# 4. Macro Analysis

Exploding Welfare Claims in Japan:
A New Look through Long-Term Time Series Data

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I. Introduction

The number "2,022,333" is definitely a shocking one for most Japanese, and for the whole world as well. The monthly average number of welfare recipients, for the first time in March 2011, has exceeded 2 million since 1952. The turning point came in the late 1990s. The percentage of welfare recipients against the total population had been steadily declining until 1995 when the trend changed direction and the number has continued to rise drastically thereafter. Along with Japan's unprecedented speed of aging, the number of welfare claims has been growing exponentially: its size has doubled in just one decade (Figure 1).

Figure 1 Number of households/persons on welfare (1990-2010)
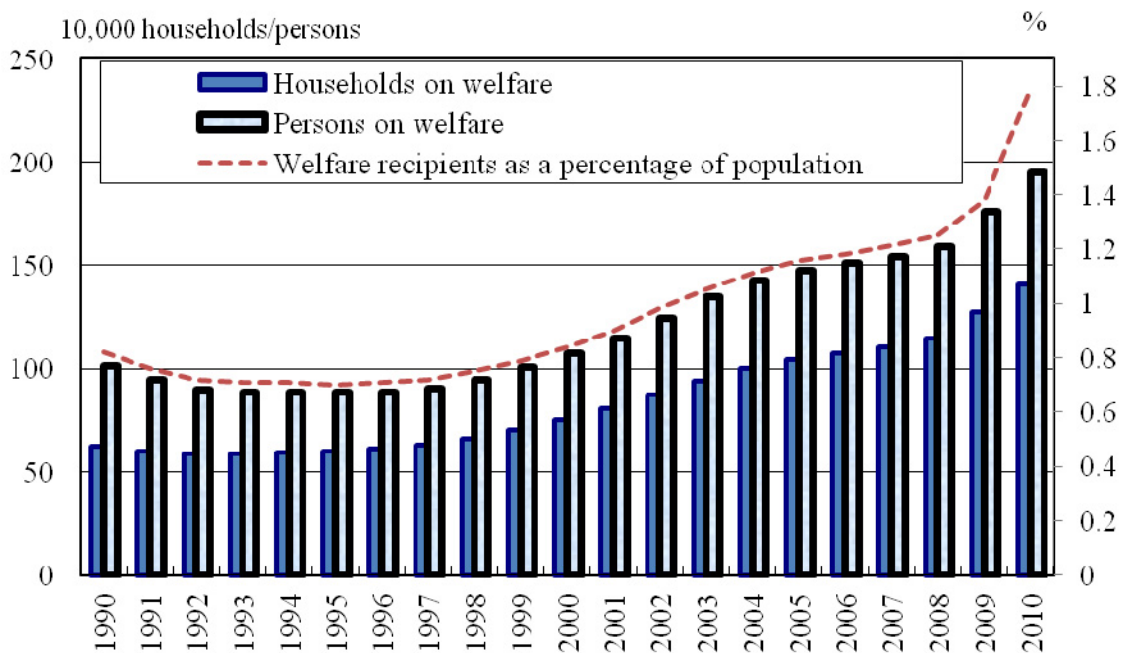
Data source: "Welfare Administration Report" by Ministry of Health, Labour and Welfare.
Notes: (1) Monthly averaged values. (2) Forecasted values for 2010.

Although elderly households continue to be the predominant claimants of welfare, since the

turn of the century, the number of working-age households requesting welfare has been growing at an unprecedented pace. Between 2008 and 2009 alone, these households increased from 121,570 to 171,978 (41.5% rise). We embarked on the study with suspicion that this rapid increase of working-age households on welfare has been triggered not only by the economic downturn but also by the generous government stance on welfare approvals.

This paper investigates to what extent "temporary/business cycle shock" or "permanent/ structural shock" (aging and government stance) could explain the recent rapid rises in welfare figures. If the temporary shock dominates, we can expect a moderate rise or even decline of welfare claims when the economy recovers. On the contrary, if the permanent shock plays a central role, rises in welfare claims are very likely caused by persistent transitions in population structure and welfare programs, and are hard to alleviate or reverse in a short run.

There have been very few empirical studies on this topic in Japan with the sole exception of Suzuki and Zhou (2007). Using a bivariate vector autoregression method, which was originally implemented by Blanchard and Quah (1989) in real business cycle analysis, Suzuki and Zhou (2007) try to separate out the effects of temporary shocks and permanent shocks on the rises of welfare claims. Their study, for the first time, confirms the relative importance of permanent shock on the rises of welfare claims since 1992, but their analysis only traces until October 2006. This paper, however, adds the most recent period (November 2006 to March 2011) into the analysis target, and aims to disclose whether permanent shock is still the major driving force for the rises of welfare claims in recent years, particularly for the years after the Lehman crisis.

Our empirical findings indicate that permanent shock, as a whole, played a central role in driving up the welfare requests during the last two decades. While Suzuki and Zhou (2007) find that temporary shock explains more than half of the public assistance rate variance at 0 to 60 months, this paper reveals that the permanent shock dominates even at the very initial time horizon. A further look on the gap of forecasted and real values of the public assistance rate indicates that permanent shock plays a particularly important role in explaining the rapid rises of welfare claims since 2008. Permanent shock accounts for only 52.0% of the gap between forecast and actual values ("forecast-real gap") at the beginning of the Lehman shock, but its share reaches as high as 82.3% now.

The expansion of the permanent shock was unsteady and was obviously interrupted between 2003 and 2007, during which period there were strong public opinions expressed in Japan criticizing the overuse of welfare. As a result, stricter supervision on welfare approvals was instructed by the government. In other words, the influence of permanent shock seems to be strengthened (or weakened) in parallel with the generosity (or toughness) of the government stance toward welfare approvals.

In addition to the above, we found that the impact from temporary shock can last for a long time. It takes 64 months for the impulse of temporary shock to converge to zero. Put differently, even if the public assistance rate rises due to temporary shock such as a recession or an

earthquake, it takes nearly 5 years to regain the normal level.

II. Background

A. Sluggish Economy

Welfare recipients will definitely increase in a bad economy. Japan's economy has been suffering a near zero gross domestic product growth and persistent deflation for the entire period of the 1990s and 2000s, which are termed the "lost decades". The pain of the "lost decades", however, went disproportionally to young and unskilled workers.

To fend off heavy competition from rival companies based overseas, most Japanese companies began to replace their permanent workforce with temporary workers who had no job security and fewer benefits, and these non-regular employees now make up over a third of Japan's labor force. Although the unemployment rate is not yet at crisis-level high (a peak of 5.8% in March 2003), nowadays young generations and unskilled workers stand much slimmer chance of getting secure and well-paid work. As a consequence, income inequality has risen quickly and populations below the poverty line have surged as well.

As we can observe from Figure 1, the number of welfare claims moved simultaneously with the economy's sluggishness to some extent. For example, welfare claims shifted to an upward trend in 1995, just a couple of years after the collapse of the bubble economy. When the economy deteriorates, as with the most recent example of Lehman Brothers' collapse in 2008, the number of welfare caseloads skyrocketed thereafter. Meanwhile, when the economy recovered slightly during the period from 2002 to 2007, welfare claims increased moderately.

If a sluggish economy is the major factor responsible for the climbing welfare claims, this rapid upward trend could be moderated or even reversed when the economic condition is improved. Put differently, as long as the lost decades persist, the welfare dependency rate is likely to keep rising.

B. Rapid Aging and Dysfunctional Public Pension System

Rapid aging, however, is another critical factor for welfare claims. Japan outweighs all other nations with the highest proportion of elderly citizens, 23.1% over the age of 65 in 2010 (Source: Statistics Bureau, Japan). Households headed by the elderly make up the biggest group of welfare collectors in Japan. As Table 1 indicates, more than 40% of the households on welfare are elderly households.

Why are there so many elderly citizens collecting welfare despite the fact that Japan has a universal public pension system? The coverage of basic pension is universal, but a significant number of the self-employed, farmers and non-employed, for whom subtracting pension premiums from pay checks is near impossible, are defaulting on premium payments, either because they are too present-orientated, in money shortage, or have no confidence in the public

pension system (Suzuki and Zhou, 2001). Since the eligibility for pension benefits requires a minimum of 25 years of premium payments, some of the defaulters are going to lose their entitlement to pension benefits. While premium defaulting was rare in the 1970s and 1980s[1], the most recent default rate is as high as 40% (2009). Put differently, we will see more and more non-pensioners in the future. The welfare program is going to face an even bigger challenge when these present premium defaulters enter retirement.

Table1 Household Types on Welfare (2005-2010)

	2005	2006	2007	2008	2009	2010
Total number of households on welfare	1,041,508	1,075,820	1,105,275	1,148,766	1,274,231	1,409,067
		(3.3)	(2.7)	(3.9)	(10.9)	(10.6)
Elderly households	43.4%	44.0%	45.0%	45.6%	44.2%	42.8%
		(4.8)	(5.0)	(5.3)	(7.5)	(7.1)
Households whose head is disabled or in illness	37.4%	36.9%	36.3%	35.4%	34.2%	33.0%
		(1.9)	(0.9)	(1.5)	(7.1)	(6.7)
Single-mother households	8.7%	8.6%	8.4%	8.1%	7.8%	7.7%
		(2.3)	(0.3)	(0.5)	(6.6)	(9.2)
Other types of households	10.3%	10.2%	10.1%	10.6%	13.5%	16.1%
		(2.4)	(1.3)	(9.2)	(41.5)	(32.2)

Sources: "Welfare Administration Report" by Ministry of Health, Labour and Welfare.

Notes: (1) Number in the parentheses is the percent changes from previous year. (2) Monthly averaged values. (3) Forecasted values for 2010. Data of the nuclear disaster-affected Fukushima Prefecture (regions other than Koriyama City) is excluded from the statistics of 2011:02.

C. Government Stances on Welfare Approval

The stance of the government is another important but always neglected factor in determining welfare claims. Criteria for approving or rejecting welfare applications are at least partly under the cloud of subjective judgment. For example, the likelihood of a healthy, working-age poor man getting access to welfare could vary notably by his residence (wealthier municipalities are basically more generous), application skills and know-how, and luck. The general stance of the government on welfare approval is not time-invariant, however.

Welfare administration is monitored by the Ministry of Health, Labour and Welfare (MHLW), mainly through detailed notices and orders. When outlining the major notices concerning welfare administration in the last two decades (Table 2), one can easily find swaying government stances on welfare approval. The years between 1998 and 2003 and between September 2008 and the present could be classified as "Eras of Generous Stance", periods in which welfare applications of healthy working-age applicants were relatively easily approved.

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[1] The default rate on national pension premiums was less than 5% in the 1970s. Data source: Homepage of Pension Finance by Pension Bureau, Japan.

The years between 2003 and 2008, however, could be classified as "Era of Tough Stance", a period in which welfare approvals were relatively strict.

What has led to such big changes in the government's stance? Public criticism, regime change and anti-poverty social movements are very likely factors driving these changes.

(Era of Generous Stance: 1998-2003) There have been an increasing number of homeless people in urban Japan since the late 1990s, and the problem of their subsistence rights has been rising as a new social concern. Although Japan's welfare program traditionally turns down any applicants that have no settled residences, it was from then on that MHLW has instructed flexible treatment of homeless welfare applicants. For example, some districts such as Tokyo and Osaka began to help the homeless people secure a residence, a prerequisite for welfare approval, either by subsidizing rental deposits or by directly providing free or cheap lodging houses. As a result, the number of free or cheap lodging houses rose sharply in the Kanto area (Tokyo), and it became much easier for the homeless people to get access to welfare compared to before.

(Era of Tough Stance: 2003-2008) Along with too rapid rises of welfare expenditures and the prevalence of bogus welfare claims, public criticism surged and the government turned to a new direction of curbing the welfare claims. MHLW set up a welfare council named, "Experts Committee on the New Welfare Programs" in 2003 to discuss the revision of welfare law. In December 2005, MHLW and local governments concluded an agreement on *proper* management of the welfare system. Detailed stricter welfare approval criteria were directed to welfare agencies in March 2006, through a formal notice named "Handbook for proper management of the welfare system". In response to this change in stance, welfare agencies began strictly confining welfare applicants and some of the potential users were refused even at the consulting stage, a situation mocked by lawyers and welfare workers as the "Waterfront Strategy" (Mizugiwa Sakusen)[2].

(Era of Generous Stance: September 2008-present) The government stance on welfare approvals returned to a generous one along with the Lehman crisis in September 2008. At the end of 2008, to protest the massive dismissal of dispatched workers, anti-poverty activists set a New-Year Tent village for laid-off workers in Hibiya Park, a place right under the eyes of Japan's political inner circle. As the activities had intended, this action attracted intensive media and political attentions. Under huge political pressure, welfare agencies approved many tent villagers to use welfare in the short term, many of which lacked careful screening. This generous stance was accelerated by the regime transition from the conservative Liberal Democratic Party (LDP) to the Democratic Party of Japan (DPJ) in September 2009. After the regime transition, MHLW issued the notices "Improving welfare administration on poor persons under the urgent

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[2] Under the Waterfront Strategy, some sorrowful incidents happened. In July 2007, for example, a former welfare recipient of Kitakyushu City was found dead from hunger, leaving a message that "I want to eat rice ball" in their diary. Two other similar deaths were found in Kitakyushu City in January 2005 and May 2006.

employment measures" (10/2009) and "Special attention on support for the jobless poor" (12/2009) to formally confirm this generous government stance.

A direct outcome of the government stance of generous approval could be the steep rises of working-age welfare recipients, and this worry has already turned partly into reality. Table 1 discloses an unusually high two-digit increase of "other types of households" in two consecutive years (41.5% rises in 2009 and 32.2% rises in 2010). Since the elderly, those with disabilities or illness and single-mother households have already been excluded from the definition of "other types of households", we can safely declare that welfare claims among healthy working-age men has been increasing at an incredibly high pace in recent years.

In sum, the sluggish economy, population aging as well as government stances are all telling and only telling part of the story about exploding welfare claims in Japan. In this paper, we assume the sluggish economy to be a "temporary or business-cycle factor", because the economic condition will inevitably improve at some point, no matter how many years it takes. On the other hand, both the population aging and government stances are assumed to be "permanent or structural factors" because their effects are long-lasting and are hard to reverse in the short run.

Table 2. Major Policy Events concerning Welfare Administration (1998-present)

	Background	**Policy Shifts (Major Notices)**
1998-2003	**Increasing number of homeless people and rising social concerns. Easier welfare approval to the homeless.**	**Expanding policy support to the homeless to secure a residence, which is a prerequisite for getting welfare approval.**
2003-2008	**Criticism of exploding welfare caseloads. Strict eyes on bogus claims of welfare and tighter welfare approval.**	MHLW notice "Handbook for proper management of welfare system" (03/2006) MHLW notice "Actions against misuses of welfare by Yakuza" (03/2006)
09/2008	**Lehman Shock - Massive dismissal of dispatched workers**	
2008-2009	New-Year Tent village for laid-off workers in Hibiya Park, run by anti-poverty activists, attracted intensive media attention (12/2008-01/2009) **Surging social and political pressures on more generous welfare approval**	MHLW notice "Positive actions against the declining job market" (12/2008) MHLW notice "Intensive support for laid-off and homeless persons" (03/2009)
09/2009	**Change of regime from the LDP to the DPJ**	
2009-present	**Further generosity on welfare approval under Democratic Party administration**	MHLW notice "Improving Welfare administration on poor persons under the Urgent Employment Measures" (10/2009) MHLW notice "Special attention on support for the jobless poor" (12/2009)

III. Decomposing the Shifts of Welfare Claims

While both the "temporary factor" and "permanent factor" are affecting welfare claims to some extent, it is important to understand which factor imposes a relatively larger shock on the

climbing welfare dependency for the reasons we mentioned earlier. In order to verify the relative importance of each factor, we tried to decompose the shifts of welfare claims into two parts: (1) changes due to permanent shock and (2) changes due to temporary shock. Here, the number of welfare claims per 1,000 persons, which we call "public assistance rate", is our analysis target.

A. Method of Blanchard–Quah Decomposition[3]

Using a bivariate VAR (BVAR), Blanchard and Quah (1989) propose a smart way to decompose real GNP into its temporary and permanent components. To take our study as an example, suppose we are interested in decomposing the sequence of the public assistance rate, say $\{y_t\}$, into its temporary and permanent components. In a univariate framework, there is no unique way to perform the decomposition. Blanchard and Quah(1989), however, suggest to introduce a second variable, say unemployment rate $\{z_t\}$ in our case, that is affected by the same two shocks. If we ignore the intercept terms, the bivariate vector moving average (BVMA) of the $\{y_t\}$ and $\{z_t\}$ sequences will have the following form:

$$y_t = \sum_{k=0}^{\infty} c_{11}(k)\varepsilon_{1t-k} + \sum_{k=0}^{\infty} c_{12}(k)\varepsilon_{2t-k} \tag{1}$$

$$z_t = \sum_{k=0}^{\infty} c_{21}(k)\varepsilon_{1t-k} + \sum_{k=0}^{\infty} c_{22}(k)\varepsilon_{2t-k} \tag{2}$$

where ε_{1t} and ε_{2t} are independent white-noise disturbances, each having a constant variance of 1. $c_{ij}(k)$ are the individual coefficients of the polynomials where k denotes lag operator.

The key to decomposing the $\{y_t\}$ sequence into its trend and irregular components is to assume that one of the shocks ε_{1t} has only a temporary effect on the $\{y_t\}$ sequence. In the long run, if the public assistance rate is to be unaffected by the ε_{1t} shock, the accumulated effect of an ε_{1t} shock on the $\{y_t\}$ sequence must be equal to zero. Hence, the coefficients $c_{11}(k)$ in equation (1) must be such that

$$\sum_{k=0}^{\infty} c_{11}(k)\varepsilon_{1t-k} = 0 \tag{3}$$

Although the permanent and temporary shocks are not observed, the problem could be cleared up by using a BVAR estimation. Given both the $\{y_t\}$ and $\{z_t\}$ sequences as stationary, there exists a VAR representation for equations (1) and (2) as follows.

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[3] Description of the Blanchard–Quah decomposition method is from Suzuki and Zhou (2007).

$$y_t = \sum_{l=0}^{p} a_{11}(l)y_{t-l} + \sum_{l=0}^{p} a_{12}(l)z_{t-l} + e_{1t} \tag{4}$$

$$z_t = \sum_{l=0}^{p} a_{21}(l)y_{t-l} + \sum_{l=0}^{p} a_{22}(l)z_{t-l} + e_{2t} \tag{5}$$

where $a_{ij}(l)$ are the individual coefficients and l denotes lag operator. Blanchard and Quah (1989) find that the VAR residual of e_{1t} and e_{2t} are composites of the pure innovations ε_{1t} and ε_{1t}. That is,

$$e_{1t} = c_{11}(0)\varepsilon_{1t} + c_{12}(0)\varepsilon_{2t} \tag{6}$$
$$e_{2t} = c_{21}(0)\varepsilon_{1t} + c_{22}(0)\varepsilon_{2t} \tag{7}$$

Since the values of e_{1t} and e_{2t} can be easily obtained by BVAR estimations, it would be possible to recover the values of ε_{1t} and ε_{1t} if only we know the values of $c_{11}(0)$, $c_{12}(0)$, $c_{21}(0)$, $c_{22}(0)$. Blanchard and Quah show that the BVMA model plus equations (3), (6), and (7) provide exactly four restrictions that can be used to identify these four coefficients. Hence, by substituting the estimates into the following two equations, we can obtain the values of temporary and permanent shocks to the public assistance rate shift.

(Temporary shock) $$y_t = \sum_{k=0}^{\infty} c_{11}(k)\varepsilon_{1t-k} \tag{8}$$

(Permanent shock) $$y_t = \sum_{k=0}^{\infty} c_{12}(k)\varepsilon_{2t-k} \tag{9}$$

Finally, by using the estimation results of equations (1) and (2), we will then be able to estimate the impulse response function, decompose the forecast error variance of public assistance rate, and perform historical decomposition on the public assistance rate.

B. Make a Check of the Data

Before turning to the decomposition results, we make a comparison between the two sequences of our concern—public assistance rate and unemployment rate. The monthly nationwide data over the period April 1960 to March 2010 (N=600) are used. Possibly because these two sequences have diverse trends[4], the original sequence of the public assistance rate seems to have an inverse movement with that of unemployment rate (Figure 2).

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[4] Due to the economic growth and the accumulation of national wealth, the public assistance rate has a downward trend in the long run. The unemployment rate, on the other hand, has an upward trend in the long run because mismatch unemployment has increased substantially along with radical technology innovation and industry structure transitions.

Figure 2 Monthly Shifts of Unemployment Rate and Public Assistance Rate
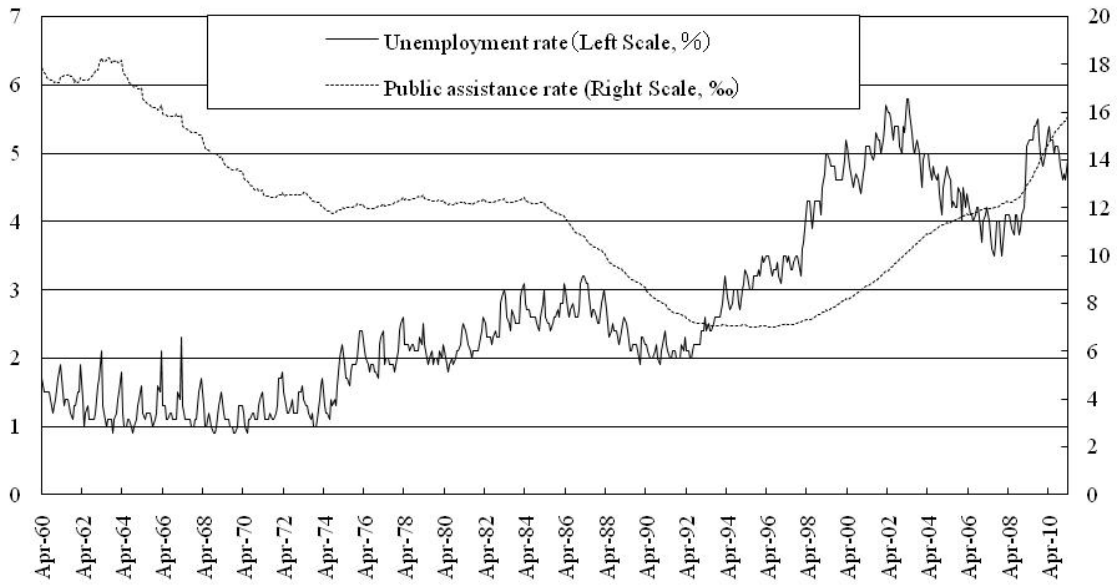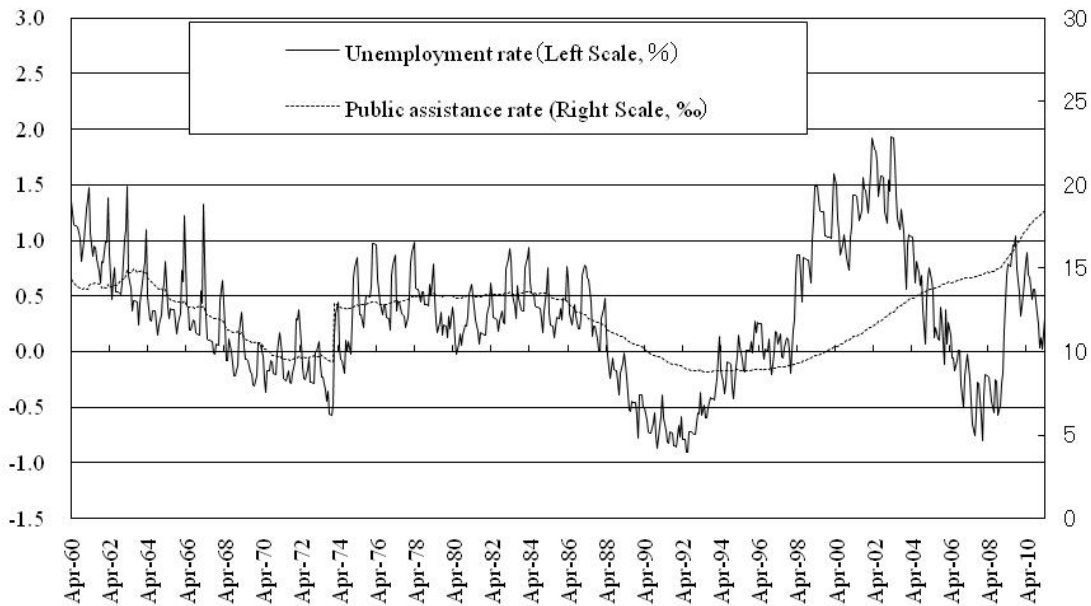(Original Sequences, 1960:04-2011:03)

Figure 3 Monthly Shifts of Unemployment Rate and Public Assistance Rate
(Stationary sequences with time trend & oil shock break removed, 1960:04-2011:03)

After getting rid of the trend by using ordinary least squares (OLS) estimators, however, we find a similar movement between these two sequences. While additionally controlling the effect of structural change of the economy around the first oil shock in 1974[5], we still find a concurrent

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[5] Public assistance rate=12.12865-0.0043507*trend+3.533062*Oil shock dummy
      (38.43)   (-5.66)   (11.55)   Adj R-squared= 0.5149
 Unemployment＝0.3017669+0.0074976*trend+0.340172* Oil shock dummy
        (3.60)   (36.79)   (4.19)   Adj R-squared= 0.8192

movement between the sequences of the public assistance rate and unemployment rate (Figure 3). Hence, the unemployment rate should be regarded as an appropriate variable for Blanchard and Quah decomposition. In estimations of the BVAR, stationary sequences after controls of time trend and oil shock break are used, as shown by the plots of Figure 3.

C. Forecast Error Variance Decomposition and Impulse Response Estimates

Using monthly data over the period April 1960 through March 2011, we estimate the BVAR model with 12-month lags[6] (Table 3). To be noted, we treat the month dummies as exogenous deterministic regressors when performing the BVAR estimation because the original sequences are seasonal.

The forecast error variances of the public assistance rate obtained from the above BVAR estimation are decomposed into two parts: those due to permanent and those due to temporary shocks (Table 4). We find that permanent shocks play a central role not only in the long run but also in the short run, which is a major difference from this paper and Suzuki and Zhou (2007).

Using an older and shorter time series sequence (1960:4-2006:10), Suzuki and Zhou (2007) find that temporary shock accounts for a dominant percentage of the public assistance rate variance in the short-run (e.g., 85.4% at 12 months) and gradually fades in the long-run horizon. This paper, however, indicates that permanent shock dominates even at the very initial horizon. For example, permanent shock is responsible for 82.5% of the variance of the public assistance rate at the 1-month horizon and its weight reaches 94.6% at 120 months (Table 4). The increasing role of permanent shock indicates that there could be some structural changes that arose during the newly added five years (2006:11-2011:03).

Notes: (1) t-values are in parentheses. (2) Oil shock dummy equals 1 if before December 1973; 0 otherwise.
[6] Estimation result by using 24-month lags is basically the same with the case of using 12-month lags.

Table 3 Estimation Result of the BVAR Model

Dependent variables (Y):	(1) Public Assistance Rate			(2) Unemployment Rate		
	Coeff.	S.E.	p value	Coeff.	S.E.	p value
Public Assistance Rate{1}	1.012	23.636	0.000	0.077	0.037	0.039
Public Assistance Rate{2}	0.016	0.261	0.794	-0.106	0.053	0.045
Public Assistance Rate{3}	0.037	0.612	0.541	0.009	0.053	0.865
Public Assistance Rate{4}	-0.032	-0.525	0.599	0.013	0.052	0.809
Public Assistance Rate{5}	-0.001	-0.020	0.984	0.028	0.052	0.597
Public Assistance Rate{6}	-0.003	-0.056	0.956	-0.061	0.052	0.245
Public Assistance Rate{7}	-0.016	-0.267	0.790	0.092	0.052	0.080
Public Assistance Rate{8}	0.014	0.239	0.811	-0.079	0.052	0.131
Public Assistance Rate{9}	0.090	1.489	0.137	0.099	0.053	0.060
Public Assistance Rate{10}	-0.078	-1.278	0.202	-0.073	0.053	0.165
Public Assistance Rate{11}	0.000	0.007	0.995	0.084	0.053	0.111
Public Assistance Rate{12}	-0.042	-0.977	0.329	-0.089	0.037	0.018
Unemployment Rate{1}	0.039	0.787	0.432	0.835	0.043	0.000
Unemployment Rate{2}	-0.009	-0.139	0.890	-0.012	0.055	0.833
Unemployment Rate{3}	-0.041	-0.637	0.525	0.085	0.055	0.126
Unemployment Rate{4}	0.050	0.777	0.438	0.021	0.055	0.698
Unemployment Rate{5}	-0.074	-1.162	0.246	-0.007	0.055	0.903
Unemployment Rate{6}	0.015	0.232	0.816	0.098	0.055	0.074
Unemployment Rate{7}	0.071	1.115	0.265	-0.075	0.055	0.171
Unemployment Rate{8}	-0.022	-0.343	0.732	-0.027	0.055	0.630
Unemployment Rate{9}	-0.005	-0.074	0.941	-0.022	0.055	0.695
Unemployment Rate{10}	-0.082	-1.286	0.199	-0.005	0.055	0.925
Unemployment Rate{11}	0.044	0.691	0.490	0.042	0.055	0.444
Unemployment Rate{12}	0.028	0.562	0.574	0.042	0.043	0.321
Constant	0.120	2.484	0.013	0.345	0.042	0.000
February dummy	-0.102	-2.449	0.015	-0.211	0.036	0.000
March Dummy	-0.065	-1.523	0.128	-0.042	0.037	0.259
April Dummy	-0.238	-5.458	0.000	-0.446	0.038	0.000
May Dummy	-0.139	-3.214	0.001	-0.374	0.037	0.000
June Dummy	-0.086	-2.143	0.033	-0.379	0.035	0.000
July Dummy	-0.080	-1.935	0.054	-0.359	0.036	0.000
August Dummy	-0.101	-2.355	0.019	-0.246	0.037	0.000
September Dummy	-0.134	-2.923	0.004	-0.285	0.040	0.000
October Dummy	-0.106	-2.246	0.025	-0.291	0.041	0.000
November Dummy	-0.083	-2.028	0.043	-0.288	0.035	0.000
December Dummy	-0.046	-1.142	0.254	-0.326	0.035	0.000
N	600			600		
Std Error of Y	2.151			0.561		

Note: Sequences after controls for time trend and oil shock break are used.

Table 4 Forecast Error Variance Decomposition of Public Assistance Rate

| Horizon (Months)	Standard Err.	Percentage of variance due to permanent shock	Percentage of variance due to Temporary shock
1	0.15	82.5	17.5
6	0.41	85.1	14.9
12	0.65	85.4	14.6
24	1.08	86.5	13.5
36	1.43	88.1	11.9
48	1.71	89.7	10.4
60	1.94	91.0	9.0
84	2.31	92.9	7.1
120	2.67	94.6	5.4

Turning to estimations of the impulse response function on public assistance rate, Figure 4 indicates that the impulse of temporary shock fades gradually with time. The impulse of permanent shocks, on the other hand, steadily rises up as the forecasting horizon grows. Still, it takes 64 months for the impulse of temporary shock to converge to zero. Put differently, even if the public assistance rate rises due to temporary shocks, e.g. a recession or an earthquake, it takes nearly 5 years to regain the normal level[7].

Why does the temporary shock keep its influence for such a long time? Like many other advanced nations, Japan's welfare program takes the form of guaranteed monthly income, under which the welfare agency determines the income needed for an eligible person based on family size and area living costs. If there are any earnings obtained, a large part of it will be subtracted from this needed level[8]. Welfare recipients are then inclined to stay in the welfare program rather than work outside even after the initial temporary shock has ended for a long time, a situation which we call "poverty trap". Since Japan has no US-style lifetime cap on welfare, the work disincentive of the welfare program could be huge.

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[7] Suzuki and Zhou (2007) estimate that a much longer period (105 months) is needed for temporary shock to converge to zero. Since our approaches are the same, the gap is likely be formed by the difference in sequence length.
[8] Japan's welfare program permits very little "earned income retained". According to the estimates of Hashimoto (2006), on average 83-93% of the earned income is balanced out. Put differently, if a welfare receiver earns 100 yen, only 7 to 17 yen will be his or her net income on hand. See Abe (2008) for a detailed discussion about the work disincentive problem of Japan's welfare program.

Figure 4 Impulse Response Function Estimates on Public Assistance Rate
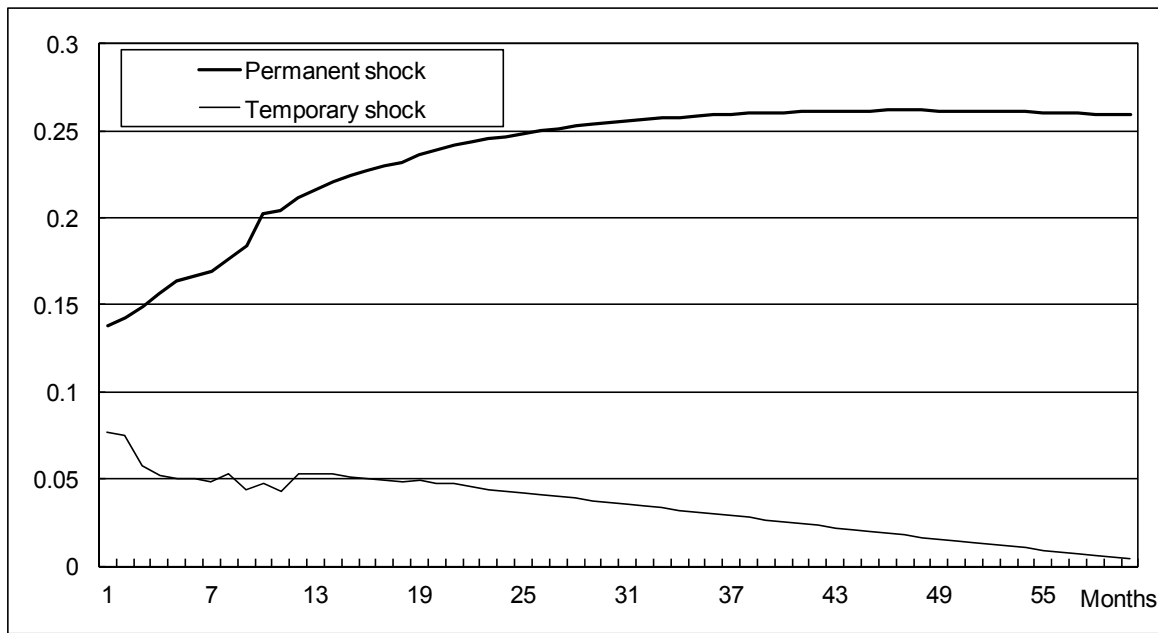
Note: The impulse being imposed is one standard error shock.

D. Historical Decomposition on Recent Rapid Rises of Public Assistance Rate

After decomposing the forecast error variance into temporary and permanent shocks throughout the whole estimation period, we then turn to another important issue: How should the rapid rises of welfare claims in recently years be understood?

"Historical decomposition" serves the goals of verifying the relative importance of permanent and temporary shocks within a limited period. Since April 1992 is the most recent bottom point of the welfare assistance rate (Figure 1), we choose the recent 228-month sequence (1992:04-2011:03) as the target of historical decomposition.

The approach is simple. First, we estimate a BVAR model by using the previous sequence (1960:04-1992:03). Second, using the BVAR estimates, we forecast the values of the public assistance rate of our concerned sequence (1992:04-2011:03) through dynamic simulations. Third, we compute the gap between the real and forecasted values of the public assistance rate in regard to our concerned sequence (Figure 5). This gap is the part of changes that could not be explained by previous information and is likely born solely from the exogenous shocks that emerged since April 1992. Finally, we decompose this gap into permanent and temporary components (Figure 6).

Figure 5 Gap between Real Values and Baseline Forecasts of Public Assistance Rate
(April 1992-March 2011)
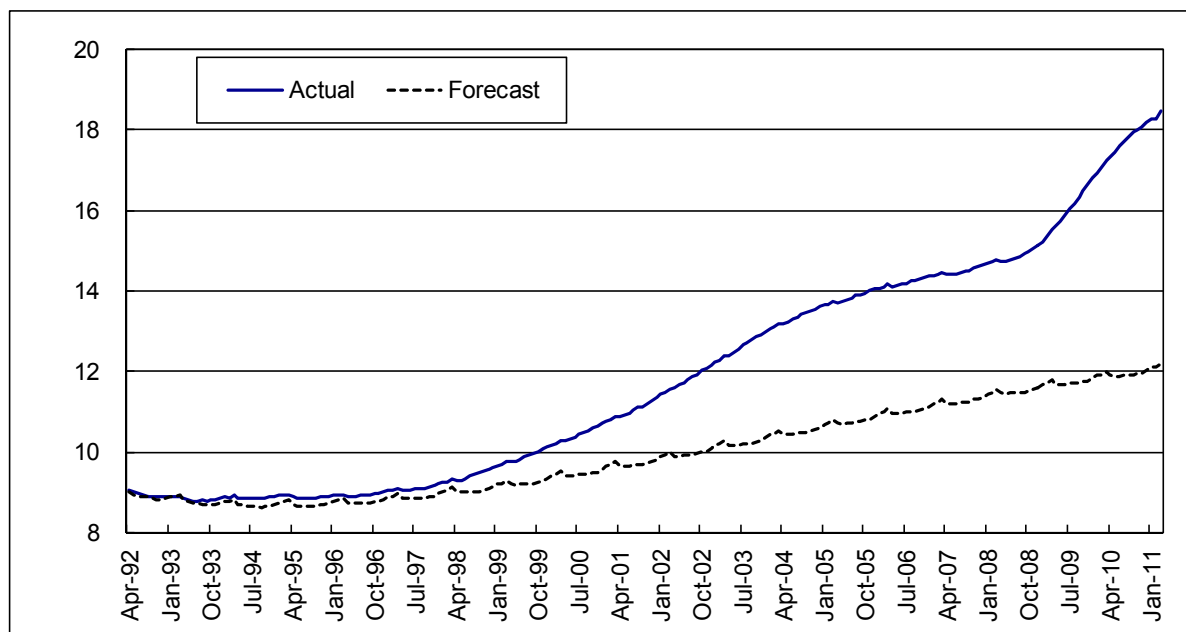
Note: Sequences after controls for time trend and oil shock break are used.

Figure 5 demonstrates the gap between baseline forecasts and real values of the public assistance rate during the period from April 1992 to March 2011. The real values of the public assistance rate after removing the time trend and oil shock break rose drastically, from 9.1‰ to 18.5‰ (9.4‰ points up). The baseline forecasts of the public assistance rate, however, rise only 3.1‰ points. There is left a forecast-real gap of as large as 6.3‰ points. Worth mentioning is that nearly half (45.2%) of the gap was created after the Lehman crisis. Thus, the unexpected rapid rises of the public assistance rate within the past 19 years are mainly due to exogenous and unexpected shocks that emerged after 2008.

Looking deeper into the components of the gap, the result of the historical decomposition (Figure 6) indicates that permanent shock plays a particularly important role in enlarging the forecast-real gap after 2008. Permanent shock accounts for only 52.0% of the forecast-real gap at the beginning of the Lehman shock (September 2008), but its share reaches as high as 82.3% in April 2011. Dating back to the pre-Lehman period, we find that the power of permanent shock has once experienced rapid expansion between 1998 and 2002. The expansion was temporarily interrupted by the mildly recovering economy, a good time (2003-2007) termed "Izanagi Keiki". And then, it came back, with even stronger power. However, as a whole, permanent shock imposes a continuously positive impact on the public assistance rate and should be regarded as the main driving factor of the upward shift of the public assistance rate.

Figure 6 Historical Decomposition on the Forecast-Real Gap of Public Assistance Rate
(April 1992-March 2011)
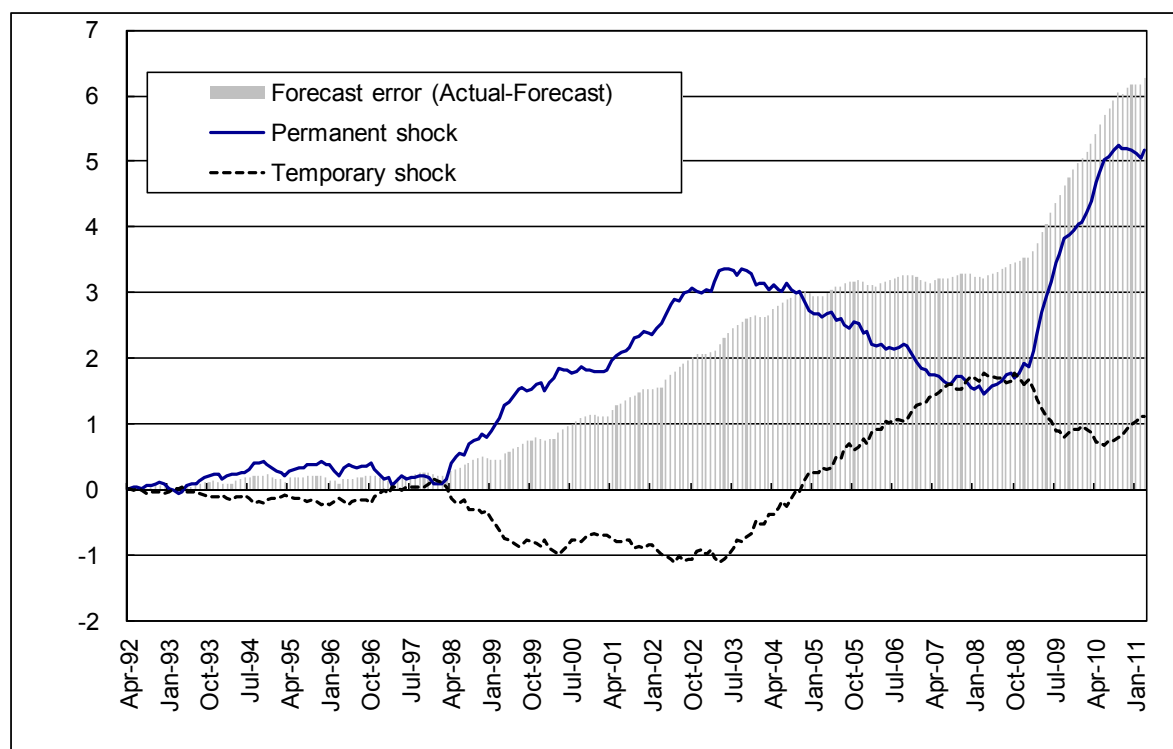
Note: Sequences after controls for time trend and oil shock break are used.

Although the temporary shock is not responsible for the quantitative upward shift of the public assistance rate, it did work as a driving force for the rises of welfare claims in recent years (2005-present). Figure 6 also indicates that there exists a time lag between business cycle and public assistance rate. For example, the Japanese economy has been turning toward recovery since 2003, but the temporary shock keeps imposing a positive impact on the public assistance rate. This lag arose because even with the economy recovering, the present public assistance recipients may need some time to search for new jobs before they stop using welfare. On the other hand, even if the economy is entering a recession and the unemployment rate is rising, the new jobless may not immediately turn to welfare use because they possibly have savings or unemployment insurance benefits.

IV. Discussions: How to Interpret Permanent Shock

How can we interpret this strengthened role of permanent shock? Shall we interpret it as the result of population aging? Or, shall we regard it as an outcome of changing government stance upon welfare approvals? Possibly both, but we suspect that the government stance factor could represent a larger source of the permanent shock in recent years.

It should be remembered that aging only moves forward and steadily, while government stance swings forward and backward, as we mentioned earlier. If aging presents the permanent
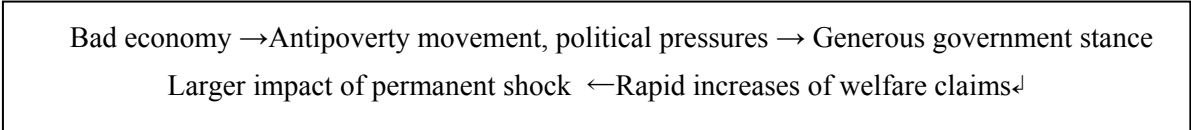
shock, the influence of the permanent shock should be accumulated steadily upon the whole span. In fact, however, the expansion of the permanent shock is far from being steady and was obviously interrupted between 2003 and 2007 (see Figure 6). Instead, we find a linked movement with government stance and the strength of permanent shock (See Table 5).

Table 5 Linked Movements between Government Stance and Permanent Shock

	Influence of Permanent Shock	Aging	Economy	Government Stance
1998-2002	Strengthened	Proceed Steadily	Recession	Generous
2003-2007	Weakened	Proceed Steadily	Mild Boom	Tough
2008-present	Strengthened	Proceed Steadily	Recession	Generous

It was around 2003 that many public opinions in Japan were criticizing the overuse of welfare, and it was from then that MHLW began to instruct the welfare agencies to exercise stricter oversight on welfare approvals. The return to greater welfare use in 2008 is accompanied by a surge of political pressure from anti-poverty movements, and this was further enhanced by the transition of regime from the conservative LDP to liberal DPJ. It is not so hard to find that the influence of permanent shock strengthened (or weakened) in parallel with the generous (or tough) government stance toward welfare approvals.

Although we suspect government stance represents a larger source of the permanent shock for the above reason, our conclusion is tentative. As the above table shows, THE impact of permanent shock also varies simultaneously with economic condition: being strengthened in recession and being weakened in boom. Hence, a more likely flow could be as represented in the following chart.

Bad economy →Antipoverty movement, political pressures → Generous government stance
Larger impact of permanent shock ←Rapid increases of welfare claims↵

No matter whether it is the bad economy that triggered a generous government stance or not, as long as the government stance on welfare approvals stays as it is now, the public assistance rate is going to keep rising at a high pace in the coming future.

However, to what extent can Japanese nationals afford the heavy burden of welfare programs? The total expenditure on the welfare program has already exceeded 3 trillion yen in 2010, which is nearly double the size compared to one decade ago. If this trend prevails in the coming two decades, the annual expenditures on welfare programs is likely to reach 10 trillion yen, a figure big enough to spur a bankruptcy of the government. In order to maintain a fiscally stable and sound welfare system in the future, MHLW may need to develop a stricter stance on approvals even in a bad economy.

V. Concluding Remarks

Separating the shocks on welfare claims into permanent and temporary parts is challenging because of the complicated technique. Interpreting the permanent shock, however, is an even more difficult task. As such, very few studies provide a definite separation on these two shocks. Nonetheless, this paper has confirmed the increasing power of permanent shock through estimates, and for the first time, points out that the government's generous stances upon welfare approvals could play an important role in driving up welfare claims in recent years.

Anti-poverty is definitely an important policy target for any government. Allowing many healthy, working-age poor to live on welfare, however, cannot be justified. According to the projection of National Institute of Population and Social Security Research, Japan's old-age dependency ratio is going to increase from the current 26% to the 50% range in 2030. Japan obviously cannot afford letting more and more precious workable citizens turn from the "supporting groups" to the "supported groups". The proper way to help the working-age poor is not to provide easy welfare, but to encourage them to search for new jobs either through tax credits or by providing job search assistance and free vocational training.

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Recent Trends in Consumption in Japan and the Other G7 Countries[1]

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Introduction

The Japanese economy has been in a prolonged recession for most of the past two decades (Japan's so called "Lost Decades"), and private consumption has been stagnant for most of this period along with the other components of gross domestic product (GDP), although, as Horioka (2006) shows, the stagnation of public and private investment has been even more pronounced than the stagnation of private consumption.

Even during the relatively prosperous period between the Asian financial crisis of 1997-98 and the global financial crisis of 2008-09, the Japanese economy has been relatively stagnant, with private consumption being no exception. In this paper, we present data on recent trends in private consumption growth in Japan and the other Group of Seven (G7) countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) during the 2002-09 period and explore the reasons for why private consumption was stagnant in Japan compared to the other G7 countries.   We compare Japan to the other G7 countries because of their importance in the world economy and because we wanted to compare Japan to countries at a similar stage of economic development and with similar market systems.

This paper is organized as follows: In section 2, we present data on recent trends in private consumption in the G7 countries, and in section 3, we present data on recent trends in possible determinants of private consumption (such as GDP, household incomes, household saving rates, and household wealth) in the G7 countries in order to shed light on the reasons for differences among the G7 countries in recent trends in private consumption. Section 4 is a brief concluding section that summarizes and makes policy prescriptions.

1. Trends in Private Consumption Growth

Table 1 shows, among other things, data on the average annual growth rate of private consumption in the G7 countries during the 2002-07 and 2007-09 periods, and as can be seen from this table, there were substantial differences among the G7 countries in private consumption

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growth rates in both periods. During the 2002-07 period, private consumption increased fastest in Canada (3.74%) and the United States (2.98%), relatively fast in the United Kingdom (2.44%) and France (2.09%), and slowest in Japan (1.30%), Italy (1.05%), and Germany (0.33%).

Table 1: Growth Rate of GDP and Consumption					
	2002-2007			2007-2009	
	GDP	Net Household Disposable Income	Consumption	GDP	Consumption
Canada	2.61	3.52	3.74	−0.98	1.67
France	2.00	1.94	2.09	−1.41	0.21
Germany	1.55	0.40	0.33	−1.91	0.27
Italy	1.14	0.51	1.05	−3.29	−1.30
Japan	2.10	1.00	1.30	−3.76	−1.33
U.K.	2.68	1.14	2.44	−2.50	−1.38
U.S.	2.75	2.61	2.98	−1.35	−0.73

During the 2007-09 period, the average annual private consumption growth rate was lower than during the 2002-07 period in all of the G7 countries due to the advent of the global financial crisis, with four of the G7 countries (Italy, Japan, the United Kingdom, and the United States) showing negative private consumption growth rates and only three of the G7 countries (Canada, France, and Italy) showing positive private consumption growth rates. However, the rank ordering of the G7 countries with respect to private consumption growth remained largely unchanged, with Canada still showing the highest average annual private consumption growth rate, France still ranking relative high, and Italy and Japan still ranking relatively low. Germany rises in the rankings, while the United Kingdom and the United States fall in the rankings.

Thus, private consumption growth rates varied considerably among the G7 countries during both time periods, and moreover, the differences among the G7 countries were relatively stable.

2. Determinants of Private Consumption Growth

In the previous section, we found that there are substantial and stable differences among the G7 countries in private consumption growth rates.   In this section, we attempt to shed light on the reasons for these substantial differences. However, we confine our analysis to the 2002-07 period for two reasons—first, because sectoral data (in particular, data on the household sector) are still not yet available for the most recent period, and second, because the 2002-2007 period was a relatively prosperous period between the Asian financial crisis and the global financial crisis and it is important to understand why private consumption growth was relatively stagnant in Japan even during this period of global prosperity.

(1) GDP Growth

Arguably, the most important determinant of consumption growth rates is GDP growth rates. Table 1 shows data on GDP growth rates alongside data on private consumption growth rates in

the G7 countries during the 2002-07 and 2007-09 periods. As can be seen from this table, there is, in fact, a high correlation between private consumption growth rates and GDP growth rates. Moreover, private consumption growth rates roughly equal GDP growth rates in many countries, including France (2.09% vs. 2.00%), Italy (1.05% vs. 1.14%), the United Kingdom (2.44% vs. 2.68%), and the United States (2.98% vs. 2.75%). However, private consumption growth rates exceed GDP growth rates by a considerable margin in some countries such as Canada (3.74% vs. 2.61%) and fall short of GDP growth rates by a considerable margin in some countries such as Germany (0.33% vs. 1.55%) and Japan (1.30% vs. 2.10%). Thus, GDP growth rates are apparently not the only determinant of private consumption growth rates.

(2) Household Income Growth

Another possible determinant of consumption growth rates is the growth rates of net household disposable income, and it is quite possible that it is a more important determinant of consumption growth rates than GDP growth rates because households finance their consumption primarily from net household disposable income. Table 1 shows data on the average annual growth rate of net household disposable income in the G7 countries during the 2002-07 period in addition to showing data on the average annual growth rates of consumption and GDP during the same time period, and as can be seen from this table, there is a high correlation between GDP growth rates and household income growth rates, with the two being roughly equal in many countries including France (2.00% vs. 1.94%) and the United States (2.75% vs. 2.61%).

However, there are some notable exceptions: the average annual household income growth rate was considerably higher than the average annual GDP growth rate (3.52% vs. 2.61%) in Canada during the 2002-07 period, and the fact that the average annual private consumption growth rate was higher than the average annual GDP growth rate in Canada (3.74% vs. 2.61%) during the 2002-07 period can be explained by the fact that the average household income growth rate was higher than the average GDP growth rate in that country during this period.

Conversely, the average annual household income growth rate was considerably lower than the average annual GDP growth rate in Germany (0.40% vs. 1.55%) and Japan (1.00% vs. 2.10%) during the 2002-07 period, and the fact that the average annual private consumption growth rate was lower than the average annual GDP growth rate in Germany (0.33% vs. 1.56%) and Japan (1.30% vs. 2.10%) during the 2002-07 period can be explained by the fact that the average annual household income growth rate was lower than the average annual GDP growth rate in these countries during this period. Thus, not surprisingly, household income growth rates appear to be much better at explaining private consumption growth rates than GDP growth rates.

(3) Household Saving Rates

Another possible determinant of consumption growth rates is the household saving rate. Consumption growth rates will exceed household income growth rates if the household saving

rate declines over time and vice versa. In order to shed light on the importance of trends over time in the household saving rate as a determinant of consumption growth rates, we present data on trends over time in the household saving rate and on the net change in household saving rate in the G7 countries during the 2002-07 period in Table 2.

Table 2: Household Saving Rate							
	2002	2003	2004	2005	2006	2007	Change, 2002-07
Canada	3.53	2.70	3.24	2.18	3.63	2.57	−0.96
France	13.66	12.46	12.36	11.37	11.44	11.87	−1.79
Germany	10.06	10.41	10.55	10.63	10.71	10.92	0.87
Italy	11.36	10.34	10.30	9.96	9.19	8.22	−3.14
Japan	5.09	3.88	3.63	3.85	3.65	3.78	−1.31
U.K.	−0.05	0.43	−1.70	−1.26	−2.95	−4.27	−4.21
U.S.	3.65	3.76	3.37	1.48	2.47	1.73	−1.93
Mean	6.76	6.28	5.96	5.46	5.45	4.97	−1.78

As can be seen from this table, the level of the household saving rate varies greatly among the G7 countries, being relatively high in France, Germany, and Italy (8.22% to 13.66%), relatively low in Japan, Canada, and the United States (1.48% to 5.09%), and negative (-0.05% to -4.27%) in the United Kingdom in all years but one (2003, when it was 0.43%). More importantly, the G7 countries also show substantial variation in the net change in the household saving rate during the 2002-07 period, with only Germany showing an increase (0.87 percentage points), Canada, Japan, France, and the United States showing relatively moderate declines (-0.96, -1.31, and -1.93 percentage points, respectively), and Italy and the United States showing relatively sharp declines (-3.14 and -4.21 percentage points, respectively).

The relatively sharp declines in the household saving rates of Italy and the United Kingdom can explain why private consumption growth rates exceeded household income growth rates in Italy and the United Kingdom (1.05% vs. 0.51% in Italy and 2.44% vs. 1.14% in the United Kingdom). Thus, trends in household saving rates can explain the divergence between private consumption growth rates and household income growth rates in some cases.

This factor was not so important in Japan because the decline in its household saving rate was not so sharp (-1.31 percentage points), as a result of which its private consumption growth rate was only slightly (0.30 percentage points) higher than its household income growth rate during the 2002-07 period. To put it another way, one reason for the stagnation of consumption in Japan during the 2002-07 period is the fact that household saving rates declined only moderately during this period, due perhaps to increased pessimism about the future.

(4) Household Wealth

Private consumption growth will also be influenced by changes in household wealth, with increases (decreases) in household wealth due to capital gains (losses) on equities, land, and other assets causing private consumption to increase (decrease) by more than would be expected by GDP growth, household income growth, and trends in household saving rates.

Thus, Table 3 shows data on the ratio of net household wealth to net household disposable

income in 2002 and 2007 and the net change in net household wealth during the 2002-07 period as a ratio of net household disposable income in the G7 countries, and, as can be seen from this table, household wealth increased sharply in France (by 235.0% of household income) and the United Kingdom (by 185.2% of household income), moderately in Italy (by 109.5% of household income), the United States (by 101.4% of household income), and Germany (by 94.0% of household income), and least sharply in Canada (35.8% of household income) and Japan (by 15.9% of household income).

Table 3: Ratio of Net Household Wealth to Household Income			
	2002	2007	Change, 2002-07
Canada	5.127	5.485	0.358
France	5.713	8.063	2.350
Germany	5.336	6.276	0.940
Italy	7.475	8.570	1.095
Japan	7.194	7.353	0.159
U.K.	7.156	9.008	1.852
U.S.	5.143	6.157	1.014
Mean	6.163	7.273	1.110

Thus, the sharp increase in household wealth in the United Kingdom (by 185.2% of net household disposable income) during the 2002-07 period can explain the strong private consumption growth in the United Kingdom (2.44%), and in particular, why the average annual private consumption growth rate during the 2002-07 period was much higher than the average annual household income growth rate during the same period (2.44 vs. 1.14%).

By contrast, the stagnation of household wealth in Japan (it increased by only 15.9% of household disposable income during the 2002-07 period) can explain why private consumption growth was relatively weak during this same period (1.30%).

(5) Conclusion concerning the Determinants of Private Consumption Growth

In this section, we showed that private consumption growth is determined by trends in GDP growth, household income growth, household saving rates, and household wealth but that the relative importance of these factors differs greatly from country to country.

For example, in the case of Japan, we found that the stagnation of consumption during the 2002-07 period was due primarily to the stagnation of household income (which was much more stagnant than GDP) and due partly to the relative stability of household saving rates, which was presumably due in large part to increased pessimism about the future, and the sharp decline in household wealth.

Similarly, private consumption was the most stagnant in Germany due primarily to the stagnation of household income (which was much more stagnant than GDP) and due partly to a moderate increase in its household saving rate.

France showed an intermediate growth rate of private consumption because its household income growth rate was also intermediate, but its private consumption growth rate was somewhat

higher than its household income growth rate, presumably because France showed by far the largest increase in household wealth.

By contrast, the strong growth of private consumption in Canada and the United States was due primarily to the strong growth of household income (far in excess of GDP growth in the case of Canada) and due partly to moderate declines in their household saving rates.

The most interesting cases are those of Italy and the United Kingdom, which showed considerably higher growth rates of private consumption than of household incomes due in large part to the sharp decline in their household saving rates and (especially in the case of the United Kingdom) sharp increases in household wealth.

3. Summary and Policy Implications

In this paper, we found that there has been significant variability among the G7 countries not only in their private consumption growth rates but also in the determinants of private consumption growth during the 2002-07 period, with the relative importance of GDP growth, household income growth, household saving rates, and household wealth varying from country to country.

With respect to Japan, we found that private consumption has been relatively stagnant during the 2002-07 period and that the stagnation of private consumption has been due primarily to the stagnation of household income and due partly to the relatively stability of its household saving rate and the sharp decline in household wealth.

This suggests that the best way of stimulating private consumption and of bringing about a recovery of the Japanese economy as a whole would be to boost household incomes. Possible ways of doing this would be to increase wages, create more job opportunities (especially for young workers, whose unemployment rates are still very high), provide more opportunities for vocational training, increase the share of regular workers (whose share has been declining), and improve the wages and other benefits and working conditions of part-time and temporary workers (whose share has been increasing).

Finally, since we found that the stability of household saving rates is a contributing factor to the stagnation of private consumption in Japan, improving social safety nets and improving access to consumer credit would also boost private consumption by reducing precautionary saving (see Horioka and Yin (2010) for cross-country evidence on the impact of social safety nets and consumer credit on household saving and consumption).

The author hopes that these policy measures will be adopted as soon as possible so that private consumption as well as the Japanese economy as a whole can receive a boost, enabling it to extricate itself from two "lost decades" of stagnant growth and high unemployment.

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