Post Keynesian Review
Vol. 3, No. 1, Pages 17–37 (the 31st March, 2015)
ISSN 2187-4875

How did the Postwar Golden Age Emerge? A Critical Essay of Two Existing Marxist Explanations

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ABSTRACT. The period from the end of World War II to 1970s crisis is the so-called Golden Age of advanced capitalist economies. There exist two different kinds of explanations up till now about the genesis and continuation of the Golden Age, one by Mandel(1999), the other by the Regulation and the SSA Schools. In his attempt to apply the laws of motion of the capitalist mode of production to explain the postwar long boom, Mandel failed in developping an institutional analysis of the intermediate level, which is advocated by the Regulation School. On the other hand, notwithstanding a contribution to institutional analysis of modern capitalism, the Regulation School misunderstands the laws of motion of the capitalist mode of production, by elevating consumption, which is supported by relevant institutions, as the prime driving force of capital accumulation. This article concludes that it is necessary to make a creative combination between these two existing explanations.

***Keywords*:** The Golden Age, the Regulation School, Mandel, long waves, capital accumulation

1. The Development of the Golden Age and its Institutional Basis

The period from the end of the WWII to the crisis in 1970s is the so-called Golden Age in economic history of advanced capitalism. The growth rate of either GDP or per capita GDP in the Golden Age is twice that in every distinctive period since 1820, as shown by Table 1 (Madison, 1982, p.91, Table 4.9); the growth rate of labor productivity follows the same pattern; the growth of investment in fixed capital appears to be unprecedentedly robust; the growth in export even overtakes GDP increase, being eight times that between 1913-1950, twice the whole 19th century since 1820 respectively. Table 2, cited from McDonough et al(2001, p.113, Table 4.3), shows GDP growth rates of major advanced capitalist countries in three distinctive periods, *i.e.* 1950-1973, 1973-1979 and 1979-2000. Nevertheless, in the aftermath of the Golden Age, the growth rates in all nations turn to a sharp decline.

TABLE 1. Characteristics of the growth data in different phase of Capitalist Development (Arithmetic mean values for 16 countries) 1820-1979

		(Annual average compound growth rate)			
	Phase	GDP	per capita GDP	Non-housing fixed capital stock	Exports
I	1820-1870	2.2	1.0	no data	4.0
	1870-1913	2.5	1.4	2.9	3.9
II	1913-1950	1.9	1.2	1.7	1.0
III	1950-1973	4.9	3.8	5.5	8.6
IV	1973-1979	2.5	2.0	4.4	4.8

Source: Maddison (1982, p.91, Table 4.9).

TABLE 2. Real GDP growth rates of several advanced capitalist countries (average annual growth rate)

Country	1950-1973	1973-1979	1979-2000
France	5.0	2.8	2.1
Germany	6.0	2.4	2.1
Italy	5.6	3.5	2.0
Japan	9.2	3.5	2.7
UK	3.0	1.5	2.3
USA	4.0	3.0	3.1

Source: McDonough, T. et al (2010, p. 113, Table 4.3.)

In the long wave theory, the postwar Golden Age corresponds to the upswing of the fourth long wave in capitalist history. Freeman-Louca(2002) refers to this period as "an era of oil, mobile, motorization and mass-production." The system of mass-production with Fordist's labor process as a prototype typically features the techno-economic paradigm in this period. Notwithstanding its first appearance well before World War 2, it is only after the war that this system becomes further strengthened and diffused in the majority of sectors. By definition, the Fordist labor process is a combination of Taylorism and semi-automatic assembly lines, in which the operation of workers and their speed of work are determined by the rhythms of production lines. At its early stage of introduction into shop floors, Fordist's labor process is usually resisted by workers in different nations. Gradually, however, along with the strengthening in the power of employers, unions negotiate a

compromise with their counterparts, recognizing their power in determining investment and organizing production process, but asking for a corresponding increase of wages as necessary compensation. In the postwar era, the Fordist system of mass-production is popularized along with the reconstruction of industrial reserve army, the universalization of wage labor relations and the final accomplishment of proletarianization. As described by some authors, in the major advanced capitalist countries, from 1950 to 1970, with the growing population, total employment increased by 30%, which added nearly $1/3$ of working class population. In addition, the number of proletarians increased faster than that of the employed total. When the employees from the national private department of advanced capitalist countries increased to 46 million, the number of self-employed workers and domestic laborers decreased by 20 million. In 1954, among the populations officially classified as employees, 31% belonged to the category, and in 1973 the figure declined to 17%. Statistically, the transfer from self-employed to employed labor was an escape from the land. To the entire society, it is proletarianization on an epic scale (Armstrong et al, 1991, Ch. 11). In the postwar Golden Age, there appears a period of transition as well as its completion among major advanced capitalist countries, during which thousands of peasants leave off land and become wage laborers. In Table 3, from Boltho(1982) and Eichengreen(2007, p.218, Table 7.1), we can see various origins of the newly added labor force and their respective contributions to the growth of employment in non-agricultural sectors of EEC countries. In various periods listed in the table, migrant workers from the agricultural sector remains all the time the largest contributor to employment growth. However, till the early 1960s, the effect of this factor becomes steadily declining. By the end of 1960s, "employment in agriculture has decreased to less than 15% of the entire continent. To industries the elastic supply no longer existed. ...By the second half of 1960s, labor had been allocated from agriculture to industry." (Eichengreen, B., 2007, pp.217-8.)

In 1950s of Japan, the percentage of self-employees, peasants and domestic workers amounts to 60.6%, while employed workers is about 39.3%. In 1970, almost 20 years later, the former declines to 35.8%, while the latter rise to 64.2%, which implies a complete change in previous structure (Itoh, 1990, p.145). From 1955 to 1970, the number of employed laborers in non-agricultural sectors in Japan witness an increase by 15 million. In contrast, the total labor force only increases by 9 million, and the labor force in the agricultural sector decreases by over 6 million. In the U.S., wage and salary earners in the years 1945-1961 rises by 15 million or 35% (Mandel, 1999, p.177, note69). In the reconstruction of the postwar industrial

TABLE 3. Contributions to the employment growth in non-agricultural sectors in EC countries from different factors (%)

	1955-1960	1960-1965	1965-1970	1970-1975
non-agricultural employment growth	1.7	1.7	0.8	0.4
Contributing factors:				
Labour from city	0.20	0.01	-0.16	0.19
unemployment	0.57	-0.04	-0.07	-0.48
Immigrants	0.33	0.52	0.29	0.20
Migration from agriculture	0.64	1.02	0.72	0.41
Non-agricultural self-employment and family labour	-0.04	0.12	0.02	0.08

Source: Boltho, A., ed. (1982). Eichengreen, B.(2007, p.218, Table 7.1.)

reserve army, the participation of women plays an important role in many countries. With U.S. as an example, the employment of adult women increased by 71% between 1950-1970. (Mandel, 1999, p.181).[1]

The reconstruction of the industrial reserve army and further proletarianization of the working force have two-fold meanings. First of all, as Mandel ever emphasized, it helps to improve the rate of surplus value and the rate of profit, satisfying those conditions for expanding investment. On postwar Japan's growth, Itoh(1990, p.151) also pointed out that, "It must be obvious that the greatest contributing factor for rapid Japanese economic growth was the favourable conditions in the labour market for firms and the resulting relatively cheap labour ...."[2] Among non-Marxian economists, Kindleberger(1967) held a similar view that abundant labor supply was a favorable factor for economic growth in the long-term simply because it helps to suppress wages, increase profits and promote investments. Kindleberger(1967) tries to apply the Lewis model to explain the making of postwar prosperity. But, as Mandel argues, despite a certain explanatory power, the Lewis model fails in taking into consideration the possibility that industrial reserve army can be recreated through capital deepening, even if pre-capitalist sectors have already disappeared. An example can be found in the postwar U.S. experience, where, due to the adversary effect of the war, the industrial reserve army ever tended to all but exhausting. Nevertheless, in the 1950s, with large number of workers being replaced by machines,

[1] From 1950 to 1976, the ratio of U.S. women in the labor force rose from 28.8% to 39.7%. (Maddison, 1982, p.192, Table C2.)

[2] See also Mandel(1999, Ch.5).

the industrial reserve army was promptly reconstructed, thus paving the way for the unprecedented prosperity in early 1960s (Mandel, 1999, p.177).[3]

Secondly, the reconstruction of industrial reserve army and further proletarianization of labor force not only guarantee a sufficient labor supply for the system of Fordist mass production, but create a social structure consisting mainly of wage earners. Since the reproduction of their labor power is completely dependent upon markets, any enlargement of wage earner class tends to increase the purchasing power in the markets and reshape the features of macro-economy in the postwar advanced capitalist countries. The postwar proletarianization of the working force was closely connected to the development of various durable consumer goods industries generated by the fourth technological revolution. In a period of as long as 20 years, these industries on the one hand played the role of absorbing a large number of industrial reserve armies, on the other hand experienced its rapid expansion favored by consistently enlarging markets which, in the last analysis, was driven by proletarianization. The prerequisites of the postwar Golden Age was usually reduced to the establishment of a series of institutions. According to the view of both SSA School and the Regulation approach, these institutions can be classified in terms of its role in reproducing relevant relations of production, so that a generally accepted version of classification differentiates several different categories of institutions pertaining to capital-labor relations, capital-capital relations, government-economy relations and state-citizen relations, respectively. Nevertheless, a somewhat different classification of postwar institutions can be attempted in terms of their function in promoting investment, innovation, consumption, trade and finance etc.

In early postwar years, a reconstruction of industrial reserve army helped to increase the rate of surplus value and profitability, which served as a necessary condition for accelerating investment. By a necessary condition it implies that the rise of surplus value and profitability cannot by itself explain a sustaining surge of productive investment, which has to be explained from institutional perspective. The surge of investment throughout the heyday of the Golden Age was supported by relevant institutions. In the core sectors of advanced capitalist countries, the legalization of the class struggle was achieved through collective bargaining. Labor-capital relations thus turned from intense confrontation to some kind of cooperation, which are often referred to as "capital-labor agreement" or "neo-corporatism." The institutional structure of neo-corporatism includes three parties, *i.e.* firms, unions and states, in which the state encourages firms to put profits into productive investment;

[3] Brenner(2006, p.65) also emphasized the characteristic of American economy in the 1950s.

the management of enterprises promise to the unions that workers are permitted to share in the near future the gains produced by investment and productivity enhancement. Meanwhile, the state offers social welfare in exchange for the self-restraint of unions in their demand for wage growth. Under this corporatist structure, a mutually-monitoring institution was built up to safeguard and promote cooperation. In Germany for example, right after the war, an act of "co-determination" was passed, which allows workers to be representatives in a board of supervisors in joint stock companies. In some other European countries, similar institutions were established gradually as well. The neo-corporatist structure played a crucial role in promoting investment and innovation as well as regulating income distribution, which is to some extent overlooked in literature. The cooperation among classes under this structure was beneficial for introducing new technology; at the same time, the steady growth of income and consumption of working class favors to improve the investment expectation of enterprises. After the war, many countries ever adopted a carrot-and-stick type of institutions to induce enterprises to invest and reshape their industrial structure. In Germany for instance, in order to prevent enterprises from taking profit as dividend, the government offered tax reduction and exemption for the profit used for productive investment; in Austria, private firms are allowed to acquire intermediate inputs from state-owned enterprises in relatively lower prices, as long as private firms make policies of investment and dividends in accordance with the expectation of the government (Eichengreen, 2007, pp.31-40). In Japan, Ministry of Trade and Industry promoted firms to upgrade technology and adjust structure through economic review conferences and administrative guidance (Sumiya, 2001, Abstract and Ch.3).

During the Golden Age, in those sectors where concentration of production is relatively higher, the pricing of products and services follows the so-called mark-up pricing pattern, which implies that the oligopolistic enterprises, according to an expected profitability, set their prices of goods and services on the basis of the growth of prime costs, such as labor and raw materials. Notwithstanding some doubts about whether mark-up pricing ever existed in the Golden Age, such as Itoh(1990, p.238), most scholars seem to agree that in the heyday of Golden Age, mark-up pricing was indeed the major pattern for large corporations to set their prices. Under mark-up pricing, competition among oligopolistic enterprises was constrained to a certain extent; price reduction was no longer the major means of competition. Due to the existence of collective bargaining, wage costs in different sectors tend to grow at the same rate, which was frequently used by those enterprises with higher productivity to squeeze profit of lowly efficient enterprises.

Collective bargaining, minimum wage legislation, along with the forms of co-respective competition among large capitals, gave birth to the result that wage growth is indexed with productivity enhancement. On the other hand, a consistent expansion of transfer payment from the welfare states also helps to guarantee income growth of non-laboring populations. In Europe, the ratio of transfer payment and family allowances to GDP grew from 8% in 1955-1957 to 12% at the end of 1960s and 16% in the middle of 1970s, respectively. In addition, government's expenditure in healthcare, education and other public goods and services continuously went up as well. From 1950 to 1970, the growth rate of all these expenditures in OECD countries (except Japan) amounted to a half of output. The combination of these expenditures with transfer payment from welfare states dramatically changed the public expenditure to GDP ratio, which increased from 28% in the 1950s to 34% in 1960s and 41% in 1970s (Glyn et al, 1990, p.59f). The growth of public expenditure was not only beneficial to expand effective demand, but to weaken the extent of commodification of labor power, enhancing the possibility for working class to take full advantage of their collective power, and therefore consolidating class cooperation under the corporatist structure as mentioned above. The successful operation of domestic mode of regulation within every country is related to the establishment of an international order or international mode of regulation. After WWII, decision makers in various countries came to realize that international trade was of great significance to promote employment, safeguard private ownership and develop international security system. Under the so-called Pax Americana, a whole set of institutions for trade, financial and international payment were established in the aftermath of 1945. By the end of 1950s, most European currencies became convertible, while the Bretton Woods System began to play its role. In 1957, the European Community was established. In 1950s and 1960s, negotiations in GATT, supported by the U.S., led to many rounds of multilateral actions on cutting customs. All the institutions and policies favored a gigantic expansion of capitalist world trade (esp. trade among the developed countries) as well as the mutual investments among developed countries. In the international pro-Golden Age environments, the terms of trade with developing countries was also a factor frequently referred to in the literature. From 1951 to 1970, the global prices of primary products relative to manufactured products decreased by 32%. Before the crisis in 1970s, the oil price remained at a low level for long time. As a crucial generic input, the cheap supply of oil dramatically facilitated the 4th technological revolution. As Itoh(1990, pp.34-5) wrote, "To satisfy the ever increasing demand, oil supply from Middle East countries largely increase, but oil price remained at 1.8$ per barrel or even

lower. Compared with the export price hike of manufacture goods from advanced capitalist nations, the real price of oil actually decreased. Crude oil in the 1950s and 1960s was relatively cheap and the supply was elastically expanding. It was a basic condition for manufactured goods and consumer goods structure that was heavily oil consuming and formed through the innovation in the advanced capitalistic world. It offered cheap and abundant raw materials to the growing petrochemical industry, promoted a society on wheels and changed the major source of energy from coal into oil."[4]

2. The Regime of Accumulation in the Golden Age: Critical Remarks on the Regulation School

The Fordist mass production system based on oil consumption, combined with the mode of regulation as delineated ever before, defines the main features of macro-economic system in the postwar Golden Age. Nevertheless, how to sum up these characteristics as comprehensively as possible, still requires further discussion. In the literature of political economy, a summarization by the Regulation School has been by far the most influential. According to their terminology, the postwar macro-economic system is defined as the "Fordist regime of accumulation," under which there exists "a virtuous cycle of growth," which implies, first of all, a growth of productivity based on economy of scale related to mass-production; secondly, the growth of wages indexed with productivity enhancement, which in turn brings about growth of mass consumption and effective demand; a full utilization of capacity is thus available which allows an increase of profits; the increase of profits spurs growth of investment which aims to improve equipments designed for mass production, and therefore further productivity enhancement. (Jessop, 1992, p.33).

For the Regulation School, there exists two critical sets of relations in the virtuous cycle, since they constitute "the core characteristics of the macro-economic pattern in the Golden Age" : (1) the parallel growth of labor productivity and capital stock per capita (*i.e.* the capital-labor ratio) in Dept. I of social production; (2) the parallel growth of labor productivity and real wages in Dept.II of social production (Glyn et al, 1990, pp.46-50). According to the first set of relations, labor productivity increase in Dept.I of social production may offset more or less any growth in technical composition of capital in Marx's terms, which implies the output-capital ratio in the Golden Age change hardly changes. This is because, by definition, the

[4] Itoh(1990, p.237 note 7) cited from Nore(1979, p.114) as follows. "whereas between 1870 and 1950 GNP per capita rose sixfold for a mere doubling of per capita energy use, between 1950 and 1973 ernergy growth per capita actually exceeded the per capita growth in production."

output-capital ratio can be decomposed into the capital-labor ratio (or the technical composition of capital) and labor productivity. If labor productivity growth cannot offset growth in the capital-labor ratio, the output-capital ratio has to decline and exert accordingly negative effect on profitability. For the Regulation School, what is more crucial is the second set of relations, *i.e.* the parallel growth of real wages and labor productivity in Dept.II of social production. According to the data constructed by Andrew Glyn, from 1952 to 1970, the annual growth rate of private consumption in six major advanced capitalist countries was 4.2%, and the growth rate of output per capita was 4.5%, which were almost equal to each other (Glyn et al, 1990, p.49). Such a parallel growth can help to offset not only crisis-prone tendency due to underconsumption, but profit squeeze resulted from wage growth, thus maintaining roughly a stable profit share. Since by definition profit rate can be decomposed into the output-capital ratio and the profit share, the above two sets of relations indicate that in the postwar Golden Age the profit rate remains almost stable. A relatively stable profitability combined with continuous expansion of markets facilitated capital accumulation in the long run.[5]

The diagram of Boyer(1988, p.85) describes the aforementioned virtuous cycle of growth. We can see in the diagram that, as a compromise, unions accept technological change and Taylorist scientific management, while management allows workers to share gains brought about by productivity enhancement; collective bargaining centered on monetary wage growth spread to the whole society, hence guaranteeing consistent improvement of the consumption norm of working class; the growth of income and consumption promotes investment and produces huge profits for the sectors of investment goods, which in turn creates new capacity. The whole process is thus self-recycling.

According to the Regulation School, the economic growth under the Fordist regime of accumulation is achieved through a consistent expansion of domestic demands. This point of view conforms to the experiences of all relevant countries during the Golden Age. Taking Japan as an example, which is usually considered relying heavily upon exports. Nevertheless, its exports during the Golden Age remains at roughly 10% in GNP for a long period of time, lower than that of Germany and Britain in the same period (Itoh, 1990, pp.155-8). From international perspective, the increase of world trade at this period mainly took place within developed counties as a whole. In other words, developed countries during this period serve

[5] The profit rate by definition depends on the profit share and the output-capital ratio. Namely, $P/K = P/Y * Y/K$, where P stands for profits, Y net output, K fixed capital stocks, Y/K the output-capital ratio, and P/Y the share of profit.

as markets for themselvs, *i.e.*, to offer demands to each other (Glyn et al, 1990, p.48; p.51). As for the sources of accumulation, capital accumulation in the Golden Age mainly depends on the retained earnings of enterprises. Armstrong et al.(1991) pointed out, "In 1961, 78 per cent of corporate business investment was financed by retained earnings. The remainder, equivalent to 2.8 per cent of GDP, was paid for by borrowing from the personal sector (*i.e.* workers' savings and rentier incomes.) By 1973 this self-financing ratio had fallen to 64 per cent, and 5.6 per cent of GDP was borrowed by firms to cover the shortfall." Therefore, " So accumulation played the decisive role in maintaining favourable demand conditions. The boom in accumulation was essentially self-sustaining. It simultaneously increased the surplus produced by the working class and ensured that this surplus found a market, generating steadily rising profits for employers." (Armstrong, et al.,1991, p.128). To admit these characteristics of postwar capital accumulation is of far-reaching significance, since from Rosa Luxemburg to David Harvey there has been all the time a strong voice within Marxism that without the help of exploitation of the outside capitalist world, capital accumulation in the advanced countries would be difficult to be maintained. Howerver, the above-mentioned phenomena indicate that at least in the postwar Golden Age, capital accumulation in advanced countries is mainly endogenously driven.

Notwithstanding all these advantages of Regulation theory, one of the key propositions on which the Regulation model hinges that there is an almost parallel growth of output and consumption is based on a relatively fragile theoretical assumptions. These assumptions include, first of all, the driving force of capital accumulation is mainly attributable to consumption; secondly, the growth in consumption is mailny attributable to the role of specific institutional forms. In the light of Marx's theory, these assumptions ignore that it is the behaviour of capitalists, *i.e.* capital accumulation, plays the role of driving force in economic growth. The increase in consumption is a passive element, rather than an autonomously determining force. Secondly, the growth in consumption demands not only depends on external institutional forms, but also results from the accumulation process itself. Brenner-Glick(1991) criticized the theory of Regulation School very sharply. They summarized four different reasons which are endogenously generated in accumulation process and tend to expand demands: (1) Oppressed by the competitive pressure of technological reform, new labor power anywhere could be used to increase investment into capital (demand for capital goods); (2) new consumption expenditure brought by employed labor power through increasing investment in capital goods; (3) payment growth that is predictable and accompanied by technological reform in

the long process of capital accumulation; (4) unproductive expenditure (Brenner and Glick,1991, p.81).[6] In comparison, owing to its overlook of the endogenously generated demands for consumption, and its inclination to regard institution-supported growth in consumption as the basic driving force of accumulation, the Regulation School tends to degenerate into a variant of Under-consumptionism.

From the perspective of Marxist economics, the parallel growth of labor productivity in Dept.II of social production on the one hand and real wage on the other is unsustainable in a capitalist economy, in which the only goal of capitalist agents is to pursue profits. The reason is that there would be no increase in profit share or the rate of surplus value in the long run, if all the benefits of techical progress were reaped by workers. Thus, if the Regulation School would like to maintain such a proposition, what can be inferred from it is that, in the postwar Golden Age, there would be no significant growth in the rate of surplus value, or put it in other way, there exists no production of relative surplus value in Marx's sense. Nevertheless, it is difficult to find such a blunt expression in the literature of Regulation School. The attitude of Regulation School towards this problem is rather ambiguous and self-contradictory. We only find an explicit conclusive remark in Itoh(1990). As Itoh put it, since the growth rate of labor productivity and that of product wages are roughly the same in the postwar Golden Age, "The mechanism which Marx called 'the production of relative surplus value' (....) did not work in the advanced countries as a whole for this period." (Itoh, 1990, pp.41-2). Itoh tried to carry through the logic of Regulation School right here, thus exposed the internal contradictions of Regulation theory in the end. It is seen that Itoh was heavily influenced by the Regulation School.

Some questions can be proposed against Itoh's view. *First of all*, to substitute product wages for real wages, and to compare it with productivity is theoretically untenable. By definition, real wages is monetary wages divided by prices of consumption goods, while product wages are total monetary wages divided by monetary net output (or net value added). The problem is that workers never purchase investment goods with their wages. From the perspective of value realization, the value of labor power could only be measured in terms of the value of consumption goods purchased by workers. Therefore, to apply product wages as substitute for real wages and compare them with labor productivity cannot be regarded as a

[6] Brenner and Glick also proposed that, "Our view is not a denial of a serious effective demand issue. We think that through the accumulation of the comparatively fast growth of the first category over the second category, under the institutions lacking standards to guarantee workers' consumption, a complete institution will not raise an issue of effective demand."

reliable method in calculating the rate of surplus value. It is also problematic for the Regulation School to equate relationship between real wages and productivity with that between consumption and output, since growth of consumption not only originate from wage increase, but from consumption of capitalists and other unproductive classes, as indicated by the conspicuous growth of consumption in the neo-liberal United States. *Secondly*, Itoh's idea revealed to be self contradictory. In his discussion of Japanese economy from 1975 to 1985, he finally gave up replacing real wages with product wages, and compare real wages directly with labor productivity of Japanese manufacturing sectors. As he claimed, for Japanese economy in this period, there exists a significant growth of labor productivity on the one hand, and real wages stagnation on the other, hence a production of relative surplus value as a result. While according to his statistics, the growth of product wages in the same period was quite close to the growth in productivity (Itoh, 1990, p.181).

Notwithstanding its growth along with labor productivity enhancement in the accumulation process, real wages cannot grow without an increase in the rate of relative surplus value in the long term, which is determined by the very nature of capitalist economic system. If we look into the graphs compiled by Brenner et al(2006), we see an almost parallel growth of real wage and productivity in the U.S. non-agricultural private sectors only sustained for a short period in the early 1950s. In the aftermath of 1958 or so, the rate of surplus value began to decline all the time. As pointed out by Aglietta (1979, p.99), from 1958 to 1966, or the heyday of postwar prosperity, the growth of labor productivity in the U.S. private sectors turned out to surpass that of real wages, leading to a hike in the rate of relative surplus value and a corresponding growth in profitability. According to graphs presented by Brenner et al.(2006, p.61;p.63), from 1958 to 1965, the growth rate of profitability in the U.S. manufacturing sectors was no less than 80%, while in private sectors the growth rate was 45%. In the same period, the average growth rate of real wages in manufacturing sectors precipitated by 40%, from 3.6% in 1950 to 2.2% in 1958. Another example is Japan. From 1955 to 1970, the average growth rate of labor productivity was 50-100% higher than that of real wages. The absorption of surplus products was not mainly dependent on consumption, but on investment in new factories and new equipments which grew at an annual rate of 22% from 1956 to 1973, twice that of GDP. (Brenner and Glick, 1991, p.94: Itoh, 1990, pp.155-7).

3. Mandel on the Formation of the Golden Age

Mandel(1999, p.178) stresses that the production of relative surplus value is the major form of production of surplus value in the postwar Golden Age, to which

he even refer as "the Great Leap." In the U.S., the rate of surplus value began to rise due to a combination of wartime mobilization, the Cold War and McCarthyism, which spurred burgeoning investment of surplus capital into new technology, new products and new industries in the early phase of the Golden Age, thus gave birth to the fourth technological revolution in Mandel's view.[7]

In the postwar long boom, it was the first time in capitalism history for almost all economic sectors to be completely industrialized. Not only consumer goods and machinery were produced through machinery, but raw materials and foods were produced through machinery. As Mandel argues, such a change brought about equalization of labor productivity across economy as well as equalization in the organic composition of capital across the two departments of social production. The advantage of Dept. I in terms of labor productivity and organic composition turned out to be disappeared. From the perspective of equalization of profitability, such a change tends to destroy the very condition for surplus labor to be transferred into Dept. I in which productivity is relatively more developed. In other words, there is no possibility for the old channel way of extra-profits based on the regional and departmental differences of productivity was no longer sustainable. Under these new circumstances, capitalist firms were forced to make pursuit of technology and rent (another form of excessive monopoly profits) as important means of value added and formed constant pressure of accelerating technological innovation (Mandel, 1999, pp.190-2).

The final completion of industrialization in the phase of "Late Capitalism" was closely related to the development of postwar proletarianization. In analyzing the U.S. experiences, Braverman(1998) ever pointed out that the consequence of capitalist development was the intrusion of capital into either rural areas or families, depriving functions of domestic production, transforming semi-products for food processing or even finished products into commodities. The conquest of these domestic productions by capital sharply expanded the range of activity for capital,

[7] Mandel traces the rise in the rate of surplus value either in Germany or in the U.S. back up to the time of the reign of Fascism and WWII. The improvement in the rate of surplus value first succeeded in reallocating large amount of surplus capital into arms production, thus helping relevant countries to get rid of devastating effect of the Great Depression. In the wake of the war, huge amount of surplus capital was then invested in new technological revolution and gave birth to the postwar long boom. It can be noted that there are some differences between Mandel and Neo-Schumpeterian economists as for how to differentiate distinct technological revolutions in capitalist history. Mandel(1999) regards the postwar new technological revolution as the third , rather than the fourth, simply because he forgets the Industrial Revolution in the 18th century.

increased the amount of exploitable labor power, and promoted further development of proletarianization. In this process, the newly added wage earners mainly came from rural areas and families, most of whom were women (Braverman, 1998, Ch. 13).

Mandel proposed that to initiate the postwar boom requires a remarkable expansion of markets as well as growth in the rate of surplus value and profitability. He wrote, "In the concrete situation after the Second World War, this combination could not be created by a geological expansion of the market, but only by a technological transformation in Department I. Only an upheaval as fundamental as this could lead to cumulative growth in all branches of industry and to a significant rise in the productivity of labour, to a major increase in the production of relative surplus-value together with an expansion of the selling market for consumer goods (therefore also a rise in the real income of wage-earners)." (Mandel, 1990, pp.168-9.) During the Golden Age, the technological reserves provided by the fourth technological revolution paved the way for enterprises to compete with each other by means of investing in innovation. Dept. I improved rapidly its productivity by investing in technological revolution and created demands within itself. In the meantime, the demands for Dept. I also expanded due to its delivery of more advanced products and technologies to Dept. II. On the other hand, Dept. II invested in new technologies and witnessed a rise of labor productivity as well. Mandel wrote that "after a phase of 'extensive industrialization,' capital investment henceforward took the form of semi-automation and automation, especially in the U.S., West Germany and Japan. There occured a massive increase in the productivity of labour in Dept. II, and therewith a corresponding increase in the output of relative surplus-value and hence in the rate of surplus-value." (Mandel, 1990, p.179). It is worth noting that Mandel(1990) stressed all the time the effect of the following factors, that is, to reconstruct the industrial reserve army and create pro-employer conditions in the labor market, in order to constrain the growth of real wages at a rate less than that of labor productivity, so that the production of relative surplus value can be guaranteed.[8]

According to Mandel, the impetus of accumulation comes not from consumption; nevertheless, expansion of consumption demands serves as the precondition for sustainable accumulation process. This point of view is methodologically sound,

[8] What can be added to this view is that, although the postwar long boom was characterised with the production of relative surplus value, it is also combined with the production of absolute surplus value, which was reflected in further development of proletarianization, growth of employment and intensification of workers' effort in the Fordist labor process.

echoing that of Brenner and Glick, *i.e.* new consumption demands can be generated endogenously in the process of accumulation. What is worth emphasizing is that during the Golden Age, proletarianization related to persistent burgeoning investment expanded consumption demands further. In Japan for instance, for 15 years from 1955 to 1970, real wages in manufacturing sector grew by 2.3 times, while the number of wage earners almost doubled over the same period, which implies the consumption demands of wage earners grew by 4.6 times (Itoh, 1990, p.145; p.156). The development of proletarianization was due to the fact that huge amount of peasants left their lands, which gave extra impetus to urbanization. The demand generated therein was of specifically great significance. We believe that the fundamental explanation of the formation of the postwar Golden Age can be found in the combination of complete proletarianization of working population as well as a surge of investment based on the fourth technological revolution. What needs to be pointed out is that the pro-employment investment is mainly of extensive investment and entrepreneurial investment, which, as will be discussed afterwards, were the dominant types of investment in the early phase of the Golden Age.[9] Generally speaking, in explaining the formation of the postwar Golden Age, it is pro-investment and pro-innovation institutions which ought to be emphasized, rather than the pro-consumption institutions as partially stressed in the Regulation theory. It is regrettable that Marxists have failed to pay sufficient attention on this problem till now.

Mandel's main idea as discussed above is correct. However, his analysis is to some extent contradictory with the long wave theory of himself. In Mandel, the turn from an upswing to downswing of a long wave requires co-existence of double conditions, *i.e.* improvement in the rate of surplus value and expansion of world markets. However, these two conditions, argued by Mandel, cannot be satisfied simultaneously due to an endogenous reason, which for Mandel implies the laws of motion of the capitalist mode of production. As he puts, "Generally speaking, the ways for Capitalism to acquire the first and the second condition are contradictory." (Mandel, 1999, pp.144-5.) This is because a rise in the rate of surplus value always means suppression of consumption demands of the mass in a capitalist economy, which necessarily prevents any expansion of consumer goods markets. This dilemma is termed by Mandel as "the fundamental contradiction in the growth of capitalism," which can only be resolved through non-economic "exogenous shock (such as wars and revolutions)." (Mandel, 1995, p.113.)

[9] As for the influence of different types of investment on employment, see Gao Feng(1990, p.227f.)

When Mandel's theory is applied to explain the birth of the postwar boom, it is immediately exposed to logical inconsistency. According to Mandel, the postwar boom can only be realized on the basis of endogenous and accumulative growth due to sustaining investment of two departments in the technological revolution, rather than on the basis of geographical expansion. It is important to note that cumulative growth in the two departments occurs in the aftermath of large scale investment in technological revolution. Mandel, on the other hand, regards significant expansion of markets as the very condition for large scale investment to be induced. These two views are obviously contradictory to each other. Actually, in one paragraph (Mandel, 1999, p.190), Mandel abandons the factor of markets, only resort to a rise in the rate of surplus value as a precondition for accelerated capital accumulation.

Since Mandel regards investment in the new technological revolution as the fundamental reason of the protracted postwar boom, he is thus differentiated from the Regulation approach, and appears to echo with Neo-Schumpeterian view. During the Golden Age, investment played a crucial role in driving economic growth. In the U.S., the ratio between gross investment in non-residential fixed capital and GDP (in current market price) rose from 9.9% in 1941-1950 to 12.8% in 1951-1960 and 13.5% in 1961-1973. In Japan, the ratio increased from 16.3% to 20.3% and 27% respectively. In Germany, the ratio increased to 11% in the 1930s to 17% in the 1950s and 18% in the 1960s. (Maddison, 1990, p.40, Table 2.3; Eichengreen, 2007, p.22). Table 4 exhibits the rate of change of investment in 6 major capitalist countries from 1960 to 1975, in which it can be found that the rates of change from 1965-1970 are universally higher than that in 1960-1965 in all nations but the U.S. This pattern of investment growth reflects that there exists a gigantic technological gap between U.S. and the other countries in the postwar Golden Age. For the latter, the surge of investment in the Golden Age was to certain extent the product of catch-up processes. Europe and Japan gradually improved their competitiveness in the world markets through combining advanced American technology with cheap labor force. Moreover, they initiated an independent innovation on the basis of imitation as well as utilization of their own advantages. Take Japan as an example; when introducing the Fordist mode of production, the so-called lean production was developed and became benchmarking for global automobile producers in 1980s and 90s. (Womack et al, 1991.) In Europe, there emerged "the 3rd Italy." A large number of small and medium sized enterprises converged and made up densely located networks in this area and developed the mode of production as flexible specialization. (See also Piore and Sabel(1984). Since 1970s, Neo-Schumpeterian economics developed comparative institutional analysis to explain innovation performances of

different nations, and proposed an analytical framework of "national innovation system." In contrast, the Regulation theory on the Fordist mode of regulation partially emphasizes the ramification of those pro-consumption institutions, playing down the role of the institutions which facilitate innovation and investment.[10]

TABLE 4. Growth rates of fixed capital investment and employment growth rate

	1960-65	1965-70	1970-75
France	6.9	9.6	3.5
	(1.1)	(0.5)	(0.4)
Germany	3.2	5.2	-7.3
	(1.4)	(0.4)	(-1.9)
Italy	-3.3	11.3	-0.4
	(0.4)	(1.5)	(0.9)
Japan	6.0	21.5	-4.7
	(3.9)	(3.6)	(-0.5)
UK	3.7	4.2	-4.6
	(0.3)	(-0.5)	(-2.1)
USA	8.0	2.4	-2.2
	(1.1)	(1.7)	(-0.7)

Note: Freeman, Ch., et al(1982,p.158, Table 8.6.)

TABLE 5. The fastest-growing and the technology-leading sectors in US(1956-1973)

10 Fast-growing	Growth rate	10 technology-leading	Growth rate
Rubber and Plastic	9.2	Meter	28.44
Chemical products	7.9	Rubber and plastic	14.73
Electric instruments	7.3	Electric instrument	12.05
Meter	6.3	Stone, clay and glass	11.68
Papers etc.	5.0	Chemical products	10.72
Machines	5.0	machines	8.96
Textile	4.6	Transportaion facility	7.77
Furniture and decorations	4.4	Metal smelt	6.54
Others	3.9	Petroleum	5.18
Press and publishing	3.8	Metal machining	3.04

Note: Van Duijn(1982), Table 11.2.

[10] As for a comparison between postwar Europe and the U.S. of the characteristics in technological innovation, see also the brief account in Eichengreen(2007, pp.257-63).

According to the neo-Schumpeterian view, huge amount of investment in basic innovation (*i.e.* major product innovations that drive the growth of new sectors) is the most important factor that facilitates economic growth. In the Golden Age, the most rapidly growing sectors were usually those that innovate fastest. Table 5 confirms this phenomenon with the U.S. data. Freeman et al (1982, p.128-30, Table 7.1-2). From 1960 to 1973, the fastest growing manufacturing sectors in Europe not only included technology intensive sectors (chemistry, plastics, electric power, electronic equipments, instruments and communications) but the sectors characterized with higher income elasticity and changing patterns in response to consumption demands for products (automobiles, durable consumer goods, pharmaceuticals, etc.) The former category was mainly of sectors of investment goods, while the latter mainly of sectors of mass production oriented to consumers as emphasized in the Regulation theory. These two categories of sectors played a pivotal role in the economic growth of every country, with growth rates almost twice that in other sectors. In contrast, the sectors of agricultural products, textile, garment and solid fuel only experienced a growth rate lower than the average in the Golden Age.

4. Conclusions

The formation of the postwar Golden Age was contradictory with Stalinist's theory of capitalist general crisis which was delineated in 1930s. Before the work of Mandel and the Regulation School, Marxists often regarded the advent of the postwar boom as a result of postwar reconstruction, rather than as something brought about by the laws of motion of the capitalist mode of production. Both the Regulation School and Mandel highlighted that the postwar long boom was far beyond the scope of pure reconstruction, signifying that capital accumulation had entered into a new long-term expansion period; Marxism, therefore, requires a brand new theory which can serve as an explanation of the nature and cause of this era. Mandel, differing from the Regulation School, failed to break with traditional theories completely. For example, he never gave up the idea that capitalism had stepped into an era of historical decline since 1914, which was not changed at all even after the advent of the Golden Age. It can be argued that his asymmetrical theory of long waves reflected the contradictions of his thought. According to this theory, the postwar long boom resulted from non-economic historically contingent factors. In so doing, Mandel played down significance of those endogenous factors (*i.e.* the laws of motion of the capitalist mode of production) in creating long-term prosperity.

The postwar Golden Age constituted a specific stage of development in capitalist history which lasted for several decades. Although its formation was related to

various kinds of historical specific reasons, a role was undoubtedly played by the laws of motion of the capitalist mode of production. In other words, its formation was to some extent semi-endogenous product of capitalist economy. A theoretical explanation of the Golden Age ought to integrate different factors such as technology, institutions, history, etc. into a coherent whole on the basis of the laws of motion of the capitalist mode of production. In comparison with the Regulation as well as the SSA School, Mandel tries to apply the laws of motion of the capitalist mode of production to the postwar history, but failed in developing a medium-leveled institutional analysis, which was more successfully advocated by the Regulation and the SSA School. On the other hand, notwithstanding its orientation towards institutional analysis in general and the focus on the Fordist regime of accumulation in particular, the Regulation School turned out to interpret the general laws of the capitalist mode of production inappropriately. In Aglietta's theory for instance, there exists an unresolved contradiction in his theory. On the one hand, he considered the production of relative surplus value as well as the organic relations of two departments of social production as fundamental characteristics in the Golden Age, on the other hand, he argued that the organic relations of the two departments were established mainly on the basis of growth of consumption.[11] In the subsequent development of the Regulation School, the role of consumption appeared to be more conspicuous. The parallel growth of consumption and output were regarded as core characteristics of the accumulation regime arising in the Golden age, which paved the way for Itoh to openly claim on behalf of the Regulation School that there never existed a production of relative surplus value throughout the Golden Age. The one-sidedness in its theory necessarily led to a limited scope of institutional analysis. Thanks to its treatment of consumption as the primary driving force of accumulation, the institutional analysis of the Regulation approach was basically confined to those related to consumption.

The limits to the two Marxist explanations highlights that any further theoretical development requires a creative combination between these two theories. The

[11] "In so far as Fordism increased the rate of surplus-value by developing an overall set of social relations that closely combined the labor process with the social consumption norm, the department producing means of consumption appeared to be endowed with a dynamic arising from consumption itself. Since accumulation managed to preserve a relatively regular rhythm thanks to a certain harmonoization of development between the two departments, at the price of a planned obsolescence and a permanent devalorization of capital, the problem of effective demand was not too serious. The 'consumer society' appeared to have definitively resolved the contradictions of capitalism and abolished its crises. Such was the pattern of the two decades after the Second World War." Aglietta(1979, p.161).

laws of motion of the capitalist mode of production do not work in a vacuum. Only through mediation of various kinds of institutional forms, could these laws overcome to some extent their non-equilibrium or contradictory consequences. In this sense, it appears to be theoretically absurd to imagine a purely endogenously-driven long term expansion, which implies an expansion completely driven by the laws of motion of the capitalist mode of production. On the other hand, however, one should not deny the existence of any endogenous effect of these laws of motion in promoting long-term expansion. In explaining the making of the postwar Golden Age, therefore, we need to develop a "semi-endogenous" analysis combined with the institutional analysis, which is characterized with the following features. *Firstly*, to admit the laws of motion of the capitalist mode of production work as 'semi-autonomous,' *i.e.* the working of these laws is preconditioned and constrained with specific institutional forms, rather than purely governed other economic variables. *Secondly*, to enlarge the scope of institutional analysis on the basis of all achievements by the Regulation approach, *i.e.*, to incorporate in it with those institutions which are relevant to the promotion of investment and innovation, in order to reveal more fully the institutional basis for capital accumulation in the postwar Golden Age.

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