# Use of Micro-level Data on Mutual Funds to Better Determine Household Savings in Japan's Financial Accounts[1]

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## Abstract

The 2008 SNA recommends that retained earnings of mutual funds be recorded as income and thus savings of the investor, rather than the mutual fund, highlighting the role of mutual funds as investment vehicles or conduits. In practice, however, the data needed to estimate mutual funds' retained earnings tends to be difficult to obtain, posing a challenge to compilers of financial statistics. A recent regulatory change in Japan has made available micro-level, i.e., individual fund-level, data regarding income and dividends of mutual funds, enabling statisticians to reasonably estimate mutual funds' retained earnings. The data also reveals that a considerable portion of dividends of mutual funds in Japan comes from holding gains (principal and capital gains), which could also affect the estimation of financial surplus/deficit by the household sector in Japan's financial accounts.

Keywords: mutual funds, retained earnings, micro-level data, 2008 SNA

# 1. Introduction

In the wake of the recent global financial crisis revealing the weakness of data coverage to analyse financial stability, international initiatives to develop data in particular on non-bank financial institutions (non-banks), the center stage of the crisis, have been undertaken. The G20 Data Gaps Initiative (DGI) has been created by the international statistical community and endorsed by G20 Finance Ministers and Central Bank Governors and the IMFC,[3] proposing 20 recommendations to identify and close data gaps. The SDDS plus, a new, top-tier data dissemination standard, has also been established by the IMF, supplementing the SDDS[4] with nine new data categories that would help countries in pursuit of the work on the DGI.

Following those international initiatives, the Bank of Japan (BOJ) has recently developed several new sets of data in its Flow of Funds Accounts to capture activities of non-banks, consequently improving the accuracy of estimating households' income distributed through non-banks. In view of implementing the 2008 SNA recommendations, the BOJ published its specific methods in July 2014 to estimate the stocks and flows of all employment-related defined benefit pension schemes on an accrual basis, projecting to release its revised financial accounts in 2016.[5] In June 2014, the BOJ revised the current estimation method for insurance and pension reserves in the life insurance sector to separate more accurately valuation changes due to asset prices and foreign exchange from transactions.[6]

In addition to pension funds and life insurance companies, mutual funds (MFs) have also emerged as one of the most significant sectors among non-banks to influence households' income in recent years. In fact, the 2008 SNA recommends that the retained earnings of MFs be recorded as income and thus savings of the investor (mainly households), rather than as the MFs themselves, highlighting the role of MFs as investment vehicles or conduits. In this treatment, households' income is not recognized if MFs retain earnings to improve their performance at the expense of households. This recommendation may well be motivated by the fact that, under the current treatment of investment funds in the 1993 SNA, households' income is underestimated whereas that of corporations would be overestimated by equal value.[7]

Besides the retained earnings of MFs, there is a very unique aspect of Japan's MFs that undoubtedly raises a question of whether households' income is accurately measured. A considerable portion of distributions has in recent years

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[3] The International Monetary and Financial Committee (IMFC) is an advisory body to the Board of Governors of IMF.

[4] Special Data Dissemination Standard (SDDS) is a global benchmark set up by the IMF in 1996 for disseminating economic and financial data to the public when IMF member countries seek access to international capital markets.

[5] For more details on the BOJ's revised methods for financial accounts to implement the 2008 SNA recommendations regarding the pension funds sector as well as other sectors and issues, refer to Bank of Japan (2014).

[6] In the previous method of estimating transactions as stock differences, valuation changes arising from asset prices and foreign exchange were inevitably recorded as transactions in the life insurance sector.

[7] Eurostat and ECB Directorate General Statistics (2005).

been paid out by MFs from the principal and capital gains,[8] but not from a regular source of income gains (that is, interest and dividends).[9] While the 2008 SNA does not explicitly consider this special case with respect to MFs, by following the principle of MFs as investment vehicles, to treat distributions from the principal and capital gains as dissaving of households, in other words, to treat such funds flowing out of the MF sector as withdrawal or repayment/refund of the investment, would significantly improve the accuracy of data on households' income in Japan.

In theory, it is appropriate to revise how to measure retained earnings in line with the 2008 SNA recommendation for MFs – and, in the case of Japan, distributions from the principal and capital gains – to improve estimates of households' income. However, in practice, data limitations pose a serious challenge to statisticians compiling those statistics. Aggregate information on MFs' retained earnings is usually not available, and individual MF's investment reports (or prospectuses) do not provide sufficiently detailed information on sources of distributions to estimate retained earnings. Even though some countries, such as Australia and the US have already implemented the 2008 SNA, data limitations have brought about serious measurement issues with estimates of retained earnings.

While data limitations are major obstacles to implement the 2008 SNA recommendation on retained earnings, a recent regulatory change in Japan has made available micro-level, i.e., individual fund-level, data regarding sources of distributions by MFs (whether from income gains, capital gains, or the principal), enabling statisticians to reasonably estimate MFs' retained earnings as well as distributions from the principal and capital gains. The purpose of this paper is to use micro-level data of MFs to measure retained earnings of mutual funds and distributions from the principal and capital gains. Measured figures reveal how much Japan's households really reinvest in and withdraw from MFs, better capturing households' income as well as the financial surplus/deficit of the MF sector.

The rest of the paper is organized as follows. Section 2 briefly explains what MFs are, highlighting their role as investment vehicles in the 2008 SNA. Section 3 describes methodological challenges for estimating MFs' retained earnings in Japan and their unique aspect of distributions from the principal and capital gains, drawing on some experiences of other countries. Section 4 depicts source data and estimation methods while Section 5 analyses estimation results. Section 6 concludes the paper.

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[8]     Hereafter in this paper, the term "capital gains" is used to stand for "holding gains." Although the 2008 SNA prefers the latter, the two terms have essentially the same meaning (2008 SNA 3.105).

[9]     As for terms used in this paper, distributions from income gains refer to investment income that comprises interest (income on debt) and dividends (income on equity) while distributions from capital gains refer to payments distributed from capital gains. In the SNA, distributions from the principal and capital gains essentially refer to withdrawal of equity, defined as "large and irregular payments based on accumulated reserves or sale of assets."

## 2. Mutual Funds as Investment Vehicles or Conduits in the 2008 SNA

Mutual funds are collective investment schemes that raise funds by issuing shares or units to investors and invest the proceeds predominantly in financial assets and in nonfinancial assets.[10] While there are many types of MF (e.g., open-end or closed-end, active or passive, global or dedicated), the role of MFs as investment vehicles or conduits is universal across fund types in that MFs raise funds from investors, invest the proceeds mainly in securities, and distribute payments to investors.

To illustrate the role as investment vehicles, consider the case of retained earnings obtained by MFs and compare the ways in which they are recorded between the 1993 SNA and 2008 SNA – differences depend on whether retained earnings are recorded as a transaction or a reconciliation in financial accounts (Chart 1). On the one hand, the 1993 SNA recommends that retained earnings are obtained by MFs and reinvested by MFs, recording investment income obtained by MFs as a transaction on the asset side and reinvested income as a reconciliation on the liability side, leaving the MF sector with positive saving. On the other hand, according to the 2008 SNA recommendation, while investment income obtained by MFs is recorded as a transaction in the same way as in the 1993 SNA, reinvested income is imputed as if the income were distributed to and reinvested by investors and is recorded also as a transaction on the liability side of MFs (i.e., on the asset side of investors), leaving the MF sector with no saving.
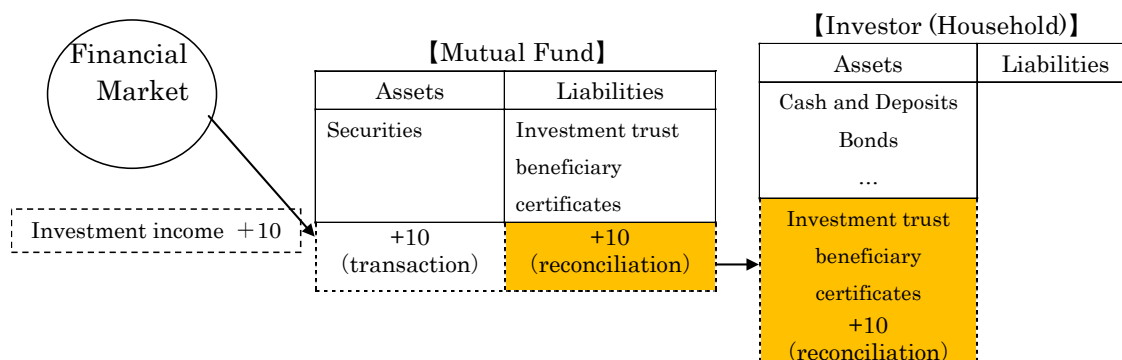
As for investors' income and savings, the 1993 SNA's treatment of retained earnings leaves investors (mainly households), with negative saving (equivalently, MFs' positive savings) while the 2008 SNA's treatment leaves investors with no saving, and consequently with a financial surplus/deficit of MFs being balanced. Given the role of MFs as investment vehicles, the 2008 SNA recommendation would be more appropriate. This change in the treatment of MFs' retained earnings is in part motivated by the fact that, under the 1993 SNA treatment of investment funds, households' income is underestimated.[11]

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[10]  These collective investment schemes are often referred to as investment funds, managed funds, or funds. This paper uses the term mutual funds.

[11]  Note that estimation methods for retained earnings are different between capital accounts and financial accounts in Japan's SNA. On the one hand, in capital accounts, (property) income flows are estimated from information on the asset side of investment trusts which include MFs, automatically recording retained earnings. On the other hand, in financial accounts, (property) income flows are estimated from information on the liability side of MFs, that is, net purchases (purchases minus redemptions) by investors.
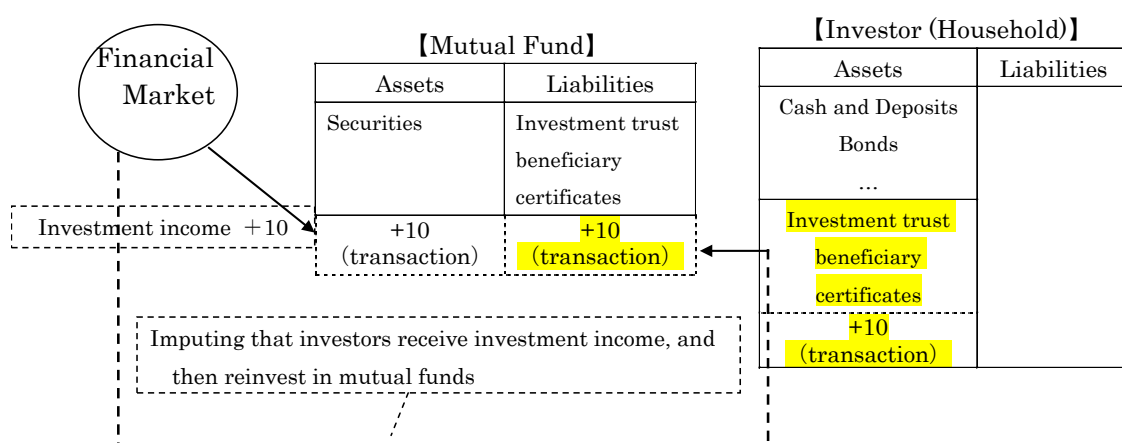
(1) 1993 SNA

-- MF sector receives ten units of investment income, and then retains them (reinvests in securities).

【Investor (Household)】

【Mutual Fund】

| Financial Market | | | Assets | Liabilities |
|---|---|---|---|---|

Investment income ＋10

| Assets | Liabilities |
|---|---|
| Securities | Investment trust beneficiary certificates |
| +10 (transaction) | +10 (reconciliation) |

| Assets | Liabilities |
|---|---|
| Cash and Deposits | |
| Bonds | |
| ... | |
| Investment trust beneficiary certificates +10 (reconciliation) | |

(2) 2008 SNA

-- MF sector receives ten units of investment income, and then retains them (reinvests in securities).

【Mutual Fund】

【Investor (Household)】

Financial Market

Investment income ＋10

| Assets | Liabilities |
|---|---|
| Securities | Investment trust beneficiary certificates |
| +10 (transaction) | +10 (transaction) |

| Assets | Liabilities |
|---|---|
| Cash and Deposits | |
| Bonds | |
| ... | |
| Investment trust beneficiary certificates +10 (transaction) | |

Imputing that investors receive investment income, and then reinvest in mutual funds

# 3. Methodological Challenges in Japan and Other Countries

As mentioned in Section 2, the intended motive behind the 2008 recommendation on retained earnings is in part to rectify underestimation of investors' income by imputing retained earnings as investors' income rather than MFs'. As a result, net positive savings of MFs which would prevail in the treatment of the 1993 SNA, are expected to shrink (net negative savings of investors to shrink, i.e., savings of investors to increase). However, a very unique characteristic of the MF sector in Japan is that, in recent years, MFs' net savings have structurally remained negative by a significantly large amount. The negative savings are the opposite of the outcome expected by the 2008 SNA recommendation and the problem that current

Japan's financial accounts (Flow of Funds Accounts) is facing in measuring households' income (Chart 2).

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Financial Surplus/Deficit of Mutual Fund Sector in Japan                    Chart 2

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Source: BOJ

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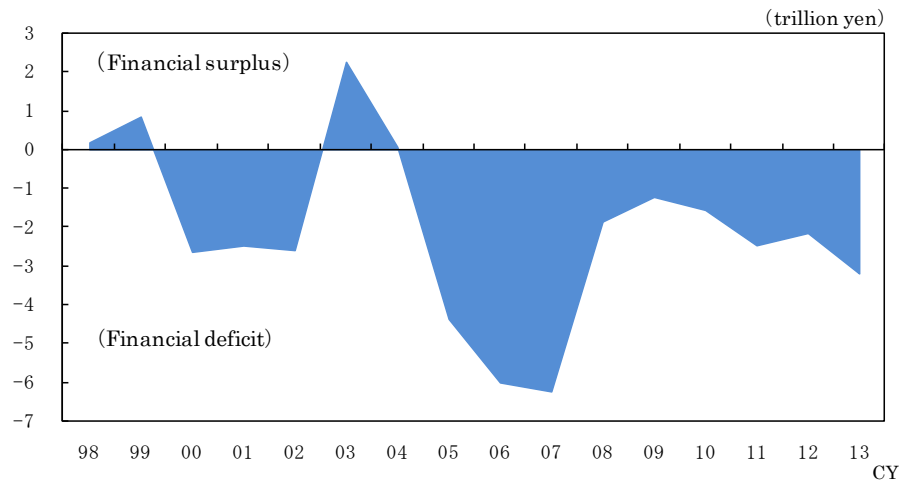
The net negative savings of MFs mean that MFs pay out more distributions than the amount of income gains generated from their assets. This type of fund investment strategy has been commonly observed in increasingly popular MFs whose main characteristics are as follows: 1) their assets are predominantly concentrated in foreign-currency denominated bonds to aim for higher returns under the super-low interest rate environment in Japan's domestic market; and 2) distributions are paid out monthly, perceived by investors as substitutes for interest income generated from bank deposits under high-interest rate environment in the past, especially the 1980s, and thus used as supplements to living expenses and pension payouts, particularly for the elderly.[12] The problem arose when, in recent years, even after the yen sharply appreciated in the wake of the financial crisis and thus funds' performance greatly deteriorated, many MFs continued to pay out a predetermined amount of distributions denominated in yen every month, which could not be covered by income gains and thus had to be overwhelmingly financed by payouts from the principal and capital gains.

The problem of structural net negative saving in the MF sector can be understood by noting how MFs can pay out distributions from three different sources in Japan: income gains, capital gains, and part of the principal. On the one hand, distributions from income gains are standard and this does not change

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[12]    As general observations, the elderly who depend on pension payouts more than the younger generation. prefers monthly distribution-type MFs more than the younger generation, and the former owns more MFs in value than the latter.  In tandem with the rapidly aging population in Japan, monthly distribution type MFs tend to have become increasingly popular in society as a whole.  In fact, according to Nomura Research Institute, the share of monthly distribution-type MFs rapidly increased from about 10% of the net asset value of non-MMF MFs in 2000 to about 70% in 2011.

financial surplus/deficit of the MF sector; investment income flowing into the MF sector from the financial market is offset by distributions flowing out of the MF sector. On the other hand, distributions from capital gains and the principal require MFs to sell their (financial) assets to generate proceeds which can be distributed to investors. In this case, while no investment income is flowing in, the MF sector pays out distributions and as a result, records a financial deficit. As for the investor sector, even the distributions from capital gains and principal are recorded as income and thus financial surplus is recorded. Nonetheless, this treatment is not appropriate according to the 2008 SNA, which emphasizes the role of MFs as investment vehicles with net savings of MFs being zero. Similarly, for investors, as distributions are generated from sale of assets, this transaction is essentially the same as withdrawal of equity and should not be recorded as a financial surplus of the investor sector. Overestimation of investors' income should be rectified (Chart 3).

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Flows in Mutual Fund Sector                                                                 Chart 3
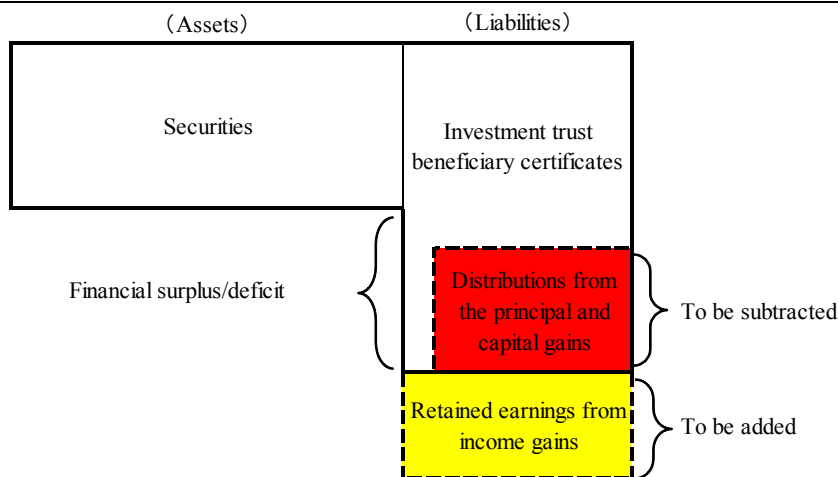


Note: Investment trust beneficiary certificates (liabilities of MFs = assets of investors) are estimated by net purchases (purchases minus redemptions) of MFs' shares by investors.

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Conceptually, as described above, treatment of retained earnings and distributions from the principal and capital gains is clear. Practically, however, data availability is a major challenge to implement the 2008 SNA recommendation, which requires information in particular on sources of retained earnings and distributions. According to the 2008 SNA, imputing retained earnings from capital gains as investors' income is not appropriate since capital gains in general are not considered as property income – at least at the time of finalizing the 2008 SNA.[13] Therefore, it is necessary to break down sources of earnings and distributions into income gains and capital gains. Such detailed data is usually difficult to obtain.

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[13] Experts have not yet reached a consensus on the issue of whether capital/holding gains and losses should be included in investment income. Smith (2012) pointed out that in the case of insurance and pension funds, holding gains and losses attributable to policyholders or pension beneficiaries should be included in investment income. However, the Advisory Expert Group on National Accounts continues to discuss the topic as a future research agenda.

In fact, other countries which have implemented the 2008 recommendation on retained earnings of MFs face compilation challenges due to data limitations. For example, Australia, one of the first advanced countries to implement the 2008 SNA in 2009, reports large negative retained earnings for some time periods in part due to data limitations in that capital gains and losses cannot be perfectly separated from income gains. As another example, the US, which implemented the 2008 SNA in 2013, uses assumption of zero net savings of the MF sector in its financial accounts – financial surplus/deficit of the MF sector as balanced (i.e., zero) – due most likely to data limitations, which means that retained earnings from income gains are automatically recorded as a transaction, i.e., households' income.[14] However, a drawback of this method is that retained earnings from capital gains and losses can also be recorded as part of households' income, which is not recommended by the SNA.[15]

In the case of the US, imposing the assumption of zero net savings of the MF sector raises an issue regarding the concept of income in the SNA, that is, whether capital gains should be considered as income. Given the role of MFs as investment vehicles, investors would not distinguish between income gains and capital gains because sources of distributions would not matter as long as investors receive payments. From this point of view, it may be reasonable to record distributions from capital gains as income in the SNA. In the case of Japan, the BOJ has decided to exclude distributions from capital gains (and the principal) from income in line with the current principle of the SNA. Nonetheless, as the issue of the concept of income in the SNA has not yet been resolved, the BOJ will watch closely the direction of the future debate on this issue.

## 4. Estimation Methods for Retained Earnings and Distributions

While data limitations pose a serious challenge for implementing the 2008 SNA recommendation on retained earnings in other countries as explained in Section 3, Japan also faces the similar challenge: while aggregate data on distributions from (publicly offered) MFs are compiled and made publicly available by the Investment Trusts Association of Japan, no aggregate data on retained earnings of MFs are available. However, a regulatory change enacted in 2012 has made data available from June 2012 onward in order to reasonably estimate retained earnings. By this regulation, individual MF is required to disclose in its investment report (or prospectus) detailed information on income gains, capital gains, and sources of distributions. This paper shows the estimated result of retained earnings derived

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[14]    An increase in MFs' assets by earnings retained equal to an increase in MFs' liability (by the assumption imposed), which in turn is equal to an increase in households' assets/income.

[15]    It is not a drawback if capital gains are *intentionally* recorded as households' income, which may well be the case in the US. Nonetheless, some practical issues remain with zero financial surplus/deficit assumption of the MF sector. First, in order for this to work practically, reasonably accurate flow data on the asset side of MFs is required. Second, time lags in settlement of purchase and redemption transactions would make income flows volatile, especially in higher frequencies, such as quarterly data.

from income gains and of distributions from principal and capital gains. Details on data and estimation methods used in this paper are described below:[16]

(Sample Data)

As there are over 7,000 MFs in Japan, this paper uses a sample of 150 MFs which represent a majority of the total MFs, ensuring the validity of the estimation as well as minimizing compilation costs. The information on a sample is as follows:

−   Non-MMF MFs (MMF, REIT, or ETF is excluded)

−   Publicly offered MFs (privately placed MFs, which are mostly purchased by institutional investors, are excluded due to data limitations)

−   MFs paying out distributions at least four times per year

−   Monthly frequency

−   Sample includes about 150 MFs, which are designed to be selected without bias with respect to asset classes (equity, bonds, real estate, or mix) and regions (domestic, overseas, or mix), accounting for about 70 percent of total net asset value of publicly offered MFs[17]

(Rule for Distributions and Disclosed Information)

The rule for distributions which can be paid out by MFs and information which must be disclosed in the investment report by MFs are as follows (Chart 4):

−   MFs can use the following four sources of funds from which distributions are paid out to investors: income gains generated during the current period (a), capital gains generated during the current period (b), retained earnings accumulated up to the previous period (c), and part of the principal (d); and

−   The investment report discloses information on the amount of distributions (f), part of which are generated from the current period (x) – both income and capital gains – and part of which are generated from sources other than x, (y),[18] and information on (a) through (d).

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[16]   In response to the Financial Services Agency's Year 2011 Guidelines for Supervision of Financial Instruments Business Operators, the Investment Trusts Association of Japan revised in 2012 its self-guideline for MF's financial report to make more transparent to investors MF's investment strategies and their risks involved in assets held in foreign currency denominated bonds combined with predetermined monthly distributions, especially during times of the Japanese yen's appreciation, as mentioned in Section 3.

[17]   A sample is selected in two steps: sample 1 is selected to account for 70% of net asset value of *total* MFs regardless of categories, while sample 2 is selected to account for 70% of net asset value in *each category* in a matrix of asset classes and regions. The final sample contains either sample 1 or sample 2 (i.e., union of two samples).  As the net asset value of MFs changes over time and some MFs cease to exist, a sample is updated every year.

[18]   (y) consists of part of (c) and part of (d).

## Disclosed Information on Sources of Distributions (an example)

Chart 4

(Calculation of Distributions)

|  | (yen) |
|---|---|
| (a) Income gains from the current period | 3,448,944,500 |
| (b) Capital gains from the current period | 0 |
| (c) Retained earnings accumulated up to the previous periods | 14,862,141,396 |
| (d) Part of principal that can be distributed | 71,229,777,924 |
| (e) Total of distributable funds (a+b+c+d) | 89,540,863,820 |
| (f) Total distributions (for about 2.5 trillion shares) | 8,749,736,673 |
| (g) Total distributions (per 10,000 shares) | 35 |

Sources of Distributions: (a), (b), (c), (d)

(Decomposition of Distributions)

|  | (yen, per 10,000 shares) |
|---|---|
| (g) Total distributions | 35 |
|     (x) Distributions from the current period's earnings | 13 |
|     (y) Distributions from sources other than x | 22 |
| (h) Distributable funds carried over to the next period (e - f) | 323 |

Note: The information on sources of distributions is disclosed in MF's profit and loss report for the month of December 2013.

Source: Investment Report of Global Sovereign Open (Monthly Distribution), Kokusai Asset Management.

## (Estimation Method)

The estimation method for "retained earnings derived from income gains of the current period, (p)," and "distributions from the principal and capital gains during the current period, (q)," is as follows (Chart 5):

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*Estimation Equations for Individual MFs*

1. Distributions derived from income gains: $(z) = (x')*(a/(a+b))$,

where $x' = x*$number of every 10,000 shares in MF[19]

2. Retained earnings derived from income gains: $(p) = (a) - (z)$

3. Distributions from the principal and capital gains: $(q) = (f) - (z)$

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[19]    Note that as x appears as per 10,000 shares in the financial report, this figure needs to be converted to as per mutual fund for individual MF levels.

- Calculate "part of distributions which are actually paid out from income gains generated during the current period (z)" by multiplying ($x'$ = x*number of every 10,000 shares) – funds which are generated during the current period – with ($a/(a+b)$) – the share of income gains to funds generated during the current period;[20]

- Calculate "retained earnings from income gains (p)" by subtracting (z) from (a);

- Calculate "distributions from the principal and capital gains (q)" (= "distributions from capital gains during the current period" + "funds are generated from sources other than x") by subtracting (z) from (f); and then,

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*Estimation Equations for aggregated level retained earnings (P)*

4. $p_{sample}/f_{sample} = (p_1/f_1*n_1+p_2/f_2*n_2+...+p_i/f_i*n_i)/(n_1+n_2+...+n_i)$, i = sample

5. $P = F*(p_{sample}/f_{sample})$

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- Given estimated retained earnings at the individual MF level (p), calculate retained earnings at aggregated level (P) by weighted-averaging across sample of individual MFs with net asset value (n) as a weight, and by grossing-up with a ratio of the amount of distributions at the individual MF level (f) to that at aggregated level (F), which is compiled and made publicly available by the Investment Trusts Association of Japan.

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*Estimation Equations for aggregated-level distributions from the principal and capital gains (Q)*

6. $a_{sample}/f_{sample} = (a_1/f_1*n_1+a_2/f_2*n_2+...+a_i/f_i*n_i)/(n_1+n_2+...+n_i)$, i = sample

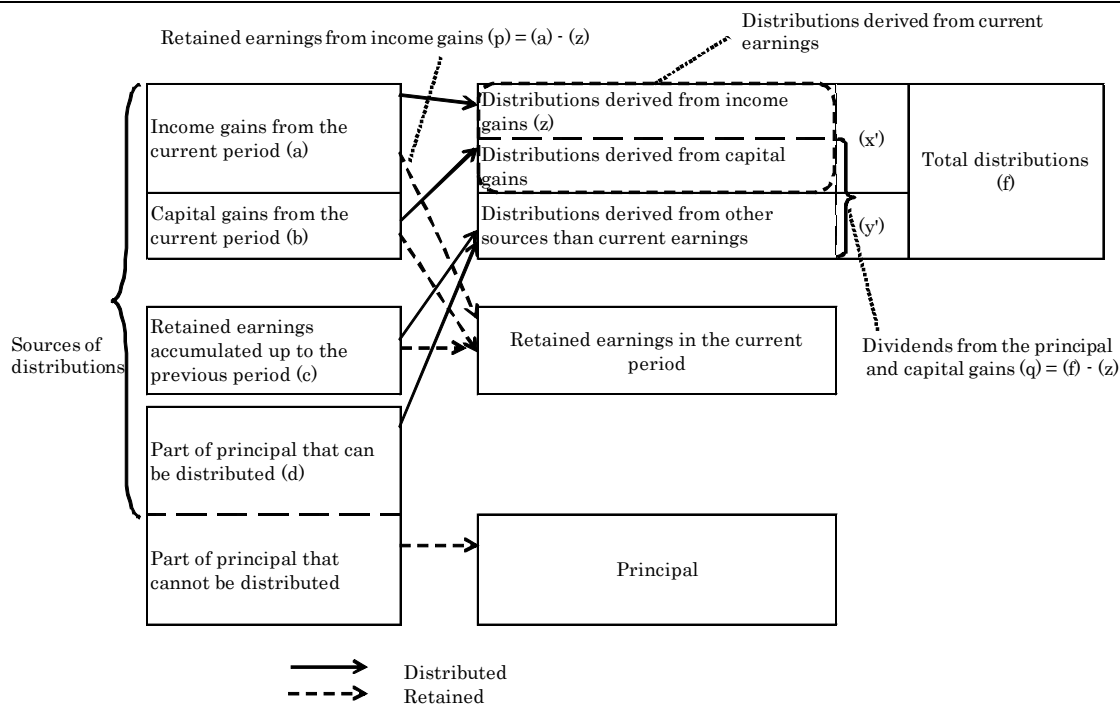7. $A = F*(a_{sample}/f_{sample})$, then $Q = F - Z = F - (A - P)$

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- Similarly, for aggregated level distributions from the principal and capital gains (Q), after grossing up (a) to (A), subtract (Z = A - P) from (F).

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*Estimation Equation for overall adjustments of flows of MFs sector (P - Q)*

8. $(P) - (Q) = (A - Z) - (F - Z) = (A) - (F)$

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- Overall adjustments of flows of the MF sector entail adding retained earnings, P (= A - Z), and subtracting distributions from the principal and capital gains, Q (=F - Z), simply resulting in (P - Q), that is, (A - F).

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[20]    An implicit assumption here is that the share of income gains *distributed* and the share of income gain *generated* are equal. Actual distribution strategies vary among individual fund managers.

Sources of Distributions, and Flows of Retained Earnings and Distributions by
Mutual Funds Chart 5

Retained earnings from income gains (p) = (a) - (z)

Distributions derived from current earnings

| Income gains from the current period (a) | Distributions derived from income gains (z) | (x') | Total distributions (f) |
| --- | --- | --- | --- |
| | Distributions derived from capital gains | | |
| Capital gains from the current period (b) | Distributions derived from other sources than current earnings | (y') | |

Sources of distributions

| Retained earnings accumulated up to the previous period (c) | Retained earnings in the current period |
| --- | --- |
| Part of principal that can be distributed (d) | |

Dividends from the principal and capital gains (q) = (f) - (z)

| Part of principal that cannot be distributed | Principal |
| --- | --- |

→ Distributed
--→ Retained

Note: x' = x times number of shares (about 2.5 trillions) in MFs (per 10,000 shares). y' = y times number of every 10,000 shares in MFs (per 10,000 shares).

# 5. Estimation Results

Following the estimation method described in Section 4, this section presents estimates of retained earnings and of distributions from the principal and capital gains, using sample monthly data between June 2012 and May 2013.

First, retained earnings are estimated at 0.6 trillion yen for 2012 and 1.3 trillion yen for 2013 at an annualized rate, which are about 20 percent and 37 percent of income gains generated during the current period, respectively – that is, a distribution payout ratio from income gains of 80 percent and 63 percent, respectively. Those estimates are rather small compared with total distributions of 4.8 trillion yen for 2012 and 5.0 trillion yen for 2013, in part possibly reflecting low interest rate environment.[21] This result implies that net saving of investors would increase by 0.6 trillion yen for 2012 and 1.3 trillion yen for 2013, compared with households' net savings (i.e., financial surplus of the households sector) in the

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[21] Those estimates are only for publicly offered MFs, which tend to pay out more distributions than privately placed MFs (about half the size of publicly offered MFs in net asset value). As privately offered MFs are mainly purchased by institutional investors with long-term investment strategies, they tend to retain rather than distribute earnings.

current statistics of 23.6 trillion yen for 2012 and 23.6 trillion yen for 2013 (Table 1).[22]

Second, distributions from the principal and capital gains are estimated at 2.2 trillion yen for 2012 and 2.6 trillion yen for 2013 at an annualized rate (excluding privately placed MFs), which accounts for about 46 percent and 52 percent of total distributions, respectively. This largely reflects the fact that many MFs paid out distributions even with their poor performance in the aftermath of the global financial crisis. This implies that net savings of households would decrease by 2.2 trillion yen for 2012 and 2.6 trillion yen for 2013 (Chart 6). Combined with estimates of retained earnings, net savings of households would decrease by 1.6 and 1.3 trillion yen on net – in turn, net savings of MFs would increase by the same magnitude to partially correct underestimation.

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Decomposition of Distributions                                                                 Table 1

| (trillion yen) | 2012 | 2013 |
|---|---|---|
| Total distributions (F) | 4.8 | 5.0 |
| Distributions from principal and capital gains (Q) | 2.2 | 2.6 |
| Retained earnings (P) | 0.6 | 1.3 |
| P - Q (adjustment of households' income) | -1.6 | -1.3 |

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From 2008 to 2011, distributions from the principal and capital gains are estimated to account for a large portion of the total distributions, while those prior to 2007 are considerably smaller, reflecting in part the better performance of MFs and in part underestimation (as explained below). Note, however, that figures for distributions from the principal and capital gains prior to May 2012 are approximately estimated by the alternative estimation method as described in Annex, because the detailed information on sources of distributions is only available from June 2012. The alternative method makes use of the concept of the average purchase cost that is applied to individual MFs – as opposed to being applied to individual investors for filing income tax purposes. The alternative method compares the share price with the average cost in estimating distributions from the principal and capital gains: distributions from MFs are considered as those from the principal and capital gains when the share price is below the average cost.[23]

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[22]   As a reference, Japan's nominal GDP and disposable income for 2012 are about 474 trillion yen and about 350 trillion yen, respectively.

[23]   This method was actually applied up to March 2000 to calculate income taxes for individual investors in Japan although the average cost of the MF as a whole and that of the individual investor diverge, generating inequality among investors.

(trillion yen)
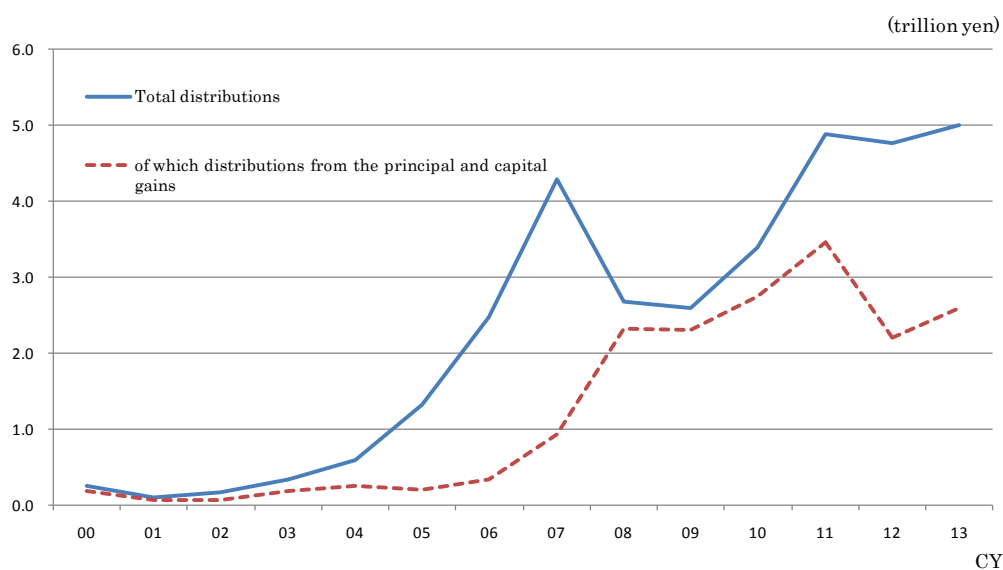


Note: Distributions from the principal and capital gains are estimated by an alternative method
(the average purchase cost) prior to 2012. Data are publicly offered mutual funds.

Source: BOJ

Because figures estimated by the alternative method are an approximation, some estimation biases exist in either direction. On the one hand, figures tend to be overestimated when MFs perform poorly (in the sense that the share price is below the average cost) because they would include income gains. On the other hand, figures tend to be underestimated when MFs perform well (in the sense that the share price is above the average cost) because they would exclude capital gains as may well be the case in the mid-2000s.[24]

# 6. Concluding Remarks

A recent regulatory change in disclosing information on sources of distributions by MFs in Japan has made it possible for statisticians to reasonably estimate retained earnings as well as distributions from the principal and capital gains in line with the 2008 SNA recommendation. This paper's analysis offers three important implications.

First, the 2008 SNA recommendation to impute retained earnings as investors' income rather than MFs' is appropriate, considering the role of MFs as investment vehicles or conduits. Nevertheless, albeit easily understood in theory, commonly prevailing data limitations make it difficult to implement it in practice, as evidenced by examples of other countries, such as Australia and the US. Only when detailed

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[24]    For more details, refer to the Annex.

micro-data at the individual MF level became available in Japan did it become possible to estimate income gains and capital gains separately. As in other recommendations in the 2008 SNA, implementing the 2008 SNA recommendation entails developing data, but at the same time reporting burden should be given a serious consideration. Weighing costs and benefits is (and has been) a fundamental challenge to statisticians in developing data.

Second, it is difficult to capture activities of non-banks including MFs from the existing source data although this area of data development is requested by the international community. It follows that it is also difficult to assess and analyze their effects on households' income through non-banks. Thus far, the BOJ has revised estimation methods for pension funds and insurance and pension reserves in the life insurance sector to make estimation more appropriate and accurate, and the latest attempt in this area is to take on the remaining major sector of MFs and revise estimation methods. As a result of those revisions, estimates of households' income are expected to improve significantly.

Third, as Japan's unique feature, MFs' distributions come not only from income gains, but also from the principal and capital gains. The latter part is not explicitly explained in the SNA manual, but statisticians need to decide whether to record distributions from the principal and capital gains as households' income. While other countries may not have experienced similar cases, the BOJ has decided that it is appropriate not to record them as households' income. Nevertheless, given the role of MFs as investment vehicles, recording capital gains – but not the principal – as income can be given a serious consideration, possibly stimulating future discussions about what is considered as "the concept of income" in the SNA.

## References

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Eurostat and ECB Directorate General Statistics (2005), "Retained earnings of mutual funds," *Issue paper for the meeting of the Advisory Expert Group*, July.

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# Annex: Alternative Estimation Method for Distributions

As discussed in the text, estimating distributions from different sources, "distributions from the principal and capital gains" and "distributions from income gains," entails a set of detailed information, such as income gains, capital gains, and sources of distributions. However, since individual mutual funds (MFs) are required to disclose detailed information on which the estimation method in the text relies only after June 2012, an alternative method to estimate "distributions from the principal and capital gains" prior to May 2012 is introduced by making use of more readily available data.

It is important to estimate "distributions from the principal and capital gains" during time periods prior to May 2012, especially in the aftermath of the global financial crisis. As explained in the text, while most monthly distribution-type MFs paid out distributions from the principal (and capital gains) following the global financial crisis, most investors did not perceive the source of distributions as the principal. Instead, they rather perceived it as the "ordinary" source of income gains – as if it were interest paid on bank deposits. Thus, those investors should be made aware of their misperception of the source of income, and the magnitude of the distributions should be made available, albeit as an approximation. Although the alternative method is not as accurate as the method in the text, given the data limitation of detailed information prior to May 2012, it is one of the best possible alternatives to quantify the magnitude of misperceived households' income. This annex explains the alternative method, its possible discrepancies from the method in the text, and its estimation results of "distributions from the principal and capital gains."
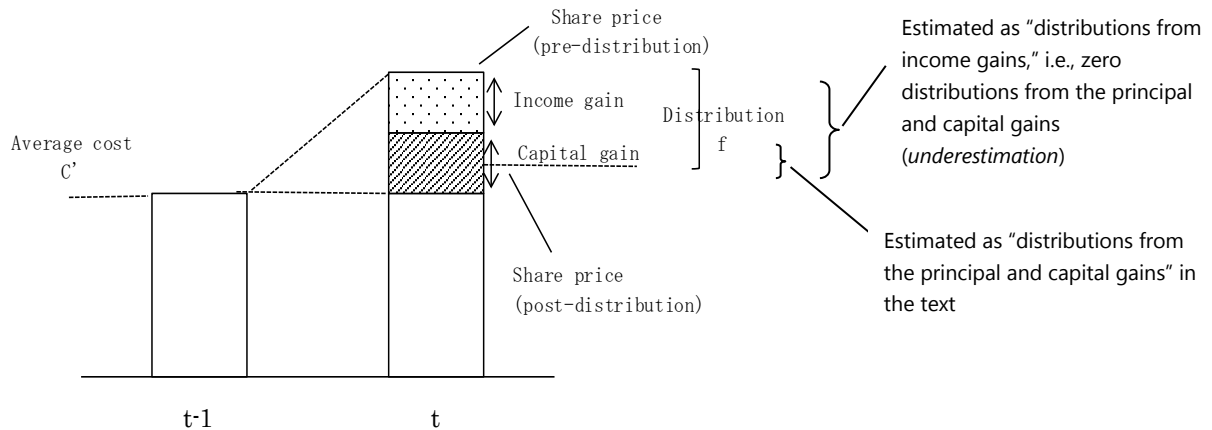
(Concept of Alternative Method)

The alternative method applies the concept of the average purchase cost to individual MFs – as opposed to individual investors for more familiar taxation purposes – by using more readily available data disclosed by individual MFs, such as share prices, distributions, number of total shares, number of shares purchased, and number of shares redeemed. The alternative method compares the share price (= net asset value/number of shares) with the average purchase cost per share (= principal/number of shares; hereafter, the average cost) in estimating "distributions from the principal and capital gains." The underlying concept is to consider distributions as "normal" in the sense that the MF pays out distributions when generating "money" (e.g., income gains and capital gains) represented by the case when the share price is above the average cost while considering distributions as "peculiar" in a sense that the MF pays out distributions even when losing "money" (e.g., capital losses) represented by the case when the share price is below the average cost.[25]

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[25] This alternative method makes use of the average purchase cost *at the individual mutual fund level.* In fact, this concept is rather common *at the individual investor level* where taxable income is determined by the relationship between the share price and the average purchase cost. For example, when investors redeem shares, if the share price is above the average cost, the difference between the proceeds from redemption and the principal (= average purchase cost times number of shares) will be taxed. On the contrary, if the share price is below the average cost, the proceeds from redemption are smaller than the principal, and thus no proceeds will be taxed because investors "lost their money."
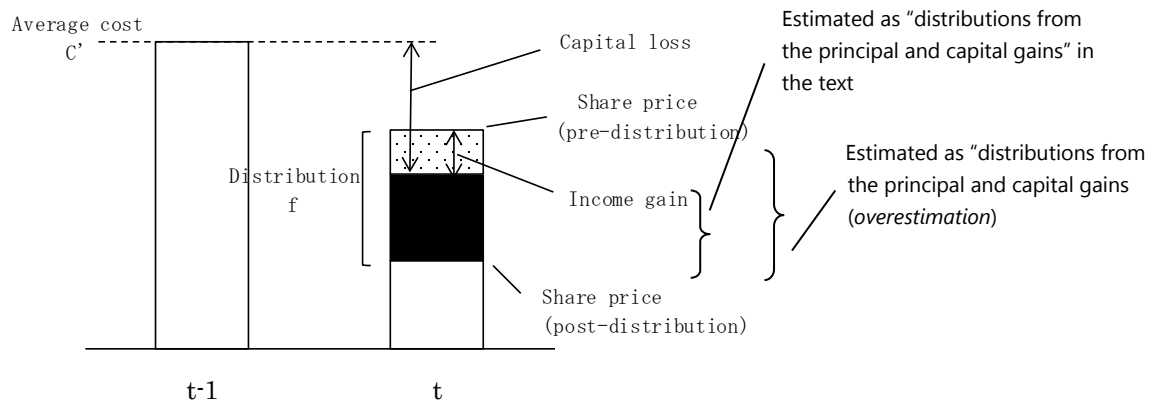
Share Price, Average Purchase Cost, and Distribution (per share unit for individual MFs)
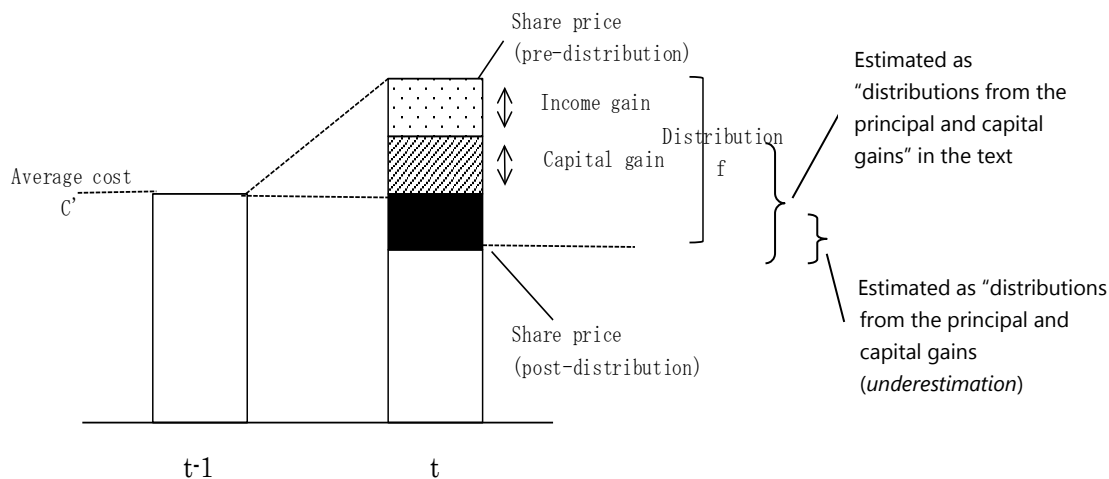
[Case 1] Share Price > Average Cost



[Case 2] Share Price < Average Cost



This alternative method was actually applied up to March 2000 to determine taxable income for individual investors in Japan by comparing the average cost *at the MF level* as a whole with that of the investor *at the individual investor level*. The problem is to apply the same MF level average cost to every individual investor equally although the average cost differs among individual investors, generating inequality among investors. This inequality prompted a change in the tax code which has been used to calculate individual investors' average cost since April 2000. Given this history, the alternative method of using the average cost at the MF level is relatively common in the MF industry in Japan.

[Case 3] Pre-distribution Share Price > Average Cost > Post-distribution Share Price



In particular, the following three cases are worth considering (Chart A1): when distributions paid out by MFs are considered as those from income gains if the share price is above the average cost (this condition still applies even after the distribution is paid out – note that the share price, calculated as net asset value divided by number of shares, declines after the distribution is paid out), denoted as *Case 1*; when distributions are considered as those from the principal and capital gains if the share price is below the average cost, denoted as *Case 2*; and, as a case similar to Case 1, where the relationship between the share price and the average cost changes before and after the distribution is paid out, when part of distributions which lies below the average cost is considered as being from the principal and capital gains if the pre-distribution share price is above the average cost, but the post-distribution share price is below the average cost, denoted as *Case 3*.

## (Discrepancies from the Method in the Text)

Not using detailed information on sources of distributions, estimates by the alternative method deviate from those by the method in the text in either direction (upward or downward), depending on the relationship between the share price and the average cost. On the one hand, figures for "distributions from the principal and capital gains" estimated by the alternative method tend to be underestimated when the share price is above the average cost because capital gains are excluded as in Cases 1 and 3. On the other hand, figures for "distributions from the principal and capital gains" tend to be overestimated when the share price is below the average cost because income gains are included as in Case 2. Nevertheless, those discrepancies tend not to remain in one direction because individual MFs are estimated separately before being aggregated using a weight of net asset value, and also because market fluctuation makes the discrepancies appear in both directions.

(Estimation Equations)

Focusing on the average cost before and after distributions are paid out, "distributions from the principal and capital gains" for individual MFs can be estimated by using a readily available data set of share prices after distribution ($p_t$), net asset values ($I_t$), shares purchased ($S_t$), shares redeemed ($R_t$), and distributions per share ($f_t$), at time t. Given those basic data, the number of total shares at time t ($Ni_t$), number of shares purchased during time t ($Ns_t$), and number of shares redeemed during time t ($Nr_t$) can be simply derived as follows:

| | |
|---|---|
| Number of shares at time t | $Ni_t = I_t/p_t$ |
| Number of shares purchased during time t | $Ns_t = S_t/p_{t-1}$ |
| Number of shares redeemed during time t | $Nr_t = R_t/p_{t-1}$ |

Then, the average cost per share *before distributions* ($C'_t$) can be derived as follows:

| | |
|---|---|
| Average cost per share before distributions | $C'_t = \dfrac{Ni_{t-1} \times C_{t-1} + Ns_t \times p_{t-1} - Nr_t \times C_{t-1}}{Ni_{t-1} + Ns_t - Nr_t}$ |

Given distributions per share ($f_t$), the average cost per share *after distributions* is shown, depending on the three cases discussed above, as follows:

$$\text{Average cost per share after distributions} \quad C_t = \begin{cases} C'_t & (C'_t < p_t) \ldots Case\ 1 \\ p_t & (p_t \leq C'_t < p_t + f_t) \ldots Case\ 3 \\ C'_t - f_t & (p_t + f_t \leq C'_t) \ldots Case\ 2 \end{cases}$$

Then, "distributions from the principal and capital gains" can be shown for each of the three cases (each estimate corresponds to each case discussed above, respectively) as follows:

$$\begin{array}{l} \text{Distributions from the principal} \\ \text{and capital gains} \end{array} \quad g_t = \begin{cases} 0 & (C'_t < p_t) \ldots Case\ 1 \\ C'_t - p_t & (p_t \leq C'_t < p_t + f_t) \ldots Case\ 3 \\ f_t & (p_t + f_t \leq C'_t) \ldots Case\ 2 \end{cases}$$

Finally, to derive figures at the macro level, estimates of individual MFs are aggregated through individual MFs.

## (Estimation Results and Some Implications)

The alternative method, based on monthly data for about 4,000 individual publicly offered MFs since April 2000, estimates "distributions from the principal and capital gains" whose results are shown in Chart A2:

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Distributions from Principal and Capital Gains                                                          Chart A2

(trillion yen)

— Total distributions

- - - of which distributions from the principal and
        capital gains estimated by the alternative method

—■— of which distributions from the principal and
        capital gains estimated by the method in text.
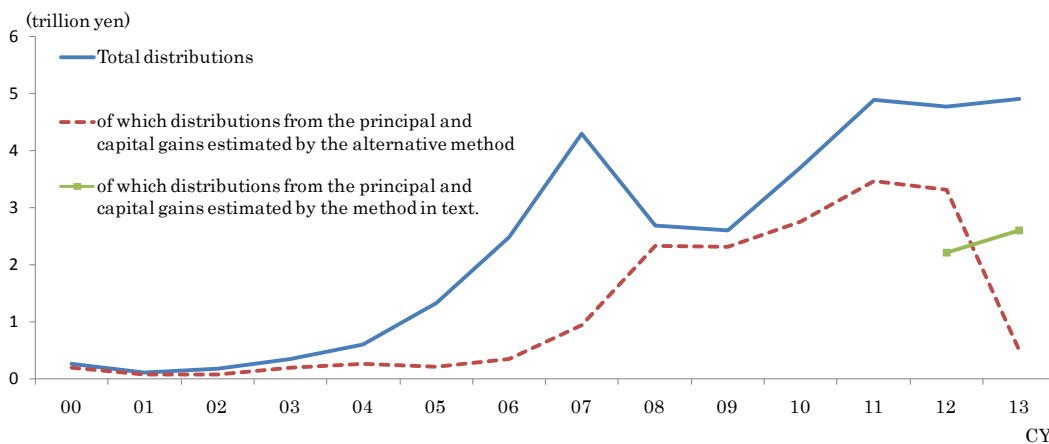
Note: The broken red line depicts estimates of "distributions from the principal and capital gains" by the alternative method prior to 2012 (based on about 4,000 samples of publicly offered MFs). The solid green line depicts estimates by the method in the text after 2012 (based on about 150 samples of publicly offered MFs).

Source: BOJ.

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Chart A2 is similar to Chart 6 in the text with differences in figures in 2012 and 2013. Note that figures for 2012 and 2013 can be estimated by both the alternative method and the method in the text because data overlap – about 150 MF samples with detailed (more granular) data for the method in the text and about 4,000 samples with less granular data for the alternative method.

Given those estimates, the financial surplus/deficit of the MF sector as shown in Chart 2 of the text can be adjusted by adding figures of "distributions from the principal and capital gains" – as a mirror image, the same magnitude is subtracted from the household (investor) sector (Chart A3). As a result, while the excessive financial deficits of the MF sector could be mostly rectified in recent years, the deficit in the mid-2000s could hardly be rectified. The latter could be influenced by discrepancies between the alternative method and the method in the text: "distributions from the principal and capital gains" can be underestimated or overestimated, depending on the relationship between the share price and the average cost. For example, during 2005 and 2007 when the financial deficit of the MF sector was virtually not adjusted, "distributions from the principal and capital gains" estimated by the alternative method which does not capture *capital gains* can be underestimated when the share price is above the average cost as in Cases 1 and 3 – that is very likely given conditions of the financial markets (e.g., equity and

FX, both of which significantly affect the share price). If capital gains had been properly captured, the financial deficit would have been further reduced so as to be adjusted closer to what MFs' role as conduits would predict.

Separately, during 2009 and 2011, albeit a lesser magnitude, the financial deficit turned to a surplus – that is, the financial deficit is excessively adjusted. This may be explained by the fact that "distributions from the principal and capital gains" estimated by the alternative method, which does capture *income gains*, can be overestimated when the share price is below the average cost as in Case 2, which is very likely given the conditions of the financial markets in the aftermath of the financial crisis. If income gains had been properly captured and excluded accordingly from the alternative estimates of "distributions from the principal and capital gains," the financial surplus would have been further reduced so as to be adjusted closer to what MFs' role as conduits would predict.[26]

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Adjusted Financial Surplus/Deficit in Mutual Fund Sector                    Chart A3
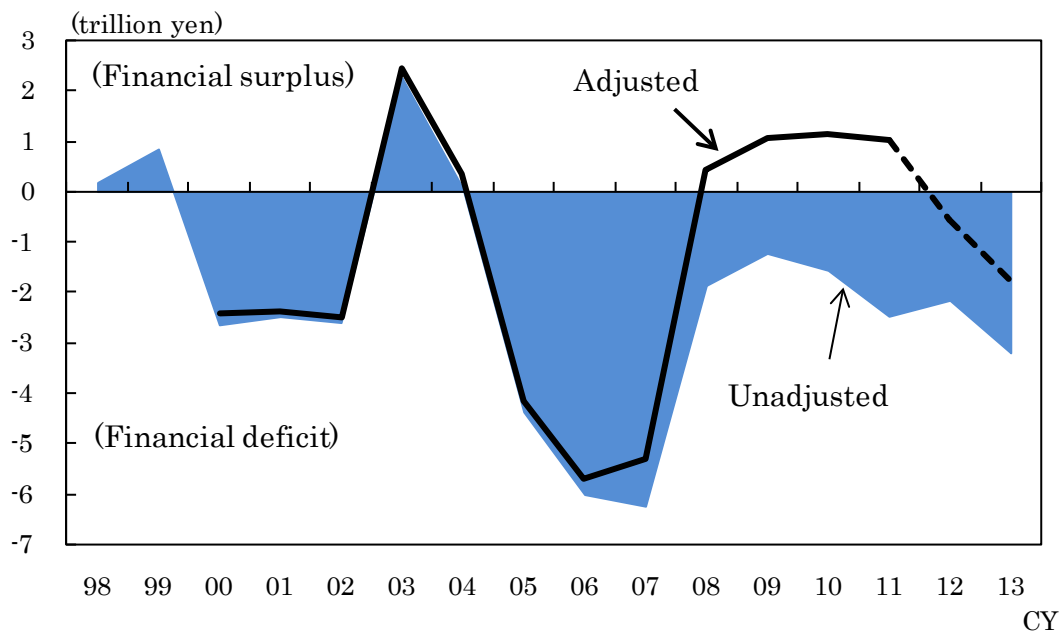


Note: The area in blue indicates financial surplus/deficit of the MF sector under the current financial account. The line in black is adjusted by estimates of distributions from the principal and capital gains by the alternative method between 2000 and 2011 (solid line) and by the method in the text after 2012 (broken line). Figures for 2012 and 2013 are also adjusted by retained earnings. Refer also to descriptions of Chart 2 in the text.

Source: BOJ.

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As an attempt to quantify estimation discrepancies using overlapping data during 2012 and 2013, figures for "distributions from the principal and capital gains" estimated by the alternative method can be compared with those by the method in

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[26]     Note that if retained earnings, which cannot be measured due to the lack of detailed data, had been measured prior to 2012, the adjustment would have been made further in the direction of widening (narrowing) the deficit (surplus).

the text, as depicted in Chart A2. Those figures suggest that discrepancies are significant, especially in 2013 (Table A1).

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Estimates of Distributions from Principal and Capital Gains                                      Table A1

(trillion yen)

| | 2012 | 2013 | |
|---|---|---|---|
| Estimation method in text (A) | 2.2 | 2.6 | Distributions from capital gains may not be captured as in Case 3 |
| Alternative method (B) | 3.3 | 0.5 | |
| Discrepancies (B - A) | 1.1 | -2.1 | |

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In 2013, when the Japanese yen was on a significantly weakening trend and equity prices were sharply rising, as the MFs must have generated a significant amount of capital gains, "distributions from the principal and capital gains" by the alternative method were most likely underestimated, for example, as in Case 3. This suggests the possibility that when the share price is above the average cost, the alternative method might well fail to capture "distributions from capital gains," which could be as large as the order of a few trillion yen – corresponding to 2.1 trillion yen in Table A1. As an implication, estimates of "distributions from the principal and capital gains" during 2005 and 2007 could be underestimated by a similar magnitude, and if that is the case, the financial deficit of the MF sector would be further adjusted upwards, that is, closer to zero which is suggested by the role of the MFs as conduits.[27]

Note, however, that two years' worth of data is not sufficient to generalize factors behind the discrepancies between the alternative method and the method in the text. As more data are accumulated in the future for analyses, the factors behind the discrepancies will become better understood. At the same time, if we become confident enough to observe that the discrepancies do not systematically drift in one direction, then the justification for using the alternative method will be reinforced.

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[27]  Note that financial markets behaved similarly in the mid-2000s and in recent years, by observing a representative stock price index, TOPIX, and JPY/USD. TOPIX (end year period, y-o-y percentage in parenthesis): 1,149.63 (2004), 1,649.76 (2005, 43.5%), 1,681.07 (2006, 1.2%), 1,475.68 (2007, –12.2%), 728.61 (2011), 859.80 (2012, 18.0%), 1,302.29 (2013, 51.5%). USD/JPN (yen, end year period, y-o-y percentage in parenthesis): 103.78 (2004), 117.48 (2005, 13.2%), 118.92 (2006, 1.2%), 113.12 (2007, –4.9%), 77.57 (2011), 86.32 (2012, 11.3%), 105.37 (2013, 22.1%).