand are taste and preference; demand of related goods, consumer's disposable income; size of the market; expectations of future demand.

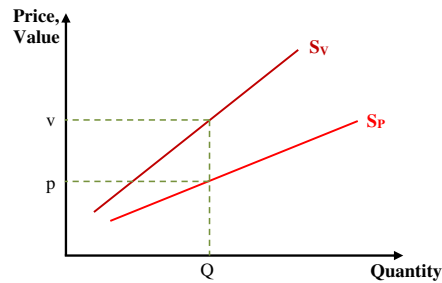
Since value is created in the consumption process, both firm cost and customer cost have to consider in value creation systems. Thus, the theory of value also redefines market supply that includes price supply ( $S_p$ ) and value supply ( $S_v$ ) as in Figure 8.

The price supply is the existing relationship between supply's price and its quantity supplied in a given time period, *ceteris paribus*. The value supply is the existing relationship between supply's value and its quantity supplied in a given time period, *ceteris paribus*. Law of supply states direct relationship between the price and the value with their quantity supplied in a given time period, *ceteris paribus*. An explanation of the law of supply and upward sloping supply is based on the law of diminishing returns, in which firm's marginal cost and customer's marginal cost rise as production and consumption increases, marginal costs rise as production and consumption increases. Since supply's price depends on firm's marginal cost, and supply's value depends on both firm's marginal cost and customer's marginal cost. Supply's price and value rise as production and consumption increases, which is the law of supply. The main determinants of supply are production and consumption costs; supply of related goods, taxes, and subsidies; size of the market; expectations of future supply.

Market equilibrium ( $E_p, E_v$ ) occurs at the equilibrium price ( $P_e$ ) and the equilibrium value ( $V_e$ ) that the price's equilibrium quantity ( $Q_{ep}$ ) equals the value's equilibrium quantity ( $Q_{ev}$ ) as in Figure 9. In short run, market demand ( $D_p, D_v$ ) and market supply ( $S_p, S_v$ ) are no changes, the producers will change the market price equaling the equilibrium price ( $P_e$ ), and customers will change the market value equaling the equilibrium value ( $V_e$ ). This market equilibrium mechanism is so-called static market equilibrium as illustrated in Figure 9. In long run, when the market is in disequilibrium status in which the price's equilibrium quantity ( $Q_{ep}$ ) is not equal to the value's equilibrium quantity ( $Q_{ev}$ ),

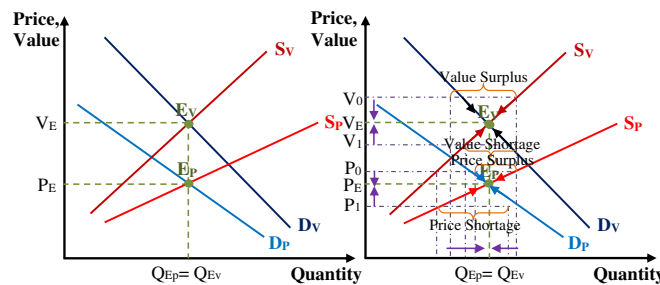
**Figure 8. Market supply.**

Source: Trinh (2014a).



**Figure 9. Market equilibrium.**

Source: Trinh (2014a).



market demand ( $D_p, D_v$ ), and market supply ( $S_p, S_v$ ) will change to reach the new market equilibrium. This market equilibrium mechanism is so-called dynamic market equilibrium.

### 5. Conclusions

The theory of value encompasses all the theories within economics that attempt to explain on value and price. Although economists explain that price is determined by supply and demand, but the explanation on the value is still challenge in the today's economy. It found that it is necessary to explain how the value of a commodity determine and distribute in the market. Since value is more appreciate than utility in explaining on value creation and market behavior, thus the theory of value is constructed upon a law diminishing marginal value. The distinction between value and price is so important to determine market behavior and market equilibrium.

From the value creation perspective, the study not only revises the roles of producers and customers, but also conducts the value balance between the firm and the customer in the value creation systems. The study result indicates that there is a value balance between the firm and the customer, and value balance is also a necessary condition for market equilibrium. From the theoretical base, the value added approach is used to measure GDP, and value balance approach is the base for analyses of market behavior. The paper contributes a new paradigm on the value that explains on value creation and market behavior in the economy.

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