

[Research Note]

## Are People Money Rich and Time Poor in Japan?

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### Introduction

It is often believed that the quality of our life can be evaluated based on two essential commodities, the amount of income we earn and the amount of free time we have left over after working to generate that income. Several time-use researchers and economists have emphasized the importance of free time when considering the quality of a person's life.

Bittman & Matheson (1999) emphasized the importance of free time as follows; "The ability to participate in social life is the product of both access to leisure goods and services, and a sufficient quality of leisure time." Harvey (1996), a Canadian economist having lead the International Association for Time Use Research, concluded that "time poor people realize less household production, as the result of their time deficit, have to substitute these 'missing' products and services by market products and services."

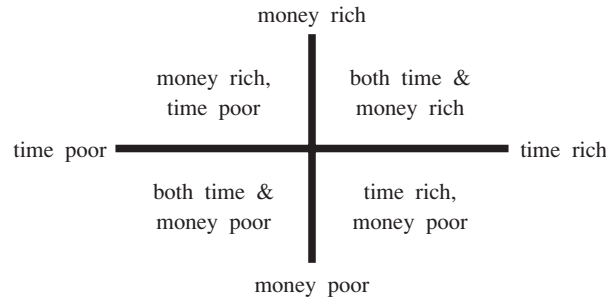
A theoretical economics has examined the maximization of household utility between income preference and leisure time preference<sup>1)</sup>. It explains how households turn their income preference to leisure time preference based on the indifference curve. It is theoretically known that households turn their income preferences to leisure time preferences at some level of income.

In this paper, we try to find empirically at what income level households change their preferences from income to leisure time. This is clearly different from concerns of such time use

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Footnote: This paper was based on our paper, presented at 2008 IATUR (International Association for Time Use Research) in Sydney, Australia.

Figure 1 Typology of money and time



researchers as Bittman and Harvey. Time use data are very convenient for studying the relation of the changing preferences of households and their income level, since they include data of working time and leisure time, and household income data.

In the current study, we analyzed the relationship between annual income and time usage of single income earners in Japanese households, for simplicity and accuracy of observations. We can use the data of household income levels, not that of the individual household members, as is explained later. People may be both time and money rich, time rich but money poor, money rich but time poor, or both time and money poor. We conducted fact finding research from a theoretical economics standpoint.

## 1. Method

### 1.1 Data Collection

We collated the data from a national survey on time use and leisure activities which was conducted by the Japanese Statistics Bureau in 2001 (Ministry of Public Management, Home Affairs, Posts and Telecommunications, Japan). For obtaining ideal data to examine macro-economic theoretical problems, we have carried out computing work on micro data with the permission of the Ministry of Internal Affairs and Communications.

Let us explain more about this survey.

Sample of the survey:

This national survey was conducted to investigate individual household members in Japan. The questions in the survey were directed at individuals who were 10 or more years old. In this survey, about 190,000 people in about 73,000 randomly selected households were investigated. A stratified two-stage sampling method was adapted in the survey.

Period of the survey:

The survey was conducted over a nine-day period from 13<sup>th</sup> to 21<sup>st</sup> of October, 2001. Any two consecutive weekdays were chosen by the individual respondents.

Method of the survey:

Before the survey period, the enumerator visited the participating households to distribute the questionnaires. After the survey period, the enumerator revisited the same households to collect the completed questionnaires.

Classification of the data:

A pre-coded diary method was used to record the daily activities of each person. The recorded daily activities were then classified into 20 sub-categories. These sub-categories were then grouped into three main categories. We will explain the classification method of the daily activities in more detail later.

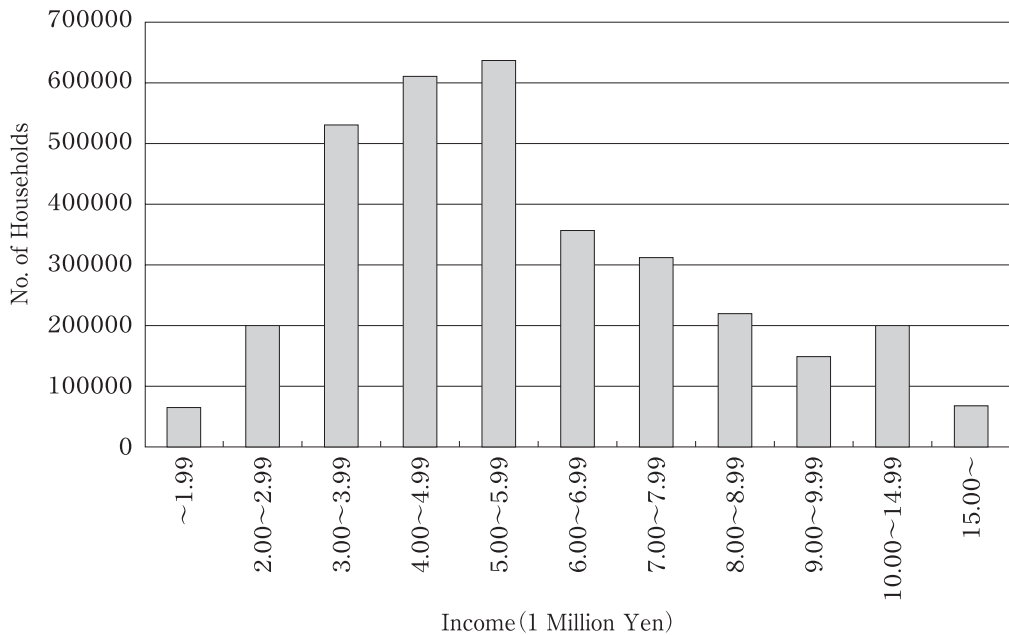
Weighting:

The classified data was weighted so that the data could be regarded as a representation of the Japanese population.

### 1.2 Respondents and Variables

In the national survey, only the total annual income value of each household was recorded. The annual income of each household member was unknown, so for the purposes of our study, we only focused on nuclear families with a single income earner. Also, to further standardize the data, the income earner of the household had to be the husband while the wife and children had to be unemployed. In addition, the children in each household had to be either students or infants. If the wife or a child in the household earned any money, the household data was deleted from the sample.

Figure 2 Distribution of households by income



Income distribution:

The total annual income of each household was categorized into 11 groups.

- 1) ~1.99 million yen
- 2) 2.00~2.99 million yen
- 3) 3.00~3.99 million yen
- 4) 4.00~4.99 million yen
- 5) 5.00~5.99 million yen
- 6) 6.00~6.99 million yen
- 7) 7.00~7.99 million yen
- 8) 8.00~8.99 million yen
- 9) 9.00~9.99 million yen
- 10) 10.00~14.99 million yen
- 11) 15.00 million yen~

Currently one hundred yen is roughly equivalent to one US dollar, so one million yen is the equivalent of about ten thousand US dollars.

As is shown in Figure 2, the mode of the income distributions is at 5.00 to 5.99 million yen. The income distributions show normal distributions, but are not symmetrical. The second and third modes are at the lower rank of income between 3.00 to 4.99 million yen.

Classification of the daily activities:

As we mentioned before, the recorded daily activities were then classified into 20 sub-categories. These sub-categories were grouped into three main categories. The three main categories were primary activities, secondary activities, and tertiary activities.

The primary activities consisted of 'sleep,' 'meals' and 'personal care.' The secondary activities comprised paid work and unpaid work. The tertiary activities included all the other activities. Time spent on tertiary activities was also referred as 'free time.' The tertiary activities were divided into two types of activities; one was 'active free-time activities' and the other was 'passive free-time activities.' During active free-time activities, people used their time for 'studies and research,' 'hobbies and entertainment,' 'sports' and/or 'volunteer and social activities.' This study did not investigate passive free time activities.

## 2. Data Analysis and Fact Findings

### 2.1 Annual Income and Paid Work Time

Figure 3 illustrates the relationship between annual income and time. The horizontal axis shows the annual household income in yen, and the vertical axis shows how many minutes that the respondents spent on the three different activities on weekdays. The primary, secondary and tertiary activities were plotted for each income group and the secondary activity was divided into paid and unpaid work.

As we can see in this chart, the time spent for paid work slightly increased with the annual income up to 10 million yen and decreased when the annual income exceeded 10 million yen. For annual income between 8 million yen to 10 million yen, the time spent for paid work

Figure 3 Income and time (on weekdays)

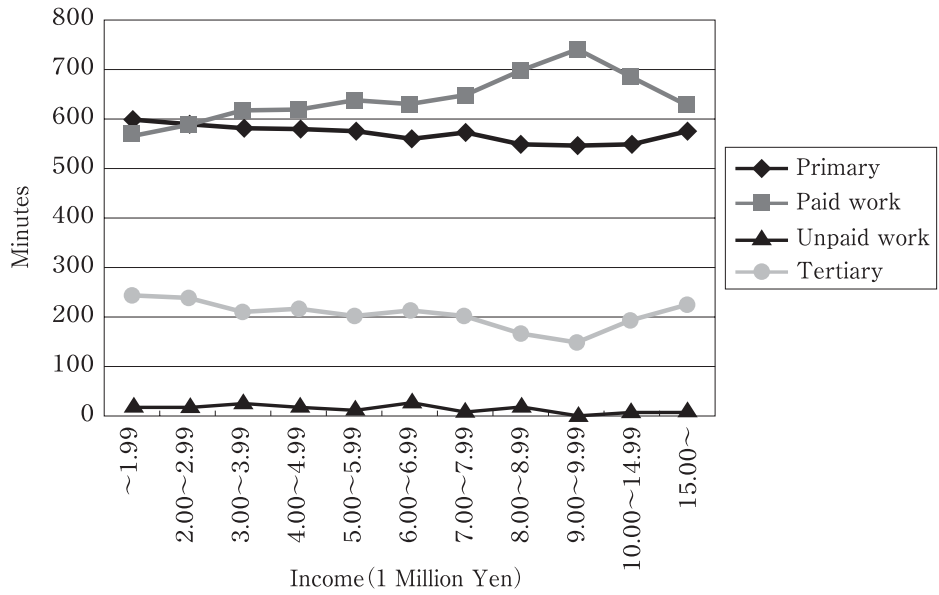
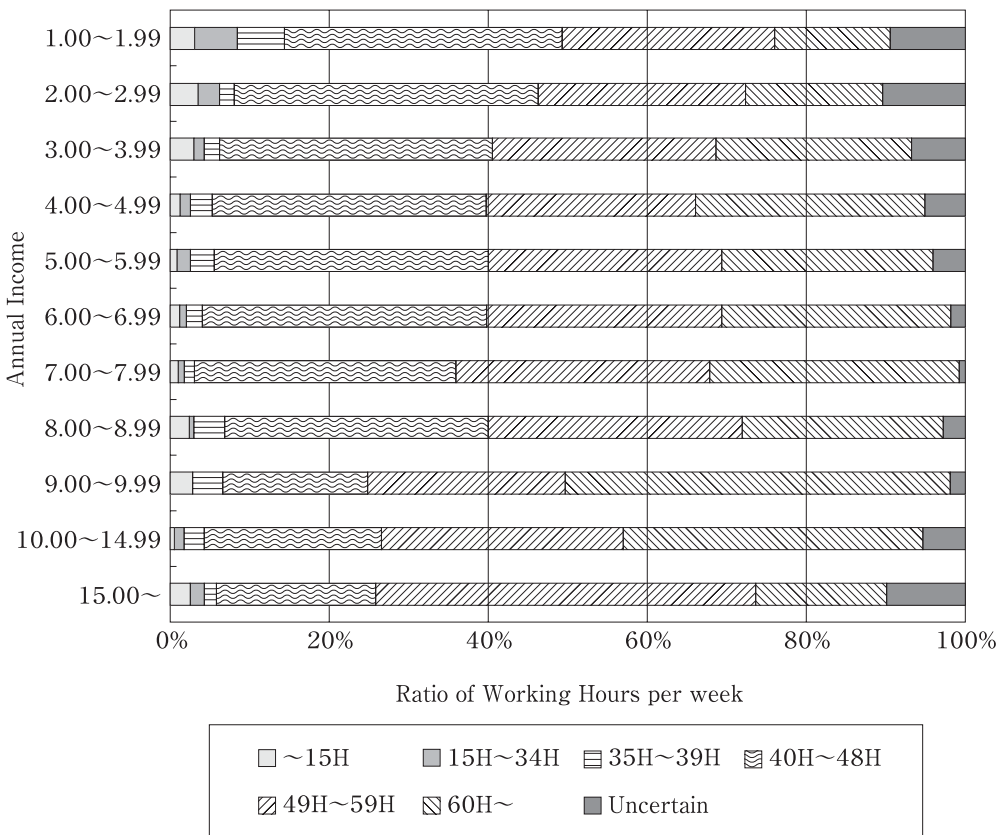


Figure 4 Annual income and working hours per week



increased significantly in relation to the income level.

The time spent on primary activities decreased a little as the time spent on generating income increased. The time spent on tertiary activities decreased more noticeably with the increase in time spent for paid work. This was particularly noticeable when the income was between 8 million yen and 10 million yen.

Now, let's examine the relationship between the annual income and the time invested to generate it from another perspective (See Figure 4). This bar chart shows the proportion of working hours per week for each income bracket. We divided the respondents into six groups based on the amount of time they invested to generate an income each week. The first group worked from 0 to 15 hours, and the last group worked 60 hours plus. We calculated the proportion of time each group worked and plotted it against each income bracket.

As we can see, the number of working hours for the '49 to 59 hours' and also the '60 hours plus' groups increased as the income increased. Based on analysis of the results, we can say that up to an annual income level of 10 million yen, the time spent for paid work increases as the annual income increases. In particular, a large proportion of the people who earned an annual income of 9 to 9.99 million yen worked 60 hours plus per week. But interestingly, when the annual income reaches 15 million or more yen, majority of the people seemed to work between 49 to 59 hours rather than 60 hours or more.

## 2.2 Free Time Deprivation

Figure 5 shows the relationship between income and tertiary activities which was referred

Figure 5 Income and free time (on weekdays)

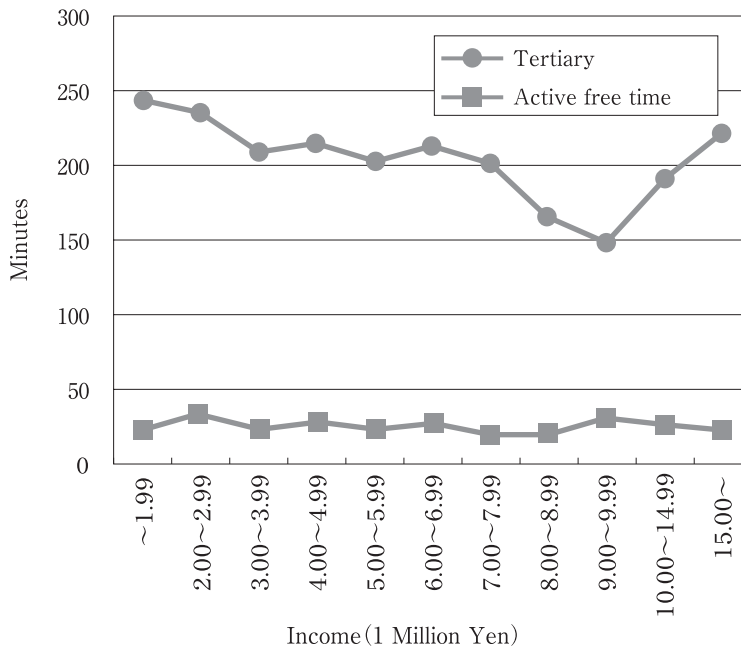
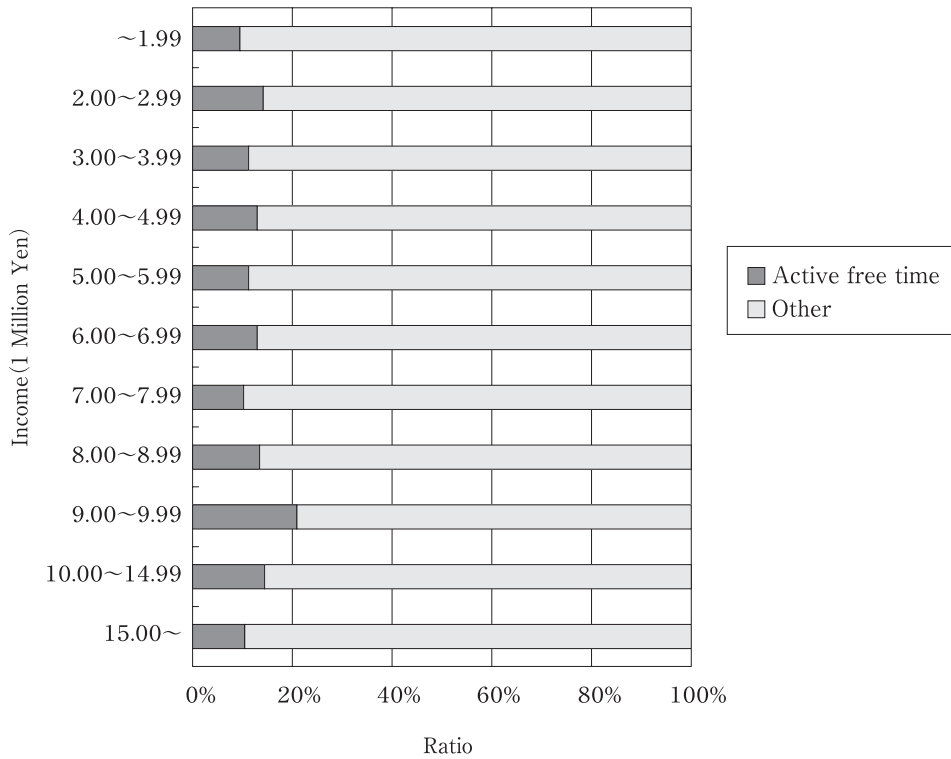


Figure 6 Income and free time activities (on weekdays)



to as ‘free time.’ In the tertiary activities, there were two types of activities: ‘active free-time activity’ and ‘passive free-time activity.’ This chart plots time spent on active free-time activities together with the total amount of tertiary activity time. The amount of time spent on active free-time activities is shown by the green line.

Even though the tertiary activity time for the households (husbands) with annual incomes between 8 million yen and 10 million yen was the lowest among all the income groups, their amount of active free-time was not the lowest.

This result is also illustrated in the Figure 6. Here, we can see the proportion of the time spent on active free-time activities in the total time spent on tertiary activities. Interestingly, the households with income of 9.00 to 9.99 million yen had the highest proportion of active free-time among all the income groups.

### Summary and Conclusion

Through our studies on the relationship between money and time, we found the following tendencies.

- a) For income earners in Japan, as the level of annual income went up, the average hours of paid work of husbands during weekdays increased. This pattern was consistent up to the annual income level of 10 million yen.

- b) When the level of annual income exceeded 10 million yen, the average hours of paid work of husbands during weekdays decreased.
- c) As the level of annual income went up, the average hours of tertiary activities of husbands during weekdays decreased. This pattern was consistent up to the annual income level of 10 million yen.
- d) When the level of annual income exceeded 10 million yen, the average hours of tertiary activities of husbands during weekdays increased.

In conclusion, we can say that in Japan, the more a single income family earned, the less free time the income earner had (*i.e.* money rich but time poor). This pattern was consistent up to the annual income level of 10 million yen.

Provided that the annual income level exceeded 10 million yen, the more a single income family earned, the more free time the income earner had (*i.e.* both money and time rich).

### Note

1. Harada (1991) explained clearly the relation of the changing preferences of households and their income level from a macro economics perspective.

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**Key words:** time use, time rich, money poor, utility function, annual income, paid work time, free time

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