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**Enhancing Household Data on the Flow of Funds Accounts in Japan**

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This paper has been prepared by Satoru Hagino, Tomotaka Hiroki, Fumiko Inadachi, Chihiro Sakuraba, and Yoshiko Sato—all from Bank of Japan

# Enhancing Household Data on the Flow of Funds Accounts in Japan

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Satoru Hagino, Tomotaka Hiroki, Fumiko Inadachi, Chihiro Sakuraba, and  
Yoshiko Sato<sup>1</sup>

Bank of Japan

## Abstract

The flow of funds accounts (FFA) record financial positions and flows of various sectors, including those of the household sector. This paper shows how the Bank of Japan has enhanced the household sectoral data in the Japan-FFA in conformity with the *System of National Accounts 2008 (2008 SNA)*. The data enhancement for household assets includes, for instance, incorporating currency breakdown, which has attracted the attention of statistics users in recent years. Measuring employment-related pension assets held by households has changed in the Japan-FFA to conform to the *2008 SNA* since the quarterly release on December 2010. Employee stock options will be also compiled in 2011 for the first time.

The integration of nonfinancial and financial assets in the quarterly frequency is another challenging task for the Japan-FFA. Based on the comprehensive data of dwellings and land separately recorded in the System of National Accounts (Japan-SNA), much more accurate evaluation at market price will be expected upon the accomplishment of the unbiased property price index in the forthcoming years.

Key words: Flow of funds accounts, household sector, conformity with 2008 SNA

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<sup>1</sup> The views expressed are those of the authors and should not be attributed to the Bank of Japan.

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### **1. Introduction**

The Flow of Funds Accounts (FFA) is a statistical record of both financial transactions and the outstanding amount of the financial assets and liabilities in the economy. It provides sub-aggregate statistics by various sectors, including households, nonfinancial corporations, governments, financial institutions, and overseas entities or non-residents. It is universally regarded as the most detailed and comprehensive set of financial statistics. The official and uniformed compilation method has been recommended in *Monetary and Financial Statistics Manual* of IMF (2000). For the Japanese economy, the Bank of Japan (BOJ) has been responsibly compiling the FFA (hereafter Japan-FFA) since 1954. The Japan-FFA contains 45 sectors and 53 financial items or products shown in *Appendix*.

The Japan-FFA is compiled by gathering numerous source data, such as financial

statements of individual entities as well as market statistics. Definitions and attributes of these source data are always examined carefully in order to avoid double counting and to exclude various kind of noise. The Japan-FFA is reviewed periodically to maintain the accuracy of aggregating individual data and estimating missing data. Against the background of rapid changes in both financial structures and accounting standards, the review of the Japan-FFA has become increasingly important.

This paper introduces the recent measures in enhancing household sectoral data in the Japan-FFA. It also discusses some challenges in implementing the conformity with the *System of National Accounts 2008 (2008 SNA)* (Eurostat et al. (2009)). The enhancement includes incorporating currency breakdown for household assets. Currency breakdown will be expected to contribute to fill the data gaps recognized globally through the financial crisis in 2008.

The paper briefly presents the recent review of the Japan-FFA as follows. Section 2 explains the basic framework of estimating the position and flow data of the household sector in the Japan-FFA. Section 3 illustrates the recent achievements in enhancing the Japan-FFA. Among others is currency breakdown of household assets as well as measuring the outstanding amount of new financial instruments which attract households. Section 4 discusses the on-going implementation of the conformity with the *2008 SNA*, focused on the household sector in the Japan-FFA. The measurements of employee stock options and household public pension assets are challenged. Section 5 envisages the integration of household nonfinancial and financial assets. Developing unbiased residential property price indices is considered as important key figures for evaluating real assets at market price. Section 6 remarks the usefulness of sectoral balance sheets.

## **2. Basic framework for estimating position and flow data for household sector**

### **2.1. Data compilation procedures in the Japan-FFA**

The accuracy of the FFA depends greatly on the completeness of source data and the robustness of estimation methods. Through quarterly and annual reviews newly available sources are checked in the Japan-FFA. Cross checks for the estimation methods for identifying missing figures and sectoral data are also been conducted.

The Japan-FFA is presented in a matrix of sectors in column and transaction

items/financial instruments in row. It comprises more than six thousand data series. Data series in the FFA are usually compiled from a combination of a multiple sources. At present, more than 600 source data are utilized in compiling the Japan-FFA. Data for each financial instrument are compiled from aggregated source data or through various types of estimations. Those data are decomposed and aggregated further to make up a sectoral data series in the FFA. Cautious examination of every single source data has enhanced the accuracy of the aggregating sectoral figures and financial instruments in the Japan-FFA. Although the examining process requires the human-intensified resource, the BOJ has achieved an efficient program of compiling the Japan-FFA; the average number of the Bank senior and junior staff members in the compilation team is eight.

## **2.2. Estimation method of financial positions and flows of household sector**

Since there is no single data recording balance sheet of households, most figures of household sector need to be estimated. Only exception is the outstanding amount of deposits held by the household sector, which can be derived directly from bank reporting. The other figures need estimations with a various kind of difficulties.

The typical estimation method adopted in the household sector in the Japan-FFA is the horizontally residual calculation. That is just calculating the residual amount of other sectors, *i.e.* financial institutions, nonfinancial corporations, governments, private nonprofit institutions serving for households, and overseas entities. There are some financial instruments estimated in a less complicated manner by utilizing ready-made data, the origin of which goes to any central organizations of financial industries as well as custodians. For example, the outstanding amount of all discount bank debentures sold over-the-counter at bond-issuing banks and those sold through securities companies can be fully allocated to the household assets. This is because those debentures provide selective tax treatment for households.

On the other hand, most financial assets and liabilities held by the household sector cannot be calculated by a simple residual method in the Japan-FFA. Practically, fixed parameters, which assume that investment or financing behavior, show no difference between the household and the other sectors, are sometimes adopted for estimating the marginal figures of household assets.

The total amount of borrowing by the household sector is complicated. Bank statistics prevail the sub-aggregation of bank loans by industrial category instead of sectoral

breakdown. Since the household sector includes family businesses, the whole amounts of their borrowings are spread throughout almost all industries. In order to convert such industrial breakdown into sectoral breakdown as well as to identify loans to personal proprietors, the parameters for weighting sectors must be needed. Low frequent but reliable surveys on family businesses are utilized for reaching the parameters. On the other hand, the data of housing loans and consumer credits are diversified from depository financial institutions to finance companies in recent years and complicated to be summed up.

Securities holdings of the household sector are generally estimated with data provided by custodians as well as market data. Due to the limitation of the availability of individual source data, however, there remain more or less difficulties in identifying the securities traded through secondary markets.

It is the stylized fact for the Japanese economy that more than ninety percent of the outstanding amount of central government securities and the publicly-issued Residential Local Government Bonds<sup>2</sup> has been stably possessed by the Japanese residents. Such an obvious tendency underscores that the ultimate investors are domestic households, although they have invested mainly through bank deposits and investment funds instead of direct holding of government securities. The recent observation also tells that nonfinancial corporations as well as private nonprofit institutions serving households have shifted to fund surplus sectors and, as a result, increased investing in government securities. Subsequently, the Japan-FFA has introduced estimation of allocating government security holdings among sectors. The sectoral holdings of investment trust beneficiary certificates are now calculated on the assumption of a fixed weight among sectors for each certificate.

As for the case of foreign securities, the figures are derived from the balance of payments and international investment positions statistics. Both statistics provide the in- and out-flows of aggregate foreign security investment with almost perfect accuracy in Japan. However, the current statistics do not provide the outstanding amounts. Some discrepancies also lie in transaction between residents and non-residents. In the Japan-FFA, the fixed parameters of sectoral weighting, drawn from ad-hoc surveys conducted by brokerage firms, are assumed in allocating the foreign securities among

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<sup>2</sup> Residential Local Government Bonds are a type of publicly issued municipal bonds that local governments issue toward local residents to finance their activities.

sectors. The estimation may not trace the recent change in global asset allocation of the households and, thus, needs to be reviewed.

Household holding amounts of shares are estimated by using shareholders' distribution survey of the Tokyo Stock Exchange. The unlisted shares are allocated to the household sector by applying the ratio derived from the listed shares.

As for the inland and foreign trade credits, the Japan-FFA assumes that the difference between the aggregate amount of trade credit assets and liabilities in the other sectors correspond to the net assets of family businesses.

A challenging task would be how to estimate currency breakdown of the asset held by the household sector. Currently, the residuals of financial institutions and public entities are regarded as the amount of either household or nonfinancial corporation sector. The weighting parameter between these two sectors was an approximation. Robust estimation is argued in the section 3.1.

### **2.3. Accuracy of the estimates for household sector**

The Japan-FFA adopts different estimation methods suitable for each series of figures. Subject to the availability of primary data sources and the estimation errors, the accuracy of each figure in the matrix is considered to differ as shown in Table 1. From the viewpoint of the estimation methods, the vertical aggregation provides higher accuracy rather than the horizontal aggregation, although most items of the household sector are estimated by residual calculation using the horizontal aggregation. Subsequently, it is possible to regard that the accuracy of the household figures as a whole is inferior to other sectors.

So far this inferiority in terms of estimation error has never been reversed. This is because the household data are mostly estimated as residuals of the aggregation of the other sectors, or the horizontal aggregation. The degree of the accuracy of household figures will be increased only after the other sectoral figures become accurate. Careful consideration is also required in controlling the entire estimation errors when the estimation method of each figure is modified and could affect the robustness of other estimations. In spite of such constraints, the BOJ has recently introduced some new estimation of the household figures as followed in the next section.

(Table 1) Accuracy of the Estimates in Assets & Liabilities (Footnotes in the next page)

:High 
  : Middle 
  : Low

	Financial institutions								Nonfinancial corporations	General government	Households	Private nonprofit institutions	Overseas
			Depository corporations		Insurance and pension funds		Other financial intermediaries						
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities					
Currency and deposits	High	High	High	High	High	High	High	High	High	High	High	High	High
Deposits with the Fiscal Loan Fund	High	High	High	High	High	High	High	High	High	High	High	High	High
Loans by private financial institutions	High	High	High	High	High	High	High	High	High	High	High	High	High
Loans by public financial institutions	High	High	High	High	High	High	High	High	High	High	High	High	High
Treasury discount bills	High	High	High	High	High	High	High	High	High	High	High	High	High
Central government securities and FILP bonds	High	High	High	High	High	High	High	High	High	High	High	High	High
Local government securities	High	High	High	High	High	High	High	High	High	High	High	High	High
Industrial securities, bank debentures	High	High	High	High	High	High	High	High	High	High	High	High	High
Investment trust	High	High	High	High	High	High	High	High	High	High	High	High	High
Structured-financing instruments	High	High	High	High	High	High	High	High	High	High	High	High	High
Shares and other equities	High	High	High	High	High	High	High	High	High	High	High	High	High
Financial derivatives	High	High	High	High	High	High	High	High	High	High	High	High	High
Insurance, pension reserves	High	High	High	High	High	High	High	High	High	High	High	High	High
Trade credits	High	High	High	High	High	High	High	High	High	High	High	High	High
External claims	High	High	High	High	High	High	High	High	High	High	High	High	High



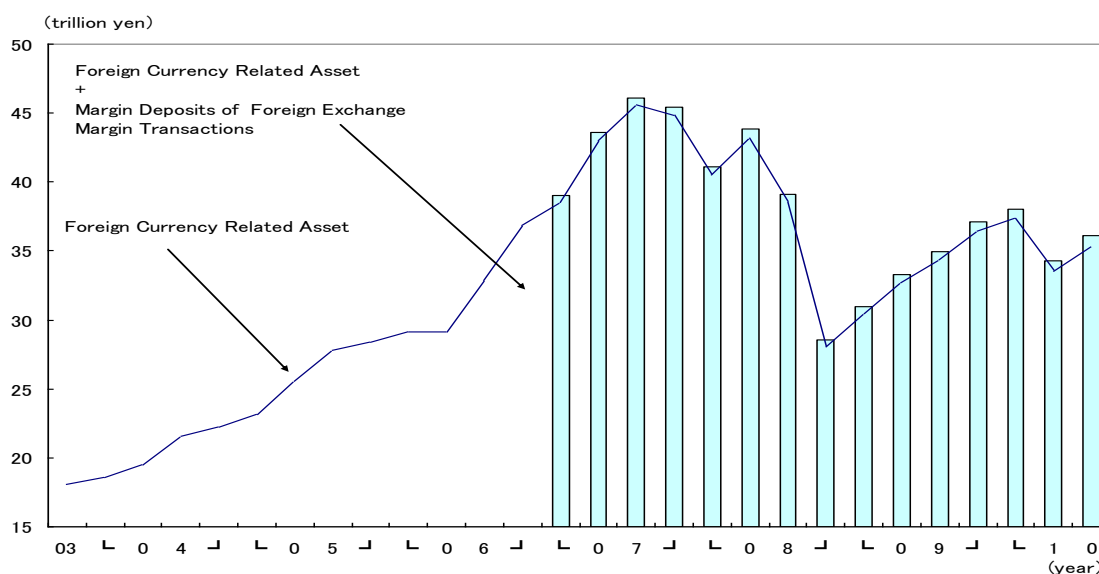
Notes for Table 1: “High” indicates that the figures are compiled directly by using the original source data. “Middle” indicates that the figures are estimated by utilizing original source data where the information on estimations is generally available. “Low” indicates that the figures are estimated where the information on estimations is not available, or where the figures are estimated residually by deducting other transaction items from the sub-aggregation. Empty cells indicate that there is no figure as of the end of March 2005.

### 3. Recent examples of enhancing the Japan-FFA

#### 3.1. Creating currency breakdown in household assets

Users of the Japan-FFA have expressed a request to provide a currency breakdown in the household assets. To respond to those requests, the BOJ introduced a new estimate for household foreign-currency-related assets for the period between the fourth quarter of 2003 and the third quarter of 2010 (Chart 1).

(Chart 1) Outstanding Amounts of Household Foreign-Currency-Related Assets and Foreign Exchange Margin Transactions



Note: Foreign-currency-related assets is the sum of foreign-currency-related investment trusts, foreign currency deposits, and outward investments in foreign-currency-denominated securities.

The households invest in foreign-currency-related assets through investment trusts. The foreign-currency-related assets comprise also foreign currency deposits as well as outward investments in foreign-currency-denominated securities. At the end of 2009, such assets accounted for 2.5% of their total financial assets: 24.7 trillion yen of foreign-currency-related investment trusts, 5.3 trillion yen of foreign currency deposits,

and 6.5 trillion yen of outward investments in foreign-currency-denominated securities. The outline of the estimation methods adopted through currency breakdown is as follows.

The outstanding amount of foreign-currency-related investment trusts is estimated on the basis of the statistics released by the Japan Investment Trusts Association. The household holdings of money management funds, medium-term government securities funds, and long-term bond investment funds are derived from this statistics. As for other bond funds and stock funds, household holdings are the aggregates of outstanding amounts of funds of which unit purchase values are relatively small. The ratio of foreign-currency-related assets, which is available from publicly offered investment trusts of contractual type, is then assumed to be a multiplier for the total outstanding amount of household foreign-currency-related investment trusts.

The outstanding amount of foreign currency deposits is the aggregate of those deposits of resident individuals at depository financial institutions located in Japan. Such data are directly reported by these institutions. Foreign currency deposits at depository institutions abroad are yet to be measured and are currently negligible.

The outstanding amounts of outward investments in foreign-currency-denominated securities are estimated on the basis of the statistics of International Investment Positions, sorted by currency and type of securities. The ratio of those securities is multiplied by the household holdings, estimated by the outcome of ad-hoc surveys to securities firms.

### **3.2. Incorporating foreign exchange margin transactions**

In recent years, households have increasingly involved in foreign exchange margin transactions. Their transactions have gathered attentions as a contributing factor to so-called "yen carry trades" in the global markets. Currently, the outstanding amount of margin deposits for open interests stands at seven hundred billion yen or US \$8 billion. In order to grasp this hot money, the BOJ has incorporated the relevant data into the Japan-FFA since the fourth quarter of 2009 (see also Chart 1).

Margin deposits with foreign exchange margin trading firms and securities firms were included in the item of deposited money of the household sector. Holding gains and losses of household opening positions in foreign exchange margin transactions were

included in the item of forward-type financial derivatives in either the household sector or the financial auxiliaries sector. The outstanding amount of margin deposits is estimated on the basis of the statistics released by the Financial Future Association of Japan. To allocate those deposits between households and corporations, the ratio provided by the Association is also adopted. The market values of household and trading firm positions are estimated by referring the related figures on the financial statements of major trading firms.

### **3.3. Inclusion of electronic money**

Electronic money is traded via various instruments. They include credit cards, debit cards, prepaid cards, paper-based gift certificates, prepaid money stored in IC chips, as well as customer loyalty award credits. Some of them carry real value, while others represent virtual tradable amounts for specific use. As for credit card loans, outstanding amount is already included in the household liability figure as consumer credits. Debit cards carry no asset and have a function of telecommunicating on merchandise purchase. The outstanding amounts on prepaid cards, gift certificates, prepaid money stored in IC chips, and customer loyalty award credits are challenging items for estimation. The BOJ has developed estimation methods and plans to release them in 2011. Such statistical enhancement will increase the entire Japanese household assets by a couple of percent.

In Japan, prepaid cards and gift certificates are defined by Money Settlements Act as prepaid settlement instruments. The outstanding of these instruments amount to approximately two trillion yen. Prepaid money topped on IC-chip-embedded cards is named as *Edy*, *Suica*, *ICOCA*, *PASMO*, *nanaco*, *WAON*, *SUGOCA*, and *Kitaca*. The nominal amount of these cards is a hundred billion yen. The majority of the outstanding amounts allocated to prepaid cards, gift certificates, and prepaid money topped on IC-chips are classified under the household assets of deposited money, a type of miscellaneous assets, which can be estimated as a ratio of sales of prepaid card and gift certificates to individuals by adopting some survey data of the representative companies. Such amounts are not recorded under deposits, since there are restrictions on the reimbursement of prepaid money and they are issued by nonfinancial corporations.

Customer loyalty programs such as airline mileage programs are used by entities to provide customers with incentives to purchase their additional goods or services, according to the definition of the IFRIC 13. Under these programs, when customers purchase goods or services, the entity grants the customer award credits, usually

described as “purchasing-power-points”. The customer can redeem the award credits for awards such as free or discounted goods or services. Under this definition, a wide variety of points may be included in the household assets. From the scope of liabilities, however, the *2008 SNA* includes legal liabilities and constructive liabilities, based not on formal contracts but on some wide-spread understanding or customs which are not easily refuted, and excludes provision and contingent liabilities. Thus, FFA compilers need to judge whether each customer loyalty program is constructive or contingent.

The BOJ has adopted such a view that if a company applies the IFRIC 13 in their financial statements and records reasonable amounts of liabilities based on the assumption of redemption rates, such liabilities should, in principle, not be refuted. The majority of the amount is allocated to the household assets under accounts receivable by adopting the same ratio of sales of prepaid cards and gift certificates to individuals by representative companies.

#### **4. Conformity with the *2008 SNA***

##### **4.1. Measuring employee stock options**

While *Monetary and Financial Statistics Manual* of IMF (2000) has not been revised for including the conformity with the *2008 SNA*, the BOJ has already begun the revision program in order to conform to it. The followings are an initial part of the revision on the figures of the household sector.

With respect to the treatment of employee stock options, the *2008 SNA* underlines the importance of distinguishing the grant date, the vesting date, and the exercise date. Any changes in the values between the grant and vesting dates should be treated as part of compensation of employees, while any change in the values between vesting and exercise dates should be treated, in principle, as a holding gain or loss instead of compensation of employees. However, for practical reasons, the total of the increase between grant and exercise dates is treated as a holding gain or loss for the time being.

In Japan, the Quarterly Corporation Statistics identify the outstanding amounts of stock acquisition rights, in which employee stock options are included. Such amounts are neither valued at market price nor represented as a fair value. The book value alone is not sufficient for the FFA, since the changes in the value only provide information on net flows. To conform to the recommendation of the *2008 SNA*, gross flows, *i.e.* new issues and exercises of stock acquisition rights, have to be identified so that the former

can be recorded as the compensation of employees. In addition, the market value of these rights has to be captured to identify changes in their true value. Since the source data for grant of stock acquisition rights are not well developed, there still remain further tasks in the Japan-FFA to conform to the 2008 SNA.

#### **4.2. Measuring employment-related pension funds**

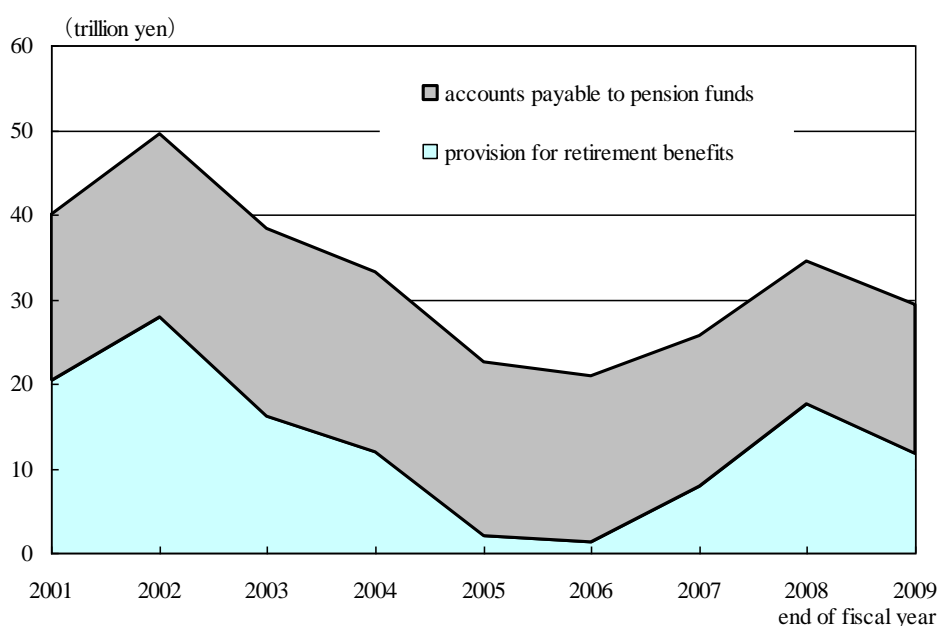
The treatment of employment-related pension funds also involves a classification problem related to employment compensation. The 2008 SNA recommends the following changes to the 1993 SNA in the case of defined-benefit schemes;

- a) the level of the employer's contribution should be the increase in the net present value of the pension entitlement which the employee has earned in the period, adding any costs charged by the pension fund for operating the scheme and deducting the amount of any contribution the employee makes,
- b) this amount should be determined actuarially, taking into account only the life expectancy of the employee,
- c) an explicit liability of the pension fund to the employee should be shown in the financial account and balance sheet, and
- d) the assets of the fund are then to be regarded as belonging to the fund and not as the belonging to the employee.

In the current Japan-FFA, the outstanding amounts of the entrusted assets by pension funds consists pension reserves or pension fund liabilities in most cases. Thus, the household assets in the Japan-FFA will have to pay much more attention to an actuarial calculation.

In the case that pension funds are insufficiently funded, both accounts receivable of the pension funds sector and corresponding accounts payable of the nonfinancial corporations and financial institutions sectors need to be estimated, and these amounts need to be added to household assets. In Japan, number of corporations adopting the accounting rule of retirement benefit obligation has increased. These corporations calculate their retirement plan on an actuarial basis. Thus, the precise amount of such accounts receivable can be directly derived from the individual financial statements. In total, accounts payable to pension funds, *i.e.* the shortage of funding pension funds, exist by approximately 30 trillion yen in Japan at present as shown in Chart 2.

**(Chart 2) Accounts Payables to Pension Funds**



(source) Financial statements of listed companies in Japan

In case of changes in accounts payable to pension funds, the 2008 SNA states that the sum of employers' actual and imputed pension contributions should be treated as a part of compensation of employees. Precisely, clear separation between "revaluation" and "transaction" is required for compiling the amount of employers' contributions. If they are offsetting the shortage of funding, then the contributions should be recorded as revaluations. Instead, if employers' contributions increase the net worth of household pension assets, *i.e.* the compensation of employees and financial investments in the pension funds, then they should be recorded as transactions.

As a rather exceptional case, if the employer changes the pension scheme so that employees' pension assets could increase, changes in stock should be recorded as transactions. In the absence of source data for distinguishing transactions from revaluations, however, the Japan-FFA has no alternative but treats all the changes in stock of accounts receivable or payable as revaluations.

#### **4.3. Measuring social security pensions**

The 2008 SNA recommends that estimates of the liabilities of social security be included in a supplementary table instead of the main accounts. The motivation for calculating such estimates is such concern that benefits may exceed contributions or that the social

security balance in Japan is likely to worsen in the aging population. On the other hand, the reason for allowing no record for the estimates in the main accounts is that there is no savings element involved for pension participants. In addition, such estimates would fluctuate to a large extent because the government has changed the social security pension scheme in past. As a result, the reliability of those estimates remains relatively low.

In the Japan-FFA, the Social Security Funds sector includes institutions that manage social insurance such as pension insurance, the so-called social security pensions, medical care insurance, employment insurance, and workers' accident compensation insurance. The Japanese pension system consists of three tiers; the Basic Pension Account, the Welfare Insurance and National Pension Special Accounts, and employment-related pensions. The first two tiers comprise social security pensions, and there are complexities as follows.

Under the Japan's social program, the employee pension funds, which are classified under pension funds in the financial institutions sector, cover the public pension portion of the Welfare Insurance Special Accounts and the private pension portion. There is an argument that the portion of Welfare Insurance managed by employee pension funds should be classified under public pensions in the social security funds sector. However, the portion of Welfare Insurance is not managed in a segregated account within the employee pension funds. Thus, there is no alternative to classifying the entire employee pension funds in the financial institutions sector.

Mutual Pensions in the main civil servant pension funds also cover both social security portion and employment-related pension portion. Since Mutual Pensions manage the employment-related portion, there is an argument that Mutual Pensions should be also classified under pension funds in the financial institutions sector. At the same time, these pension funds manage the first tier pension portion for participants with the age of 65 or elder who have joined prior to the introduction of the Basic Pension Accounts. The Japan-FFA, then, classifies Mutual Pensions under public pensions in the social security funds sector.

The difficulty of separating employment-related pension funds and social security pensions appears in estimating the liabilities of social security pensions. In Japan, the Ministry of Health, Labor and Welfare publishes estimates of social security pension

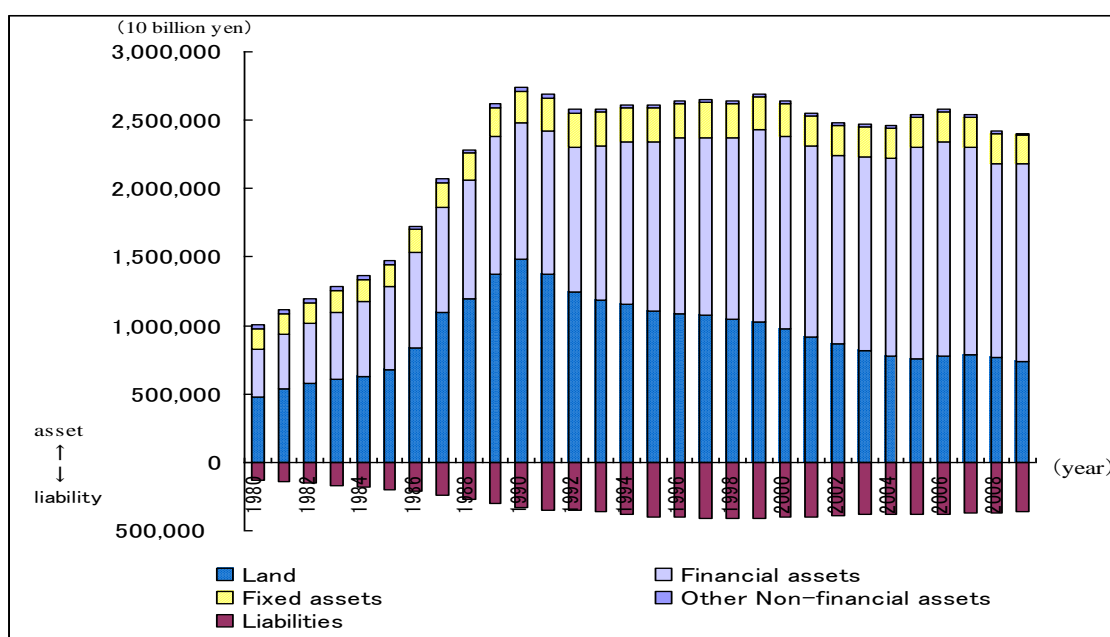
liabilities every five years. The 2009 estimates showed liabilities of 830 trillion yen for Welfare Insurance, 120 trillion yen for National Pension, and 172 trillion yen for Mutual Pensions, totaling 1122 trillion yen or almost US \$13 trillion. This amount appears very significant; the total household assets in the current Japan-FFA stood at 1452 trillion yen at the end of the fiscal year 2009. To obtain estimates of public pension liabilities more frequently, elaboration of estimation models will be needed.

## 5. Integration of nonfinancial Assets

### 5.1. Household nonfinancial assets recorded in Japan-SNA

The Economic and Social Research Institute (ESRI) of the Japanese Cabinet Office compiles the annual sectoral balance sheets in the SNA. At glance, the household balance sheet in the Japan-SNA integrates nonfinancial assets and financial assets/liabilities (see Chart 3). While the SNA compilation focuses on capital formation and changes in net worth, some difficulties seem to exist in the estimation and evaluation of land properties.

(Chart 3) Household balance sheet



Source: ESRI.

The ESRI has already estimated the amount of fixed assets such as dwellings and land separately. The stock data of land owned by households is a portion of all privately owned land. The ratio of household sector to the entire private sectors is given by the



nationwide surveys compiled annually by the Ministry of Internal Affairs and Communications. The Japan-SNA has evaluated each privately owned parcel of land at the representative price and not at the exact market price for individual property, because transaction and/or market prices for all parcels of nationwide land are not obtainable. For example, the Tokyo metropolitan area consists of millions of home owners. Actually the SNA provides land prices for the representative spots. Thus, the total number of land prices sampled for the SNA might be smaller and involve sampling bias. Based on the current compilation method, the value of land in the SNA may not necessarily represent the whole market value.

The ESRI also provides estimation data on dwelling. It is simply calculated by adding annual capital formation cumulatively to the benchmark value. The benchmark value is compiled on the basis of the comprehensive but one-shot National Wealth Survey conducted in 1970. The following-year value of dwelling is adjusted by applying the accounting formula for the amortization. This formula may not necessarily follow the true depreciation of dwelling constructions. In forthcoming months, the ESRI is going to introduce a so-called perpetual inventory method (PIM) for estimating nonfinancial produced assets accurately as part of the next comprehensive revision. Then, the SNA for the Japanese economy will include the dwelling evaluated more precisely at current prices.

## **5.2. Measuring nonfinancial assets in household balance sheet**

To produce better estimates for the household balance sheet, both the amount of dwelling and land will need to be evaluated at market price. If the residential property price indices (RPPIs) were available, we could use them for unbiased estimators of property population. In Japan the official RPPIs are under development, with the initiative of the Ministry of Land, Infrastructure, Transport and Tourism in conformity with the almost finalized draft of the *Handbook on Residential Property Price Indices* written and edited by the European Commission and the Eurostat (2011). Therefore, upon release of the official RPPIs, both dwelling and land will be able to be re-evaluated at a good proxy of market price.

Since the FFA compiles financial assets and liabilities, it includes the newly issued mortgages. In Japan, the ratio of the initial value of household mortgage to the outstanding amount of collateralized property has been stable around ninety percent. Consequently, the growth rate of the total amount of residential properties estimated by

incorporating the RPPIs may not differ from that of the sum of mortgage shown in the FFA. Indeed, it will be an excellent way to cross-check the values of residential property and mortgage if the unbiased RPPIs are made available.

It is not surprising that the integrated balance sheet of the household sector will be compiled easily if the RPPIs are confirmed to be unbiased for the nationwide population. Such integration will provide good analytical information for the net position of household sectors. The investment behavior of households will be also traced in detail, such as private choice between purchasing another dwelling and staying and/or repairing the present dwelling. This is a typical application of integrating the FFA with real assets held by the household sector. Financing activities related to household mortgage would need to be much more closely monitored, which could give good clues in identifying risks.

## **6. Concluding remarks**

The compilation of the FFA conveys the nature of research activities. It requires compiling experiences and deep knowledge on financial data. In particular, choosing the most suitable data sources and incorporating them into the FFA in a consistent manner are challenging tasks but also rewarding. The household assets are estimated instrument-by-instrument, by aggregating and sometimes disaggregating financial and market data. The various estimations and residual calculations display the real ability of the compilers.

With respect to the enhancement of the FFA, the IMF Balance Sheet Approach is full of instructive. The Japan-FFA has already incorporated a currency breakdown into household assets. It could fulfill the needs of many statistics users. The foreign currency breakdown includes difficult estimations for foreign-currency-related assets as well as for investment trusts. Expanding the breakdown to sectors other than households seems to establish “from-whom-to-whom” statistics for the complete compilation.

Conforming to the *2008 SNA* will be a challenging task for all FFA compilers, as imputations of data and estimations will be needed in wider range of areas. For instance, the estimation of flows and stocks of employee stock options and pension fund liabilities might be undermined by significant shortcomings of source data. It is also noted that such an aspect will be fully taken into consideration in the update of the IMF (2001) *Government Finance Statistics Manual*, in particular, for the treatment of social

security pensions.

To capture each sectoral condition accurately, improving estimates of nonfinancial assets is essential. Evaluating residential properties at market price is not easy. In Japan, the new and unbiased RPPI is now under development. Upon the accomplishment, the possibility of incorporating nonfinancial assets into the quarterly FFA becomes plausible.

Finally, the Bank of Japan would like to share huge experience of compiling the FFA with other statistic agencies and to make any international coordination in developing sectoral positions and flow data in macro-economic accounts, which will be organized under the auspices of the IMF and the OECD.

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## Appendix: Category of Sectors and Financial Items in the Japan-FFA

### Sectors

	Code
Financial institutions	1
Central bank	1-1
Depository corporations	1-2
Banks	1-2-1
Domestically licensed banks	1-2-1-1
Foreign banks in Japan	1-2-1-2
Financial institutions for agriculture, forestry, and fisheries	1-2-1-3
Financial institutions for small businesses	1-2-1-4
Postal savings(through 2007/3Q)	1-2-2
Collectively managed trusts	1-2-3
Insurance and pension funds	1-3
Insurance	1-3-1
Life insurance	1-3-1-1
Of which: private life insurance companies(through 2007/3Q)	1-3-1-1-1
Nonlife insurance	1-3-1-2
Of which: private nonlife insurance companies	1-3-1-2-1
Mutual aid insurance	1-3-1-3
Pension funds	1-3-2
Corporate pensions	1-3-2-1
Other pensions	1-3-2-2
Other financial intermediaries	1-4
Securities investment trusts	1-4-1
Bond investment trusts	1-4-1-1
Of which: money management funds and money reserve funds	1-4-1-1-1
Stock investment trusts	1-4-1-2
Nonbanks	1-4-2
Finance companies	1-4-2-1
Structured-financing special purpose companies and trusts	1-4-2-2
Public financial institutions	1-4-3
Fiscal Loan Fund	1-4-3-1
Government financial institutions	1-4-3-2
Financial dealers and brokers	1-4-4
Of which: securities companies	1-4-4-1
Financial auxiliaries (financial institutions other than intermediaries)	1-5
Nonfinancial corporations	2
Private nonfinancial corporations	2-1
Public nonfinancial corporations	2-2
General government	3
Central government	3-1
Local governments	3-2
Social security funds	3-3
Of which: public pensions	3-3-1
Households	4
Private nonprofit institutions serving households	5
Overseas	6
Domestic nonfinancial sector (total of 2, 3, 4, and 5)	7
Pension total (total of 1-3-2 and 3-3-1)	8

Before 2<sup>nd</sup> quarter 2001, '1-4-3-1' shows 'Trust Fund Bureau'.

"Financial institutions for small businesses" includes the Japan Post Bank from the fourth quarter of 2007.

## Financial Assets/Liabilities

	Code
Currency and deposits *	A
Currency	A-a
Deposits with the Bank of Japan	A-b
Government deposits	A-c
Transferable deposits	A-d
Time and savings deposits	A-e
Certificates of deposit	A-f
Foreign currency deposits	A-g
Deposits with the Fiscal Loan Fund	B
Loans	C
Bank of Japan loans	C-a
Call loans and money	C-b
Bills purchased and sold	C-c
Loans by private financial institutions	C-d
Housing loans	C-d-a
Consumer credit	C-d-b
Loans to companies and governments	C-d-c
Loans by public financial institutions	C-e
Of which: housing loans	C-e-a
Loans by the nonfinancial sector	C-f
Installment credit (not included in consumer credit)	C-g
Repurchase agreements and securities lending transactions	C-h
Securities other than shares	D
Treasury discount bills	D-a
Central government securities and FILP** bonds	D-b
Local government securities	D-c
Public corporation securities	D-d
Bank debentures	D-e
Industrial securities	D-f
External securities issued by residents	D-g
Commercial paper	D-h
Investment trust beneficiary certificates	D-i
Trust beneficiary rights	D-j
Structured-financing instruments	D-k
Mortgage securities	D-l
Shares and other equities	E
Of which: shares	E-a
Financial derivatives	F
Forward-type instruments	F-a
Option-type instruments	F-b
Insurance and pension reserves	G
Insurance reserves	G-a
Pension reserves	G-b
Deposits money	H
Trade credits and foreign trade credits	I
Accounts receivable/payable	J
Outward direct investment	K
Outward investments in securities	L
Other external claims and debts	M
Of which: Gold and SDRs etc.	M-a
Others	N
Financial surplus or deficit (Financial transactions table)	Y
Difference between financial assets and liabilities (Financial assets and liabilities table)	
Difference in reconciliation amounts (Reconciliation table)	
Total	Z
(Reference) Foreign exchange reserves	W
* Of which: Deposits(excluding certificates of deposit)	A-z

\*\* the Fiscal Investment and Loan Program

Before 2<sup>nd</sup> quarter 2000, 'M-a' shows 'Of which: Foreign exchange reserves'.

Before 2<sup>nd</sup> quarter 2001, 'B' shows 'Deposits with the Trust Fund Bureau'.

Before 2<sup>nd</sup> quarter 2001, 'D-b' shows 'Central government securities'.

Before 4<sup>th</sup> quarter 2008, 'D-a' shows 'Financing bills'.