

Chapter 8

Revisit: The Utility Theory and Consumption Function

Foreword to Chapter 8

If Winter comes can Spring be far behind? This is a golden saying conveyed from olden Japan. Yes, everything moves everywhere. Nevertheless, in practice, old is new and new is the same as old. In our academic world of learning by doing, the same is true. Closer to Nature, we practitioners approach true human life and its society. We are a member of societies by aspect. This chapter discusses all of aspects in the academic world concisely, broadly and deeply, as much as possible; the simpler and the shorter the better.

We understand each other when we compare results of any aspect each other. Therefore, this chapter compares results by researcher or economist such that Robinson, Joan; Marshall, Alfred; Samuelson, Paul, A.; Uzawa, Hirofumi; Myrdal, Karl, Gunnar; and Lindahl, Eric, where Swedish School is historically the successor of Austrian School of Wicksell, Knut.

Academic achievements for the Utility theory and consumption functions are so numerous in so many years, and broadly and globally. Underlying frameworks and assumptions seemingly differ by system or model but, the author realizes reveals of essentials existing commonly to the literature; four factor ratios/rates, the macro level and micro, real and financial/market assets, and endogenous, exogenous, and externals. These four essentials are concretely expressed by: full employment; no inflation/deflation (minus inflation); the rate of return/profits; the growth rate of GDP/value added; the rate of interest; the valuation ratio, the rate of technological progress, external and purely endogenous; productivity, macro & micro; and break-even-point with external expenses (as in *IAE* Conference, Savannah, Oct. 2014).

The author pays much attention to readers who do not like equations so that the author explains the whole story, without equations and notations as much as possible (except for some notes). Then, this chapter wholly exudes essential connections.

1. Introduction

This chapter is composed of three sections: (1) General statements, (2) Specified statements, and (3) Appendix with evidenced figures.

The whole version of this chapter seemingly rather complicated. The author pays much attention to readers who do not like equations so that the author explains the whole story, without equations and notations as much as possible (except for some notes). Then, structure or framework of this chapter increases its position and importance. Structure is classified into two ways:

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For one way, unique six researchers; Robinson, Joan; Marshall, Alfred; Samuelson, Paul, A.; Uzawa, Hirofumi; Myrdal, Karl, Gunnar; and Lindahl, Eric, where Swedish School is historically the successor of Austrian School of Wicksell, Knut.

The author realized several key points while revisiting the Utility theory and consumption function. As a result, the author, as a human, set up Appendix for modest Lindahl. Of course, these unique researchers are surprisingly connected with each other. The author also activities four factors (ratios/rates) by forming four diagrams for 65 countries, 1990-2012 or total plot numbers are nearly 1600:

Diagram 1: Utility function as ever-lasting system in reality

Diagram 2: Characteristics of four factors in Utility theory; the relative share of capital, the capital-output ratio, and the wage rate

Diagram 3: The rate of return-ties among four factors essentially connected with Utility theory

Diagram 4: Remaining three factors-ties among four factors essentially connected with Utility theory

In the other way, Generalized Statements and Specified statements:

(1) Thirteen Generalized Statements

List by key points: 1. Mathematics and *social sciences*; 2. Essence of the Utility theory and consumption function; 3. Relationship between *Utility* equations and *Axiom* constant-Omega.

Key points in Generalized Statements are (G1), (G2), ... , (G13).

(2) Six Specified Statements

List by key points: 1. Utility and *Axiom* constant-Omega; 2. Public Expenditure.

Those in Specified Statements are (S1), (S2), (S3), (S4), (S5), and (S6).

2. List of Generalized Statements:

Utility theory and Consumption function

This section lists up key points from the viewpoint of; Mathematics and social sciences; Methods in statistics and statistics data; and Utility function, between the micro and the macro levels.

1. Mathematics and *social sciences*

(G1). If any equation is mathematically correct, the equation is consistent with other known/unknown equations. It is not necessary for anyone to review and confirm possible equations wholly as a mathematical system. It implies that specified equations in sciences, natural and social, holds always if equations are mathematically correct. This is true.

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- (G2) From the viewpoint of mathematics, do differences of equations between natural and social science exist? Yes, we find the differences. Why? Natural sciences, physics, chemicals, agriculture and so on, respectively obey natural role such that excludes human decision-making. Social sciences, including economics and human behavior, contrastingly, specified equations must be consistent with each other and need to prove the consistency from the viewpoint of a whole system. Nevertheless, this whole system is much narrow compared with the whole in the earth and/or universe. 'Reversed is also true' does not hold in social sciences.
- (G3) Equations estimate quality as well as quantity. Or, quality is shown by dependent variable while quantity by independent variable.

2. Methods in statistics and statistics data

- (G4) Methods in statistics progress historically and globally by using statistics data. When data are originally limited to 'amount,' we must accept the market principles that express the level of price by goods and services; beyond space and time, and accurately just like the next to Nature/God. However, the level of price is vertical by nature and, stands at opposite poles to a whole system.
- (G5) Is there any way to get rid of this discrepancy? Yes, we have. Perfect competition is royal road to a solution. How to? Executing no regulation by vertical sector and defending laissez-faire are required. Why? This is because perfect competition is realized only when a whole system exists most deeply(vertically) and widely(horizontally), as proved and verified in the *EES*.
- (G6) Then, what does 'amount' in the market principles? 'Amount' implies that its quality=quality=Money=1.000000, where Money has been used by human since human used it as general medium of exchange and currently M2 or equivalent in the 93SNA (A System of National Accounts). This is the author's new discovery and holds as a base for perfect competition.
- (G7) What is the characteristic of statistics data? Statistics data are ex-post, not ex-ante. Statistics data are actual results and never express all the causes hidden in the real assets of the 93 SNA. Therefore, Statistics data need method for estimating forecast in economic analysis by model, where models need respective assumptions to equations. Equations and assumptions are indispensably combined to justify equations' limits. Any one cannot blame the ex-post mechanics under the market principles. Further, statistics data are always stay within a certain range of endogenous data with no assumption, under the same market principles.
- (G8) What ties statistics with endogenous data commonly and universally? This is GDP. The author's new discovery of GDP-based is able to connect statistics data with endogenous data accurately and consistently, beyond space and time. And, six aspects of neutrality remain in GDP-based data, as in the

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EES. Six aspects produce new equations with assumption. The current stream of the literature is reinforced by these equations and GDP-based database, 1960/90-2012 in KEWT series (1.07, 2007, to 9.15, 2015).

3. Utility function, between the micro and the macro levels

- (G9)** What is a most crucial point in statistics database and economic analysis? This is individuals' utility function, the author perceives. Utility theory estimates 'degree of customer satisfaction' by using arbitrary/given number of 'relative' ranking among goods/services. Two problems: 1) given or external parameter, and 2) between two individuals. Utility theory was born most early before economics but, currently we have to solely use it even today since no other way exists. It implies that micro is a base for macro.
- (G10)** Why is the micro level wrong? The macro level is determined by the balance of payments, deficit, population or labor, consumption, public and private. Then simultaneously, saving and investment are determined as a whole by country, where the rate of technology is endogenously measured independently of the relative discount rate of consumer goods to producer goods, as shown in the six aspects of neutrality. Accordingly, key policies by country hold first in a whole system and, strategies reinforce key policies, in sub-systems or numerous sectors.
- (G11)** Why is utility function alive vividly in the literature? This is because utility function is a genius product that bridges actual with endogenous data. Common features by country are the use of: 1) consumption or the propensity to save/consume, 2) national taste independently determined, 3) amount=price under the market principles, and 4) no capital stock required for the Cobb-Douglas production function. Method and process of function mechanics differ but, are exactly and consistently rearranged in the author's endogenous-system.
- (G12)** What is crucial difference of databases between the literature and the KEWT database, GDP-based? 1) The rate of technological progress is given in the literature or estimated not wholly but partially; 2) the growth rate of total factor productivity (TFP) is independently estimated; 3) capital stock is calculated using corporate accounting in the micro level, independently of capital in the macro level (where the capital-output ratio must be constant by year and over years, as shown by Axiom constant Omega).
- (G13) Equilibrium and balances:** Throughout (G1) to (G12), equilibrium, static and dynamic, and actual and endogenous, matches balances, macro and micro. or in other way; balance of payment in the 93SNA and simultaneously the balance sheet and the profit and loss statement in corporate accounting.

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Diagram 1. Utility function as ever-lasting system in reality

Diagram of two individuals in the Utility function Externals + endogenous (Left-side)	Diagram corresponding with the Utility function Externals + endogenous (Right-side)
Commonly to actual/statistics databases	Commonly to statistics and endogenous databases.
1. Several goods at least in Utility function.	1. Items of 93SNA, accounts in corp. accounting.
2. between Two individuals	2. From two comparison to numerous comparison.
3. Utility satisfaction by order; arbitrary numbers.	3. Not arbitrarily but endogenously, measured accurately.
4. Comparative statics as produced by genius.	4. Ever consistent with comparative statics in the literature.
Without consciousness to close to Nature or human.	With perception to close to Nature or decision-making.
	Philosophy measures databases, by year and over years.
In perfect competition with assumptions by model.	In perfect competition with no assumption to any equation.
Between models, impossible to compare accurately.	Thousand equations are always consistent by nature.
Actual data ever change instantly and in a long term.	Endogenous data ever change instantly and in a long term.
Strategy-oriented vertically by goods/services using each price level.	
Strategies concretely reinforce policies for a whole system.	Policies direct a whole system by nature.
	Policies spread from several to numbers infinitely.
Beyond space and time, both Left-side and Right-side each holds comparatively	

3. List of Specific Statements:

Utility equations and Axiom, constant-Omega

The author focuses searching and, collects Samuelson's graphs and/or diagrams. Reason is: Uzawa is free from Omega-constant, while Samuelson first discovered constant-Omega, at the beginning of his research work, 1939-1941.

Key words behind the Utility theory and consumption function are three: (1) Relationship between the rate of return to prevent assets-bubbles; (2) Cost burden to individuals in communal society or people by country, for stop inequality per capita; and (3) system and tax law, as stressed by Lindahl (see Appendix).

1. Utility and Axiom constant-Omega

(S1) Why does the relationship between utility function and Axiom constant-Omega (constant-capital-output ratio) not contradict?

Utility function incidentally prevails independently of capital and accordingly, the capital-output ratio. Further, Axiom constant-Omega is a hidden key that cannot be found anywhere in any database but any database does not exist. It implies that Axiom constant-Omega is a closed Nature/God and breathes all the databases available in the current world. Therefore, Samuelson's earlier mathematical proof of constant capital-output ratio is correct and does not contradict his earlier utility-oriented discussions.

(S2) In this respect, Samuelson's contributions to *Journal of Economics and Statistics* (1954, 380-390; 1955, 350-356; and 1965, 343-356) were perfectly right. Economics and statistics data are most pertinently connected with each other by nature, beyond space and time.

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- (S3) Capital stock in corporate accounting or double-entry bookkeeping is indifferent of Axiom constant-Omega. An averaged level of capital stock is completely produced within a whole system; purely endogenously and no room for externality/exogenous in a model. This is after lecturing on his lifetime research work reviewed by the author. The *EES*, the *HEU*, and the KEWT GDP-based data wholly present evidences for 65 countries, 1960/90-2012, whose original data come from *International Financial Statistics Yearbook*, IMF, by year and over years.
- (S4) Scientifically in two dimensional plane, algebraically and geometrically. The above (S1), (S2), and (S3) each hold by obeying Samuelson's guideline, scientific and using no behavior science. Samuelson magnificently walks Royal road yet, Short cut, effectively and efficiently.

2. Public Expenditure

- (S5) Samuelson (1955, *ibid.*) present five charts (p. 353, p. 354, and p. 354). The author understands that these five charts cover the current stream of the literature most pertinently and in detail among others. These five charts constitute the author's intellectual treasure to understand the whole economics. Each title of five charts is as follows:
- (1). Indifference contours relating man 1's consumption of public and private goods.
 - (2). Indifference contours relating man 2's consumption of public and private goods.
 - (3). Transformation schedule relating totals of public and private goods
 - (4). Utility frontier of Pareto-optimal efficiency points and its tangency to highest attainable social welfare contour.
 - (5). Intersection of public good's marginal cost schedule and the vertically-summed individual's marginal rates of substitution, as envisaged by Lindahl and Bowen.
- (S6) Lindahl (1967) seemingly classics to taxation system (for page numbers and in detail, see Appendix). However, 'taxation and its system,' as a whole, is a saver to politicians and, people that constitute communal society as a base. Cost of burden must be delivered to final consumers.

This is justified by a fact that total amount of the government sector just before redistribution of total taxes is equal to that just after the same redistribution, where national income=expenditures=products, as Stone and Meade first set up for the framework of A System of National Accounts (SNA).

The above fact is reinforced by a systematic fortune that government expenditures equal government consumption, where there is no profit in the government sector. The literature confirms that flow or marginal concept is first schemed. We start from zero or initial stock is zero. Then, we accumulate the

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results and who owns the property, Lindahl asks. This notion, nevertheless, is absorbed into a whole system such as the endogenous-equilibrium. Then, initial stock is taken into a whole system supported by Axiom or constant-Omega, where consistency between flow and stock is kept but, the initial data determines uniqueness of the initial stock.

4. Robinson, Joan, Richard T. Ely Lecture, 1972: The Second Crisis of Economic Theory

The author here cites five points in the above paper, together with interpretations from the viewpoint of equilibrium in the literature. The author admires her universe summing up, which is alive pertinently even in Dec 2014. According to Robinson's thinking, the first economics crisis years were just before and after 1930 and, the second crisis years broadly spread between 1945 and today, currently, 2012. At the beginning, the author introduces her intentions together with a few key papers Joan kept in mind, citing her robust statements, words and sentences. After explaining and understanding Joan's essence of lecture, the author questions and answers to Joan's explanatory essence, at the end of this section.

First, let us digest Robinson's essence of lecture by using Leijonhufvud, A. (1968) hidden behind: Leijonhufvud, Alex (1968). *On Keynes' Contribution in Economic Theory and the Economics of Keynes: A Study in Monetary Theory*. New York: Oxford University Press. xiv, 431p.

It is surprising for us to know what Leijonhufvud, Alex(1968) wanted to stress is true endogenously and never dies even today. Robinson (3, *ibid.*) cites his paragraph, 'an analysis of the harmony of an organism should be useful for dealing with the problems of its malfunctioning.' The author most likes this sentence and the word of *organism*, in Robinson's truth-penetrating lecture. Yes, the market principles must be reinforced by organic whole functions first of all, the author adds here.

(1). Robinson (1, *ibid.*) starts with saving $S =$ investment I , $S=I$, similarly to economists who rely on the real assets in the 93SNA. $S=I$ start be easily connected with the money-neutral, in terms of financial and market assets and avoid confusion between real and financial assets as the reverse of real assets. Further, $S=I$ start be easily connected with the author's GDP-based statistics/actual data, effective commonly to worldwide databases. GDP-based data, in turn, most easily accept Axiom of constant-capital-output ratio (Omega). A constant-Omega was first mathematically proved by Samuelson but with no empirics up to today. Axiom of constant-Omega is a unique real key hidden for solving the Utility theory and consumption function.

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- (2). Robinson's intuition is supreme. It was early 1970s when there were no instant large capacity data techniques today. Even if these techniques were available, there is no method to unite social and economic sciences wholly as a system until today.
- (3). Similarly, Robinson's economic crisis continues between 1945 and today and tomorrow, far more regrettably. Why are serious problems of (2) and (3) not solved?
- (4). Serious problems are indispensable but no responsibility of economists and statisticians. Real cause comes from the character of the market principles or a limit of vertical 'by goods and services.' A tool absorbing numerous vertical functions works for a whole functions, simultaneously with horizontal functions. This tool is originally hidden in the Utility theory and consumption function. It is still difficult for the literature to empirically verify the Utility theory and consumption function, using the current large data techniques.
- (5). When the above tool is once disclosed, the other solved naturally. All of these results are measured in the author's KEWT database, GDP-based, for 65 countries, 1990-2012. Total numbers of plot points are nearly 1600, each plot of which are instantly reproduction by anyone, except for key intellectual property.
- (6). As a result, some economic analyses changing by model-maker are rescued. For example, look at Diagram 2, 3, and 4. These three diagrams answer questions in Myrdal, Karl, Gunnar (1968), *Asia Drama: An Inquiry into the Poverty of Nations*, New York: Pantheon, Random House. xxx, 2284p.

Diagrams 2, 3, and 4 each show its essentials as follows:

Diagram 2: Evidences for economic transitions of developing countries. In particular, 1600 plots at bottom are extremely flat along with the x axis, which implies that any country can get rid of inequality per capita, regardless of policy-failure.

Diagram 3: Similar evidences but with more allowances along with the x axis. Implies: Differences between long and short-sighted; Real vs, financial assets-oriented and also; Young countries have more power.

Diagram 4: Middle of top and bottom is most typical in hyperbola curve; the rate of return and Omega follow Yin and Yang balances, static and dynamic.

Finally, Q & A to Robinson in this section is summed up as follows:

Q&A 1: Based on a simple idea of investment $I = \text{saving } S$.

Q&A 2: Citing Hayek and laissez faire.

Q&A 3: Citing 'normality is a fiction of economic textbooks.'

Q&A 4: Against Keynes' core such that breaks out the cocoon of equilibrium and consider the nature of life lived in time—the difference between yesterday

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and tomorrow. Here and now, the past is irrevocable and the future is unknown.

Q&A 5: Keynes had broken down the compartments of “real” and “monetary” theory.

5. Marshall, A. (1890): *Principles of Economics*, 1st ed., London

We know the decent of laissez faire; Adam Smith’s (first 1776; in his life, 1723-1790) *invisible hands* (127, Penguin Books, 2008) and Marshall, Alfred (1842-1924). When the author was invited by Harcourt, Jeffrey, in autumn 1996, the author was in the room of Marshall Library so that the author feels specific nostalgia to Marshall naming.

Now Harcourt, Melbourne, Australia, celebrates my work but at that time, Harcourt refused the author’s idea to unite two Cambridge streams, the UK and the US (see Acknowledgements in the *EES*, 1st ed., 2013 and 2nd ed., 2014).

In 1996, the author’s dormitory was 4th Floor of Kings College, where Kaldor, Robinson, and Keynes teach. The author recollects the mathematical Bridge. Down this river, there were pretty garden, where the author just remembers a monument of mathematician, Farrell. Old ties and connection are now alive once more in this essay. In short, the stream of Smith and Marshall are peacefully alive not classics but universally beyond space and time in GDP-based database.

6. Uzawa, Hirofumi (1989): *How to Think of Economics*, Tokyo

The author has learned a lot from the above new-paper book since 1989. The author is indebted to his essential explanations. The author believes: Uzawa dying wish be left in the future as key strategies. Uzawa was connected with Robinson. For instance, Uzawa was a translator of *An Introduction to Modern Economics* (1973) written by Robinson, Joan, and Eatwell, John, A.

- (1). Uzawa (p. 184, *ibid.*) states: Robinson’s ‘structure to unbalanced dynamics’ remains unfinished work.
- (2). Uzawa most highly evaluates Robinson’s (1-10, 1972), Richard, T. Ely Lecture, ‘The second Crisis of Economic Theory.’
- (3). The author emotionally agrees with Uzawa’s heart-warming to human behavior and encouraging people and citizens against indispensable inequality. Yet, Uzawa’s behavior on social activities belongs to vertical strategies that reinforce economic policies.
- (4). The author, however, disagrees with Uzawa’s change in quality of capitalism and also resistance against the market principles. GDP-based data system

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verifies and realizes full-employment under no inflation/deflation, simply by manipulating statistical databases now globally available in the world.

- (5). Further, GDP-based data system realizes the increase in the real rate of wages, in corporation with the Utility theory under the market principles. This is because an economist or layman simply reproduces actual results, similarly to a specified technical researcher in this field, except for a few intellectual property and patents the author and his publisher, Better Advances Press, Toronto own commonly (see **Appendix** at the end).
- (6). Besides, Uzawa's social proposal does not actually contradict GDP-based data systems since the Utility theory and consumption function are wholly and harmoniously absorbed into the endogenous system.

7. Conclusions:

Why is Eric Lindahl (1891-1960)' original so modest?

Uzawa Hirofumi (1928-2014) is one of leading heart-warming economists who has also been connected with practitioners in environmental activities in Japan. His last papers in English were: 'The Penrose Effect and Economic Growth' (Res. Econ. Stud., 1968) and, 'Time Preference, the Consumption Function and Optimum Asset Holdings' (In: ed. by Wolfe, Value, Capital and Growth, 1968). He moved to Tokyo Univ. in 1968, from Chicago Univ.

The author most repeatedly reads Uzawa's (1989, in Japanese); *How to Think of Economics*. Tokyo: Iwanami. 265p.

Eric Lindahl (1891-1960) deepened the Utility theory as Swedish School succeeds Knut Wicksell as a leader in Austrian School. Among others, the author is interested in Eric Lindahl (214-232; In ed., by Musgrave, Richard, A. and Peacock, Alan, T., 1967: after six years later of Lindahl eternity); 'Some Controversial Questions in the Theory of Taxation.' Lindahl is communal society-oriented and respects social cohesion, similarly to Hans Ritschl (just after the above Lindahl; 233-241, 1967; translated by Elizabeth Henderson, German).

Readers may realize that Uzawa and Lindahl each share the same thoughts and research area. The author points out here two different ways; Uzawa foresee the change in capitalism while Lindahl stays at the classics and follows the path of Knut Wicksell. The author dares to suppose; Uzawa did not read the above Lindahl (233-241, 1967) at all. This is because, in Uzawa (55-89 for explanations of na, *ibid.*, Japanese) there is no word for Lindahl surprisingly. The author immediately investigated major textbooks and research works in the author's library day and night: I have accustomed to strictly research original works in a long run, before and after century. This is because the author's work

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starts with two dimensional plane yet, establishes dozens of new discoveries commonly lying between West and East.¹

At once, the author investigated major achievements and citations done by attractive economists after the 2nd war and, regrettably found no citation for Lindahl. Why does the author stick to Lindahl? To the author's sixty or more year life-work to hyperbola curve or the mechanics of algebraic and geometric consistency, the truth and fair evaluation naturally appear.²

Why Lindahl life-work worthy of historical records? The author raises three questions italic-written by Lindahl (214, 220, and 226, *ibid.*) as follows:

- Q 1: Can the value which public services have for the individual taxpayer be assessed in terms of money?
- Q 2: How far do general economic principles govern the amount and distribution of taxation?
- Q 3: Can the benefit principle be established as a tax principle of general validity?

Readers have respectively her/his own thoughts and ideas. Anyone cannot control others intentions and targets. This is true. To the author's understanding, Lindahl's version overlaps the hyperbola Yin and Yang philosophy, theory, and practice or causes=results and balances and imbalances in the endogenous system and the market principle. In this sense, The version is accepted since Smith, Adam (1723-1790) and Marshall, Alfred (1842-1924).

Finally, the author concludes this Appendix by the following key sentences:

- (1). (219, *ibid.*) If our argument is correct, then the individual values which we have analyzed ultimately do determine the actual tax burden, because the men who take decisions base their financial calculations on an estimate of these individual values. The estimates can be of course wrong. People's interest in expansion of some public service may, for instance, be overestimated. Note of the author: Evaluation of values are measured by NPV method, as proved by Khoury, Sarkis, J., and Parsons, Torrence, D., 36, 49, 53-60 (295, xii, 1981).
- (2). (215, *ibid.*) Marginal utility can be precisely measured. If public activity were so indivisible that its cost could be neither be diminished nor

1 Concretely for 65 countries: 17 Pacific and Asian countries; 14 Euro; 15 Europe and East Europe; and 19 Rest, South America, Near East, and African, 1960/80-2012, by using GDP-based database, commonly to statistics data, and taking into Japanese culture (i.e., 'organic' agriculture-oriented) and national taste.

2 The author's case is lucky and fortunate in that hyperbolic work was found with help of Dr. Yisheng Huang, Chief Editor, Better Advances Press, Toronto, Canada. This is a bright present for Heaven, two friends, Yisheng and Hide, believe. The author must globally return back this present to social communal cohesion and citizens and, of, for and by people, equally regardless of qualitative levels of democracy, capitalism, dictatorship, or no market Arabian several countries. We human is destined to closer to Nature/God and by nature.

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increased—it would crease if its cost were diminished and would function no better if its cost were increased—then we could speak of the total utility of public services.

- (3). (221, *ibid.*) Taxation is also a case of distributing common costs. The public expenditures which are to be financed by taxes cannot be specified for each individual; they represent services which benefit all citizens or at least a majority of them.
- (4). (222, *ibid.*) The total amount of public expenditure is not given: there is always a choice between less costly and more costly solutions. We have alluded earlier to this circumstance, which enabled us to calculate the value of public services for individual; the same circumstance now provides a purely economic answer to the question of tax distribution.
- (5). (222-223, *ibid.*) The influence of “demand” on “price” certainly causes more friction here than it does in the market but we can nevertheless assume that the wealthier group of taxpayers would voluntarily shoulder a greater share of public expenditure so as to reduce the “price” of public services for the others and thereby to get their agreement to an expansion of public activity.
- (6). (225, *ibid.*) The only result of an unequal distribution of power is, in essence, that the equilibrium position outlined above is shifted to the advantage of those in power: the extent of the shift can be regarded as directly proportional to the eight of the preponderance of power.
- (7). (227, *ibid.*) Quite apart from anybody’s views on the justice of the existing property structure, taxation according to benefit, in the above sense, must therefore be an essential element in any rational and just tax system.

In short, Lindahl version seemingly simple and natural but, underlying logic is so universe that corresponds with the author’s six-aspects neutral.³

3 **Aspect 1** shows a base for endogenous situation from the aspect of costs of capital.

Aspect 2 shows a base for endogenous situation from the aspect of endogenous equilibrium.

Aspect 3 shows a base for endogenous situation from the aspect of the endogenous NAIRU (the non-accelerating-inflation rate of unemployment).

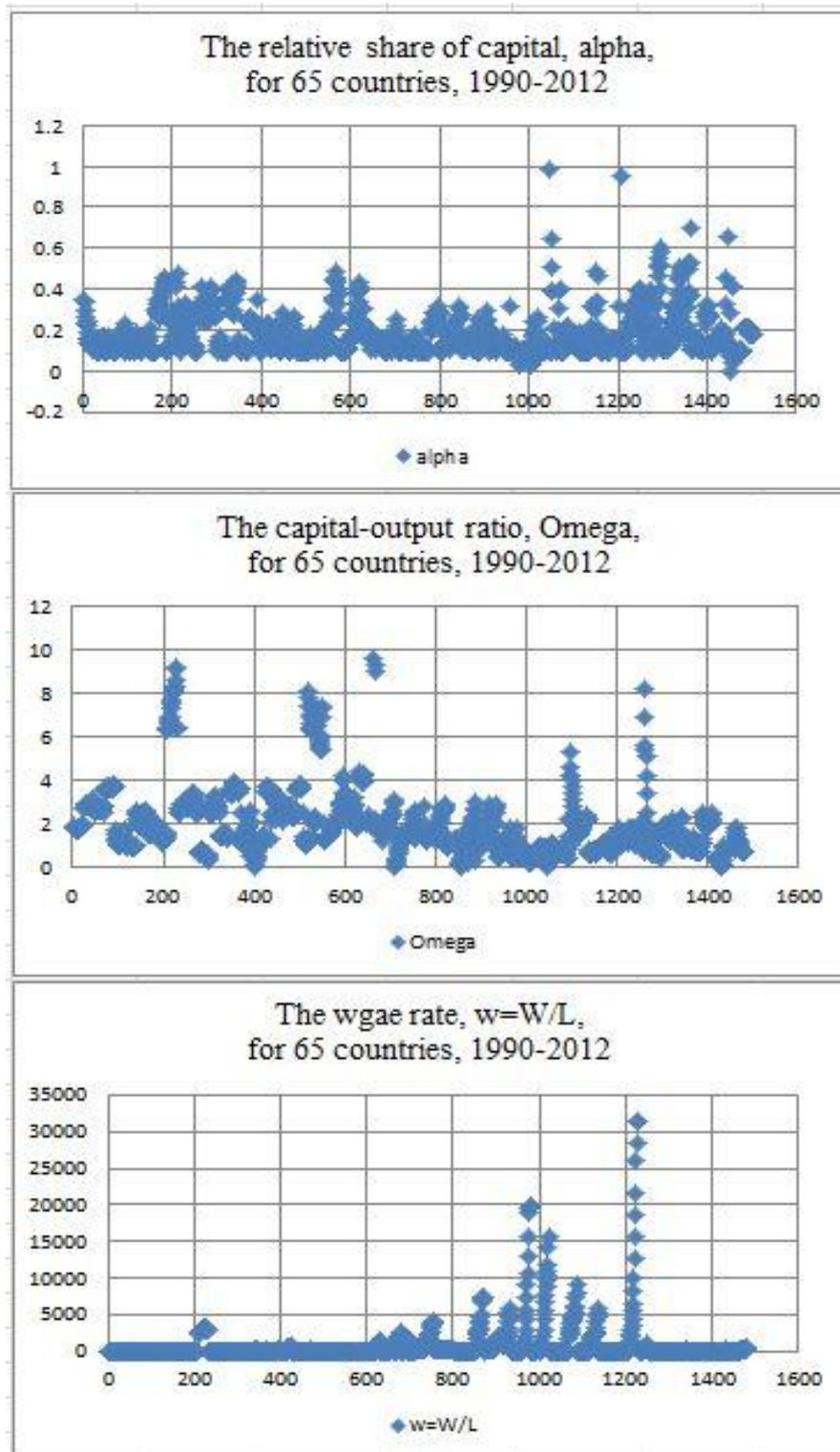
Aspect 4 shows a base for endogenous situation from the aspect of technology-oriented robustness and economic stage Aspect 4 wholly ties up technology, robustness and economic stage.

Aspect 5 shows a base for endogenous situation from the aspect of the balance between growth and returns.

Aspect 6 shows a base for endogenous situation from the aspect of the balance between real assets and financial/market assets (or, the neutrality of the financial assets to the real assets, as shown in *Int Adv Econ Res* 16: 282-296, 2010).

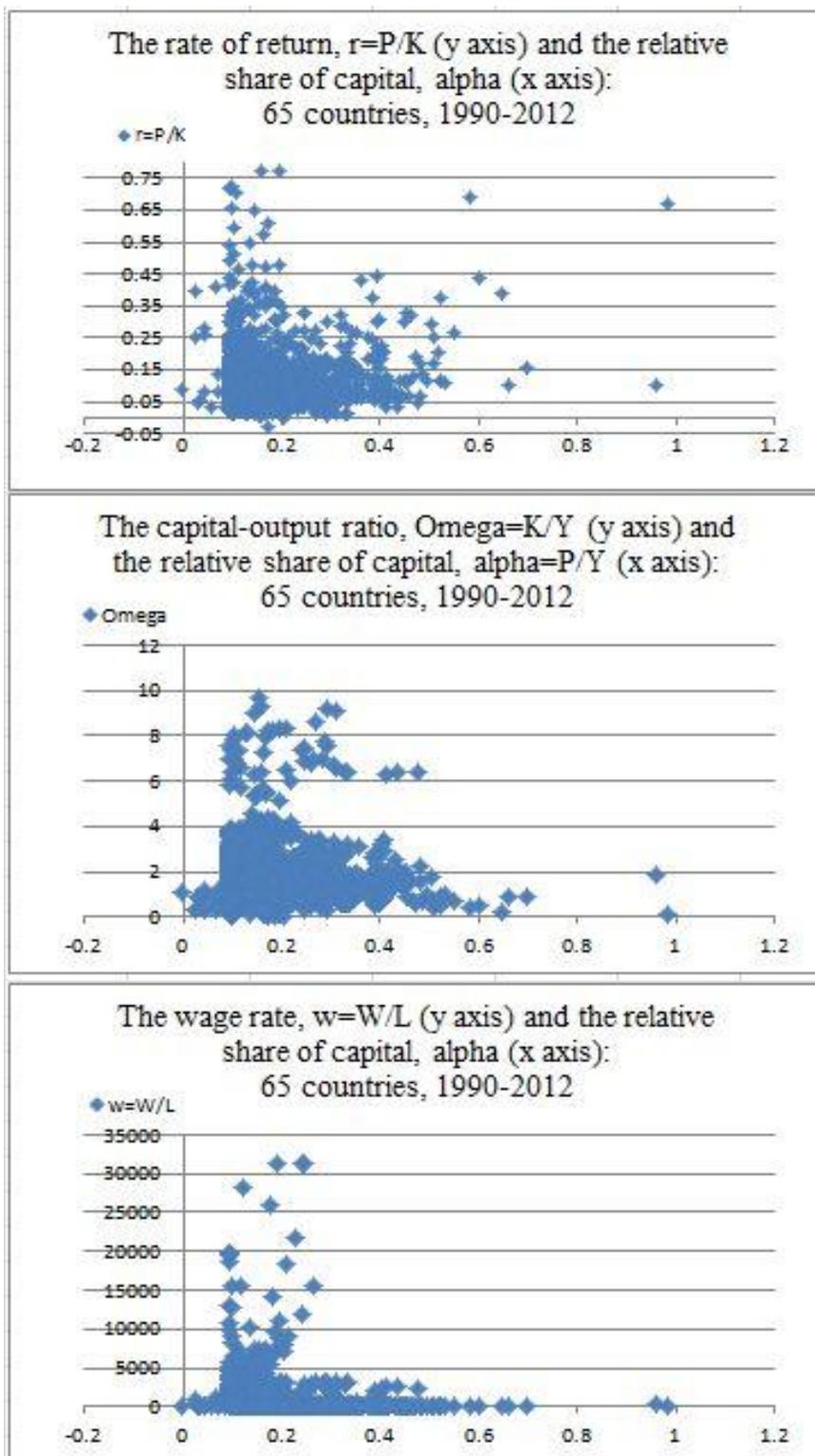
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Diagram 2 Characteristics of fundamental factors in Utility theory; the relative share of capital, the capital-output ratio, and the wage rate



Note: Statistics actual database, GDP-based, and compatible with endogenous data

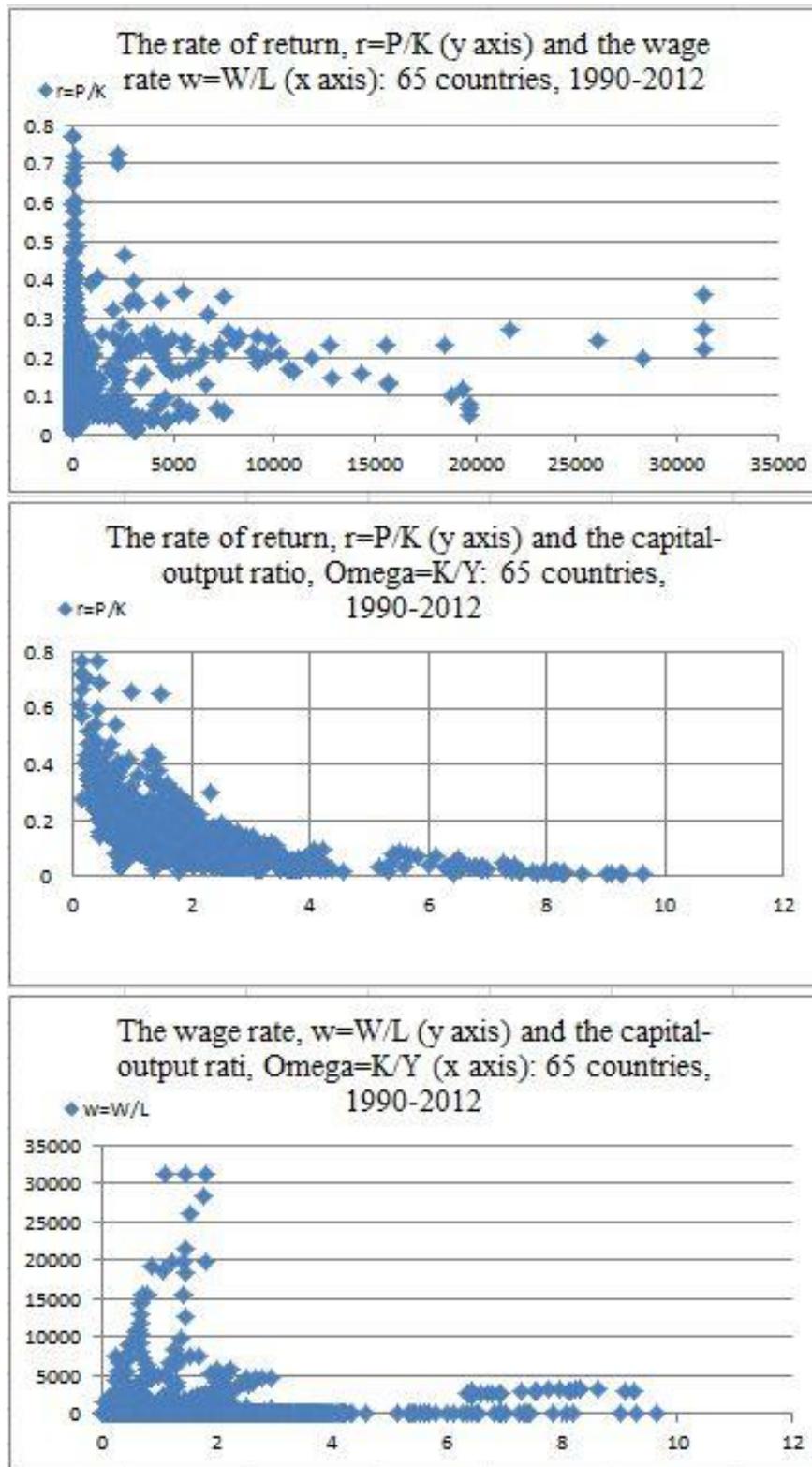
Diagram 3 The rate of return-ties among four factors essentially connected with Utility theory



Note: Statistics actual database, GDP-based, and compatible with endogenous data

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Diagram 4 Remaining three factors-ties among four factors essentially connected with Utility theory



Note: Statistics actual database, GDP-based, and compatible with endogenous data

Explanations to **Diagrams 2, 3, and 4:**

The author revisited a dozen papers and books intuitively selected soon after returning back from October-visit to *International Financial Statistics* staff, IMF, Washington, D. C. If the author could not frame GDP-based database, together with a simple method for Axiom-constant capital-output ratio, discovered instantly and luckily in August, the author could not succeed in solving empirics for Utility theory. The author introspects deeply; theory and practice had remained or stopped, just before understand a whole picture of Utility theory. Accordingly, **Diagram 1** above has not been born in this section for absorbing the Utility theory pertinently. As a result, I happened to rescue dry comment such as A. R. Prest's (766-770, 1959) 'Review' to Musgrave's (xvii + 628p., 1959) "The Theory of Public Financing."

Why do we not understand the Utility theory so well? This is not due to its difficulty but to the market principles by nature. When the supply and demand curves determine the price level by goods and services, any model/system willingly accepts the two curves and vertical character of the market principles. The Utility theory also accepts these common features. Otherwise, the Utility theory does not so long last as like Chinese Phoenix.

Why are we not present everlasting evidence in the Utility theory? Because, methods to verify are also vertical by goods and services and, statistically turns back or reversed as we see historically. A typical case: think of 'double switching,' where the wage rate, w (y axis) and the rate of return, r (x axis) determine grand factor-price frontier—a system of production technique, setting the rate of return as a base for comparison. Here, a simple story or paradox: when current consumption decreases, the rate of return—the interest rate also decreases, whose roundabout production (newly producing from machines to final goods) be more productive or raise *productivity per capita* but, be adversely denied.

Results are the same but, actually seem be reversed. If we discover Axiom-constant capital-output ratio, all of these contradictions immediately disappear. The production function cannot express this key point, using statistics data. Therefore, solving key points, four factors in Utility theory are clarified everlastingly; the relative share of capital, the capital-output ratio, the rate of return and the wagger rate, as measured in **Diagrams 2, 3, and 4**. The interest rate is seemingly external but, finally matches the rate of return.

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(END of Part I)