

Income Distribution and Asset-Based Policies

With Special Reference to the Kuznets Curves

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Abstract

1, In this paper I have tried to show possible theoretical explanations of short-term and long-term behaviour in the share of wages. Simon Kuznets suggested that there are inverted-U relationships between economic growth and income distribution; specifically, income distribution deteriorates at the earlier stage of economic development when an economy grows and per capita income increases rapidly. However, after a turning point, the relative income share of the low-income class begins to increase again. Since the beginning of the 1960s, I have suggested a similar hypothesis with regard to the share of wages. In the present paper I will explain the possible reasons for relative share behaviour.

2, At the highly developed economic stage, the value of national assets tends to become larger relative to national income. The role of asset-based policies, therefore, has become more central with regard to economic stabilization and economic distribution than in previous periods. The higher the ratio of assets to income, the higher the share of asset income to labour income tends to become. This means that the relative share of a worker's income becomes smaller in the absence of any active asset policies to increase workers' assets. The inequality in asset and income distribution is likely to become greater.

3, As a result of changes in the relative value of assets and their global movements, income and asset distribution across nations causes inequality between nations. Behaviour patterns of income distribution must be reformulated taking assets and global factors into account. As a result of the liberalization in financial and asset markets, the inequality in asset and income distribution within and between countries will increase.

4, Several recent studies have identified an inverted-U relationship between pollution and economic growth. The inverted-U relationship is sometimes called the environmental Kuznets curve (EKC). It is interesting to note that there are common factors behind EKC and the Kuznets curve, especially the behaviour of relative wage shares (WKC). Both curves are influenced by (1) per capita income and the economic growth rate or investment ratio, (2) the labour market situation, (3) the industrial structure, (4) peoples' priorities (5) international factors, and (6) economic policies and systems.

5, The share of wages plays a dual role in deciding wages. In the short run the higher share of wages leads to an increase in wages, but in the long run the high share of wages in this sense decreases the growth rate of total income. An optimum share of wages is the

share that maximizes the wages in the long run. Assuming that all investment is financed by profits of the company, the optimum share of wages approaches 50% as the period of service is assumed longer and the propensity to save profit becomes higher.

6, This simplified model neglects the fact that workers have assets as long as their propensity to save is positive. If we assume that the workers accumulate assets and, therefore, receive asset incomes, the above model is modified. A revised two-class model à la Kaldor suggests that there is a possibility that equalization of asset ownership will proceed as a result of a high relative share of labour combined with the high propensity to save on the part of workers. This means that there is a possibility that an inverted-U relationship will be formed in respect of the behaviour of asset ownership..

1. The Stages of Economic Growth and Income Distribution

From the mid-1950s to the mid-1960s, the Japanese economy experienced a structural transformation into a highly developed economic stage (Maruo, 1964). The structural change in the labour market from a demand shortage to a supply shortage as a result of the high rate of economic growth was one of the main causes of the transformation. In the transitional period, firstly, the wage differentials by firm size, which had been getting larger, began to reduce.

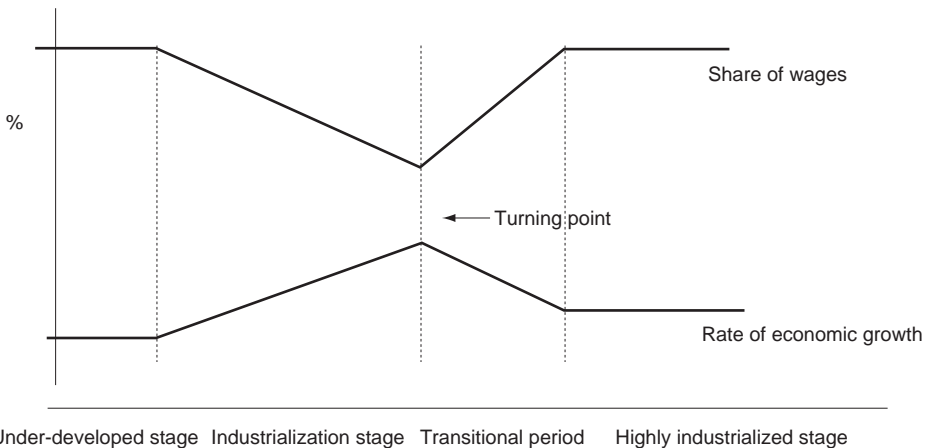
Secondly, the share of wages,¹ which had been declining, began to increase. The behaviour of the share of wages is assumed to behave as shown in

the V curve in Chart 1 (Kato and Maruo, 1963; Maruo, 1965). The behaviour is similar to the Kuznets U-curve with regard to personal income distribution (Kuznets, 1955). There are several ways to explain a declining trend in the share of wages during the industrialization stage and an increasing trend after the turning point (Maruo, 1965 and 1975).

Firstly, as Arthur W. Lewis suggested, labour markets change from the unlimited labour supply to a limited supply (Lewis, 1965)..

Secondly, the increase in investment ratio and the rate of economic growth as well as the capital / output ratio influence the share. The well-known relationship between the share of wages and economic growth, investment ratio and marginal capital/output ratio² suggests that the share of wages

Chart 1 Hypothesis to explain the Trend in the Share of Wages W / Y



1 Share of wages = employees' compensation ÷ (employees' compensation + property incomes)

declines when the rate of economic growth or investment ratio and the capital / output ratio increase.

Thirdly, a feature of the industrialization stage is the development of the heavy industry sector, which needs a higher capital / labour ratio. The increase of the relative weight of this sector will entail a decline in the share of wages. However, after the turning point it is the tertiary industry, in which the share of wages is relatively high, that develops. The changes in industrial composition will influence the behaviour of the share of wages.

It is highly probable that for these reasons the share of wages tends to decrease during the industrialization stage and increase in the transitional period. Japanese experiences seem to support this hypothesis. In Japan, economic development from the industrial stage to the transitional stage began before World War II, but was interrupted by the war.

The transitional period began again at the end of the 1950s, when the declining trend in the share of wages began to change to an increasing trend as Charts 2 and 3 suggest (Maruo, 1963; Maruo, 1965).

There are several definitions (a) ~ (f) regarding the share of wages in the national income base (Kravis, 1959).

(a) Employees' compensation / National income: $\frac{W}{Y}$

(b) Employees' compensation / (National income - incomes of the self-employed): $\frac{W}{(Y-E)}$

(c) Assuming that per capita labour income in

the self-employed sector is the same as per capita employees' compensation.: $\frac{(W + wN_e)}{Y}$

(d) Assuming that the average profit rate is the same as that of the corporate sector: $\frac{W}{(W + P + rK_c)}$

(e) Assuming the share of wages in the self-employed sector is the same as that of the corporate sector: $(W + \Omega E)/Y$. If an economy consists of the corporate sector and self-employed sector, (e) coincides with (b)³.

(f) Wage share parity: $\frac{w}{Y/N}$. Theoretically (f) = (c)⁴

The share of wages in the national income base in Chart 2 is calculated by definition (b), where W : Total wages = employees' compensation, Y : National income, E : Incomes of the self-employed, N : Number of total workers, $y = \frac{Y}{N}$, N_e : Number of the self-employed, N_w : Number of employees, w : Average wages = Employees compensation $\div N_w$, Ω : Share of wages, P : Profits, r : Profit rate in the corporate sector, K_c : Capital assets in the corporate sector. $Y = W + P + E$ is assumed.

Chart 2 shows the observed figures ($\bullet\text{---}\bullet$) and the estimated figures ($\circ\text{---}\circ$) by regression (1).

$$\frac{W}{Y}(b) = 96.147 - 0.942G_r - 0.928 \frac{1}{Y} \text{-----}(1),$$

(38.00) (- 5.935) (- 8.055)

$$\bar{R}^2: 0.824$$

where G_r devotes the rate of economic growth in real times.

Chart 3 shows the behaviour of the share of wages in the corporate sector. Equation (2) is an example of regression in the share of employees'

2 Assuming a simplified two sector model, the relationship is expressed as the following equations (Kaldor, 1960 and 1964). Assuming $Y = W + P$, $Y = I + C$, and $I = S$,

$$\frac{W}{Y} = 1 - \{(s_p - s_w)vG + s_w\},$$

where $Y = W + P$, $s_p > s_w$, and $\frac{1}{Y} = vG$ is assumed.

Y : National income, W : Wages, P : profits, I : Investment, S : Saving, C : Consumption, s_p : Propensity to consume profits, s_w : Propensity to consume wages, v : Marginal capital / output ratio, G : Rate of economic growth.

3 $\frac{W_w}{Y_w} \frac{Y_w}{Y} + \frac{W_w}{E} \frac{E}{Y} = \frac{W_w}{Y_w} \left(\frac{Y_w}{Y} + \frac{E}{Y} \right) = \frac{W_w}{Y_w}$

4 $\frac{(W + wN_e)}{Y} = \frac{(wN_w + wN_e)}{yN} = \frac{w(N_w + N_e)}{yN} = w/y$

compensation in national income (a). The share of employees' compensation increases as the proportion of employees to total workers $\frac{N_w}{N}$ increases. $\frac{N_w}{N}$ is a dominant variable used to explain $\frac{W}{Y}$ (a)

as standard t statistics show. The proportion is, therefore, not a suitable indicator to reflect the relative share of labour incomes versus capital incomes.

$$\frac{W}{Y}(a) = 43.197 + 0.393 \frac{N_w}{N} - 0.513 \frac{1}{Y} - 0.389 \dot{Y} + 5.181D \text{ -----(2)}$$

(293643)	(15.816)	(-8.388)	(-7.287)	(-9.837)
[0.521]	[-0.150]	[-0.195]	[-0.325]	

$\bar{R}^2: 0.973$

Figures in () are t statistics and figures in [] are standardized t statistics

G_r : Rate of economic growth in real terms

Chart 2 Share of Wages : Observed and Estimated

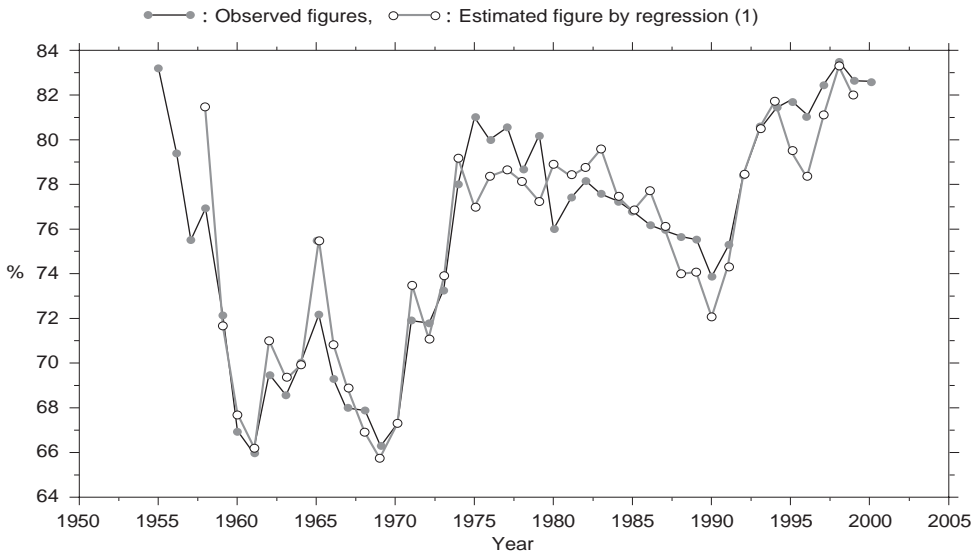
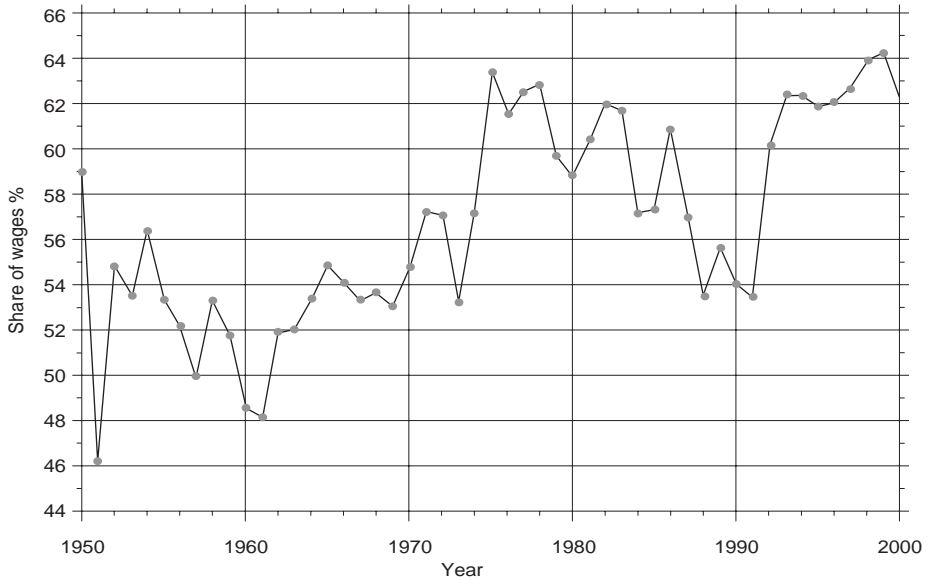


Chart 3 Share of Wages, Corporate Enterprise, all industries



In the labour market, wage differentials by age have been decreasing as a trend since the beginning of the 1960s (Chart 4). The differentials were especially large in large firms at the beginning of the 1960s. The wage differentials among university graduates in large firms between the average wages of those aged 20~24 and those aged 50~54 decreased from 5.2 times at the beginning of the 1960s to around 3.0 times. In other words, the proportion of average wages of 20~24 year olds to the average wages of 50~54 year olds increased from 19% in 1960 to around 34% in the 1990s as Chart 4 shows. A similar trend is observed in the wage differentials by firm size. In this respect, inequality in income distribution in the working population has decreased markedly compared with the beginning of the 1960s. Also in the same period, as mentioned above, the relative share of labour increased. Common variables are assumed to work behind the behaviour changes in the share of wages and the wage differentials.

The situation is changing again, however. According to the latest SSM survey, the odd ratio that expresses the social mobility between white collar employees and blue collar employees deteriorated (Toshiki Sato, 2001). In the labour market, wage differentials by firm size, which had decreased remarkably from the latter half of the

1950s to the middle of 1963, began to widen after 1975. Since the middle of the 1980s, income distribution, too, began to show greater inequality.

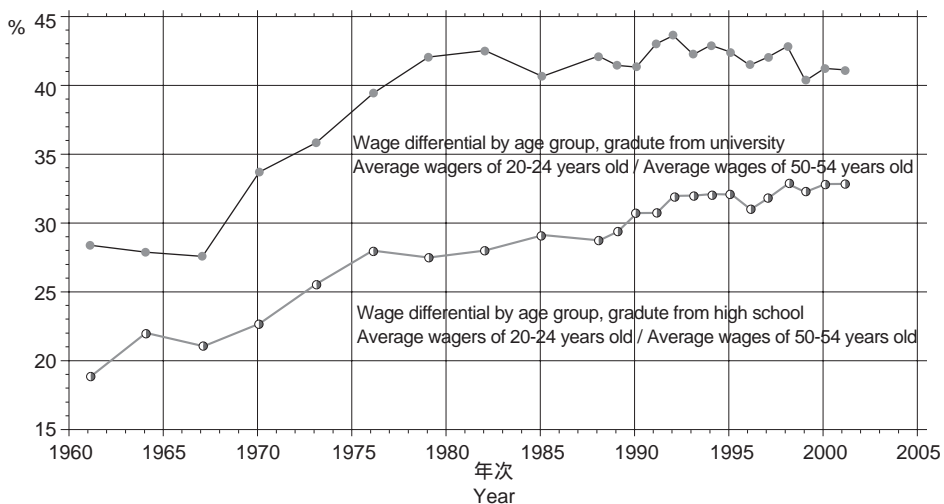
The increasing Jini coefficient from 1972 to 1999 may be partly explained by the relative increase of the aged population (Ootake, 2000).

This is not the only indication, however. There are many signs to suggest Japan has been changing in the direction of a more unequal society. Increasing inequality in asset ownership caused by asset liberalization and globalization are possible reasons to explain the change.

2. Influence of Assets on Income Distribution and Economic Stability

Distribution in asset ownership was also relatively equal in Japan as a result of the radical democratization policy just after World War . However, from the mid-1970s, inequality of asset ownership increased mainly because of the sharp land price increase. The democratization just after the War radically equalized the ownership of agricultural farms. But the ownership of other land was not equalized. The inequality of land ownership increased in line with the marked increase in land prices, and agricultural land was changed in-

Chart 4 Wage Differentials by Age Category
Wages of 50 ~ 54 year old employees / Wages of 20 ~ 24 year old employees

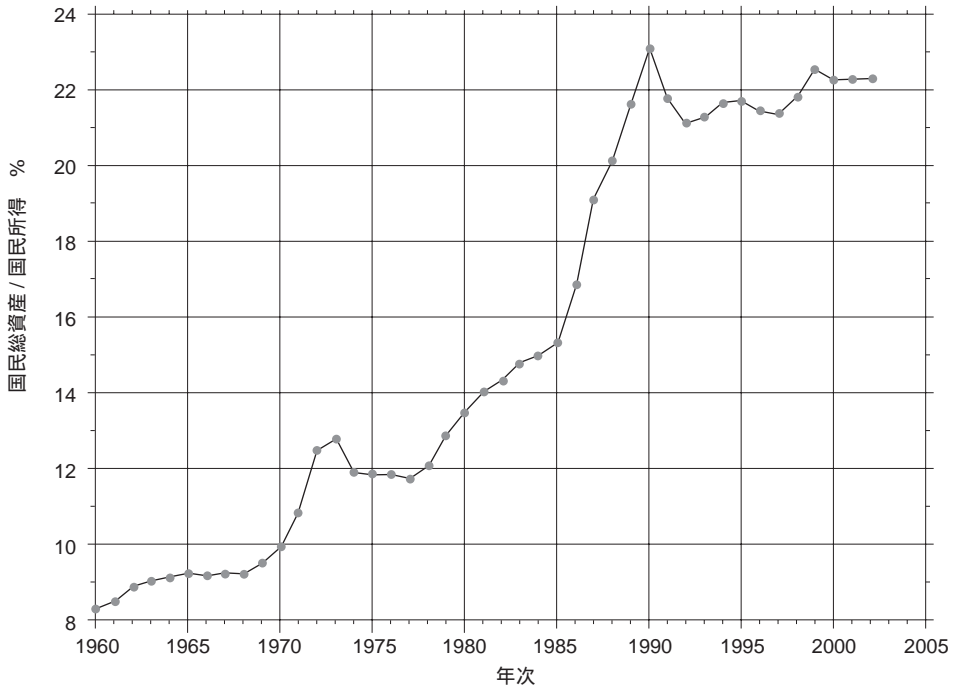


to land for housing and commercial use. In the 1980s, more than 60% of the inequality in asset ownership of households could be explained by the inequality of land ownership. Since the 1980s, a new type of inequality in asset distribution has been observed as a result of liberalization and globalization of asset markets.

In Japan the proportion of the total value of na-

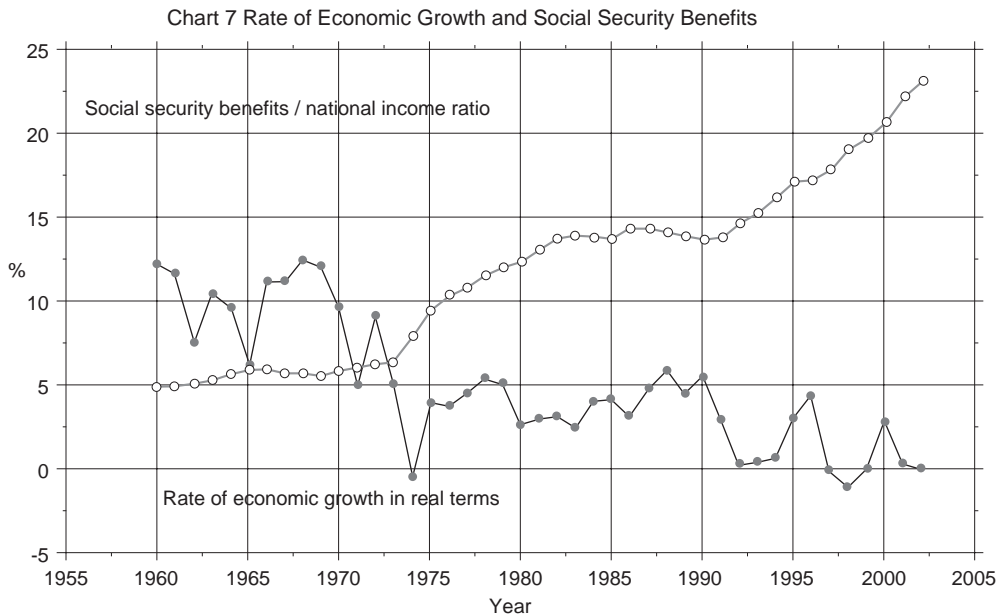
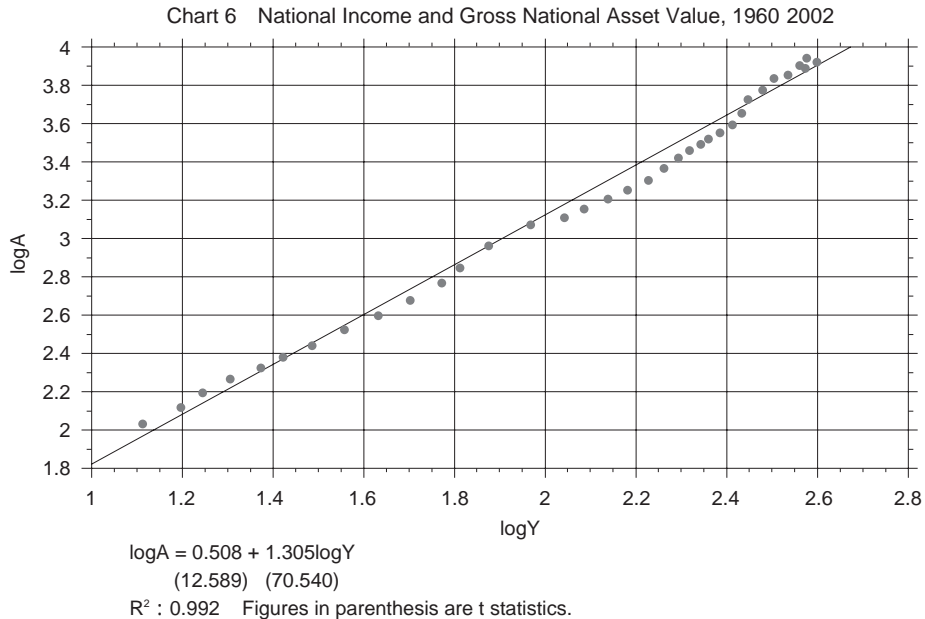
tional gross assets in relation to national income has nearly tripled in the last two decades from 8 times to more than 22 times (See Chart 5). The elasticity of gross assets with respect to national income is estimated at 1.3 (Chart 6 and the regression). This is a fundamental reason explaining why the role of asset-and asset-based policies has become more central.

Chart 5 Gross National Assets / National Income Ratio, 1960-2000



Based on annual data between 1960 and 2002.

Source: Ministry for Economic and Financial Affairs, *Economic and Financial Survey in 2004*, Tokyo 2004.



Source: Ministry for Economic and Financial Affairs, *Economic and Financial Survey in 2004*.
 National Institute for Social Security and Demographic Studies.

The new structural changes took place in 1973-74 at the time of the first oil crisis. The average rate of economic growth in real terms dropped down to a rate half that of the preceding two decades. The proportion of total social security benefits⁵ to national income suddenly began to in-

crease (Chart 7) as a result of the slowdown of economic growth and the Government policy for coping with population ageing. The then Tanaka Cabinet called 1973 "The first year of welfare" and took positive policies to expand social security benefits.. The development of social security in

the 1970s improved the after-tax income distribution to a certain extent.

Thanks to the so-called economic democratization reform just after World War II, Japan became one of the most equal societies among industrialized countries. As a result of the democratization policy, the peerage system was abolished. Large landowners disappeared. Japan became not only economically but also socially an equal society. According to opinion polls conducted by the Government in the 1970s, 80~90% of the Japanese answered that they belonged to the middle class. The SSM (Social Stratification and Mobility) survey, which has been conducted every ten years, supports the conventional view that "Japan is a classless society".

3. Inequality of Asset Distribution between Countries

At the peak of the bubble economy, the world's ten largest financial institutions in terms of their asset value were all Japanese companies. The market value of listed companies on the Tokyo stock market became larger than that of New York in terms of total current share value. Household financial assets in Japan were the largest in the world. It was in this same period that Japanese companies bought New York's Rockefeller Center, Columbia movie studio, etc in the US.

At the end of the 1980s, the relative value of Japanese assets on average increased to a point where it was three times as large as value in 1979 (Maruo, Björklund and le Grand, 2004)

However, the bursting of the bubble economy turned the tables in favour of the US. The relative share prices in Japan versus the US changed dramatically, with the result that in the 1990s, the relative positions of Japan and the US were reversed. The share price indices show that the Japanese relative share value in 2000 dropped to as low as 15% of that of 1989. In the 1990s, in contrast to the US and European countries, which

enjoyed the benefits of the global liberalization of financial and asset markets, Japan and a few newly industrialized nations in Asia were seriously afflicted by depression.

Experiences in Asian countries in the 1990s suggest that introducing the same "global standards" for international competition on "equal footings" to nations at different stages of market development is sometimes not fair (Stiglitz, 2002). Asset markets are more volatile than the markets of goods and services. Liberalization of financial and asset markets sometimes causes cumulative economic fluctuations and unjust distribution of asset ownership between nations and within nations. Liberalization of financial and asset markets is also likely to widen inequality in asset ownership within a country. In the transitional period when a system shift takes place in financial and asset markets, (1) asset allocation policies for allocative efficiency, (2) asset stabilization policies for economic stability, and (3) asset distribution policies for equity are required.

4. Asset-Based Economic Policies to Cope with Asset-Based Depression

Japanese experiences in the 1990s suggest that asset-based anti-depression policies are necessary to recover from the new type of depression caused by the depression of asset prices. In an era where the economic influences of assets have become so large, neither neo-classical policies nor Keynesian anti-depression policies that are concerned mainly with managing economic flows are sufficient. Positive asset-based policies are sometimes required to make market mechanisms work well. The Swedish case in the 1990s is of special interest when studying policies at times of financial crisis (Englund, 1999; Jongus and Stymne (1997); Maruo, 1996 ; Suzuki, 1999; Maruo, 2002).

Comparing the contrasting anti-depression policies of Sweden with those of Japan in the

5 The concept of social security is defined according to the ILO definition. Social security includes not only income security but also social services such as health services and personal social services.

1990s is most instructive. Sweden experienced the bursting of its bubble in 1989-1990 and serious depression in 1990-1992 with a negative growth rate, falling asset prices, balance sheet consolidation, financial fragility, unemployment and expanding public deficits. The timing and experiences of the bubble and bursting were similar to those of Japan, but the policies adopted then by both countries contrasted with each other. In 1993, the Japanese Government introduced a typical Keynesian anti-depression policy in the form of expanding public works, while the Swedish Government in 1993-94 spent 4.66% of GDP not on public works but to support financial institutions. The difference in the effects of anti-depression policies in the two countries was impressive. The Swedish economy recovered from depression in 1995, while the Japanese economy has been in economic stagnation more than a decade. This experience seems to suggest that asset-based policies such as separating bad banks from good banks, injecting public money into banks in crisis to issue new equity, and issuing guarantees to the bank owners for loans that enabled the banks to fulfill their capital requirements are more effective than Keynesian types of demand expansion such as increasing government expenditure for public works. We may interpret this as being because asset effects on depression are so large that without restoring asset markets and improving the balance sheets of banks, there will be no recovery from the asset-based depression.

Another important asset-based economic policy that is required in the transitional period of financial and asset liberalization is a policy aimed at inducing the shift of financial assets from so-called indirect financing to direct financing.

If a larger portion of these financial assets were to shift from small risk assets such as bank deposits and government bonds, etc. to higher risk and higher return assets such as company shares as happened in the US and a few European countries in the 1990s, share prices would increase and the economy would be revitalized. We may assume that if the proportion of investment in higher

return assets to total investment becomes larger, share prices will be higher in the long run at least to some extent, other things being equal.

Further, portfolio selection theories suggest that diversifying assets is more efficient than "investing" all the money in one asset. However, in Japan most personal financial assets are held as safe deposits and private insurances. In 2002, Japanese families had more than 1400 trillion yen in personal financial assets. Most of these financial assets are owned as bank deposits, private insurance policies and bonds. Investment in company shares and mutual investment funds amounts to only 4.3% and 2.3% respectively. Moreover, huge public and occupational pension funds amounting to several hundred trillion yen are held as safety assets and only 5% of the public pension funds are invested in company shares. Asset allocation in Japan is far from the optimum allocation. These ratios contrast with those of the Swedish public pension funds (NDC), which invest more than 50% of the funds in equities.

In the US and some European countries, deregulation of asset markets induced an asset shift from low-risk-low-return assets to higher risk-higher return assets. Besides, in those countries, the governments introduced incentives such as tax reduction to promote the asset shift. The defined contribution pension plan 401 (k) in the US, Everyman's Fund (Alleman's fonder) in Sweden, and workers' asset formation schemes in Germany are examples. These egalitarian asset-based welfare policies will promote an asset shift to equities and a fair distribution of asset ownership by encouraging workers' asset investment. As there is a large information asymmetry between financial institution and ordinary people, and even between financial institutions, the market mechanism is not sufficient to realize an optimum allocation and fair distribution of assets. Government asset allocation and distribution policies are necessary, especially in countries where people are not accustomed to risk-taking market activities."

5. Possible Effects of Asset Policies on Economic Stability and Distribution

Keynesian economic policies mainly influence the aggregate demand curve, while policies suggested by neo-classical and supply-side economists mainly influence the supply curve.

Asset policies are assumed to be mainly concerned with managing the aggregate demand through the effects on private consumption and private investment. Asset-based stabilization policies do not replace Keynesian and neo-classical policies but supplement them when financial and asset markets fail to work well. The government role is to set a sort of k% rule with regard to the growth rate of aggregate assets value and use asset policies to maintain the rule.

Asset markets are volatile. Liberalization of financial and asset markets sometimes causes cumulative economic fluctuations and unjust distribution of asset ownership. In the transitional period when a system shift takes place in financial and asset markets, positive asset-based economic policies as well as egalitarian asset-based welfare policies are required to make market mechanisms work well and mitigate inequality in asset ownership. Asset-based welfare policies as a third pillar of the welfare state (Regan, Sue, 2000) will mitigate the uncertainty of people by supplementing social security in income and social services, which, in turn, will stimulate the stagnant private consumption

In a period of system shift in asset markets, asset based welfare policies such as spreading information on asset markets and promoting workers' share ownership through mutual investment funds, etc. are effective means of mitigating inequalities in asset ownership and promoting efficient asset allocation as well.

Due to the liberalisation of asset markets, there is the possibility that income and asset distribution will deteriorate in developed countries unless asset-based welfare policies are introduced. How-

ever, it is of interest to note that a revised two class model à la Kaldor suggests that an equalization of asset ownership is possible (Maruo 2003). The model suggests that if the share of wages multiplied by the workers' propensity to save becomes higher than that of 'capitalists' and that if the return rate of assets is the same as that of the capitalist class, the rate of increase of workers' assets will become larger than that of 'capitalists'.

This is because if $s_w W r_w > s_p P_p r_p$, in future A_w , will be larger than A_p and the longer the time, the greater the equality in asset ownership that will be realized.

$$\frac{A_w}{A_p} = \frac{\bar{A}_w(1+r_w)^n(1+g_w)^n}{\bar{A}_p(1+r_p)^n(1+g_p)^n} \text{-----}(3),$$

where A : assets, P : asset income, r : return rate of A . Subscription w denotes working class and p denotes 'capitalists' class. \bar{A} : denotes the initial value of A , g : Growth rate of A , n : time or years.

6. Relationship between the Kuznets Curve and the Environmental Kuznets Curve

Many indicators show an inverse-U relationship with income, whereby environmental degradation gets worse in the early stages of economic growth, but eventually reaches a peak and starts declining as income passes a threshold level. There are common explanation variables linking the two Kuznets curves. They are differences in (1) per capita income, (2) economic growth rate and related capital factors, (3) labour markets, (4) industrial structure, (5) peoples' priority, (6) international factors, and (7) policy attitude, and (8) economic system (Maruo, 2003).

However, the environmental quality indicators do not behave similarly. Some environmental indicators such as clean water supply, sanitation, suspended particulate matter, and sulfur oxides have improved over time after a threshold level (Seldon & Song, 1994). But others, such as fecal coliform in rivers, have unambiguously worsened (Shafik, 1984). The situation in Japan is nearly the

same.

In addition to the difference by pollutants, the quality of the environment differs according to economic and environmental policies. Just as the income distribution is more equal in the so-called welfare states such as Scandinavian countries, it seems that those countries where income distribution is relatively equal take more positive policies in improving the quality of natural environment. Difference in policy attitude is typically observed with regard to policy differences in CO₂ reduction. Those who study economic policies should not dismiss the difference in policies.

7. An Approach to the Optimum Share of Wages

Along with the positive studies on the behaviour of the relative share of wages, there have been normative studies on the share of wages. Just as the theory of optimum economic growth assumes that the maximization of the present value of per capita consumption overtime is optimum, the theory of optimum share of wages assumes the share ratio that maximizes the present value of wages in the long run is optimum.

Assuming a simplified two period lifecycle model, the present value of employees' total compensation including bonus, fringe benefits of employees in a company is

$$W^* = W_1 + \frac{W_2}{1+t} \text{-----(6)}$$

where W means total wages, t implies the time discount rate. W^* is the present value of lifetime wages (including fringe benefits). The total wages of each period are;

$$W_1 = \Omega V_1 \text{-----(7)}$$

$$W_2 = \Omega \Delta V_2 \text{-----(8)}$$

where n means the length of service period 2 to period 1.

Ω : share of wages including fringe benefits, in value added. V means value added. Subscript figures denote a period. For example denotes V_1 in period 1 and V_2 denotes V in period 2.

Assuming that the investment of a company is solely financed by profits of the company, an increase of value added (ΔV) depends on the share of wages Ω as (9) shows;

$$\Delta V = S_p \sigma (1 - \Omega) V_1 \text{-----(9)}$$

As $\Delta W = \Omega \Delta V$, substituting (9) into ΔW , the dual effects of Ω are shown in Eq (10)..

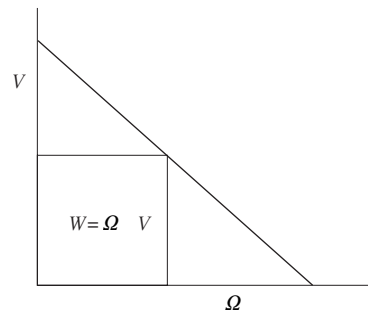
$$\Delta W = S_p \sigma (1 - \Omega) V_1 \text{-----(10)}$$

Differentiating Eq. (10) with respect to Ω :

$$\Omega = 1/2 \text{-----(11)}$$

These equations show that the share of wages has a dual effect of Ω on wage increase ΔW . Chart 10 visualizes the dual relation between Ω and ΔW . The Chart shows that the larger share of wages reduces the increment of value added and therefore that the larger share of wages does not always increase the increment of wages. Under this most simplified assumption, the share of wages that maximizes the increment of wages is $\frac{1}{2}$ as equations (9) and (11) suggest. The share of wages that maximizes the total wages of an employee's lifetime at present value can also be deduced.

Chart 10 Dual Effects of the Share of wages on Wages



Assuming the share of wages is the same in the second period the wages in the second will be shown as follows.

6 When a part of investment is financed by borrowed money, we may assume that the interest of the money is asset income of capitalist.

$$W_2 = \frac{V_1 \Omega S_p \sigma (1 - \Omega) n}{1 + t} \text{-----(12)}$$

If we assume a simplified two period model, the present value of lifetime wages including fringe benefit can be obtained by combining (7)~(8).

$$W^* = W_1 + W_2 = \Omega V_1 + \frac{\Omega V_2 n}{1 + t} \text{-----(13)}$$

Assuming that investment is financed only by the profit of the company⁶ and $\pi = 1 - \Omega$, total sum of the present value of wages is

$$W_1 + W_2 = \Omega V_1 + \frac{\Omega V_1 \sigma S_p (1 - \Omega) n}{1 + t} \text{-----(14)}$$

Substituting Eq. (13) into (Eq. (12),

Differentiating Eq. (13) with respect to Ω , the optimum share of wages in the sense that maximizes the present value of employees' life-time income is deduced.

$$W^* = \frac{1}{2} \left(1 + \frac{1 + t}{\sigma S_p n} \right) \text{-----(15)}^7,$$

where W^* : present value of lifetime wages, W_1 : total wages including fringe benefits in period 1, t : time discount rate, V : value added, Ω : share of wages as % of value added. Value added is assumed as Wages + Profits. S_p : savings ratio of the company profits = (1 - pay-out ratio of profits), σ productivity of investment. Subscription 1 denotes period 1, and 2 denotes period.2

Simplified Eq. (15) suggests that the optimum share of wages is increasing functions of n , σ and S_p and time discount ratio t is a decreasing function. When n , S_p and σ are sufficiently large, the optimum share of wages approaches to 1/2 (50%). This relationship is what I called the theorem of the share of wages (Maruo, 1997). In Japanese large firms n is large because of the practice of lifetime employment. The dividend ratio $(1 - s_p)$ has been kept low. Because of Japanese people's "senyuu kouraku (work and save at present to enjoy later)" mentality, we may assume that t

7 Equation (15) is deduced as follows.

has also been low.

One of the reasons for the low share of wages and low pay-out ratio in the 1950~1980s in Japanese large firms that have made the high rate of productivity growth possible may partly be attributed to the rational behaviour of employees. They agreed to restrain the share of wages on conditions mentioned above in order to increase the size of "the future pie".

8. Influence of workers' saving and share ownership on the optimum share of wages

So far we have assumed that investment is financed solely by the profits of the company. When a part of the investment of a company is financed by borrowed money, the relationship is somewhat complex. Still the fundamental relationship and the optimum share of wages do not change, if the interest paid on borrowed money is counted as a part of profits.

However, if we assume that a part of the savings of the company is financed by the savings of employees' share ownership plans, etc., an important change takes place as to the savings function and the distribution of share ownership. The investment of a company is now financed by the savings from both profits and wages as the Kaldorian saving function shows;

$$S = (S_p - S_w)(1 - \Omega) + S_w \text{-----(16)}$$

Therefore, Eq. (10) is modified into Eq. (17).

$$\Delta W = \Omega \sigma V \{ (S_p - S_w)(1 - \Omega) + S_w \}. \text{-----(17)}$$

Differentiating Eq. (17) with respect to Ω , we obtain the share of wages that maximizes *the increment of wages*:

$$\text{Optimum } \Omega = \frac{1}{2} \frac{S_w}{S_p - S_w} \text{-----(18)}$$

Eq. (18) shows that the share of wages that

maximizes the increment of wages becomes higher than $\frac{1}{2}$ when S_w is positive ($\frac{S_w}{S_p - S_w}$). The relation holds fundamentally with two period model. This implies that this condition is realized and if the saving of employees are used to finance investment, the optimum share of wages to maximize the increment of wages increases and therefore the share of wages that maximizes the present value of the lifetime income of employees will also increase. This implication is very important to solve or mitigate the trade-off between high productivity increase and equity for employees.

9. Concluding remarks

So far I have explained how the role of assets has become more central than in previous periods. In the conventional welfare state in the latter half of the 20th century, "flow-based policies" such as demand management and income redistribution played dominant roles in stabilizing the economy and achieving a fair distribution of income⁸. In the new stage of the welfare society, asset-based economic policies and asset-based egalitarian welfare policies will play important roles. In 2003 and 2004, asset prices, mainly land and share prices, are still stagnant in Japan. Liberalization of the financial market is definitely necessary to improve economic efficiency. However, the experiences of Japan and a few countries in Asia suggest that the liberalization with the so-called "global standards" for financial and asset markets worked unfavourably for those countries that had little experience and information with regard to the liberalization of financial and asset markets (stiglitz, 2002; Maruo, Björklund and le Grand, 2005). Moreover, the US experience suggests that it will increase the distributive inequality in financial asset

ownership⁹. The liberalization and globalization of financial and asset markets will result in unexpected distribution between nations and within nations.

In the new stage of economic development, we should attach more importance to the roles of assets and asset policies to cope with income and asset allocation and distribution.

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8 The financial difficulty in future social security funds in Japan is sometimes over exaggerated. If the proportion of the elderly 65 years old and over to the total population becomes 28% in 2030, the proportion of social security benefits / national income ratio will be 30-32% according to my estimate (Wadensjö and Maruo eds.2001). A recent Government estimates that even if the present social security system changed, the proportion in the 2020s will be lower than that of European countries.

9 A recent study on asset ownership in the US shows that 47.2% of the financial assets of all households in the US are held by 1% of households (Keister, 2000).

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