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The Recent Increase in Dual-Income Households and Its Impact on Consumption Expenditure

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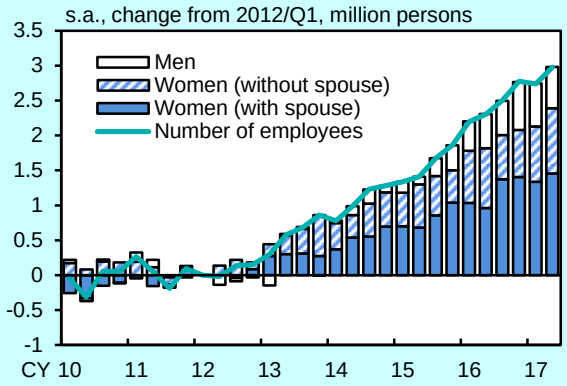
In recent years, the increase in dual-income households has been remarkable. The main factor in this increase has been the successful efforts of the government and firms in promoting female labor force participation in a tight labor market. In addition, negative factors such as the heightened concern of mainly middle-aged people regarding their financial situation in old age has also affected the increase in dual-income households. Looking at the effects of the increase on dual-income households' consumption expenditure and savings, it is clear that the increase in income corresponds with an increase in consumption expenditure. Meanwhile, the increase in dual-income households also contributes to a rise in the savings rate (a decline in propensity to consume), which is considered to be one reason why macroeconomic propensity to consume has declined since about 2013.

Introduction – Increase in Dual-Income Households

In recent years, the increase in dual-income households has been remarkable. Since 2012, the number of employees in Japan has increased by about 3 million people, as labor supply and demand conditions have tightened (Chart 1). Looking at the breakdown of the increases of employees, women, especially women with spouses, increased by about 1.5 million — about half of the increase of employees during this period. Considering that more than 80% of working-age men have jobs,[1] most of these women therefore belong to dual-income households.

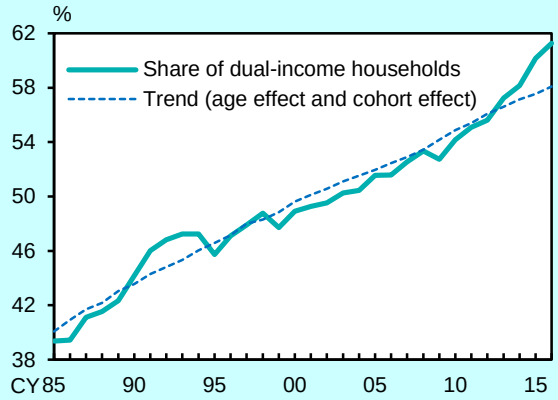
[Chart 1] Breakdown of Increase in Employees



Source: Ministry of Internal Affairs and Communications.

The increase in the share of dual-income households (based on the non-agricultural forestry households from the labor force survey) has been accelerating since 2012 (Chart 2) — displaying an upward trend. This upward trend is influenced by two factors. The first factor is the age effect. The age effect refers to the effects that are particular to a given age segment of the population. The female labor force

[Chart 2] Share of Dual-income Households

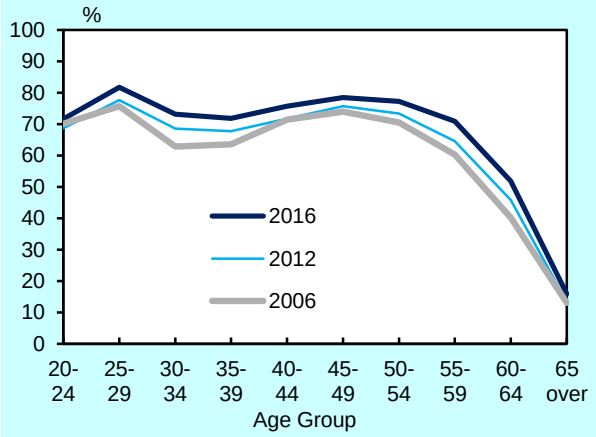


Notes: 1. The share of dual-income households is the share of households in which both the husband and wife work as (non-agricultural) employees in the total number of households in which at least the husband works.
2. Specification of the cohort-based model:
Share of dual−income households$_{j,t}$
= $\beta_{1,j}$ × Wife's age dummy$_j$ + $\beta_{2,k}$ × Cohort dummy$_k$ + $\varepsilon_{j,t}$
t=CY 1985-2016,
j= aged 15−24, … , aged 55−64, and aged 65 and over,
k= born in the 1910s, … , born in the 2000s.

Source: Ministry of Internal Affairs and Communications.

participation rate tends to decline temporarily during the child-birth and child-rearing period. This trend is shown as the M-shaped curve of female participation rate by age, although the curve has been getting flatter in recent years (Chart 3). Therefore, the progress of demographic aging pushes up the ratio of dual-income households. The second factor is the generation effect. The generation effect refers to differences in the share of dual-income households based on the year of birth. In fact, as a result of the progress in women's advancement in Japanese society, the younger generation tends to have a higher share of dual-income households. Therefore, using cohort analysis,[2] we calculate an upward trend of the share of dual-income households. From this analysis, it is clear that the rise in the share of dual-income households since 2012 is much greater than the trend indicates.

[Chart 3] Female Labor Force Participation Rate



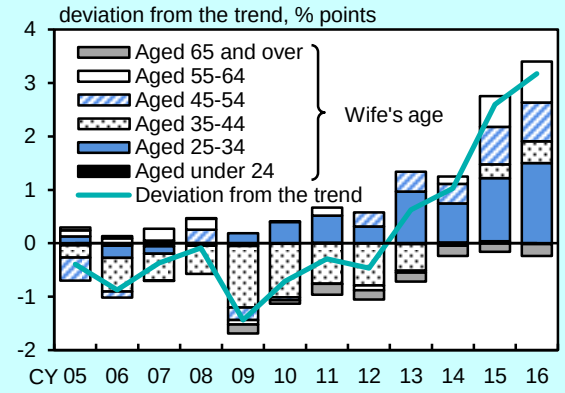
Source: Ministry of Internal Affairs and Communications.

What has caused such an increase in dual-income households in recent years? How does the increase in dual-income households affect consumption and savings? The remainder of this paper focuses on these two subjects.

Factors affecting the recent increase in dual-income households

Firstly, the deviation from the trend for the share of dual-income households was decomposed for each age group. Although there is a rise in most age groups compared to the upward trend, the rise in young people of ages 25-34 and middle-aged people of ages 45-54 are particularly remarkable (Chart 4). There seems to be different causes for rise in the share of dual-income households, however, in the first age group — during the child-rearing years — and in the latter age group — after child-rearing.

[Chart 4] Breakdown of Rise in Share of Dual-income Households



Note: This chart shows the breakdown of the deviation from the trend of the share of dual-income shown in Chart 2 by wife's age group.
Source: Ministry of Internal Affairs and Communications.

First factor: measures to promote female labor force participation

Concerning the rise in the labor participation rate of the younger age group, efforts to promote female labor force participation by the government and firms have been successful. For example, the government has partially revised the Act on Child and Childcare Support, and has been working on improving the environment so that workers raising children can continue working, such as by providing support for the improvement of office-based childcare centers (Chart 5). Under these measures and in a tight labor market, firms are also making efforts to ensure that women of child-rearing age can continue working.[3]

As a result, the M-shaped curve shown in Chart 3 has become flatter in recent years. According to the National Institute of Population and Social Security Research's "National Fertility Survey," the rate of women who continue to work after giving birth to their first child was around 40% from 1985-2009. However, for the period 2010-2014, the rate rose to over 50%.

Second factor: concerns about financial situation in old age

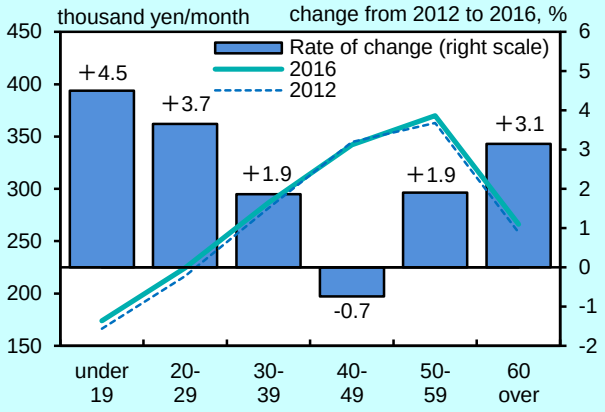
The measures for promoting female labor participation by governments and firms include elements other than child-rearing support; these other measures also contribute to boosting the labor participation ratio of middle-aged women. However, it seems that other factors also affect the rise in the share of middle-aged dual-income households.

[Chart 5] Measures to promote female labor force participation

	Measures	Summary
Jun-13	Japan Revitalization Strategy	(a) Granting of incentives for private sector corporations to promote active social participation by women and support for balancing work and child rearing. (b) Support for the active participation of women according to life stage. (c) Improvement of environment so that both men and women can balance work and child rearing, etc.
Aug-15	The Act on Promotion of Women's Participation and Advancement in the Workplace	Government agencies, local government and private sector corporations with more than 300 employees must: (a) Collect and analyze data on issues of gender and employment. (b) Devise and disclose action plans to improve gender equality with concrete objectives and measures based on these analyses. (c) Make the data on women's participation and advancement, etc available to the public.
Mar-16	Amendments to the Act on Securing Equal Opportunity and Treatment of Men and Women in Employment and the Child Care and Family Care Leave Act	(a) Lowered requirements for fixed-term employees to take family care leave (b) Introduced the possibility to split the family care leave (c) Created an obligation to prevent harassment due to pregnancy, childbirth, maternity leave, etc.
Mar-16	Partial Amendments to the Act on Child and Childcare Support	Support for office-based nursery schools in within companies.
Mar-17	Amendments to the Child Care and Family Care Leave Act	If access to a nursery school is unavailable, child care leave can be extended up until the child reaches 2 years of age.

Sources: Cabinet Office, etc.

[Chart 6] Seniority-wage Curve



Source: Ministry of Health, Labour and Welfare.

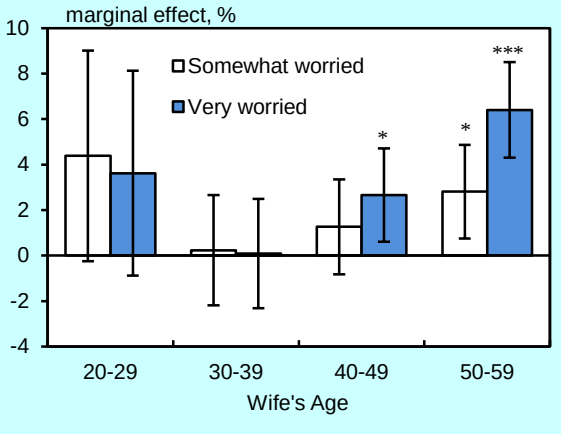
Firstly, middle-aged households supplement a decrease in income of the head of the household through the wife's labor participation. As shown in Chart 6, changes in scheduled cash earnings of full-time employees from 2012 to 2016 were clearly rising among young people and elderly people, but declining in 40s age group. "Douglas-Arisawa's law" states that when the economy worsens, the employment rate of women rises in order to supplement their spouses' income. This mechanism may have worked to increase the share of dual-income households in middle-age age group.

Secondly, for middle-aged people, it is also possible that heightened concerns about their financial situation in old age have contributed to an increase in the share of dual-income households. In the econometrical analysis using household microdata, and even taking into consideration the various variables, in households of the 40s and 50s age group who responded they were "a little/very worried about financial situation in old age", the probability of being a dual-income household is significantly higher. In Chart 7(a), the vertical bar shows how in such cases, the probability that both husband and wife were working in old age increases, while the band shows statistical error. In households in the 20s age group who responded that they were worried about their financial situation in old age, the probability that both husband and wife working is high. However, it is not statistically significant because of the large statistical error. In contrast, in the 40s and 50s age group, the vertical bar exceeds the width of the band, meaning that there is a statistically significant effect.

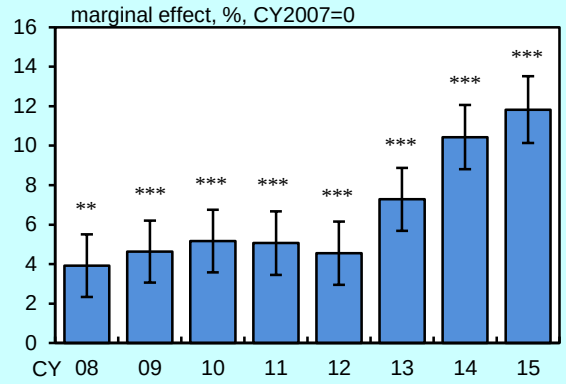
Looking at the details of the result, the annual average of residual errors after various variables including such concerns are controlled, period effect has clearly risen since 2012 (Chart 7(b)). This implies that the recent increase in dual-income households is

[Chart 7] Probability of Becoming a Dual-income Household

(a) Effect of concern about financial situation in old age



(b) Period effect



<Marginal effect on probability that both the husband and the wife work>

Financial assets	Wife's age	Wife's age squared	With husband having reached retirement age
-0.090 ***	4.210 ***	-0.054 ***	-15.61 ***
Having a child under age 6	Number of family members	House ownership	
-22.64 ***	2.243 ***	-3.159	

Estimation period	Observations	Pseudo R^2
2007-2015	16569	0.044

Notes: 1. Microdata drawn from the "Survey of Household Finances" conducted by the Central Council for Financial Services Information. For the estimation, only data for households with at least two persons in which the wife is aged between 20 and 59 is used.

2. In order to examine the effect of household concern about financial situation in old age on probability that both the husband and wife work, the following probit model is estimated,

$$P(Y=1) = P(Y^* > 0)$$
$$Y^* = \beta_0 + \sum_j \beta_{1j} \times AGE_j \times DUM1 + \sum_j \beta_{2j} \times AGE_j \times DUM2 + Survey\ year\ dummy + Control\ variables$$

where Y is a dummy for dual-income households that equals 1 for dual-income households and 0 otherwise. DUM1 and DUM2 are dummies representing how concerned households are about financial situation in old age and are based on the following question in the survey: "In your household, how worried are you about your financial situation in old age? (Single answer required.) 1. Not very worried; 2. Somewhat worried; 3. Very worried." AGE is a dummy for wife's age group in 10-year intervals.

3. Control variables include an education dummy that selects the highest level of schooling from elementary and junior high school, high school, vocational school, college, junior college, university and graduate school.

4. The error bands represent 80 percentiles. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% levels, respectively. The same applies to the charts below.

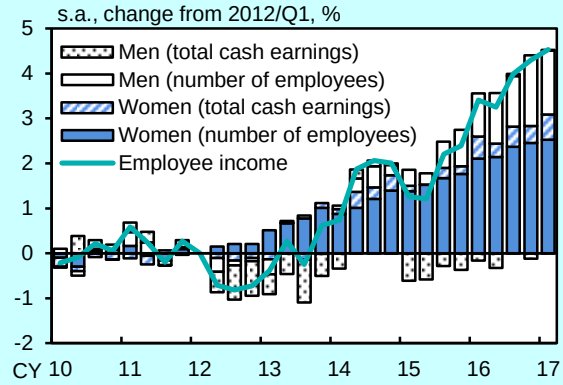
Source: The Central Council for Financial Services Information.

attributable to government and firm initiatives to promote female labor force participation are working well. Therefore, it can be concluded that the recent increase in dual-income households is influenced by both positive factors — through efforts to promote female labor participation — and negative factors — as a result of concerns about financial situation in old age.

Impact on consumption expenditure and savings by increase in dual-income households

The increase in dual-income households as shown in the previous section is boosting employee income on the whole and attributable to an increase in the employment of women with spouses (Chart 8). How does this income increase affect macroeconomic consumption expenditure and savings?

[Chart 8] Breakdown of Employee Income



Notes: 1.Employee income=total cash earnings×number of employees
2. There are discontinuities in the data for total cash earning in January 2012 and January 2015 due to changing samples.
Sources: Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare.

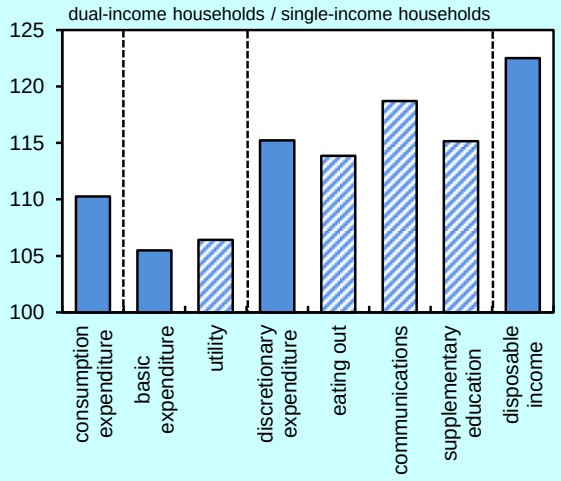
Increasing consumption expenditure

Comparing the consumption expenditures of dual-income households and single-income households (i.e., households with an employed husband and a full-time housewife), the consumption expenditure of dual-income households is higher about 10% due to a higher disposable income (Chart 9).

Looking at this difference in detail, "basic expenditure" — which includes utility expenses and so on — by dual-income households is somewhat higher than those single-income households where the wife is a full-time housewife. Meanwhile, "discretionary expenditure" — which includes frozen foods and already prepared dishes, eating out, mobile phone communication expenses and supplementary education — is clearly higher.

Dual-income households tend to have a high expenditure on mobile phone communication because they are only at home for short periods of time during the day.[4] They also tend to have a high expend on "time-saving discretionary spending," due to time

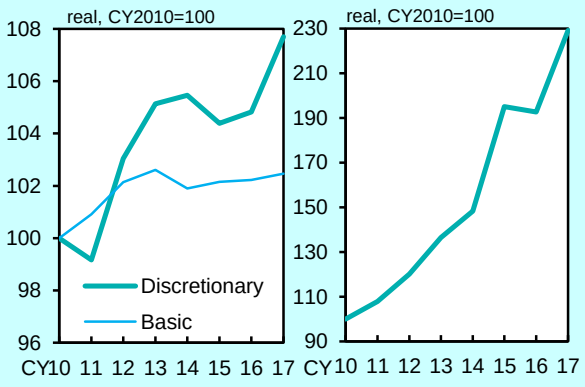
[Chart 9] Consumption Expenditures of Dual-income Households



Notes: 1. Figures are based on the "Family Income and Expenditure Survey" (average from CY2007 to 2016).
2. Discretionary and basic expenditures are calculated based on items of the "Family Income and Expenditure Survey."
Source: Ministry of Internal Affairs and Communications.

constraints on housekeeping, childrearing and so on.[5] Therefore, dual-income households actively use online shopping, which is one form of time-saving purchasing channels.[6] So, it seems that the increase in dual-income households also contributes to an increase in discretionary expenditure and online consumption, as shown in Chart 10.

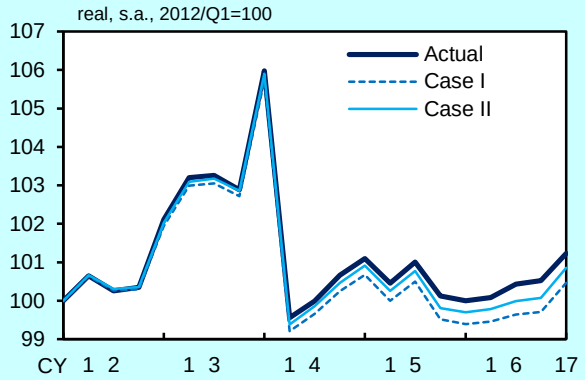
[Chart 10] Recent Consumption Expenditure



Notes: 1. Discretionary and basic expenditures are calculated based on the background data for the "Consumption Activity Index", referring to item classification of the "Family Income and Expenditure Survey."
2. Figures for (b) are derived by dividing the purchases of goods and services through the internet in the "Survey of Household Economy" by CPI (less imputed rent).
3. Figures for 2017 are January-June averages.
Sources: Bank of Japan; Ministry of Internal Affairs and Communications

How does the recent increase in dual-income households affect the macroeconomic consumption? We simply calculate how much consumption expenditure deviates in the following two cases where the number of women in dual-income households: (I) has remained unchanged from the beginning of 2012; and (II) has increased since 2012 along the trend from 2000 to 2011 (Chart 11). In these calculations, the decrease in the first quarter of 2017 is about 0.8% in Case I and about 0.4% in Case II. Although it is necessary to consider that the decrease is slightly overestimated in this calculation,[7] it is possible to conclude that recent increase in dual-income households correspondingly supports the macroeconomic consumption expenditure.

[Chart 11] Impact on Consumption Expenditure by Recent Increase in Dual-income Households



Notes: 1. The case I shows that the number of women of dual-income households has remained unchanged from the beginning of 2012 and the case II shows that it has increased after 2012 along to the trend from 2000 to 2011. We calculate the estimated employee income in each case. Then, we calculate the consumption expenditures that fits the estimated employee income according to the following formula.
log(consumption expenditure)
= 3.37+0.50×log(employee income)
+0.08×log(pension income)+0.13×log(financial assets)
<real, estimation period: 1980/Q1～2016/Q1>
2. Consumption expenditure is based on SNA and figures from 2016/Q1 to 2017/Q1 are obtained by extending private consumption expenditure using the quarter-on-quarter rate of change in the Consumption Activity Index (travel balance adjusted).
Sources: Cabinet Office; Ministry of Internal Affairs and Communications; Ministry of Health, Labour and Welfare; Bank of Japan.

Rise in household saving rate

The increase in dual-income households also contributes to an increase in savings. In Chart 9, we saw that the consumption expenditure of dual-income households is about 10% higher than single-income ones. On the other hand, it can be seen that dual-income households tend to save more due to their higher disposable income of 20%. This trend clearly appears to be attributable to the fact that dual-income households do not tend to increase basic expenditure in proportion to their disposable income. However, this is only confirmation of the general fact that the

income elasticity of consumption — how much consumption is spent when incomes increase — usually does not exceed 1.

Therefore, using household microdata again, we analyze the savings rate of dual-income households, taking into consideration the various household variables that are likely to affect the household savings rate, such as household income, financial assets, and the presence of concerns about financial situation in old age and so on. We find that the savings rate of dual-income households increases by 0.78 to 0.88 percentage points even when we control for income and financial assets (Chart 12).

[Chart 12] Propensity to Consume of Dual-income Households

dependent variables : saving rate, %

Variables	Coefficient	
	Estimation I	Estimation II
Dual-income household	0.880 ***	0.780 ***
Concerns about old age finances	—	0.752 ***
Household income (million yen)	0.825 ***	0.530 ***
Age	-0.133	0.019
Age squared	-0.001	-0.003 **
Financial assets (million yen)	0.197 ***	0.138 ***
Financial debt (million yen)	-0.046 ***	-0.040 ***
Number of family menber	-0.888 ***	-0.700 ***
House ownership	-2.420 ***	-2.435 **
House purchasing planned	2.029 ***	1.809 ***
Constant	9.783 ***	9.913 ***
Estimation period	2007-2015	
Observations	14547	8297
Pseudo R^2	0.034	0.022

Notes: 1. Microdata from the "Survey of Household Finances" conducted by the Central Council for Financial Services Information was used. Households with a saving rate exceeding 2σ are excluded.

2. Since the savings rate of this survey can be only 0 or more, the tobit model was applied.

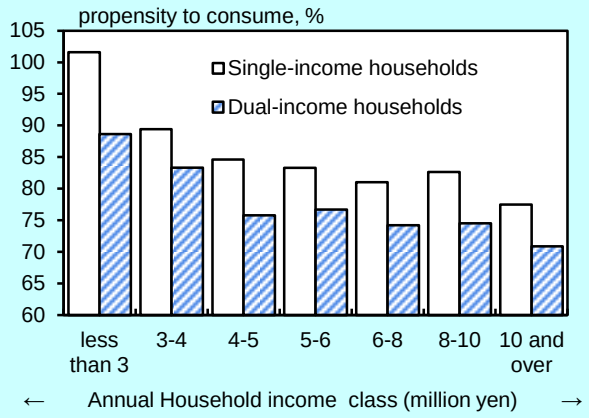
3. The estimation includes dummies for survey years.

4. There is endogeneity problem such that less saving leads to the concerns for financial situation in old age. Therefore, in the estimation II, we excluded samples that chose "There is no economically affordable way to prepare for savings for my old age."

Source: The Central Council for Financial Services Information.

This trend also appears in the propensity to consume, where that of dual-income households is lower in any income class compared with households where the wife is a fulltime housewife (Chart 13). The increase in dual-income households with low propensity to consume contributes to the pushing down of the macroeconomic propensity to consume. In fact, the macroeconomic propensity to consume has declined clearly in recent years, and it seems that structural changes such as an increase in dual-income households with low propensity to consume have also affected this change (Chart 14).

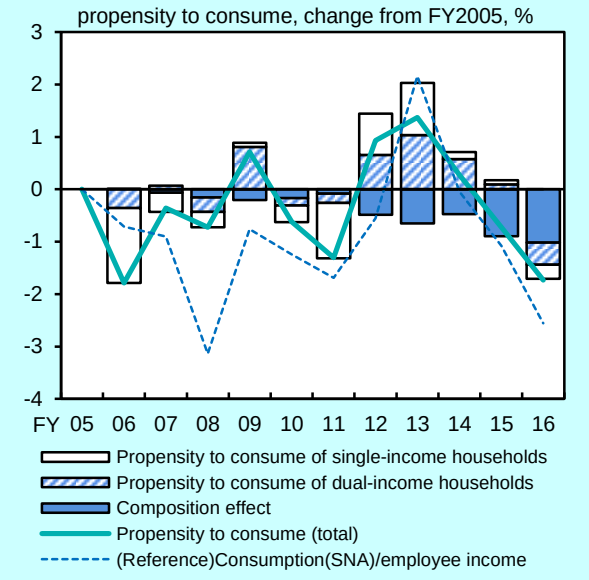
[Chart 13] Propensity to Consume by Type of Household



Notes: 1. Figures are based on worker households with at least two members in the "National Survey of Family Income and Expenditure."
2. Single-income households in this chart includes households with a non-working husband and working wife.

Source: Ministry of Internal Affairs and Communications.

[Chart 14] Propensity to Consume



Note: Figures are based on worker households with at least two members from the "Family Income and Expenditure Survey."

Sources: Ministry of Internal Affairs and Communications; Cabinet Office.

Concluding Remarks

In this paper, we focused on the recent increase in dual-income households and its impact on consumption and saving trends.

Regarding the recent increase in dual-income households, government and firm efforts to promote female labor force participation have been successful, increasing the number of women working. In addition, factors such as heightened concern about the financial situation after retirement of mainly middle-aged

people have also affected the increase of dual-income households.

Next, we showed that the increase in dual-income households has an effect on consumption correspondingly by increasing income. In particular, it seems that the increase in dual-income households is pushing up discretionary expenditure, including eating out, mobile phone communication expenses, and online consumption.

On the other hand, an increase in dual-income households has also contributed to an increase in the savings rate (a decline in propensity to consume). Very recently, macroeconomic propensity to consume stopped declining, but it continued declining trend since 2013. It seems that such movements are affected by factors such as the replacement cycle of durable goods consumption,[8] and as shown in the previous section, the increase in dual-income households.

As the population declines, the promotion of the empowerment of women and the elderly remain as important issues for the Japanese economy. Amid such circumstances, the share of dual-income households will continue to increase. It is important to examine how the increase in dual-income households has an effect not only on consumption but also on the economy and society as a whole and to consider what kind of system is desirable when assuming an increase in dual-income households. We would like to deepen our analysis by looking at these issues in the future.

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[1] Average from 2012 to 2016.

[2] Cohort analysis is a method of dividing the following three effects from time-series data categorized by age segments: (1) the age effect (effects that are particular to a given age segment), (2) the period effect (effects that are particular to a given survey year), and (3) the generation (or cohort) effect (effects that are particular to individuals born in a given year).

[3] For corporates' efforts to promote the empowerment of women and seniors, see the annex paper to the Regional Economic Report, "Kaku chiiki ni okeru jyosei no katsuyaku suishin ni muketa kigyō tō no torikumi" [Firms' initiatives toward promoting women's empowerment in each region] released in June 2017 (available only in Japanese).

[4] Looking at the long-term trend of communication expenses of dual-income households and single-income households in the Ministry of Internal Affairs and Communications' "National Survey of Family Income and Expenditure," the expenditure of both households was roughly the same when landline telephone expenses were the mainstay of communications (dual-income household / single-income households: 97%, average in 1989 and 1994). However, since the 1999 survey when the popularity of mobile phones began to spread, the communication expenses of dual-income households clearly exceeded those with single incomes (119%, average since 1999 survey). Focusing on mobile phone communication charges, the difference becomes even larger (130%, average since 2004 survey). This is considered to be partly due to the fact that those in dual-income households tend to spend longer outside of the home, and consequently they are more likely to use high performance smartphones compared to conventional mobile phones, and to subscribe to a more expensive plan to ensure a stable communication environment (speed, traffic volume, ease of connection, and so on).

[5] According to the Ministry of Internal Affairs and Communications' "Survey on Time Use and Leisure Activities Basic Survey on Social Life 2011," the time spent on housekeeping, childcare and shopping is 408 minutes per day for a housewife in a single-income household and 255 minutes for a wife in a dual-income household. On the other hand, the time spent on housework, childcare and shopping by the husband does not differ between dual-income households and single-income households (single-income household: 40 minutes per day, dual-income household: 34 minutes per day). These results show that wives in dual-income households continue to do the housekeeping and so on, but under strong time constraints.

[6] According to the Ministry of Internal Affairs and Communications' "White Paper on Information and Communications in Japan 2016," the questionnaire results show that online shopping saves about 40 minutes - 1 hour every shopping.

[7] In this calculation, we do not consider the tendency of propensity to consume of dual-income households to be lower than that of single-income households, and estimate using average income elasticity value of household as a whole.

[8] For details of a replacement cycle for durable goods, see the Bank's research paper "Recent Developments in Durable Goods Consumption: A Perspective from Spectrum Analysis" released in March 2017.

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