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Understanding the Decline in the Japanese Saving Rate in the New Millennium

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Abstract

This paper investigates why the Japanese household saving rate, which fell from the late 1990s to the first few years of the new millennium, suddenly stabilized after 2003. Analyzing income and spending data for different age groups, we argue that this is explained by Japanese corporate restructuring prompted by the 1997 financial crisis and the resulting labor income decrease being concentrated in older working households. We believe two important changes in income distribution are associated with this mechanism. First, the negative labor income shock, which was mostly borne by the younger generation in the initial stages of the “lost decade” finally spread to older working households in the late 1990s and early 2000s. Second, there was a significant income shift from labor to shareholders associated with corporate restructuring during this time. This resulted in a decline in the wage share, so that the increase in corporate saving offset the decline in household saving.

JEL classification: E2; E6; J4

Keywords: Japanese Saving Rate; Life-Cycle Model; Corporate Saving; The ‘Lost Decade’; Income Distribution; Household Saving.

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1 Introduction

It is more than two decades since Fumio Hayashi tried to explain the apparently high Japanese saving rate in his seminal article (Hayashi 1986). Today, Japan is widely recognized as a country with a “declining saving rate”. As shown in Figure 1, the Japanese household saving rate was around 18% at the beginning of 1980s. It has been declining ever since, down to 3.3% in 2006. The total decline is now about 15% over little more than a quarter of a century. There is little doubt that this declining trend is mostly explained by the aging of Japanese society (Horioka 1997; Dekle 2005; Chen, İmrohorođlu, and İmrohorođlu 2006; Braun, Ikeda, and Joines 2008).

[Insert Figure 1 here]

However, we would like to emphasize another feature observed in Figure 1. As shown, there is a significant acceleration of the decline in saving from the late 1990s to the first few years of the new millennium. The household saving rate was 11.3% in 1998 and then fell to 3.9% in 2003; more than a 7% decrease in five years. However, after 2003 and until 2007 the saving rate fluctuated in a narrow range of 3–4%.

The main subject of this paper is how we can explain the significant fall and sudden halt in the declining household saving rate in recent years. We analyze these problems by investigating income and spending data for different age groups. When the Japanese economy started to slow in the early 1990s during the initial stage of the prolonged stagnation known as the “lost decade” (Hayashi and Prescott 2002), firms saved labor costs by reducing the number of younger employees, mostly by not hiring recent graduates. However, in later stages of the “lost decade,” the decline in labor income concentrated on older employees. Hence, it is only after the financial crisis in the fall/winter of 1997 that most major Japanese firms started cutting the jobs and salaries of senior employees and seriously restructuring their existing labor force.

As a result, both labor income and consumer spending declined very rapidly from the late 1990s to the early 2000s, while the slowdown in GDP was relatively mild and the stock market boomed. We find that the decline in senior workers’ spending is still limited when compared to the decline in their labor income.

This explains the sharp decline of household saving in the new millennium and its subsequent halt when the Japanese economy finally started to recover.

The remainder of this paper is organized as follows. Section 2 considers the output, household income, and consumption data in the SNA (System of National Accounts) used to highlight the problems we investigated. Section 3 examines the income, consumption, and saving of different age groups. The evidence shows that the concentration of income decline in older working households after the financial crisis of 1997 generates the decline in the saving rate in this group and perhaps contributes to the acceleration of the decline in saving in the new millennium. Section 4 discusses why the labor income decline occurred. We emphasize two changes in income distribution underlying this; the shift from old to young households and from labor to shareholders. Section 5 provides a conclusion.

2 Output, income, and consumption in the GDP data

In this section, we look at aggregate data to highlight the problem and preview the analyses in the following sections. Table 1 provides the growth rates of real output, and income and consumption expenditure in the GDP statistics. We divide the 16-year sample at 1998 into two eight-year subsamples. As Horioka (2006) points out, there were a series of banking panics in the second half of 1997 and this created enormous uncertainty for households, setting the stage for the prolonged stagnation of the Japanese economy from 1998¹. As observed in Figure 1, there was a small hike in the saving rate in 1998 and a rapid decline from 1999. The 1998 increase is often interpreted as a rational response of households to uncertainty and anxiety created by the financial crisis in late 1997; as a temporary increase of precautionary saving (see also Doi 2001; Murata 2003; Saito and Shiratsuka 2003).

[Insert Table 1 here]

¹Yamaichi securities and Hokkaido Takushoku bank failed in November 1997. See Hoshi and Kashyap (2001, Chapter 8; 2005) for details of the banking panics in Japan in the late 1990s.

The figures in Table 1 reveal several interesting points. In 1990–98, household income and consumption exhibit very similar growth rates, but both are growing more rapidly than GDP. At the same time, while average GDP growth rates are almost the same before and after 1998, household disposable income growth is much lower in the second subsample. Though the difference between the subsamples is more limited, consumption growth is also lower in the second subsample.

We can draw some interesting implications from Table 1. First, the faster growth of household income and consumption than GDP suggests that the wage share in the Japanese economy was higher in the early stages of the post-bubble economic stagnation, the so-called “lost decade.” This probably means that real wages were becoming too high in this period. Second, in the second subsample starting in the late 1990s, “consumption was weak” but the “saving rate was rapidly declining.” At first, this may sound somewhat contradictory. The main reason why “consumption was weak” is that household income was growing at a lower rate than output, as pointed out by Horioka (2006). So the total size of the total output ‘pie’ available for Japanese households was decreasing. At the same time, as consumption growth was higher than income growth, households were eating an increasingly larger fraction of the pie in the second subsample. In other words, if the household saving rate had not decreased so rapidly, consumption growth would be even weaker and output growth much lower in the first half of the 2000s.

3 Analysis of the Age Group Data

Discussion of the aggregate data in the previous section suggests there are two questions we have to address in understanding the rapid decline in the saving rate from the late 1990s to the first half of the 2000s. First, it is puzzling why consumption growth did not fall as much as did household income growth during this period. Aging explains why there is declining trend in the Japanese household saving rate in the long run. But unless there was a sudden decrease in the working-age population, it does not explain why the declining trend suddenly accelerated in the late 1990s and then stopped declining around 2003. Second, we have to understand why household income growth was much lower than GDP growth. In this section, we focus on examining the first question by

considering the data for different age groups.

In Figure 2, we provide the saving rates of working households (two or more family members in Family Income and Expenditure Survey) by age group every 10 years (1987, 1997, and 2007). From Figure 2 it is apparent that the changes in the consumption/saving behavior of working-age households cannot explain the long run declining trend in aggregate household saving because the saving rates in 1997 and 2007 are both higher than in 1987 for most age groups. It would then be the increase in retired households that explains the long-run declining trend in the Japanese saving rate.

[Insert Figure 2 here]

However, we would like to emphasize that Japanese household members in their sixties decreased their saving rates more than 10% from 1997 to 2007. Indeed, the saving rate in 2007 of those in this age range is even lower than it was in 1987. It is apparent that this decline in the saving rate among older age groups in working households contributed to the acceleration of aggregate saving from the late 1990s until the new millennium.

To understand the mechanism behind this sudden decline in the saving rate, let us recall the basic forward-looking consumption function. In equation (1), a household is consuming a fraction α of its total wealth, which in turn is the sum of its wealth A_t and human capital H_t (Romer 1996, Chap. 6).

$$C_t = \alpha (A_t + H_t)$$

$$\alpha \equiv \frac{i}{1+i}; \quad H_t \equiv E_t \sum_{s=1}^T \left(\frac{1}{1+i} \right)^s Y_{t+s}. \quad (1)$$

So the saving rate s_t is written as:

$$s_t = 1 - \frac{C_t}{Y_t} = 1 - \frac{\alpha (A_t + H_t)}{Y_t}. \quad (2)$$

Equation (1) implies consumption growth parallels income growth when income shocks are mostly permanent and H_t is relatively large compared with A_t . This means that s_t in equation (2) is stable only if income shocks are highly

persistent. One possible explanation why consumption did not fall as much as income around the turn of the century is that Japanese households considered the income slowdown as a temporary phenomena. However, it is difficult to see why they did not consider it permanent at this time, especially when older working households reacted in this way, as shown in Figure 2.

Equations (1) and (2) suggest there is a more plausible explanation. If household's wealth A_t is much larger than H_t , s_t fluctuates as Y_t changes, even if the shock in Y_t is highly persistent. This condition fits households closer to retirement whose future income stream H_t from labor income is approaching zero and A_t is at the peak of their lifecycle. So, if the income shock is relatively concentrated in working households close to their retirement, the same amount of aggregate income shock will result in a limited consumption decline and a larger decrease in the aggregate saving rate.

To see if this prediction provides a plausible explanation, we plot the income and spending of representative age groups in Figure 3². The age groups included are the following:

- (i). 25–29 years: The youngest group, the majority of whom work in regular jobs.
- (ii). 50–54 years: The highest income group. Also some people start to retire and some are forced to move to subsidiaries/group company beyond this age group.
- (iii). 60–64 years: The age group where most people are retiring.

[Insert Figure 3 here]

The notable common feature of all three age groups is a plateau in the income trend during the mid-1990s. The increase in disposable income had stopped as early as 1991/1992. However, the decline in income did not commence for another seven or eight years until the late 1990s, after the 1997 financial crisis.

Conversely, these age groups differ from each other in several aspects. Table 2 summarizes those points by using values calculated from the data series in

²Many policy economists provide similar analyses as we present in Figure 3, emphasizing the increase in income inequality and the dispersion of the saving rate. For example, see Sadahiro (2005).

Figure 3. First, while income growth slowed between the pre-1998 and post-1998 sample, the decline is more pronounced for the older generations aged 50–54 and 60–64 years. Second, the volatility of income growth is relatively lower for the 50–54 year age group. This is not surprising as this age group is much more likely to have stable regular jobs than either the 25–29 or 60–64 year age group. Finally, the correlations between income growth and the propensity to consume (C/Y) are all negative but higher in absolute terms for households in their fifties and sixties. This final result is consistent with our discussion that the saving rates ($= 1 - C/Y$) of households close to retirement are more sensitive to income shocks.

[Insert Table 2 here]

In Table 2, C/Y for the 60–64 year age group increased 7% between the subsamples, while the increase was less than 2% for the other two age groups. This difference can be explained by a combination of the fact that C/Y for older households is more sensitive to income shocks and that the slowdown of income growth is more pronounced for the 60–64 year age group than the 50–54 year age group. Overall, the evidence in Figure 3 and Table 2 support our conjecture that the concentration of income growth decline in older working households after 1998 contributed to an acceleration of the aggregate saving decline from the late 1990s to the early 2000s because the saving rates of older working households are more sensitive to income shocks.

In Figure 4, we present additional evidence that the income shocks affected the younger generations in the early stages of the “lost decade”, but did not extend to older working households until the late 1990s. Until 1997, the unemployment rate among persons aged 35 to 59 years did not increase significantly. Unemployment is more pronounced for younger age groups in their twenties and early thirties during 1993–1997. From 1998, the unemployment rate for all age groups increased, peaking in about 2001/2002. Unemployment rates then significantly decreased from 2003/2004 and this timing is consistent with the sudden halt in the decline in aggregate saving in Figure 1.

[Insert Figure 4 here]

4 Macroeconomic Implications

In this section, we explore why household income growth was much lower than GDP growth from late 1990 until the new millennium. We also draw some macroeconomic implications from the changes in income and saving rates of the different age groups since the early 1990s.

4.1 Substitution between household and corporate saving³

Let us recall the basic national income identities,

$$\begin{aligned} Y &= C + I + G + CA \\ Y - T &= C + S, \end{aligned}$$

where CA is the current account and the remaining variables are as usually defined. Subtracting the second equation from the first, we obtain the following identities:

$$(I - S) + (G - T) + CA = 0 \quad (3)$$

$$CA + (G - T) = S - I. \quad (4)$$

Equation (3) states that net demand for funds in one country, comprising private sector ($I - S$), government sector ($G - T$), and foreign sector (CA) demands, must equal zero. So, as equation (4) implies, the sum of the current account surplus and the government deficit must equal the difference in private sector saving and investment (Sachs 1981).

From the late 1990s until very recently, the Japanese current account has been positive ($CA > 0$) because of the weak Yen. Since the fiscal expansion of the Obuchi administration (July 1998–April 2004), the accumulating government debt has been a serious concern for economists and policymakers (Ihori, Doi, and Kondo 2001; Ito, Watanabe, and Yabu 2006; Doi, Ihori, and Mitsui 2007). So ($G - T$) has also been positive. Hence, the left-hand side of equation (4) is definitely positive in recent years

On the other hand, and as we have shown in this paper, the household saving rate declined very sharply in the late 1990s and the first half of the 2000s. To keep the right-hand side of equation (4) positive, private investment should have

³Our earlier paper (Iwaisako and Okada, 2008) and Matsubayashi (2008) independently point out the apparent substitution between corporate and household saving in Japan in recent data.

declined more drastically than household saving, but we have not observed such a significant decline in investment.

Only one explanation remains: corporate saving must increase, thereby offsetting the decline in household saving. Figure 5 confirms this is exactly what was happening. Around the turn of the century, household saving and corporate saving are moving in opposite directions, with aggregate private sector saving mostly unchanged.

[Insert Figure 5]

The apparent substitution between household saving and corporate saving during this period is evidence of a significant shift in the income distribution from labor to stockholders. This is the same phenomena that Saito (2007) called “substitution between household consumption and corporate investment.”

Looking at the wage shares, Figure 6 provides more direct evidence. We report three different wage shares in the 1990–2006 time period. Their peaks are slightly different, but all three wage share series are hump shaped, peaking around 1998–2001. Therefore, they are consistent with the evidence in the two previous sections that the restructuring of labor was delayed and wages were becoming excessively high in the initial stages of the “lost decade”. Since the late 1990s, and by cutting their labor costs drastically, Japanese corporations increased their saving, as in Figure 4. This does not mean that they increased retained earnings. Rather, they used their increased cash flows to write-off nonperforming loans and to lower their outstanding debt so that the net worth of Japanese firms increased substantially in the early 2000s. Hence, in addition to the household saving rate decline, it explains why GDP growth and stock prices were relatively strong in the first half of the 2000s.

[Insert Figure 6]

Economic interpretation of recent increases in corporate saving requires careful discussion⁴. From an extreme viewpoint, the assets of private corporations are ultimately owned by households, so that corporate saving and household

⁴See Poterba (1987) for an economic interpretation of corporate saving in a more general context.

saving are just different ‘purses’ belonging to the same person. If we adopt this “corporate veil view” there was no significant decline in private sector saving throughout the 1990s and 2000s. Therefore, no explanation is required as there was no major saving decline. For example, in his discussion on the Japanese current account during this period, Matsubayashi (2008) argues that Japan does not have to worry about the saving rate decline, presuming that the “corporate veil view” definitely holds.

However, if we emphasize the labor/capitalist distinction, the interpretation is very different. When the restructuring of Japanese corporations finally picked up in the late 1990s to the early 2000s, a significant change in the income distribution occurred among stakeholders; that is, there was an income transfer from labor to shareholders. Another perspective of the change in the income distribution at this time is that older workers in their late fifties and sixties lost most in Japanese corporate restructuring. This change in the generational income distribution is essential to explain the aggregate household saving decline at the beginning of the new millennium. However, we do not have to be particularly sympathetic to these age groups as they kept their jobs and avoided the severe income decline in the initial stages of the “lost decade” at the expense of younger workers, as shown in Figure 4. Overall, incorporating changes in income distribution into the analysis is quite important to gain a better understanding the macroeconomic dynamics of the Japanese economy in the last 20 years.

4.2 Household saving and national saving

If we take the Ricardian equivalence theorem seriously, government saving and household saving are perfect substitutes. Accordingly, recent budget deficits by the Japanese government should have been incorporated into the consumption/saving decision by Japanese households because the Barro–Ricardian view suggests that government debt is part of household net worth. At the national level, as the Japanese current account surplus fell, we have to conclude that there was a decline in saving. Recent dynamic general equilibrium approaches, such as Chen et al. (2006) and Braun et al. (2008), implicitly take this view by discussing Japanese national saving, not household or private sector saving.

There is some advantage with this neoclassical viewpoint as countercyclical fiscal expansion by the Japanese government should have been incorporated, at

least to some extent, into household decision making. However, we also believe that it is difficult to comprehend the dynamics of the macroeconomic variables in the recent Japanese economy by adopting an extreme neoclassical viewpoint. Accordingly, it is also important to pay attention to changes in the income distribution, such as between labor and shareholders and among different age groups⁵⁶.

On the other hand, the increase in the saving rates of younger households in the last 20 years, as observed in Figures 2 and 3, is explained by two elements. First, increased labor income uncertainty should have increased the precautionary saving of the young. Second, income inequality within the same generation is said to have increased during the “lost decade.” This is not yet, however, confirmed because government microdata does not capture fully the actual status of the lowest income individuals, especially unemployed youth⁷. It is widely speculated that the lowest income group cannot save and does not have any accumulated wealth. As the underlying data in Figures 2 and 3 concerns households of “two or more members”, very poor young households are missing. Hence, the actual aggregate saving of younger generations may not have decreased after all because the data only captures relatively wealthy individuals who increased saving.

5 Conclusions

This paper investigates why the Japanese household saving rate fell so significantly from the late 1990s to the first years of the new millennium and then suddenly stopped declining around 2003. Analyzing the income and spending data of different age groups, we argue that the Japanese corporate restructuring prompted by the 1997 financial crisis and the resulting labor income decline

⁵In addition, if we interpret the determination of the national saving rate solely as a result of the households’ consumption/saving decision, the current account will be determined as a residual. This leaves no room for the exchange rate to explain the current account surplus/deficit. Once again, if we are interested in short-run current account dynamics, this approach will not yield satisfactory results.

⁶Another aspect that we are not fully comfortable with in recent neoclassical studies is that these quantitatively ascribe an important role to productivity growth in explaining the Japanese saving rate. First, the assumption about household expectation is critical for their explanations, as Chen et al. (2006) acknowledge. In those models, perfect foresight is assumed, so that the saving decline started long before the productivity decline of the 1990s. In addition, they have difficulty explaining the sudden acceleration in the saving decline from the late 1990s to the early 2000s unless they assume that Japanese households foresaw the world financial crisis starting with the problem of US subprime loans in 2007/2008.

⁷@@@More papers need to be cited here.

being concentrated in older working households explains these facts. We believe two important changes in income distribution are associated with this mechanism. First, the negative labor income shock, which was mostly borne by the younger generation in the initial stages of the “lost decade” finally started to spread to older working households after 1997. Second, there is a significant shift of income from labor to shareholders during the course of the corporate restructuring in the early 2000s. The latter resulted in a decline in the wage share and combined a decline in household saving and the offsetting increase in corporate saving during this period.

We did not fully explore several important issues in this paper. First, we question existing studies that attempt to explain the dynamics of the Japanese saving rate with dynamic general equilibrium models in section 4.2. How important our criticism is must be answered by calibrating the saving rate profile with age in the cross-section⁸. Second, we have not investigated exactly what Japanese corporations did with their increased saving and the changes in their balance sheets in the early 2000s.

The analysis in this paper also has some general implications. The theoretical prediction in Section 3 that older working households do not change their consumption as much as younger households suggests that expansionary policies directly affecting household income, such as tax cuts or the distribution of coupons, will be less effective in an aging economy.

Second, the fact that Japanese wage shares have fluctuated so much in the last 20 years has important implications for consumption-based asset pricing models. The Lucas asset pricing model is perhaps a good approximation if the wage share is very stable over time. However, if it fluctuates over time, it implies shifts in the income distribution between labor and stockholders. Hence, unless all stocks are held by workers and all workers hold identical portfolios, the labor/capitalist distinction matters. Put differently, good times for investment

⁸The change in productivity growth affects the saving rate through its impact on the rate of return on capital. However, the change in the interest rate will have a major effect on household saving only if its change is persistent and the household has a sufficiently long time horizon (Summers 1981). Accordingly, if the persistent low interest rates since the mid-1990s caused the rapid decline of the Japanese saving rate, the effect should have been more apparent in younger households. In Figure 2, younger households actually *increased* their saving in the last 20 years so that the saving rate profile became more steeply downward sloping with age in the cross-section data. This is inconsistent if we emphasize the low interest rate in explaining low saving, at least in the steady-state analysis. However, we still do not deny the possibility that the low interest rate actually caused the saving rate to decline as the transition dynamics can be much more complicated.

bankers can be bad times for factory workers. This argument is closely related to the stockholder/nonstockholder distinction (Mankiw and Zeldes 1991; Vissing-Jorgensen 2002) and perhaps adds some important insights to this problem⁹.

⁹One of the authors has written a paper applying Lettau and Ludvigson's (2001) version of the consumption-based model to Japanese data (Aono and Iwaisako 2008) and finds that the Japanese consumption-wealth ratio has become very unstable in recent years. Such an instability in consumption-wealth ratio should be closely related to the instability of propensity to consume studied in this paper.

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Table 1
Growth of GDP, Household Income, and Consumption

Average growth rates of real GDP, disposable income (*income*), and total consumption expenditure (*consumption*) of household sector. “*nondurables*” is expenditure on nondurables and services. “*durables*” is expenditure on durable goods.

	1990–98	1998–2006	1992–97	1999–04
<i>GDP</i>	1.5	1.6	1.7	0.6
<i>income</i>	1.7	0.3	1.2	0.4
<i>consumption</i>	1.8	1.4	1.8	1.2
<i>nondurables</i>	1.8	0.9	1.5	0.8
<i>durables</i>	2.8	7.1	5.1	7.9
<i>GDP – income</i>	–0.2	1.3	0.4	1.2
<i>GDP – consumption</i>	–0.3	0.2	–0.1	0.4
<i>income – consumption</i>	–0.1	–1.1	–0.6	–0.8

Notes: Data source is the Japanese government (Cabinet Office) web site:
<http://www.esri.cao.go.jp/en/sna/menu.html>

Table 2
Income Growth and Propensity to Consume of Different Age Groups Before and After 1998

Δy : average annual growth rate of household disposable income (percent).
 C/Y : consumption expenditure divided by disposable income (percent).

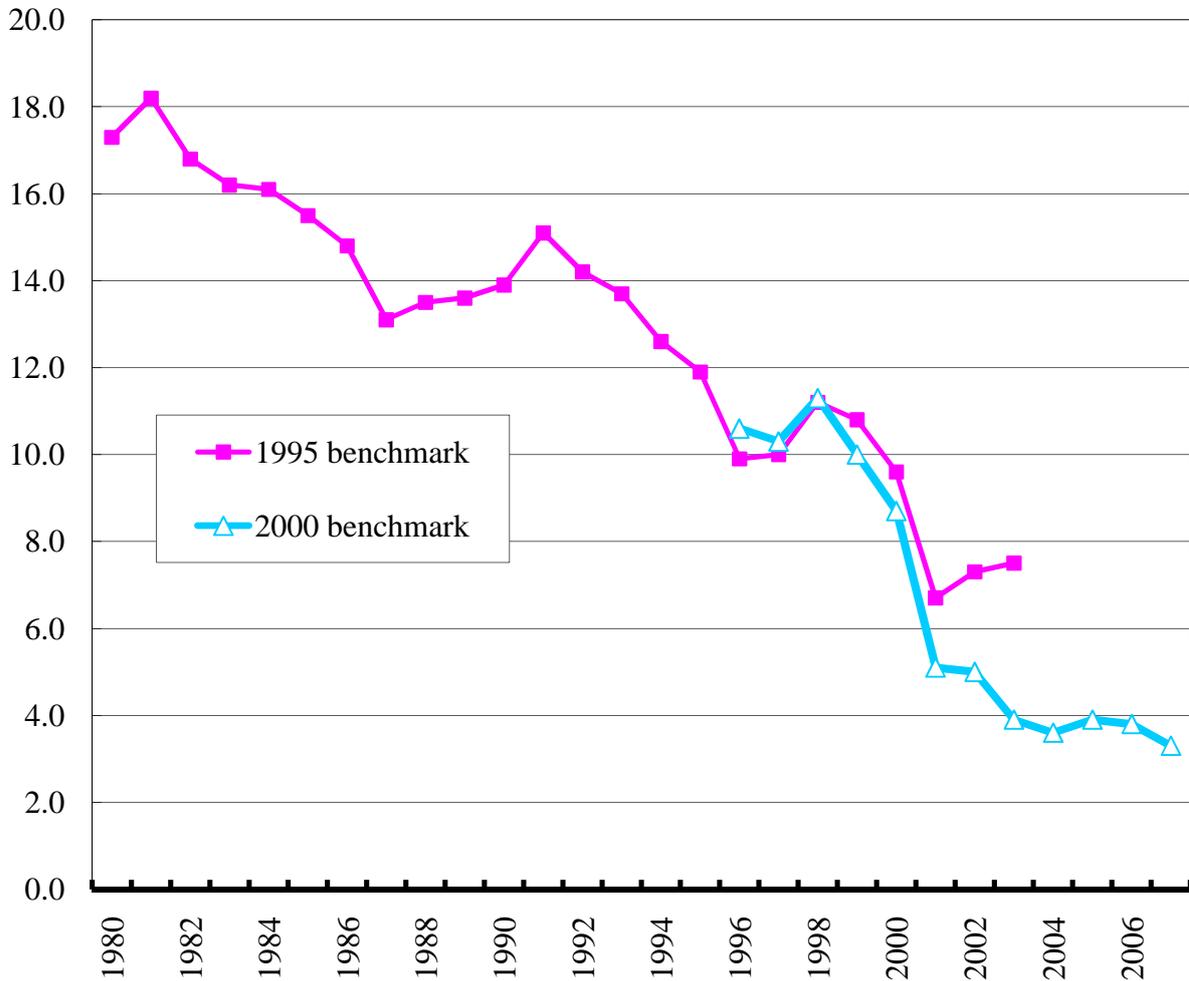
	age 25–29		age 50–54		age 60–64	
	Δy	C/Y	Δy	C/Y	Δy	C/Y
1991 – 1998	0.44	72.0	0.32	73.7	0.12	80.3
1998 – 2007	–0.51	73.7	–0.94	74.8	–1.80	87.3
S.E. in the full sample	3.45	2.2	1.92	1.9	3.61	4.9
correl($\Delta y, c/y$)	–0.15		–0.26		–0.22	

Notes: *Family Income and Expenditure Survey* (two or more family members) data.
Data source is Statistics Bureau home page: <http://www.stst.go.jp/english/index.htm>

Figure 1

Japanese Household Saving Rate:1980-2006

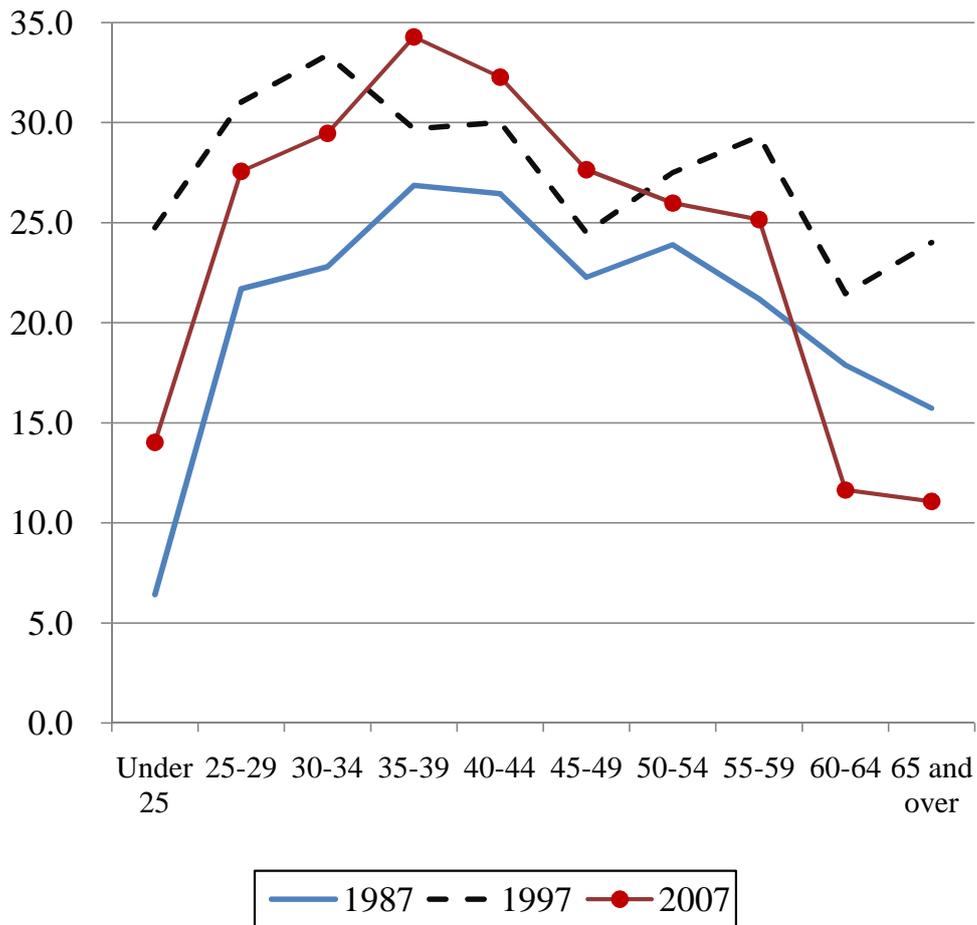
percent



Notes: Net household saving rate from Annual Reports on National Accounts. *1995 benchmark* data are taken from Annual Report 2005 and *2000 benchmark* data are taken from Annual Report 2008. Data source is the following Japanese government (Cabinet Office) website: <http://www.esri.cao.go.jp/en/sna/menu.html>

Figure 2

Saving Rate by Age Group: 1987, 1997, and 2007



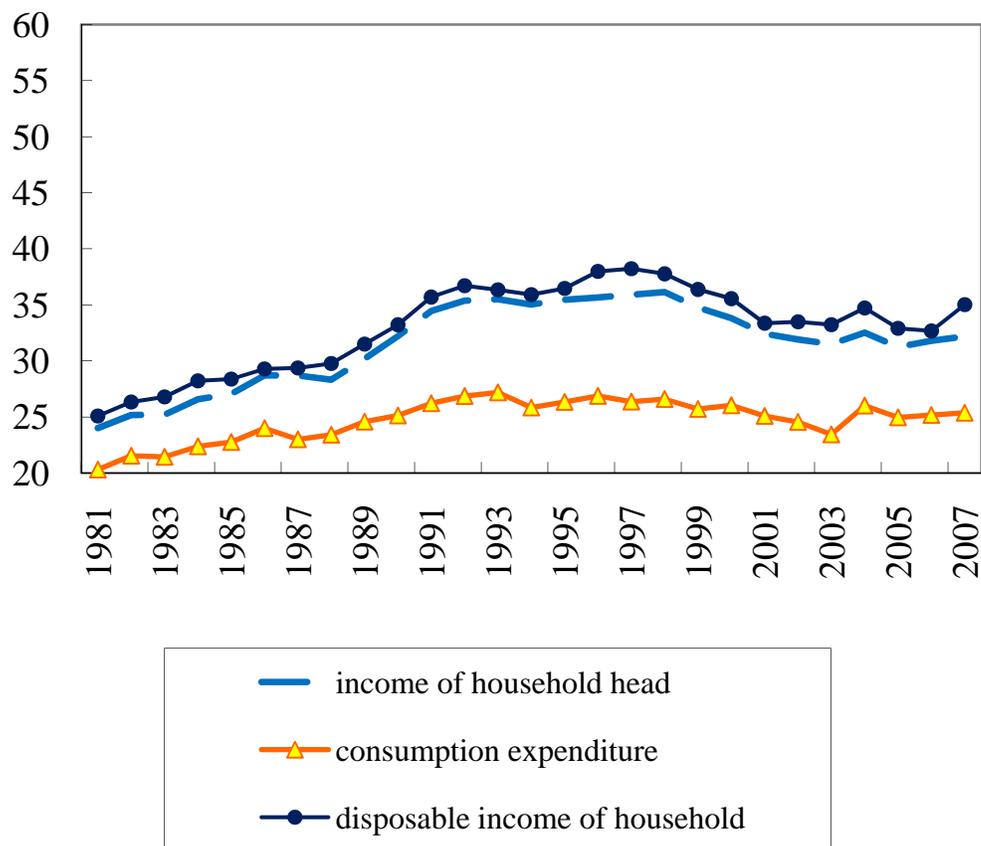
Notes: Saving rates of working households (two or more family members) by five-year age group in *Family Income and Expenditure Survey*. Data source is Statistics Bureau homepage: <http://www.stst.go.jp/english/index.htm>

Figure 3

Income and Consumption of Different Age Groups: 1981-2007

Age 25-29 group

10 thousand yen

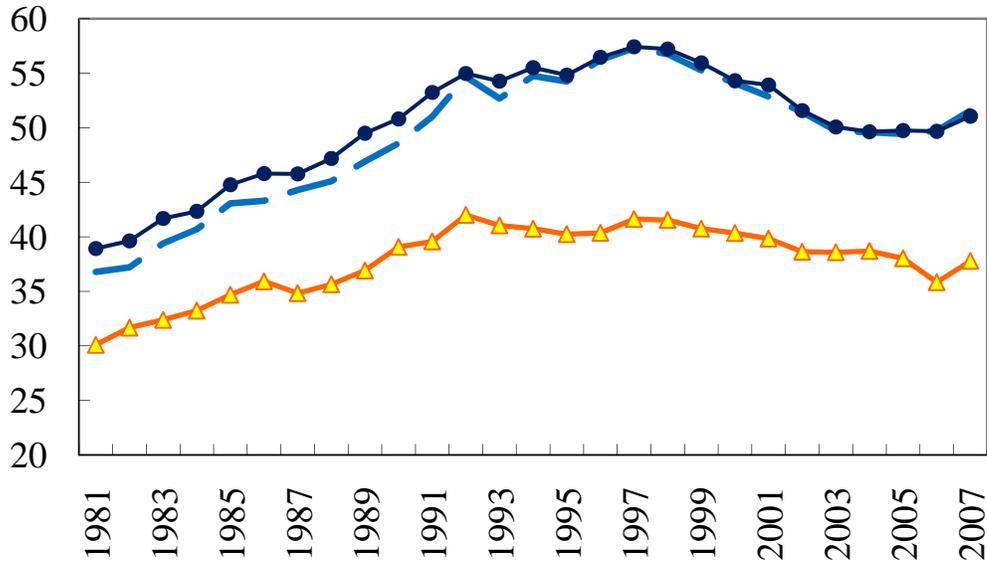


Notes: See note for Table 2 about data source

Figure 3 (continues)

Age 50-54 group

10 thousand yen



Age 60-64 group

10 thousand yen

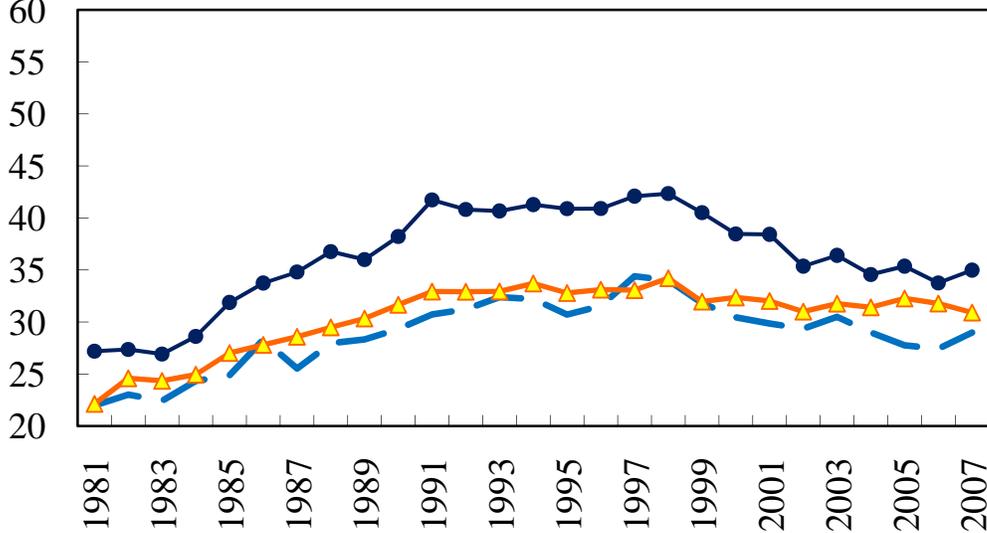
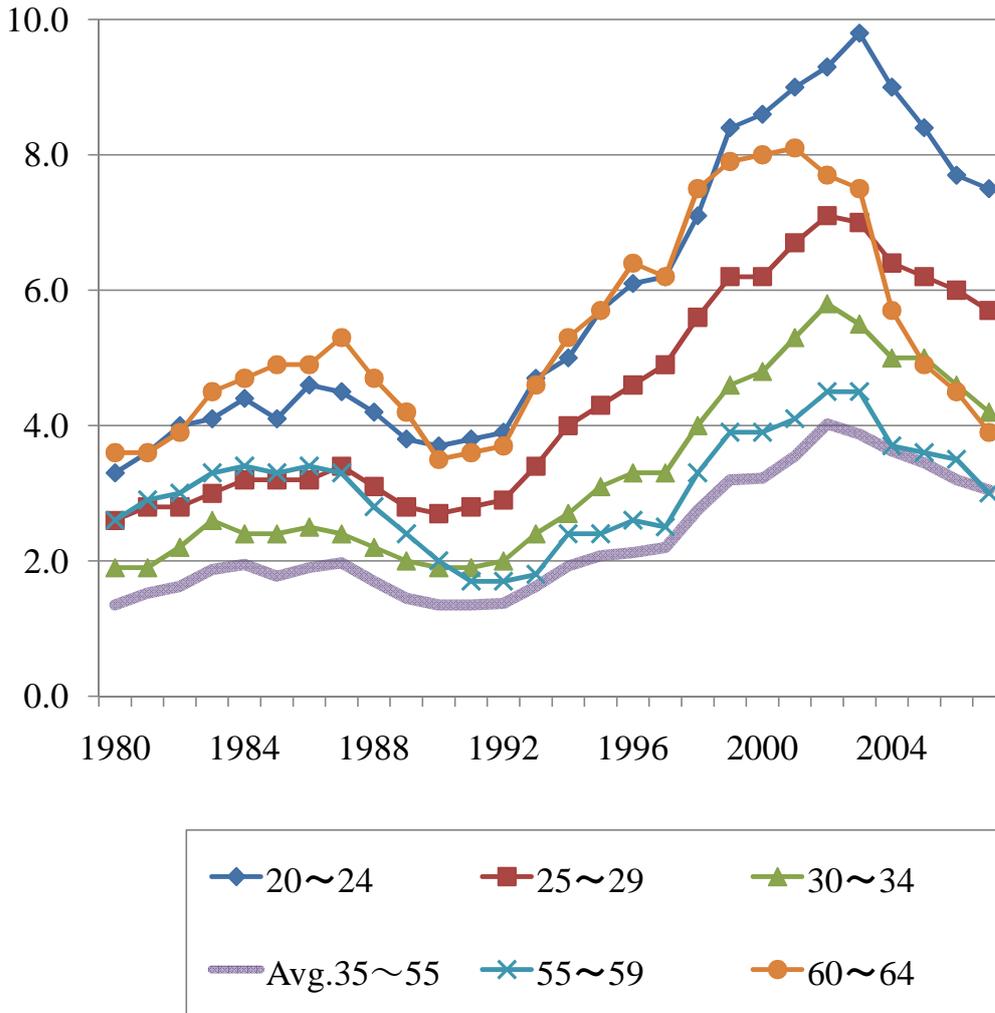


Figure 4

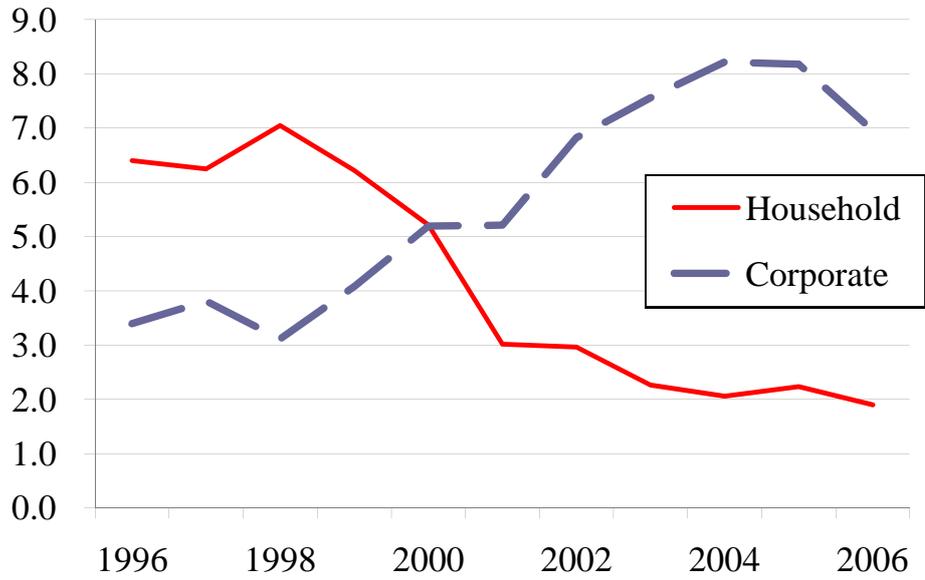
Unemployment Rates by Age Group: 1980-2007



Notes: Unemployment rates by age group from *Labor Force Survey*. Data source is the web page of *Statistics Bureau*: <http://www.stat.go.jp/english/data/rouodou>

Figure 5

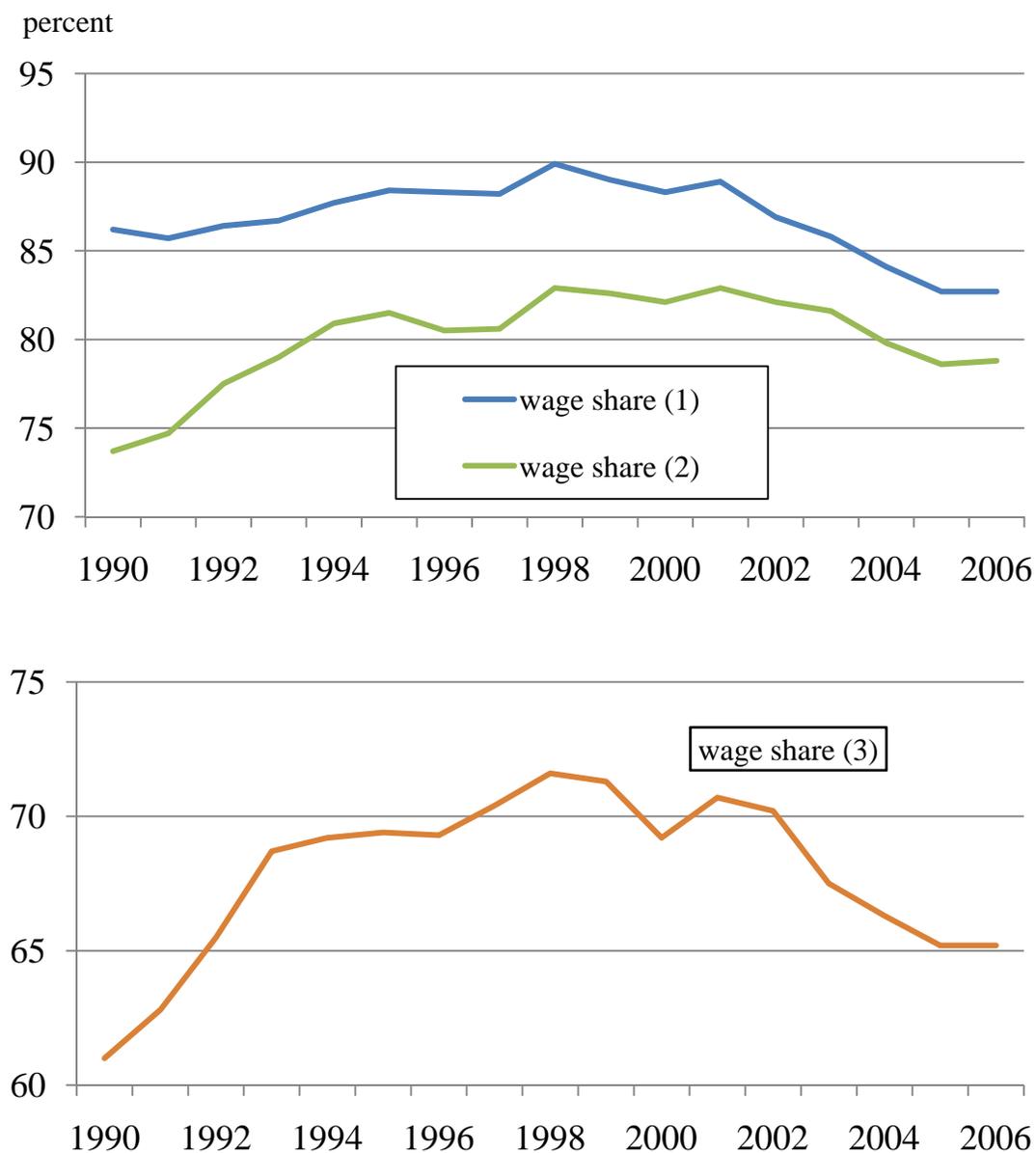
Substitution between Corporate and Household Saving



Notes: Household saving and corporate saving as share of GDP (percent). See the notes to Table 1 for the data source.

Figure 6

Wage Shares in Japan: 1990-2006



Notes:

- Wage share (1) : $(\text{compensation of employees}/\text{number of employees})/(\text{GDP}/\text{number of persons in employment})$
- Wage share (2): $\text{compensation of employees}/\text{GDP}$
- Wage share (3): $\text{personnel expenses}/(\text{personnel expenses} + \text{ordinary profits} + \text{interest expense} + \text{depreciations})$.

Wage share (1) and (2) are annual data calculated from SNA statistics. Wage share (3) is a fiscal year data calculated from *Financial Statements Statistics of Corporations by Industry*. Data source is The Japan Institute for Labour Policy and Training (2008).