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西, 洋

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Towards a Post-Keynesian Institutional Macroeconomics

Hiroshi NISHI*

1 Introduction

The purpose of this paper is to present a proposition to reconstruct post-Keynesian macroeconomic model with institutional foundations. We show in a formalized way that the institutional foundation plays the role of a benchmark for diverging post-Keynesian economics.

Since the organization of post-Keynesian economics, it has advanced in various way. It has been traditionally classified in three groups after Hamouda and Harcourt [1988]. The first is the 'Keynesian fundamentalists'. Basically, this group is in critical position against the so-called 'quantity theory of money' or 'dichotomy of real and money'. The second is the 'Sraffians', called sometimes the 'Neo-Ricardians'. Inspired from Sraffa [1960], they have focused on the determination of the relative price and the choice of technique in the reproduction process. The third group is called the 'Kaleckians'. This group has extended the Keynesian analysis of the effective demand to the long-run economic growth models with the ideas of Kalecki [1971].

With regard to theoretical development of these groups, while they are not necessarily mutually independent, theoretical incoherence among them has been pointed out (Walters and Young [1997]). Therefore, many has been concerned with this issue so that the lack of theoretical consistehey could be compensated. However, the controversy ends descriptively in many cases (Dunn [2000]; Davidson [2003-4]). We would like to contribute to give a coherence them, based on the ideas of institutional economics in this paper. As we will see below, 'institution' has been one of the keywords that post-Keynesian has emphasized as well as modern institutional economics has done.

We start with a brief review on post-Keynesian view of institution and main concerns of the modern institutional economics (Section 2). Then, we set a simple institutional model which incorporates the income distribution between wage, profit and financial income illustrate (Section 3). Basedon this setup, we illusinate there the post-Keynesian model can be reconstructed institutionally. The last section summarizes some implications which emerged from our examination (Section 4).

* Graduate school of Economics, Kyushu University. email : nishi@en.kyushu-u.ac.jp

2 Post-Keynesian Economics and Institutional Economics

2.1 Post-Keynesian Views of the Institutions

The post-Keynesian has traditionally recognized the important role of the institutions. For the post-Keynesian economics, institutional structure plays a vital role in the determination of the level of output, the generation of surplus and its distribution (Arestis [1996]). Similar to Arestis, many have referred to the role of institutions. Let us review some ideas with this regard.

In the context of the history of economic thought, King [2002] connects the old institutionalists and the post-Keynesians. According to him, both schools reject closed-system thinking and emphasize the role of history rather than equilibrium modeling. Focus of the institutionalists on the evolution and process was entirely compatible with the post-Keynesian way of thinking, in that they stress the institutional structure of the financial and labor markets and the transformational nature of economy (*ibid*, pp.226-8).

On the other hand, Stockhammer [2006-7] discusses the role of institutions in terms of power, class and uncertainty. He statesas follows:

> Social structures of various sorts determine who is concerned about what kinds of uncertainty that different groups of people face. These social and economic institutions, and hence the distribution of uncertainty, may become the focus of social conflicts. Finally, the acquisition of power over others may be a strategy to overcome uncertainty... It (uncertainty) will typically be distributed asymmetrically according to the institutional setting and class structure of the society. (*ibid*., pp.45-6)

This means post-Keynesian looks at the function of institutions as the origins and distribution of power and uncertainty. Niggle [2006] and O'Hara [2007]make a similar reference with this regard. O'Hara states that paying attention to the dynamics of institution is a general principle for this approach (*ibid*, p.6). He summarizes this principle applies not only to the post-Keynesian, but also to other heterodox economics such as the *régulation* theory, the social structure of accumulation.

To sum up, the post-Keynesian economics has needed the institutional analysis as theoretical foundations. The point is then, how can post-Keynesian introduce the institutional analysis into its model ? Before considering the issue of integration, we review briefly the theoretical development of the modern institutional economics in the following section.

2.2 Main Currents of the Institutional Economics

'Institutions matter'. This proposition is broadly accepted by those who have been interested in the intuitionalists. As institutionalism becomes popular, institutional economics has also been diversified. Following the survey of Isogai [2004], we review some backgrounds and issues which encouraged the theoretical development of modern institutional economics.

Firstly, the theoretical development in modern economics after 1970 was important. In particular, the game theory which integrates the economics of information, incentive and contract enabled the extension of the object of economic studies. Secondly, we can cite economic change after the late 1980s. The collapse of socialist economy invalided the discussion such as 'capitalist economy or socialist economy ?' It also urged the economic analysis beyond the issue of market or state. The second point leads to the third. The focus shifted to the internal dynamics of the capitalist economy. The controversy concerns especially the question over 'convergence or divergence of capitalist economy in the era of the globalization ?' Why the economic performance differs among the same capitalist system ? Why or does the diversity of capitalism persist ? Focusing on the institutions has thus become important in order to answer these issues.

Many institutional economics developed in the above context. How do they approach the above issues ? Let us briefly quote the definition of institution of the representative institutional economists.

Aoki [2001], one of the most representative economists of comparative institutional analysis, identifies an institution as follows:

> An institution is a self-sustaining system of share beliefs about how the game is played. Its substance is a compressed representation of the salient, invariant features of an equilibrium of an equilibrium path, perceived by almost all the agents in the domain as relevant to their own strategic choices. (*ibid*, p.26)

Amable, a leading economist of the second generation of the French *régulationists*, presents an original definition. While Aoki sought the definition of institutions rather in economic sphere, Amable [2003] takes the position that institutions are the expression of a political compromise. He states:

> ...institutions represent a compromise resulting from the social conflict originating in the heterogeneity of interests among agents. What we consider to be different economic 'models' are therefore based on specific social compromises over institutions. (*ibid*, p.10, emphasis in original)

Among the *régulationists*, the emphasis is slightly different. While Boyer [2004] also recognizes the role of politics, he views the institutions at intermediated or macro level. They are as follows:

> Institutional or structural form means that any kind of codification of one or several fundamental social relations. Five fundamental institutional forms are identified. They are: the wage-labor nexus, the forms of competition, the forms of the state, the monetary regime, and the international regime. (*ibid*, p.38)

The new institutional economics is also representative in the modern institutional economics. North [1990] focuses on the role of institutions in order to explain historically the rise and decline of economies. His view is as follows:

> Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction... Institutions reduce uncertainty by providing a structure to everyday life (*ibid*, p.3)

Let us finally quote the definition of a modern institutionalist, Hodgson. Similar to North, Hodgson [2003] regards the nature of institutions as follows:

> Institutions are durable systems of established and embodied social rules and conventions that structure social interactions... Institutions both constrain and enable behavior. (*ibid*, p.163)

In addition to the institutionalism above, a variety of institutionalists exists. Following the survey of Villeval [2002] and Chavance [2007], we can also cite the transaction cost approach *à la* Coase and Williamson as a new institutional economics. Besides, the varieties of capitalisms have been identified by institutional analysis in Hall and Soskice [2001]. Based on the term 'institution(al)', diverse concepts have been presented such as 'complementarity', 'hierarchy', 'diversity', 'comparative advantage', and 'change'.

However, while they share the 'institution' as a key word, their approach and concern are different. Some approach microeconomically, others approach from macro-holistic or intermediate level. For example, the comparative institutional analysis and Amable have aimed to theorize an endogenous formation of institution. In addition, based on the 'institutional complementarity', they have shown the diversity of capitalisms and the evolution of institutions. On the other hand, the aim of North [1990] is 'to expand on the characterization of institutional

change by contrasting a successful path with one of the persistent failure in economic history' (*ibid*, p.8). Moreover, Hodgson discusses the co-evolution of institutions and preference of individuals by his idea called 'reconstitutive downward causation'. Furthermore, recognizing that institutions matter for the long-run growth regime, Boyer has shown historically the growth patterns of the capitalist economy.

The modern institutional economics is thus diversified. Of course, we cannot introduce all ideas into post-Keynesian model. Therefore, based on the common themes of institutional economics that Chavance [2007] summarizes, we discuss some shared points.

2.3 Three Common Themes of the Institutional Economics

Chavance [2007] summarizes the common themes of the institutional economics in three points:

1. Since the economy as sphere of social activities is fundamentally 'institutionalized', the economics should take the institutions into consideration and study them.
2. Analyzing the 'change' and 'process' is the central question in the institutional economic study.
3. The 'emergent property' is the main theme. (*ibid*, pp.99-100, emphasis in original)

The first theme means exactly 'institutions matter'. The second points out that approach to 'process and causation' is important rather than equilibrium approach. The third says that the effect of composition or aggregation should be mentioned.

Remarking these themes, let us reconsider the relationship between the proposition of post-Keynesian and that of institutionalists. Firstly, with regard to the first common theme, post-Keynesians have proposed the following statements:

> Post Keynesians are institutional builders as it is institutions that can provide stability in the face of uncertainty, and if designed correctly, stability near full employment. (Dunn [2000], p.358)
>
> The institutions are not regarded as the imperfections, but as organizations which bring a form of stability to the economic system. The power, force, and asymmetry must therefore be emphasized. (Lavoie [2004], p.13)

Thus, post-Keynesian has recognized the first common theme of the institutional economics. The post-Keynesians discuss the role of institutions especially in the context of uncertainty, power and conflict.

Concerning the second theme, They have emphasized the concept of 'cumulative causation'. For example, Kaldor [1972] employed this concept in order to understand the causes of diversity of development and difference in growth rate. In addition, discussing the economic dynamics

under the 'cumulative causation' is consistent with Keynes' effective demand theory, since it is 'the causal type' (Pasinetti [1974]), and it is not a view depicting 'allocation of scarce means between alternative uses' (Kaldor [1972], p. 1245).

Regarding the third point, post-Keynesian has paid attention to the difference between microeconomic and macroeconomic phenomenon. The so-called 'fallacy of composition' is an example, while the meaning is different from 'emergent property'.

Thus, we can see some similarities between two economics. Of course, this does not immediately lead to integration of them. For example, while sharing the third point, post-Keynesian models are not suitable for examining the endogenous formation of institutions, nor for discussion of 'emergent property'.

However, it is worth paying attention to the fact that post-Keynesian emphasizes that the institutions reduce the uncertainty and determine the power and conflict (and are determined by them). The former point is similar to the argument of North and Hodgson, and the latter point overlaps with the 'institutional hierarchy' that the *régulationists* have emphasized. The latter concept suggests an interesting viewpoint to our approach, since it tells us why the income distribution, development of financial activity, and variety of growth patterns change depending on the period and country.

According to Amable [2003], when the institutional hierarchy exists, the institutions on the top are most crucial for income distribution for the socio-political group that constitutes the dominant bloc. Boyer [2005]states that the hierarchy of institutional forms describes a configuration in which, for any given era and society, particular institutional forms impose their logic on the institutional architecture as a whole, lending its dominant style to the mode of *régulation* (institutional adjustment).

While Amable approaches the above issue microeconomically, Boyer approaches it rather macroeconomically or from meso-level. Especially, Boyer relates the concept of the institutional hierarchy to macroeconomic dynamics such as growth regime and mode of *régulation*. The institutional hierarchy tells us to focus on the principal institutions when examining the economic dynamics.

This suggests to the macroeconomics of post-Keynesian which also emphasizes the income distribution and financialization of economy. As seen above in the quotation of Lavoie [2004], they might understand more or less the importance of the institutional hierarchy. Then, how can we reconstruct institutionally the post-Keynesian macroeconomic model? In the following section, we present a model inspired from the suggestion of Pasinetti [2005].

3 Towards an Institutional post-Keynesian Model

3.1 Pure Theory and Institutional Analysis

As seen in the previous sections, post-Keynesians are affirmative for introducing the ideas of institutional economics into their theory. Besides the consideration above, one of the leading opinions toward this extension is Pasinetti [2005].

Pasinetti insists that both pure theory and institutional analysis are important, and that this combination would strengthen the coherence of the theoretical foundation of the Cambridge school of Keynesian. He calls his methodology 'two-stage approach'. The first stage of this is called 'pure theory'. This stage focuses on the elements of reality that have a high degree of persistence through time. For this, an 'open theory' should be presented. The open theory means a theory which contains many degrees of freedom that are left open. On the other hand, 'institutional analysis' corresponds to the second stage which concerns individual and social behavior. Pasinetti explains this as follows:

> It is at this second stage of enquiry that we may introduce different (sometimes alternative) institutional set-ups through which society is organized. Precisely because the first stage of investigation leaves open so many degrees of freedom, we are not constrained at this stage to deal exclusively with only one type of institution (e.g., 'market economy') or one kind of behavior (e.g., 'rational individualistic behavior')... (Pasinetti [2005], p.846)

The institutional analysis concerns the diversity of macroeconomic dynamics. Pasinetti exemplifies this idea by the Sraffa's system on the income distribution and reproduction. In this system, given the method of production, if we add the profit rate (or wage rate), then we get the price system and wage rate (or profit rate) which assure a stable reproduction of the economy. While Sraffa considered the profit rate as a given variable, the predetermined variable (wage or profit rate in this case) is not *a priori* chosen. This system is an example of what Pasinetti calls 'open system'.

The two-stage approach is suggestive, since it allows us to develop models according to institutional or structural aspects, while maintaining the theoretical foundation. In addition, post-Keynesians, especially the structural macroeconomists, have seen such ideas by way of the 'closure'. According to them, the 'closure' gives the theory a causality, and tells what are the driving forces in the macroeconomy. It is country specific and time dependent. Therefore, a sense of institutions and history necessarily enters into this idea (Taylor [1991]; Baghirathan et al. [2004]).

Pasinetti's two-stage approach and what the structural economists call 'closure' are practically the same concept. The structural economics regards that the 'closure' attributes to principal institutions which constraint the behavior of economic agents as well as the macroeconomic causation. Their argument means that the macroeconomic dynamics corresponds to the closure, i. e. institutional form, therefore it can not be determined *a priori*. The implication is almost the same with Pasinetti's two-stage approach.

We can extend these ideas by employing a simple post-Keynesian model. Let us consider the so-called 'Cambridge equation' in case of under-capacity utilization. Suppose that 'workers spend what they earn (wage) and capitalists earn what they spend (profit)', then this equation (IS balance) is formalized easily as following:

Profit Share·Capacity Utilization Rate=Growth rate of Capital Stock.

The unknown variables are three while there is only one equation. Therefore, this system holds degree of freedom 2, and we have to choose two predetermined variables from income distribution, effective demand, or growth rate of stock.

In this regard, the determination of the income distribution might concern the comprise between industrial relations or market structure. In addition, the level of effective demand and growth in capital stock might depend on the structure of industry or financial activity. In other words, wage, price and employment concern the form of competition and the wage-labor nexus that *régulationist* defines as fundamental institution (Boyer and Saillard [2002]). Moreover, the economic activity and investment activity would also concern the international regime and the financial system since they involve trade with foreign country, price competitions, and financial norms. Thus, institutions necessarily enter there.

To sum up, the pure post-Keynesian model does not complete itself unless some institutional characteristics are introduced. In the next section, we illustrate an application of this idea by employing a model and institutional examples.

3.2 The Model

We develop a simple post-Keynesian model. The purpose is to show that the post-Keynesian model can examine macroeconomic dynamics with institutional analysis. For this purpose, we follow the summary of Yamada [2004] with regard to the typical institutional configurations and macroeconomic dynamics. The contrasting examples are the so-called 'the Fordist growth regime' and 'the financial-led growth regime'. Introducing their intuitional forms into a post-Keynesian model, we consider a dynamic relationship between intuitional foundations and macroeconomic performance.

We formalize an institutional model in the context of cumulative causation. This formalization shares the first and second common themes of the institutional economics mentioned in the

previous section. We can summarize the background of the model in Figure 1.

The economy is composed of households, firms and stockholders (dividend receivers). A single commodity is produced by the firms with two factors of production, labor and capital, using a fixed coefficient technology. The total income is distributed to the firms as profit income and to the households as wage income. The households supply their work to the firms and receive wage income. They spend a fraction of $(1-s_w)$ and save the rest. Similarly, the firms receive profit income and distribute the financial income (dividend) to the stockholders. In addition, the firms consume a fraction of $(1-s_p)$ and save the rest. They also invest according to profit rate. The stockholders do not work, and simply receive the financial income from the firms, and spend a fraction of $(1-s_d)$ on consumption.

The model has the degree of freedom, since the income distributional patterns are not closed at this stage. Therefore, we introduce the 'institutional analysis'. This analysis concerns the distributional patterns of income. In our model, according to 'institutional hierarchy[1])', the institutions give rules that determine the income distribution patterns. They also constraint or expand the economic activity of each agent (i.e. the volume of consumption and investment). The macroeconomic performance is then determined.

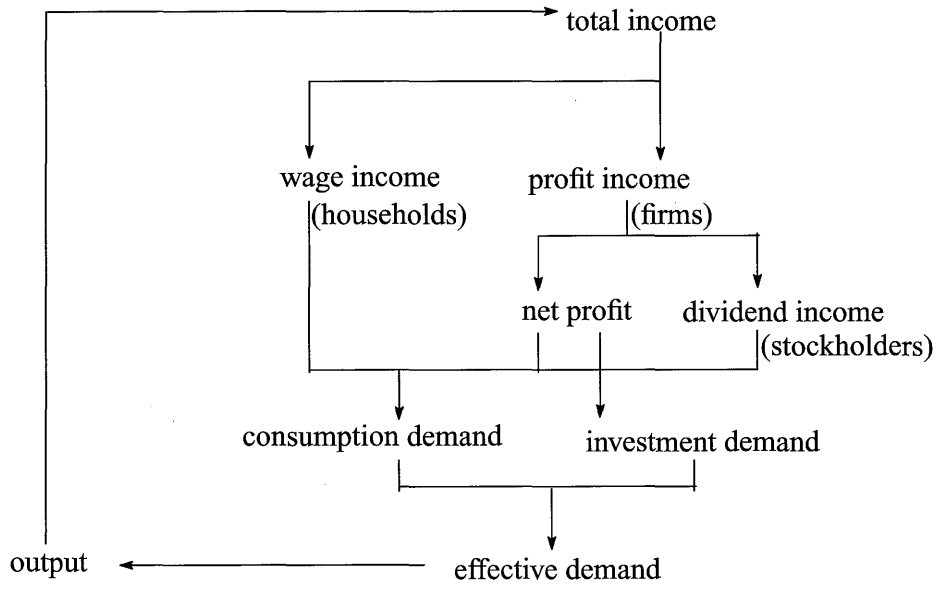

Figure 1: Cumulative Causation of Macroeconomy

1) As considered in the previous section, this is defined as the compromise among dominant groups. When the 'institutional hierarchy' exists, it is said to be that the payoff (income distribution) favors the dominant group the most. In addition, the institution which stands at the top of this hierarchy prevails other institutions. The subordinated institutions are determined itself as the residual of the prevailing institution.

3.3 Pure Theory

The main notations are as follows: C_w: consumption from wage, C_p: consumption from profit, C_d: consumption from dividend, $s_w \in (0, 1)$: saving rate from wage, $s_p \in (0, 1)$: saving rate from profit, $s_d \in (0, 1)$: saving rate from dividend, X: total income (effective output), X^*: potential output, K: capital stock, $X^*/K=\nu$: potential output-capital ratio (constant and set to unity for simplicity), $u=X/K$: output-capital ratio (effective demand)[2], S: total saving, $I=\dot{K}$: investment demand, π profit share in total income, $1-\pi$ wage share in total income, D dividend share in profit.

Then, the consumption demand of each economic actor is defined as follows:

$$C_w=(1-s_w)(1-\pi)X=(1-s_w)\alpha X, \tag{3.1}$$

$$C_p=(1-s_p)(1-D)\pi X=(1-s_p)\beta X, \tag{3.2}$$

$$C_d=(1-s_d)D\pi X=(1-s_d)\gamma X, \tag{3.3}$$

where α is wage share, β is profit share, and γ is dividend share. They must satisfy the following relationship:

$$\text{Income Distribution: } \begin{cases} \alpha=(1-\pi)\geq 0, \\ \beta=(1-D)\pi\geq 0, \\ \gamma=D\pi\geq 0. \end{cases} \tag{3.4}$$

There are three independent equations in this distributional relationship, but unknown variables are five α, β, γ, π and D. After showing the IS balance configuration, we consider the institutional determinations of income distribution and their consequences on macroeconomic result.

We set a Robinsonian investment function of which the determinant factor is the profit. Since we take the dividend income into consideration, the after-dividend distribution profit is employed as a proxy for the profit variable. Consequently, an increase in demand for distributing to dividend might restraint the investment demand. The investment function is:

$$\dot{K}=I=(g_0+g_1\beta u)K. \tag{3.5}$$

where g_0 represents an autonomous investment which has a positive value. A dot over a variable is used to denote a change with respect to a time (e.g. $\dot{x}=dx/dt$).

When there is disequilibrium in the goods market, firms respond by adjusting the output. Then, the quantity-adjustment equation is defined as follows:

$$\dot{u}=\gamma\left[\frac{C_w}{K}+\frac{C_p}{K}+\frac{C_d}{K}+\frac{I}{K}-\frac{X}{K}\right], \tag{3.6}$$

---

2) The output-capital ratio plays the role of capacity utilization rate which represents effective demand. The effective demand can be also measured as the ratio of effective output to potential output, which is $(X/K)\cdot(K/X^*)$, which is proportional to u, since the potential output/capital ratio ν is constant. Throughout this paper, we will employ this notation.

where γ is some arbitrary positive speed of adjustment. We assume $s_p > g_1$ as Robinsonian stability condition[3]. This means saving must change more than investment when net profit income changes. Then, the denominator of the following eq.(3.7) is always positive, and we denote it by Δ.

The macroeconomic IS balance $(X-\sum_{i=w,p,d} C_i)/K = S/K = I/K$ can be summarized by eqs.(3.1) -(3.3) and (3.5), as follows:

$$u = \frac{g_0}{s_w\alpha + (s_p - g_1)\beta + s_d\gamma}. \tag{3.7}$$

Following the standard post-Keynesian analysis, we can examine the distributional effect of wage, profit and dividend income on the effective demand. Differentiating u with respect to each income distributional parameter, we get:

$$\frac{\partial u}{\partial \alpha} = \frac{-g_0}{\Delta^2}(s_w) < 0, \tag{3.8}$$

$$\frac{\partial u}{\partial \beta} = \frac{-g_0}{\Delta^2}(s_p - g_1) < 0, \tag{3.9}$$

$$\frac{\partial u}{\partial \gamma} = \frac{-g_0}{\Delta^2}(s_d) < 0. \tag{3.10}$$

Given these equations, we compare the redistribution effects. Concerning wage and profit income, from eq.(3.8) and eq.(3.9), we get:

$$\frac{\partial u}{\partial \alpha} - \frac{\partial u}{\partial \beta} = \frac{-g_0}{\Delta^2}\{s_w - (s_p - g_1)\} \begin{cases} <0 & \text{iff.} \quad s_w > s_p - g_1, \\ >0 & \text{iff.} \quad s_w < s_p - g_1. \end{cases} \tag{3.11}$$

Similarly, with regard to the redistribution effect between wage and dividend income, from eq. (3.8) and eq.(3.10), we get:

$$\frac{\partial u}{\partial \alpha} - \frac{\partial u}{\partial \gamma} = \frac{-g_0}{\Delta^2}\{s_w - s_d\} \begin{cases} <0 & \text{iff.} \quad s_w > s_d, \\ >0 & \text{iff.} \quad s_w < s_d. \end{cases} \tag{3.12}$$

Finally,with respect to the profit and dividend, we get:

$$\frac{\partial u}{\partial \beta} - \frac{\partial u}{\partial \gamma} = \frac{-g_0}{\Delta^2}\{(s_p - g_1) - s_d\} \begin{cases} <0 & \text{iff.} \quad (s_p - g_1) > s_d, \\ >0 & \text{iff.} \quad (s_p - g_1) < s_d. \end{cases} \tag{3.13}$$

Thus, the consumption level of each economic actor is not determined *a priori*.

From eq.(3.4), the distribution patterns are *a priori* 3!=6. The examination above corresponds to what Pasinetti [2005] called 'pure theory'. The formalization still constrains many degrees of freedom that are left open. As seen easily, the income distribution model above holds the degree of freedom 2. Hence, we have to add two additional equations. It is in this relationship that we can introduce post-Keynesian reading of institution into the model. We compare below two contrasting regimes, the Fordist regime and the financial-led regime, in order to show that the

3) In our model, this Robinsonian stability condition also assures the Keynesian stability condition, that is, the denominator of the following eq(3.7) is positive.

growth regimes concern the institutional foundations. The next stage is what Pasinetti called 'institutional analysis'.

3.4 Institutional Analysis and Macroeconomic Performance

3.4.1 A Simple Model of the So-called 'Fordist Regime'

The term 'Fordist growth' originates in the works of the *régulation* theory (Boyer and Saillard [2002]). The so-called Fordist regime corresponds to the rapid economic growth of the major advanced countries after the World War II. This section formalizes the economic dynamics under an ideal institutional configuration of this regime.

Yamada [2004] summarizes the typical institutional hierarchy of the Fordist regime and its dynamics as follows:

> While building a bulwark against the cutthroat international competitions, each country established industrial relations at the national level. This enabled the each country to connect a high productivity to a high real wage, which stimulated the 'consumption' demand. (*ibid*, p.216)

The income distribution determines according to the institutional hierarchy of this regime: the wage-labor nexus →the forms of competition/ the forms of the state/ the monetary regime → the international regime (the arrow shows the predominant relation). This hierarchy of institutions means that the pressure from the financial institution is not so much strong in this regime. Therefore, we abstract the dividend income as the first 'closure'. That is, the dividend share in profit D is assumed to be zero. The distributional patterns are then reduced to two patterns: wage share > profit share, or profit share > wage share.

By ignoring the consumption activity of the stockholders, the demand formation is two patterns. Then, we can show conventional demand regime, wage-led and profit-led. From eq. (3.11),

$$\text{demand regime is: } \begin{cases} \text{profit-led} & \text{iff.} \quad s_w > s_p - g_1, \\ \text{wage-led} & \text{iff.} \quad s_w < s_p - g_1. \end{cases}$$

Taking the distributional patterns into consideration, $2 \cdot 2 = 4$ types of macrodynamics are possible, *a priori*. The dynamics of effective demand and growth differ according to institutional arrangements. For example, let us take a case in which consumption from wage is more active than from profit in eq.(3.11). According to the institutional hierarchy of the Fordist, we suppose as the second 'closure' that the working class is able to receive relatively high wage share by means of the collective bargaining[4]. This means that the income distribution is favorable to the workers, i.e. large α. Then, we can show the wage-led demand regime. That is,

wage share>profit share, and $(s_p - g_1) > s_w$.

This combination is an example of Fordist high growth with virtuous circle.

However, if the demand formation pattern changes to a case that the demand formation from profit is more active than from wage in eq.(3.11), the wage-led regime is not sustainable anymore. Suppose that the Fordist institutional hierarchy is maintained, then we can show a low growth with profit squeeze. That is,

wage share>profit share, and $(s_p - g_1) < s_w$.

This combination corresponds to the transformation of economic growth in the major advanced countries around 1970, that is 'the collapse of the golden age' (Marglin and Shor [1990]).

3.4.2 A Simple Model of the So-called 'Financial-led Regime'

The term 'financial-led' also originates in the recent works of the *régulation* theory (Boyer [2000]; Coriat and Schmeder [2006]). As the previous tentative, this section formalizes the economic dynamics under an ideal institutional configuration of this regime.

Yamada [2004] summarizes thetypical institutional hierarchy of the financial-led growth and its dynamics as follows:

> The global stock market forces the firms to satisfy a high financial profitability. It is the 'corporate governance' that is the principal institutionunder such circumstance... The 'corporate governance' is the new compromise and the new rule of game over the financial profitability. It is established between the firms (managers) and the finance (stockholders). (*ibid*, p.217)

Thus, the 'corporate governance' is needed to maintain the value of the firms (the stock price) and a sufficient financial income for the stockholders in this growth regime. Therefore, we assume that the 'corporate governance' assures a sufficient dividend share for the stockholders. In fact, as Aglietta and Rebérioux [2005] showed, the evolution of the dividends in the profit share in the US illustrates such an idea.

The distributional patterns at the pure theory level are 3!=6. In addition, demand formation patterns are also 3!=6 from eqs.(3.11), (3.12), and (3.13). Therefore, there are*a priori*6·6=36 types of distribution and demand formation patterns. Thus, the macroeconomic dynamics become more complex one, compared to the Fordist case.

Given the above possibilities, we insert the institutional hierarchy of the financial-led regime

4) Precisely speaking, the wage share is determined under the compromise that they are able to receive the productivity indexed wage in exchange for accepting the Taylor system. Ignoring these details, our model formalizes the income distribution exogenously by institutional closure.

in order to close the model. Contrary to the Fordist, this regime attributes the most important role to the financial profitability. That is, it is the monetary regime that becomes the prevailing institutional form in this regime. The institutional hierarchy changes as follows: the international regime → the monetary regime /the forms of the state / the forms of competition → the wage-labor nexus.

The determination of income distribution can be interpreted as follows: The dividend share γ determines first of all so that it favors the stockholders. This is the first 'closure'. Then, the firms seek to set the profit share π as high as possible in order to satisfy the requirement of the stockholders and survive in the era of the competitions. This is the second 'closure'. Finally, the wage share determines as the residual variable, which represents the above hierarchy.

Given this financial-led closure, by comparing eqs.(3.11), (3.12) and (3.13), the following demand formation pattern leads to the highest effective demand:

$$\text{dividend share} > \text{profit share} > \text{wage share} \quad \text{and} \quad s_d < (s_p - g_1) < s_w .$$

This combination is an example of the financial-led economy with virtuous circle. If this is assured, then the financial-led story goes well. However, this settlement is not always satisfied, since there are *a priori* 36 patterns of the income distribution and demand creation. The above mentioned example is merely a possible case.

We have explained that the institutional foundations and its hierarchy do not always bring a favorable macroeconomic performance. In addition, the introduction of new institution or the change of its hierarchy may leads to new and complex macroeconomic dynamics. The post-Keynesian model is able to understand that these macroeconomic dynamics attributes to the institutional foundations.

4 Conclusion

This paper reviewed the theoretical development of post-Keynesian economics and institutional economics. Then, it showed that post-Keynesian macroeconomic model can be reconstructed *à la* institutionalism.

The post-Keynesian economics has been developed under three threads: the Fundamentalists, the Sraffians and the Kaleckians. In the process, although they have occasionally referred to the 'institution', it seems that their own institutional theory has not been presented in a definite way. On the contrary, the two-stage approach that Pasinetti proposed suggests how to introduce the institutional theory to post-Keynesian model. We have formalized what he showed descriptively, introducing some ideas of the institutional economics. In addition to the motif that 'institutions matter', the idea 'cumulative causation' and 'closure' play an important role for institutional consolidation of the post-Keynesian model.

Thus, the post-Keynesian has an open form and it can be reconstructed as an institutional macroeconomics. The introduction of institutional forms may well be an important issue of post-Keynesian economics, which offers flexibility to develop models incorporating institutional and structural foundations of the effective demand.

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