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Inter-Sectoral Flow of Funds in Japan since 1871: Credit Aggregates, Net Financial Assets, and Financial Surplus or Deficit since the Early Meiji Period

Hiroyuki Fujiwara*

Abstract

The Flow of Funds Accounts (FFA) statistics are useful for understanding macroeconomic trends in the flow of funds and the financial structure of Japan. The Bank of Japan has compiled and published the FFA in Japan each fiscal year since 1953. For earlier years, stock tables prepared by researchers are available for the early Meiji period since 1871. This paper presents several representative series of Japan's long-term FFA since the Meiji period, and explains the transitions of the historical data against the background of changes in the economic structure, and the historical connectivity of the data arising from the review of compilation methods. It also reviews historical FFA statistics and the process of making necessary revisions. The main results obtained are as follows. Firstly, fluctuations in financial assets and liabilities and financial surplus or deficit (as ratio to nominal GDP) by sector during and shortly after World War II were much larger than in other periods, and shrank significantly after the war, resulting in a considerable resetting of the credit-debt relationship. Secondly, the credit aggregates and the net financial assets in recent years in the private sector, as well as the credit aggregates and the net financial liabilities in the public sector, have exceeded their pre-World War II peaks. Thirdly, the private sector's financial surplus and the public sector's financial deficit were larger at the time of the fiscal reform of 1877 in the early Meiji period and after the outbreak of the Second Sino-Japanese War in 1937 than in recent years.

Keywords: Flow of Funds Accounts (FFA); Historical connectivity of the data; Ratio to nominal GDP; Stock and Flow tables; Credit Aggregates; Net Financial Assets; Financial Surplus or Deficit

JEL classification: E51, G10, N15

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1. Introduction

The Flow of Funds Accounts (hereinafter, FFA) are useful for understanding the historical evolution of macroeconomic financial structure. This is because the FFA comprehensively record the financial transactions that occur in the economy as a whole, and the resulting financial assets and liabilities held by each economic entity such as households, corporations and governments, and by financial instrument. However, in order to utilize historical FFA, it is necessary to keep in mind that the method of compilation has been revised occasionally.

This paper presents several representative series of Japan's long-term FFA since the Meiji period, and explains the transitions of the historical data against the background of changes in the economic structure, and historically, the way in which the data has been connected up following the review of compilation methods. It also reviews the contents of existing statistics and the process of making necessary revisions. The development of the FFA statistics is considered extremely important for understanding financial deepening and the role of the financial sector in long-term economic development, as well as for conducting macroeconomic analysis of the impact of financial shocks such as financial crises and sharp inflation on the economy as a whole.

The paper proceeds as follows. Section 2 provides a brief background of the historical statistics review. Section 3 describes the evolution of the historical overview of the FFA, provides notes on their use, and explains how the stock and flow data series analyzed in later sections are calculated. Section 4 estimates total financial assets and liabilities, credit aggregates, and net financial assets by sector (stock data). Section 5 calculates financial surplus or deficit by sector (flow data), and explains the characteristics of the results respectively. Section 6 concludes.

2. Technical background

In terms of the statistics data, in addition to official statistics produced by public agencies, academic researchers of historical economic data also produce statistical data, particularly for those periods where official statistics are not available. GDP, which is used in this paper, is a typical example. When connecting official statistics and historical data produced by these researchers, users should be cautious about their consistency. Even for statistics produced by the same organization, care should be taken when connecting data due to the occasional review of the methodology used to produce the statistics.

In financial and economic statistics from public agencies, the method of compilation is often reviewed at regular or irregular intervals to reflect changes in financial and economic structures—in light of the purpose of the statistics, namely, to understand the actual conditions of the economic entities subject to its statistics. On the other hand, users of such statistics, i.e., those who use historical statistics to conduct analysis of the current financial economy, need a consistent and representative time-series statistical data set. For this reason, users of statistics need long-term time-series data produced prior to the time of review (when the compilation methods for such statistics are revised). To respond to this need, producers of statistics compile retrospective time series prior to the time of the review (to the extent deemed possible), while recognizing the difficulty of integrating statistical measures across different periods because of the appearance of new items (e.g., financial instruments) or changes in financial and economic structures.¹ ²

The FFA statistics used in this paper have been compiled and published by the Bank of Japan since 1953, and for the period prior to that, by researchers of historical economic data (from 1871 in the early Meiji period to 1952). The method of compiling these FFA has been revised in response to changes in the financial structure and available source data, thus caution should be exercised in their use. In addition, long-term FFA statistics are mostly used to analyze historical changes in the intermediation structure of financial institutions by type of business. However, the FFA can also provide a macro view of intersectoral flow of funds by capturing the trends of fund management and financing by economic entities such as households, business corporations, and governments, as well as the excess or deficiency of funds, and other such aggregate figures. This paper focuses on the flow of funds mainly by non-financial sector.

3. Overview of historical FFA, Sectoral Classification and Statistical Framework

3.1 Overview of historical FFA

At present, the Bank of Japan compiles and publishes the FFA quarterly as an indicator of the financial structure of Japan as a whole. The statistics are generally known for the approximately 2,000 trillion yen in financial assets held by households, however, they also include comprehensive statistics showing the financial assets and liabilities by sector, such as corporations (the total amount, including overseas assets and liabilities,

¹ For example, after the revision of the FFA statistics from 68SNA basis to 93SNA basis, the 93SNAbased series, which had been published since the 1990s, was extended back to the 1980s, and the research paper (BOJ (2005)) was published based on these results in 2005.

² See Borio (2022) and Bignon et al. (2022) for a view of the difficulties in constructing long-term time series data when reviewing statistics. For example, Bignon et al. (2022), a publication of the central bank network on Historical Monetary and Financial Statistics (HMFS) sponsored by the Bank for International Settlements, states that, "...Also shared by statisticians and historians is their awareness of possible limitations hanging over the comparison of statistical measures over time and space....It also explains why statisticians tend to shy away from linking two series constructed with different methodologies." (page 8)

reaches approximately 10,000 trillion yen), transaction amounts, and valuation gains or losses by financial instrument (referred to in the statistics as the "Reconciliation amount"). However, it is difficult to understand the contents of the statistics because of the wide range of asset-liability relationships among sectors and items, and differences in estimation accuracy for each item. In addition to the FFA, there are a variety of other financial statistics and related data— these are basically the source data of the FFA. The definitions and coverage of the source data of these financial statistics are not always the same as each sector and financial instrument (item) of the FFA, therefore the FFA statistics need to be used with caution.

The Bank's FFA are based on the international System of National Accounts (SNA), and the figures are prepared on the 68SNA, 93SNA, and 08SNA basis, corresponding to changes in the standards. The 68SNA basis is available from 1953-1998, the 93SNA basis from 1979-2014, and the 08SNA basis from 2004 onward in terms of stock counts in fiscal years. The time-series data for earlier periods are compiled by researchers of historical economic data, and are represented by Fujino and Teranishi (2000), Utsunomiya (2013a, 2013b), and Utsunomiya (2011). Of these, Fujino and Teranishi (2000) covers the period 1871-1940 (hereafter, Fujino/Teranishi Estimates) in calendar years, and Utsunomiya (2013a, 2013b) covers the period 1941-1948 (calendar years until 1942, fiscal years thereafter, hereafter, Utsunomiya Estimates 1), Utsunomiya (2011) provides figures for 1949-1952 (hereafter, Utsunomiya Estimates 2) in fiscal years. Thus, from the early Meiji period (1871) to the present, long-term series data of the FFA are available, including previous studies by these researchers. However, the data series by the Bank of Japan are estimated on flow data in addition to stock data, whereas the data series by the researchers are only estimated on stock data.³

Reflecting changes in international standards as well as changes in financial and economic structures, the compilation methods are reviewed occasionally, including the classification of sectors and financial instruments, valuation methods, and the use of source data in the FFA. Therefore, as mentioned above, it is necessary to be careful when looking at the long-term data series. The next part of this paper focuses on the changes in sector classifications that are important for the analysis that follows. The following part explains the framework of the FFA table which estimates the financial surplus or

³ The data series are available on the Bank of Japan's website (the Bank of Japan data: https://www.stat-search.boj.or.jp/index_en.html, and

https://www.boj.or.jp/statistics/stop/sj_old/index.htm), Institute of Economic Research, Hitotsubashi University website (Fujino/Teranishi Estimates: https://www.ier.hit-

u.ac.jp/Japanese/databases/index.html), and Faculty of Economics, Kansai University Utsunomiya Lab. website (Utsunomiya Estimates 1 and 2: https://wps.itc.kansai-u.ac.jp/t110025/stat/).

deficit by sector from stock data (produced by researchers) to flow data in Section 5.

3.2 Changes of Sectoral Classification

Looking at the basic method used to compile the FFA, most of the FFA statistical data are estimated based on data from financial institutions. Of these, with respect to households and private nonfinancial corporations, there is no financial statement data that directly cover a large number of economic entities, consequently combined data from various sources covering their trading partners (mainly financial institutions) are used for estimation. The accuracy of the estimation depends largely on the estimation of balances and transaction amounts on the part of the financial institutions.⁴ For the public sector, market data and financial statement data are used as the source data in general.⁵ In terms of the sector classification of the FFA, currently, the financial institutions sector is broken down into depository corporations, insurance and pension funds, other financial intermediaries, with more detailed breakdowns added with the emergence and institutionalization of new types of business.

For the domestic nonfinancial sector, in the 93SNA basis and 08 SNA basis, the following sectors are included: Households, Private Nonprofit Institutions Serving Households, Nonfinancial Corporations (Private and Public), and General Government (Central Government, Local Governments, and Social Security Funds). However, there are only four domestic nonfinancial sectors on the 68SNA basis: Personal, Corporate Business, Central Government, and Public Corporations and Local Governments. Of these, Personal includes Households from the 93SNA basis onward, as well as Private Nonprofit Institutions Serving Households. Corporate Business includes Private Nonfinancial Corporations from the 93SNA basis onward, as well as Nonbanks included in Financial Institutions from the 93SNA basis onward. Public corporations and local governments are combined as Public Corporations and Local Governments in the 68SNA basis, and public corporations are included in Nonfinancial Corporations from the 93SNA basis onward. Because of these and other factors, it is not possible to connect them as a series of the same definition in a strict sense. However, in terms of sector organization, the 93SNA basis and 08SNA basis can be made much closer to the 68SNA basis, which has fewer breakdown sectors in domestic nonfinancial institutions.⁶ Furthermore, the earlier stock tables developed by researchers have a classification organization that is closer to the 68SNA basis.

⁴ See Fujiwara (2014) for details on the use of source data in compiling the FFA statistics.

⁵ In addition, the overseas sector uses the Balance of Payments Statistics (Ministry of Finance and Bank of Japan).

⁶ See BOJ (1999) for a new and old table of strict sector classifications.

Based on these changes in the classification of the FFA, the scope of each sector is set broadly (with as few subdivisions as possible) in order to conduct a consistent data analysis since 1871. Thus, this paper establishes four major sectors (Private Sector, Public Sector, Financial Institutions, and Overseas⁷), in line with the Fujino/Teranishi and Utsunomiya Estimates 1, which have fewer breakdown sectors. Private Sector, i.e., the private nonfinancial sector, is defined as the sum of 68SNA-based Personal (total of Households and Private Nonprofit Institutions Serving Households from 93SNA basis onward) and Corporate Business (Private Nonfinancial Corporations and Nonbanks⁸ from the 93SNA basis onward). Public Sector, i.e., the public nonfinancial sector, is defined as the sum of the 68SNA-based Central Government, and Public Corporations and Local Governments (the sum of General Government and Public Nonfinancial Corporations from 93SNA basis onward). From the Utsunomiya Estimates 2 onward, Personal and Corporate Business in Private Sector are divided.⁹

⁷ For the period up to the end of World War II, Japanese colonies and occupied territories are in principle classified as overseas. However in some cases, data on economic entities cannot be strictly classified as domestic or overseas. For details, see Fujino and Teranishi (2000) and Utsunomiya (2013a, 2013b). In addition, for the 68SNA-based overseas sector, no stock data are prepared for 1953-1969.

⁸ Correspondingly, in this paper, Financial Institutions exclude Nonbanks in the 93SNA and 08SNA basis.

⁹ Thus, a consistent view of financial data series since the early Meiji period can be made by matching them to the base of the large sector classification organization of the past. However, it is also true that a more detailed breakdown information is missing as a result. Appendix 1 explains points to keep in mind when comparing the 93SNA basis with the 08SNA basis in the detailed breakdown sectors, Households and Private Nonfinancial Corporations.

The following table summarizes the sectoral correspondence in this paper.

	Private Sector	Pulic Sector	Financial Institutions		
Fujino/Teranishi Estimates	Private Sector	General Government*	Financial Institutions, Treasury Finance and Investments*		
Utsunomiya Estimates 1	Private Non-financial Corporations and Households	Central Government, Public Corporations and Local Governments	Financial Institutions		
Utsunomiya Estimates 2	Private Non-financial Corporations, Households	Central Government, Public Corporations and Local Governments	Financial Institutions		
68SNA basis	Corporate Business, Personal	Central Government, Public Corporations and Local Governments	Financial Institutions		
93SNA basis	Private Nonfinancial Corporations, Nonbanks, Households, Private Nonprofit Institutions Serving Households	General Government, Public Nonfinancial Corporations	Financial Institutions (excluding Nonbanks)		
08SNA basis	Private Nonfinancial Corporations, Nonbanks, Households, Private Nonprofit Institutions Serving Households	General Government, Public Nonfinancial Corporations	Financial Institutions (excluding Nonbanks)		

(2	Summary	of L	omestic	Secto	rs in	each	FFA in	\mathbf{this}	paper,
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* In Fujino and Teranishi (2000), Government is defined as the total of General Government and Treasury Finance and Investments. However, in the Utsunomiya Estimates 1 and 2 and in the FFA by the Bank of Japan, Treasury Finance and Investments is included in Financial Institutions. Therefore, only General Government in Fujino and Teranishi (2000) is defined as Public Sector in this paper, and Treasury Finance and Investments is included in Financial Institutions.

3.3 Statistical Framework of the FFA

The Bank of Japan's FFA consist of three matrix tables: (1) Financial Assets and Liabilities table (records the balance of assets and liabilities held at the end of the period as a result of transactions, "Stock table"), (2) Financial Transactions table (records changes in assets and liabilities during the period resulting from financial transactions, "Flow table"), and (3) Reconciliation table (discrepancy between (1) Stock table and (2) Flow table).¹⁰ In contrast, Fujino/Teranishi and Utsunomiya Estimates 1 and 2 only show (1) Stock table. As a result, additional calculations are required to examine time series data of flows for the period prior to the Bank of Japan's FFA.

To describe in further detail, (1) the stock table shows the balances of assets and liabilities held as a result of transactions by economic entities. (2) The flow table records the increase or decrease in assets and liabilities resulting from financial transactions by economic entities with respect to the flow of funds during a given period, and shows the financing and investment activities of economic agents during a given period. Although the stock table represents the accumulation of flow transactions, the FFA record the balances as of the end of the period, in principle, after revaluation to market value. For

¹⁰ To be precise, all three tables exist on the 93SNA basis and the 08SNA basis. For the 68SNA basis, the stock and flow tables are published while the reconciliation table is not. However, the reconciliation table is easy to calculate from the stock and flow tables.

shares and bonds, if price changes occur during the period, the difference between the stock table at the beginning and end of the period does not equal the amount of flows during this period. (3) The reconciliation table is provided to record the deviation between these two matrices. Although the reconciliation table shows the adjustment amount to reconcile the counts between the flow and stock tables, this table can also be used to estimate the gains or losses on holding financial assets for a given period caused by price changes and other factors. Therefore, the estimates by the researchers prior to the Bank of Japan's FFA, for which only stock data are available, are basically based on book value, not market value, and thus the flow figures can generally be obtained as the difference between the current and previous period's stocks.¹¹ However, it is important to note that there are factors that can cause differences in the book value basis even without financial flows.¹²

4. Total Financial Assets, Credit Aggregates and Net Financial Assets

Financial transactions in the FFA reflect real transactions such as consumption and investment activities in real assets of economic agents such as households, business corporations, and governments. The FFA can provide a macro view of inter-sectoral flow of funds, including overseas, by capturing the trends of fund management and financing by each of these economic entities, as well as the financial surplus or deficit and other figures. The focus here is on the relationship between funds provision and fundraising among sectors. Specifically, this section and the next section focus on historical credit aggregates, net financial assets, and financial surplus or deficit (corresponding to the IS balance in the real economy) by sector after reviewing the overall movement of

¹¹ The term book value basis is used in this paper precisely in contrast to market value basis, which basically means that the face value of government bonds and amounts of equity investment (liabilities) are allocated to each sector of holdings.

¹² During the period covered by Fujino/Teranishi Estimates, new types of financial institutions are added, and in many cases, the figures are added midway through the period. However, in the same estimates, the data of financial institutions are assumed to have the same amount of financial assets and financial liabilities (net financial assets are assumed to be zero in financial institutions), which causes a step difference in the figures for each category of assets and liabilities, not for net financial assets. In addition, Utsunomiya Estimates 1 includes the period shortly after World War II, when a large amount of financial assets and liabilities were cut off (when the book value of financial assets or liabilities is re-evaluated, the stock figures change). According to Utsunomiya (2013a, 2013b), the final losses associated with the termination of wartime compensation were finalized in FY1947, and the private financial institutions incurred losses of 44 billion yen (more than 10% of the total financial assets), resulting in the cutoff of a large amount of financial liabilities in addition to assets. In fact, the net financial assets relative to the total financial assets in Utsunomiya Estimates 1 in 1947 are \cdot 2.4%, a small change from the previous year (-1.5%). This suggests that the impact of the termination of wartime compensation was offset considerably by the net financial assets. For these reasons, this paper focuses on the year-on-year difference in the net financial assets among the transaction flows, which is similar to the financial surplus or deficit (See section 5).

outstanding financial assets. The financial surplus or deficit data are estimated from the net financial assets produced by the researchers.

4.1 Total Financial Assets on each basis

Figure 1 shows the total balance of financial assets throughout the period from the beginning of Fujino/Teranishi Estimates¹³ in 1871 (4.88 million yen) to 1909 (over 10 billion yen), 1947 (over 1 trillion yen), 1964 (over 100 trillion yen), and 2022 (over 10,000 trillion yen in the 08SNA basis, as of December 2023). The level in 2022 is an increase of more than two billion times that of 1871.¹⁴ Figures are shadowed for the early Meiji



(Note) For stock data, 1871-1942 are calendar years and 1943-2022 are fiscal years (the same for other figures in this paper).

¹³ Fujino/Teranishi Estimates include gross financial asset-liability differentials for each sector, therefore the financial asset-liability differentials are excluded from the totals here in line with other estimates.

¹⁴ However, note that Fujino/Teranishi Estimates do not include cash (government bills) in 1871-1873 (see section 5.2). In fact, taking into account the approximately 100 million yen in cash in circulation at that time, the balance of financial assets and liabilities in 2022 would increase less than 100 million times over the 1871 level.

period (1871-1881) and the period during the Pacific War (part of World War II) and shortly after the war (1941-1948)¹⁵ because there is reason for caution in the interpretation of the data for these periods, as is explained in more detail in section 5.

However, the real value of assets and liabilities differs greatly between the present and Meiji periods. Therefore, in the following, this paper looks at the value of money in comparison with the overall scale of economic output (nominal GDP since 1955, and GNP or NPI prior to 1955 are used. In the following, unless otherwise noted, the term GDP is used).¹⁶ Looking at the total financial assets (as ratio to GDP) in Figure 2, it can be seen that they followed an upward trend from the early Meiji period to the pre-Pacific War period, then declined sharply shortly after the end of the Pacific War, and have been on an upward trend again since then. In the case of the Bank of Japan's FFA, the gap between the 68SNA basis and the 93SNA basis is large and the gap between the 93SNA basis and the 08SNA basis is not so large, with periods where the two run parallel. On the other hand, for the data series produced by the researchers for the period prior to 1953, no parallel period exists for the 3 series and they basically follow the 68SNA-based method.¹⁷

¹⁵ In July 1937, the Second Sino-Japanese War broke out between Japan and China. In December 1941, as a member of the Axis Powers, Japan entered a state of war with the Allied Powers, including China, the United States and the Great Britain. The latter is referred to as the Pacific War —as part of World War II. In other words, the period of the Pacific War was from December 1941 to August 1945, and as a result, the stock data in this paper corresponds to that period (CY1941-FY1944), and the flow data corresponds to the period 1942-1944 or 1945 during the war. In the same way, the period of the Second Sino-Japanese War, discussed in section 5, is from July 1937 to August 1945, and consequently, the stock data corresponds to 1937, and the flow data corresponds to 1937 or 1938 for the beginning of this period.

¹⁶ Nominal GDP in this paper is based on the Annual Estimates of the National Accounts 2022 (based on 08SNA) (a) for FY1994-2022, the Annual Estimates of the National Accounts 2009 (based on 93SNA) (b) for FY1980-1993, and the Annual Estimates of the National Accounts 1998 (based on 68SNA) (c) for FY1955-1979. (d)For 1930-1954 (excluding 1945. calendar year for1930-1944, fiscal year for 1946-1954), Gross National Product is used (Economic Planning Agency, "*Shouwa38nendoban kokuminshotokuhakusho*", FY1963 White Paper on National Income) ((a)-(d) are available on the Cabinet Office website). (e) For 1875-1929 (National Income Produced, calendar year), Yamada Estimates are used (Yamada (1957)). The 1945 figure is the 1944 figure multiplied by the growth rate of income produced by Agriculture and Forestry, Fisheries, Mining, and Manufacturing industry in 1945, as estimated by Yamada. The figures for 1871-1874 are assumed to be the same as the 1875 figure. The steps in the replacement period of the utilization counts are within 5% between each of (a)-(d), and 23% between (d) and (e).

For GDP estimates by other academic researchers for the period prior to 1930, there are Ohkawa et al. (1974), who have long been commonly used, and Fukao et al. (2017a, 2017b), who are relatively new to the field. Comparing the total financial assets (as ratio to GDP) of these three groups from 1885 to 1929, Yamada Estimates in this paper show the ratio is 1.0 times to 5.3 times; in the case of Ohkawa et al. Estimates, 1.1 times to 4.6 times; and in the case of Fukao et al. Estimates, 0.9 times to 4.0 times. Thus, the ratio to GDP in this paper should be viewed with some latitude. This paper uses Yamada Estimates, for which the oldest continuous figures are available. See Koike (2023) for detailed information on how to use GDP series.

¹⁷ Trade credits (trade accounts receivable and trade accounts payable, and bills payable and receivable) are recorded in Utsunomiya Estimates 2 as in the 68SNA basis, while they are not recorded in Utsunomiya Estimates 1 as in Fujino/Teranishi Estimates. Utsunomiya Estimates 1 and



*The dotted line is the Financial Institutions portion of the solid line.

(Note) For GDP (or GNP and NPI) data, 1871-1945 are calendar years and 1946-2022 are fiscal years (the same as other figures in this paper).

Thus, conceptually, it can be divided into three periods, (1) pre-68SNA basis and 68SNA basis, (2) 93SNA basis, and (3) 08SNA basis. Of these, as shown in Figure 2, there is a large step difference in the total count of financial assets from (1) the 68SNA basis to (2) the 93SNA basis. This is due to (1) the addition of new transaction items such as "financial derivatives," "structured-financing instruments," "repurchase agreements and securities lending transactions," and "other equities," as well as (2) the expansion of the scope of mark-to-market valuation to bonds, loans, and private equities (unlisted stocks, bonds, and loans, in addition to previously listed stocks, are now marked to market) and (3) the figures for intra-sectoral transactions (deposits and loans of financial institutions) are recorded on a gross basis instead of netting out (see BOJ (1999, 2005)). However, from the 93SNA basis onward, in addition to the market value-based figures, book valuebased figures for major items are also prepared as reference figures, so that the figures can be presented as close to continuous figures by using the reference figures. On the other hand, of Utsunomiya Estimates 1 and 2, it is only in Utsunomiya Estimates 2 that business-to-business credits (trade credits) are included, and there is a step difference due to the presence or absence of trade credits, as well as due to sector reorganization (Private Sector is subdivided by Corporate Business and Personal from Utsunomiya Estimates 2).

² balance the total amount of financial assets and liabilities by financial instrument, and Utsunomiya Estimates 2 also includes market value-based data series in addition to book value-based data series. In the 68SNA basis, the valuation methods for stocks and other financial assets and liabilities differ in many cases, and it should be noted that there are some differences even within the same series, such as the revaluation of stocks (liabilities) in Corporate Business from 67 trillion yen in 1993 to 243 trillion yen in 1994.

Another important point to keep in mind when examining overall trends in outstanding balances is the impact of the establishment of new systems and major changes in financial system. Data on various financial assets and liabilities, which form the Japan's FFA statistics, are compiled mainly from data related to banks' financial statements. In Figure 2, financial assets (as ratio to GDP) are shown for Financial Institutions in addition to the total for all sectors. Initially, although the level of financial assets held by financial institutions was small compared to the total, it subsequently began to increase, and around 1900 its weight increased until it accounted for about half of the total, and it still accounts for nearly half of the total in recent years. This basically indicates a historical trend in which financial intermediary functions by Financial Institutions has come to account for a major portion of the supply of funds to ultimate demanders of funds. However, the further back these figures go, the more difficult it is to ascertain the amount of credit extended by non-banks and non-financial institutions other than banks, and it is likely that they do not adequately cover the entire range of financial transactions.¹⁸ It is very important to keep in mind how much of the increase in the ratio of total financial assets to GDP has been shifted from those not included in the previous statistical data, in order to understand the role of finance as a whole in history.¹⁹

Taking these points into consideration, looking at the historical trends of the balance of financial assets (as ratio to GDP) in Figure 2, it can be seen that they followed an upward trend from the early Meiji period to before the Pacific War, peaking during the war in 1944, declining sharply after the war, and have returned to an upward trend since then.²⁰ The sharp decline from the end of the Pacific War to the immediate postwar period can be seen in the figures: the financial assets as ratio to GDP (precisely GNP

¹⁸ According to the explanatory volume of BOJ (1966), the financial system in Japan was developed after the establishment of the Meiji government (1868), with the establishment of national banks and the central bank, however, so-called "lower-class financial institutions" (as described in the explanatory volume) such as bank-like companies, money lending companies, pawn shops and mutual aid companies still accounted for a large portion of the financial market in Japan. For example, compared to the 2.2 billion yen borrowed by the private sector in 1912 according to Fujino/Teranishi Estimates, the outstanding debt of farmers in the Ministry of Finance's survey of farmer debt for the same year was 740 million according to BOJ (1966). A breakdown of the latter showed that less than 30% of the total was borrowed from banks, while the remaining 70% or more was borrowed from other than banks. In the former, private sector loans were zero, which can be interpreted to mean that nonbanks (included in Corporate Business in the 68SNA basis and Financial Institutions in the 93SNA and 08SNA basis) were not captured.

¹⁹ For example, money loans from one household to another household are not recorded in the FFA statistics even today. If these transactions were replaced by households depositing money in banks and bank lending money to households, they would both be statistically captured.

²⁰ See Utsunomiya (2013a, 2013b). In addition, Saito (2021) provides a detailed analysis of the factors behind money demand and price movements during and shortly after the Pacific War.

during this period) was 7.0 times in 1944, it decreased to 1.0 times in 1948. Furthermore, looking at the movement from 1944 to 1948 in terms of financial assets outstanding as ratio to nominal GNP (GNP for 1944 is calendar year, others are fiscal years), the financial assets outstanding increased 5.2 times from 523 billion yen to 2.7 trillion yen, while GNP increased 35.8 times from 74.5 billion yen to 2.7 trillion yen. In addition, the GNP deflator increased by 52 times during this period (real GNP decreased by more than 30%), indicating that the high rate of inflation shortly after the Pacific War greatly reduced the value of real financial assets and liabilities outstanding.

4.2 Credit Aggregates

On the liability side of domestic nonfinancial institutions, the total stock of borrowings, debt securities such as corporate bonds, and shares and mutual funds²¹ is defined here as Credit Aggregates. In terms of Private Sector as a whole, the items (financial instruments) used as Credit Aggregates in Figure 3-1 and Figure 3-2 are shown in the table as follows.

	Name of aggregate item	
Fujino/Teranishi Estimates	Securities(Stocks, Corporate Bonds), Call Money, Loans, Equities Other than Stocks	
Utsunomiya Estimates 1	Securities(Industrial Securities and Bank Debentures,etc., Shares and Other Equities), Loans, External Claims and Debts	
Utsunomiya Estimates 2	Securities(Industrial Securities, Shares and Other Equities), Loans, Trade Credits and Foreign Trade Credits, External Claims and Debts	
68SNA basis	Securities(Industrial Bonds, Stocks, External Bonds), Commercial Paper, Loans, Trade Credits, Foreign Trade Credits	
93SNA basis	Loans, Securities Other than Shares(Public Corporation Securities, Industrial Securities, External Securities Issued by Residents, Securities Investment Trusts, Commercial Paper), Shares and Other Equities, Trade Credits and Foreign Trade Credits	
08SNA basis	Loans, Debt Securities(Public Corporation Securities, Industrial Securities, External securities Issued by Residents, Commercial Paper), Equity and Investment Fund Shares, Trade Credits and Foreign Trade Credits	

(Items used in compiling Credit Aggregates of Private Sector)

 $^{^{21}\,}$ In the FFA, real estate investment trusts (J-REITs) are classified as private nonfinancial corporations.

According to Figure 3-1, before the Pacific War, Private Sector showed an increasing trend until reaching a peak in 1931, after which it began to decline, followed by a sharp drop shortly after the Pacific War against the background of high inflation. Subsequently, the ratio to GDP grew significantly during the high-economic-growth period (especially in the first half) (from 1.06 times in 1955 to 2.20 times in 1973) and during the bubble period (from 2.96 times in 1985 to 4.24 times in 1989 on the 93SNA market value basis), however, it declined significantly after the collapse of the bubble economy. The private sector series, which is adjusted to the book value basis for the private nonfinancial corporations from the 93SNA basis onward (with a small difference from the 68SNA basis), also showed a large fluctuation around the bubble period. Furthermore, Utsunomiya Estimates 2 onward show a breakdown of inter-enterprises trade credit, and the fluctuations are small, indicating that the main causes of fluctuations are movements in borrowings, debt securities such as corporate bonds, and equities. Moreover, as shown in Figure 3-2, in Utsunomiya Estimates 2, Private Sector is divided into Corporate Business and Personal, and the level of Corporate Business is larger than that of Personal, and the contribution to the overall change in Private Sector is also larger for Corporate Business than for Personal (including loans to private unincorporated enterprises in addition to housing loans and consumer credit).



* The dotted line is the trade credits and foreign trade credits portion of the solid line.



* The dotted line is the Personal portion of the solid line. The residual is the Corporate Business portion.

In Public Sector (Figure 4), the period before the Pacific War saw a large increase in the early Meiji period, and then a gradual decrease, followed by a large increase during the Russo-Japanese War in 1904-05. This was followed by a decrease during World War I, and then another increase. After the Pacific War, it declined significantly and remained at low levels until the period of high economic growth. Finally, it followed an increasing trend, declining during the bubble period, and increasing significantly after bubble economy burst.



Thus, the credit aggregates in the private and public sector have been larger in recent years than in the pre-Pacific War period. However, as mentioned above, it should be noted that nominal GDP before the 1920s varies somewhat depending on the figures calculated by researchers, and that the further back in time, the more credit data, especially for nonbanks, is likely to be missing, especially in the private sector. However, such uncaptured credit data is mostly offset on a net basis within the private sector. The next part of the paper looks at financial assets and liabilities on a net basis.

4.3 Net Financial Assets

The previous part above described the broad historical trends in the funding side in terms of gross outstanding balances by sector. This part looks at the difference between the financial asset and liability balances (Net Financial Assets or Liabilities). This can be captured by showing which sectors are in excess of financial assets or liabilities, and from which sectors to which sectors the funds ultimately flow on a net stock basis (The whole sector, including the overseas sector, has basically zero net financial assets).²²

Figure 5-1 shows that Private Sector has been the main entity with excess financial assets and Public Sector has been the main entity with excess financial liabilities since the early Meiji period, and that Overseas has also become the entity with excess financial liabilities over the present period. The net financial assets of Private Sector are now almost twice the size of GDP, the largest in history, and peaked at a level close to the present level during the Pacific War and also rose considerably during the early Meiji period (see section 5 for details). Public Sector, on the other hand, has basically moved inversely to Private Sector, in recent years rising to levels close to its peak during the Pacific War (although, as discussed in section 5, users should be cautious in viewing the figures). Looking at the breakdown of Private Sector by Personal and Corporate Business in Figure 5-2, Personal has been the main contributor to the net financial assets and Corporate Business has been one of the main contributors to the net financial liabilities, with Personal continuing its long-term upward trend, while Corporate Business declined significantly in the 1980s. Since then, Corporate Business has generally moved sideways from the 1990s onwards while the flow of funds has tended to be in surplus, as discussed in the next section.

The following summarizes the trends among the sectors, including the overseas sector. The levels of the net financial assets of the private sector and the net financial liabilities of the public sector as (ratio to nominal GDP) increased significantly in the early Meiji period, followed by a gradual decrease, and then an increase during the Russo-Japanese War. During the Russo-Japanese War, the increase in the net financial liabilities in the public sector was particularly large, and the net financial assets increased not only in

²² Although it is the basic principle of the FFA that balance is maintained between assets and liabilities on a matrix, with respect to monetary gold, liabilities corresponding to the assets of the monetary authorities don't exist at the present.



(Note) Fujino/Teranishi Estimates are used for 1871 - 1940, Utsunomiya Estimates 1 for 1941 - 1948, Utsunomiya Estimates 2 for 1949 - 1952, 68SNA basis for 1953 - 1978, 93SNA basis for 1979 - 2003, and 08SNA basis for 2004 -2022.



(Note) See note to Figure 5-1.

the private sector but also the overseas sector. During World War I, conversely, the net financial liabilities in the public sector and the net financial assets in the overseas sector decreased substantially (the overseas sector turned into the net financial liabilities entity). After World War I, the net financial liabilities in the public sector increased while the net financial liabilities in the overseas sector began to decrease and the net financial assets in the private sector followed an increasing trend. In addition, there were large changes in each sector during and shortly after the Pacific War, and both of the net financial assets of the private sector and the net financial liabilities of the public sector shrank significantly after the war, resulting in a considerable resetting of the credit-debt relationship. Thereafter, both remained low until the first oil shock. They then increased after the first oil shock, decreased during the bubble period, and increased again significantly after the burst of the bubble economy. On the other hand, the financial liabilities of the overseas sector followed an increasing trend after the second oil shock. In recent years, they have been on an increasing trend and have exceeded their pre-Pacific War peaks.

5. Financial Surplus or Deficit

This section looks at the difference (net) between the financial investments and fundraising, i.e., the financial surplus or deficit in each sector (the flow figures). Showing the relationship between the financial surplus or deficit and the net financial assets in Section 4 (3) using the framework of the FFA statistics in Section 3 (3), the net financial assets correspond to the cumulative amount of the financial surplus or deficit and the reconciliation due to changes in market value and other factors. The researchers' net financial assets assume zero reconciliations, so that only the financial surplus or deficit is a variable factor. In the Bank of Japan's FFA, especially in the private sector in this paper, the reconciliation amounts are largely offset on the asset and liability side, so that most of the movement in the net financial assets is due to the financial surplus or deficit.²³

The financial surplus or deficit literally indicates the level at which each sector has a surplus or deficiency of funds. It basically corresponds to the difference between savings and investment in real transactions, with a surplus of funds indicating an excess of savings and a deficit of funds indicating an excess of investment (in real assets). The financial surplus or deficit is an important indicator not only for allocating funds among sectors, but also for analogizing consumption of households and investment in real assets of business corporations (in terms of their respective revenues).

This section basically regards the year-on-year difference in net financial assets used in the previous section as financial surplus or deficit for the periods of Fujino/Teranishi Estimates and Utsunomiya Estimates 1 and 2, for which only stock tables exist (this means that the reconciliation amounts are considered zero). However, there are cases

²³ In fact, the change in the net financial assets from 2004 to 2022 on the 08SNA basis is -70 trillion yen for Corporate Business (of which the financial surplus or deficit +244 trillion yen, the reconciliation -314 trillion yen) and +490 trillion yen for Personal (of which the financial surplus or deficit +330 trillion yen, the reconciliation +160 trillion yen), with each sector contributing a certain extent of the reconciliation amounts. The change in the net financial surplus or deficit +574 trillion yen, the reconciliation yen (of which the financial surplus or deficit +574 trillion yen, the reconciliation -154 trillion yen), indicating that most of the contribution comes from the financial surplus (Valuation gains on Corporate Business stock holdings by Personal are recorded equally in the assets and liabilities in Private Sector as a whole).

where the further back in time they are, the more difficult it is to obtain the figures, or where the meaning of the methods used to calculate the figures change. For this reason, after an overview of movements since the early Meiji period, the following parts check the periods from 1871 to 1881 (before the founding of the Bank of Japan in 1882) and from 1941 to 1948 (during the Pacific War and shortly after the war) specifically, as these are periods that require caution in viewing each estimation result.

5.1 Overview of Long-term Financial Surplus or Deficit

As with the stock-based net financial assets in the previous section, looking at the flowbased financial surplus or deficit (using year-on-year difference of Net Financial Assets prior to 1954), Figures 6-1 and 6-2, show that Private Sector is the main entity with Financial Surplus and Public Sector is the main entity with Financial Deficit for most periods.

Looking at the private sector's funding surplus and the public sector's funding deficit separately for the pre- and post-Pacific War periods, in recent years, Public Sector has had a large financial deficit in 2009 and 2020 due to the Great Financial Crisis and the COVID-19 pandemic (when financial deficits were around -10%), while Private Sector (Personal and Corporate Business) has had a large financial surplus.²⁴ However, the level of the financial surplus or deficit (the corresponding year-on-year difference in the net financial assets) by both sectors was larger in the early Meiji period (detailed in the next part) as well as during the Second Sino-Japanese War before the Pacific War period than during the COVID-19 pandemic and other periods after the Pacific War period. In addition, the financial deficit in Public Sector was large during the Russo-Japanese War. Thus, there were large fluctuations for the pre-Pacific War period.²⁵ For example, during the Russo-Japanese War of 1904-1905, national income produced (Yamada Estimates) was about 2.5 or 2.6 billion yen per year (total of 5.1 billion yen for the two years), and government financing during this period was not enough to cover the increase in taxes, with domestic and foreign bonds issued amounting to more than 1 billion yen (according to government debt statistics, domestic long-term government bonds increased by 459 million yen and foreign bonds by 873 million yen over the two years). In other words, this was more than 20% of the domestic economy per year. Considering that a portion of this amount was retained in government deposits, the estimated financial deficit in

²⁴ For more detail about financial surplus or deficit by sector since the 1950s, see Appendix 2.

²⁵ Public Sector' financial deficit (ratio to GDP: %) before the Pacific War (1872-1940) to after the war (1946-2022) averages -4.0 to -3.3 with a standard deviation of 7.2 to 3.4, while Private Sector's surplus also averages +4.1 to +4.1 with a standard deviation of 6.8 to 3.7 (The revised figures in Figure 8 and 10 in the next part do not change much).

Public Sector (-20.1% in 1904 and -15.9% in 1905) ²⁶ was significantly higher than the COVID-19 pandemic (-9.6% in 2020).²⁷ At the time of the Russo-Japanese War, foreign bonds accounted for a large portion of the total amount of government bond issuance, and Overseas as well as Private Sector was the main source of the financial surplus. This



(Note) 1872-1953 are Year-on-year difference of Net Financial Assets (stock data) in Fujino/Teranishi Estimates, Utsunomiya Estimates 1, Utsunomiya Estimates 2 and 68SNA basis. 1954 -1979 are 68SNA basis, 1980 -2004 are 93SNA basis, and 2005 -2022 are 08SNA basis in fiscal years.



⁽Note) See note to Figure 6-1.

²⁶ Using GDP from other researchers, -17.3% and -13.0% for Ohkawa et al. (1974) and -17.1% and -12.4% for Fukao et al.(2017a). The GDP sizes for both in 1904 and 1905 are slightly above 3 billion yen, consequently the level of the negative range is slightly lower than when using Yamada Estimates. However, the same is true for the large negative range.

²⁷ Figure 6-1 also shows a significant Financial deficit in Public Sector and a corresponding increase in Public debt in 1909. This was mainly due to the fact that the nationalization of the railroads resulted in the issuance of a total of nearly 500 million yen in public bonds to shareholders of acquired railroad companies, most of which were issued in 1909.

is different from recent years, when Overseas has been underfunded. Looking at the ratio of the year-on-year difference of the net financial assets to GDP in Public Sector from 1938 to 1941, after the outbreak of the Second Sino-Japanese War in 1937, the negative range increased significantly from -5.0% (1937) to -17.1%, -13.7%, -15.5%, and -15.5% (1938-1941).²⁸ On the other hand, during the World War I period, Public Sector had a large financial surplus (increase in tax revenues due to the Great War economy), which, together with the financial surplus in Private Sector, has been historically characterized as a large financial deficit in Overseas.

Thus, there were periods before the Pacific War when Private Sector's financial surplus and Public Sector's financial deficit (as ratio to GDP) were larger than after the Pacific War. However as seen in Figure 5-1, the net financial assets in Private Sector and the net financial liabilities in Public Sector have been larger in recent years than before the Pacific War. These results reflect the relatively large surplus of funds especially in Public Sector during the World War I period (the net financial liabilities in Public Sector declined substantially), as well as the fact that the nominal growth rate of the Japanese economy was higher in the pre-Pacific War period than in recent years.²⁹

5.2 Financial Surplus or Deficit in the early Meiji period (1872-1881: prior to foundation of the Bank of Japan)

Figure 7 shows the financial assets and liabilities by sector (Private and Public Sectors, Financial Institutions, and Overseas) based on Fujino/Teranishi Estimates for the period prior to the establishment of the Bank of Japan (1871-1881). ³⁰ However, Fujino/Teranishi Estimates do not capture cash figures for the period 1871-1873, as government bills (government debt) were only recorded from 1874. The revised data are illustrated with dotted lines to reflect the fact that government bills circulated at around 100 million yen during this period as indicated by MOF (1998) and BOJ (1966). This shows that the financial liabilities in Public Sector and the financial assets in Private Sector accounted for the majority of the financial assets and liabilities in the early Meiji

 $^{^{28}}$ The financial surpluses in Private Sector for the same period were +5.6%, +18.1%, +14.7%, +17.1%, and +17.1%.

²⁹ The change in the net financial assets in the numerator is mostly due to the accumulation of the financial surplus or deficit, while the denominator, nominal GDP, is the value for each year. As a consequence, a higher GDP growth rate keeps the level of ratio of the net financial assets to GDP lower in subsequent years, even if the financial surplus or deficit (as ratio to GDP) remains at the same level for the same period.

³⁰ For example, the amount of bonds issued in Overseas (4.88 million yen in foreign bonds for the construction of a railroad between Tokyo and Yokohama) is accounted for in Fujino/Teranishi Estimates.

period, and that Financial Institutions gradually increased as the system of national banks and other financial institutions began to be established. ³¹ In financial instruments, there was a high weighting of cash and an increase in government bonds (the large movement of the financial assets from Public Sector to Private Sector in 1877 was mainly due to the issuance of government bonds —174 million yen, 1/3 of the 509 million yen national income in Yamada Estimates). With the abolition of feudal domains, the payment of a stipend from each clan to the nobility during the Edo period was taken over by the national treasury, increasing the national financial burden. In 1876, however, it was decreed that the new Meiji government would abolish the stipend payments entirely. The following year, the government issued a large amount of stipend bonds as the final batch (*Chitsuroku Shobun*) to be granted to the former ruling class.

Figure 8 estimates the financial surplus or deficit by sector based on the balances in Figure 7. The dotted line, as in Figure 7, has been adjusted to take into account the amount of government bills in circulation prior to 1874. According to this figure, *'Chitsuroku Shobun'* resulted in a financial surplus in Private Sector of 37.2% of GDP (or more precisely, national income produced) and the financial deficit in Public Sector of -35.4% of GDP in 1877, both substantial levels. Although Public Sector remained underfunded, in 1878, due to war expenditures (42 million yen) in the Civil War (the Satsuma Rebellion), the financial deficit was significantly reduced.³² ³³ It could be said that in the midst of the major social change which occurred as Japan entered the Meiji period, there was a large transfer of funds from the government to the private sector.

³¹ Even before the enactment of the National Bank Ordinance of 1872 (which opened banks for business the following year), financial institutions such as exchange companies had already been established in 1869 (see, for example, MOF (1998) and BOJ (1966)), although these are not treated here.

³² Incidentally, the Civil War ended in 1877. Therefore, it can be said the method for compiling statistics was the cash basis, rather than the accrual basis (recording of accounts payable). In addition, the adjusted figures show that the government tended to be underfunded prior to 1877 and overfunded from 1879.

³³ Figure 7 shows that the financial liabilities in Public Sector and the financial assets in Private Sector as a percentage of GDP declined through 1879. This is due to the rapid increase in government notes in circulation in 1878 (from 106 million yen to 139 million yen), followed by the progression of inflation (increase of nominal GDP).



Figure 7. Financial Assets and Liabilities (before foundation of the Bank of Japan) Public Sector



Figure 8. Estimation of Financial Surplus or Deficit by sector

(before foundation of the Bank of Japan)

5.3 Financial Surplus or Deficit during the Pacific War and postwar period (1942-1948) Figure 9 shows the financial assets and liabilities by sector for the Pacific War period and the immediate postwar period according to Utsunomiya Estimates 1. Figure 10 shows the financial surplus or deficit by sector calculated using these stock data (yearon-year difference in the net financial assets). In Figure 9, Central Government in Public Sector and Public Financial Institutions in Financial Institutions are picked up. Central Government liabilities increased significantly during the Pacific War period due to the financing of war expenditures, and in response to this the financial assets in Private Sector initially increased; in 1944, there was a further significant increase in the financial liabilities from Overseas through Public Financial Institutions.³⁴ However, while such a huge dissemination of local currency caused rampant inflation in the Japanese occupied territory, the calculation of the creditor-debt relationship was based on the exchange ratio between the yen and the local currency remaining constant. In

³⁴ The 1944 figures in Utsunomiya Estimates 1 show 33.4 billion yen in external claims and debts (asset) in the overseas sector, corresponding to most of 36.3 billion yen in external claims and debts (liability) and 41.7 billion yen in loans (asset) from this source of public financial institutions, and 40.5 billion yen (liability) in central government loans. Specifically, this mainly reflects the fact that *Nanpo Kaihatsu Kinyuukohko* (included in Public Financial Institutions) issued local currency in Japanese occupied territory (payment of military expenditures), which was then used to finance government loans. In addition, the loan claims of *Nanpo Kaihatsu Kinyuukohko* were transferred to loans to the government from *Gaishi Kinko* (included in Public Financial Institutions), which was established in March 1945. Since then, the amounts delivered from the funds to the treasury and applied to payments in the occupied territory were huge, while they were not recorded as government loans at the end of the war (for details, see MOF (1998)).



Figure 9. Financial Assets and Liabilities (during and shortly after the Pacific War)

*The dotted lines exclude 'External Claims and Debts' in Overseas.

**'Total' and 'External Claims and Debts' are almost the same level in Financial Assets in Overseas.



Figure 10. Estimation of Financial Surplus or Deficit by sector

(during and shortly after the Pacific War)

*The dotted lines are on an adjusted basis, excluding External Claims and Debts of the Overseas and assuming zero Net Financial Assets of Financial Institutions, respectively.

other words, the yen rate had fallen substantially in effect, and it can be said that the real value of the military supplies procured in the occupied territories appears to have been much smaller. For this reason, the figures excluding this effect (denoted as "Excluding External claims and Debts of Overseas") are shown as dotted lines in Figure 9.

In addition to excluding these impacts, in Figure 10, the calculated financial surplus or deficit is shown as dotted lines after revising the net financial assets of Financial Institutions to zero (the correction for Financial Institutions is also revised in Private Sector). This is because the swing in the net financial assets in Financial Institutions is large in the Utsunomiya Estimates 1. This revision is aligned with Fujino/Teranishi Estimates.³⁵ Even when these effects are excluded, the wartime financial deficit in

³⁵ Assuming that the difference between financial assets and liabilities (net financial assets) is zero in Fujino/Teranishi Estimates (1871-1940. This also results in a zero year-on-year difference in the net financial assets. In the Bank of Japan's FFA statistics, the year-on-year difference in the net financial assets and the financial surplus or deficit in the financial institutions are not actually zero, however, since financial institutions base their operations on the management and procurement of funds rather than real investment, the level and swing of the financial surplus or deficit are actually smaller than those of other sectors. On the other hand, Utsunomiya Estimates 1 follows the estimation method of the FFA statistics by the Bank of Japan, and thus estimates the net financial assets of financial institutions as not being zero; it is also true that the swings in the figures are large. For example, Utsunomiya Estimates 1 reports the nominal capital (other equities in financial liabilities) of the Reconstruction Finance Corporation, which constitutes a public financial institution, at 145 billion yen in 1948 (accounting for nearly 40% of all public financial institutions' liabilities), when the actual government paid-in capital at that time was 25 billion yen. As a result, the extent of the net financial liabilities of the financial institutions has become larger. Basically, the difficulty in obtaining complete balance sheet figures for each institution due to limitations in source data is believed to be the reason for the large fluctuations in the net assets of financial institutions and their year-on-year differences.

Public Sector over the period 1943-45 was in the -35--45% range relative to GDP (precisely GNP during this period), the largest since the early Meiji period. Shortly after the war, there was a large decrease in the public sector's financial deficit as ratio to GDP. This was due to a significant increase in GDP due to high inflation, although the postwar processing and reconstruction-related costs increased.

6. Conclusion

This paper presents a macro perspective on the extent to which the historical evolution of Japan's financial structure from the early Meiji period to the present can be understood by using FFA statistics compiled by the Bank of Japan and stock tables prepared by researchers as well as raising several points of caution in the use of the statistics. Specifically, the movements in stocks, such as credit aggregates and net financial assets for the private sector (Personal and Corporate Business) and the public sector are presented, and the financial surplus or deficit by sector are calculated using the researchers' stock tables. The results provide a rough idea of the movements in the stock of broad-based credit and net financial assets in the private and public sectors, as well as the over/shortage of funds, during the Pacific War (part of World War II) and throughout the prewar and postwar periods. According to this, there were rapid fluctuations in financial assets and liabilities, and in financial surplus or deficit (as ratio to nominal GDP) by sector during and shortly after the Pacific War. These shrank significantly due to high inflation after the war, resulting in a considerable resetting of the credit-debt relationship. In addition, the results show that in recent years, the financial assets as ratio to nominal GDP in the private sector, as well as the financial liabilities in the public sector, have exceeded their pre-Pacific War peaks. On the other hand, the financial surplus in the private sector and the financial deficit in the public sector were larger before the Pacific War (e.g., at the time of the fiscal reform of 1877 called "Chitsuroku Shobun" in the early Meiji period, and after the outbreak of the Second Sino-Japanese War before the Pacific War) than in recent years (e.g., during the COVID-19 pandemic and the Great Financial Crisis). These results reflect the relatively large public sector's financial surplus in the World War I period and the fact that the nominal economic growth rate was higher in the pre-Pacific War period than in recent years.

There is no single set method for creating stocks and flows of financial assets and liabilities for historical FFA. However, the critical benchmark is whether the method is easy for users to understand and utilize. This paper has tried to present the sectoral classifications in a way that is as consistent as possible with past methods of preparation. However, historical data is more limited than what is available in the recent FFA. Under these circumstances, there are some issues to be addressed in future research. The first is to (1) understand the flow of funds by corporations and households prior to the Bank's FFA. The key issue here is the availability and handling of source data for corporations and private unincorporated enterprises, especially as the conversion by private unincorporated enterprises (classified as Households in the FFA) into corporations continues over the long term. In addition, as pointed out in this paper, it is also important to (2) understand the actual status of financial flows, especially for nonbanks and other financial institutions for which statistical data are not fully available, and (3) develop historical financial assets and liabilities data in a form that approaches recent estimation methods, such as market valuation, in addition to further improving the accuracy of estimation while taking into account historical data limitations.³⁶

³⁶ Regarding the FFA produced by the researchers, there is potential for improvement in the estimation of, for example, loans and equities from the government to the private sector.

(Appendix 1) Differences between 93SNA basis and 08SNA basis (Households and Private Nonfinancial Corporations)

The paper on the main topic presents a view of financial flows among sectors since the early Meiji period, in line with past sectoral classifications. Although the discrepancy between the 93SNA basis and the 08SNA basis for total financial assets and liabilities is not so large, users should be cautious when checking the total financial assets and liabilities by sector and the breakdown by financial instrument in more detail. In fact, statistical data for Households and Private Nonfinancial Corporations are overwhelmingly used for analysis, rather than for Personal which includes Private Nonprofit Institutions Serving Households, or for Corporate Business which includes Nonbanks.

In addition to changes in data definitions and concepts, when analyzing time-series data, the FFA statistics for Households and Private Nonfinancial Corporations require attention, as the number of available source data has increased in recent years due to expanded disclosure by various organizations and firms.³⁷ In the FFA statistics, when reviewing such estimates, retroactive revisions are made by using past source data as much as possible. The discontinuities arise in the estimation method from periods when similar source data do not exist. Such discontinuities are included in the Reconciliations in the FFA statistics. In addition, in many cases, the 08SNA-based FFA statistics revise the estimation method back to FY2004, when the stock tables started. Although these discontinuities are basically not particularly problematic for a rough understanding of the financial structure, there are a number of cases that cannot be ignored in the more detailed analyses.

The steps of each financial instrument are largely visible in the allocations to both Households and Private Nonfinancial Corporations. In fact, the total financial assets of Households are revised upward (Private Nonfinancial Corporations downward) and the total financial liabilities of Households are revised downward (Private Nonfinancial Corporations upward) in the 08SNA basis compared to the 93SNA basis, and the difference in the figures as of FY2004 is approximately 60 to 70 trillion yen (see Figure A-1). Furthermore, even by financial instrument, there are many instances of discrepancies between the 93SNA basis and the 08SNA basis by sector. This is partly due to changes in concepts and definitions, and mostly due to the refinement of estimation methods against the backdrop of the enrichment of source data. Specifically, in Insurance and Pension Funds, the main examples of the former are the revision of the

³⁷ See Ishigami et al.(2021) and Fujiwara (2024) for details.



calculation method for the defined benefit schemes of the corporate pensions (introduction of retirement benefit accounting) and the reclassification of unearned premium reserves from the accounts receivable/payable in non-life insurance technical reserves and life insurance reserves.

With regard to the latter, a number of revisions have been made to refine the estimation methods in currency, outward investments in securities, trade credits and foreign trade credits, and loans (housing loans, consumer credit, and business loans) in recent years. For example, in the case of business borrowing in Households (Loans to Companies and Governments of liability side in Households), the estimation method has been refined, including the start of a lending survey (Loans and Bills Discounted by Sector compiled by the Bank of Japan) in 2009 for apartment loans, which account for a large portion of the business borrowing in Households. Many of the differences before and after the revision of the estimation method are not due to changes in the concept of the financial product itself, and therefore most of the differences are not changes in the overall market size, but due to changes in the allocation of financial assets and liabilities

to Households and Private Nonfinancial Corporations. This is due to the fact that in the sectoral allocation of each financial instrument, the key to the estimation method is often how to allocate to Households and Private Nonfinancial Corporations, for which balance sheet data are basically unavailable. On the other hand, Financial Institutions are basically created based on their balance sheet data, and therefore there is little need to review the source data itself.

In other words, there is a shift between the 93SNA basis and the 08SNA basis with respect to the allocation of assets and liabilities of each financial instrument between Households and Private Nonfinancial Corporations. In the 93SNA basis, the estimation portion was larger, with Households and Private Nonfinancial Corporations being allocated a certain amount under the constraints of source data. However, the 08SNA basis has further improved the accuracy of estimation by enhancing the source data used. In many cases, the allocation to Households is specified, and the allocation to Private Nonfinancial Corporations is estimated as a residual. For Households, the estimation accuracy was originally high for deposits and housing loans that have a high weight in financial assets and liabilities, and the estimation precision for many other items has been improved (direct allocation from primary data and expansion of coverage of source data). As a result, the estimation accuracy has improved even for Private Nonfinancial Corporations that have a large number of residual items in the estimation as well as the financial surplus or deficit (the difference between the financial investments and fundraising) in Households.

(Appendix 2) Financial Surplus or Deficit : IS balance (1954 - 2022)

In order to connect past series to the present series, this paper uses the 93SNA and 08SNA basis, defining the sum of Households and Private Nonprofit Institutions Serving Households as Personal, and the sum of Private Nonfinancial Corporations and Nonbanks as Corporate Business. However, today it is normal to consider Households and Private Nonfinancial Corporations (available from 93SNA base onwards). Households and Private Nonfinancial Corporations account for the majority of Personal and Corporate Business respectively, and by keeping in mind a few steps in the data series, there is no problem in analyzing historical trends when comparing the 68SNA basis as Personal and Corporate Business, and the 93SNA basis and thereafter as Households and Private Nonfinancial Corporations respectively. The same is true for the relationship between the 68SNA-based Public Sector (the sum of Central Government, and Public Corporations and Local Governments) and the 93SNA-based General Government.

In fact, looking at the changes in the financial surplus or deficit by sector since FY1954 available in the FFA statistics prepared by the Bank of Japan,³⁸ Figure A-2 shows that until the period of rapid economic growth (until around 1972), Personal had a surplus of funds (vigorous savings) and Corporate Business had a shortage of funds (vigorous investment in real economy). Public Sector also experienced a slight shortage of funds, and this was due to the growing shortage of funds of Public Corporations and Local Governments in the 1960s as public works projects such as roads, flood control, transportation and communications became more active (in the 1960s, the financial surplus or deficit of Central Government averaged +0.8%, while that of Public Corporations and Local Governments averaged -2.4%).

After the first oil crisis (1973), Corporate Business significantly reduced its financial deficit through lean management, while Public Sector significantly increased its financial deficit (budget deficit) due to increased public investment. On the other hand, the financial surplus in Personal decreased in 1973 and then increased through 1975. After the second oil crisis (1980), fluctuations in Personal, Corporate Business, and Public Sector were milder than after the first oil crisis, while Overseas became a financial deficit entity (Japan's current account surplus).

Looking at the period since the 1980s (93SNA or 08SNA basis), until around 1990, Households were the largest financial surplus entity and Private Nonfinancial Corporations were the largest financial deficit entity. In the 1990s, Households' financial

³⁸ For details on the financial surplus or deficit by sector since 1954, see BOJ (1964, 1977, 1981, 2005), Kaneda et al. (2018), and others.



surpluses were still high, although they began to decline, while Private Nonfinancial Corporations significantly reduced their financial deficits. This swing in Private Nonfinancial Corporations reflected the aggressive investment in real assets during the bubble period and the subsequent sharp reduction in real investment. On the contrary, General Government experienced a financial surplus in the late 1980s and early 1990s due to the bubble economy, which then turned into a financial deficit. Note that the sum of the financial surplus amounts in the surplus sector matches the sum of the deficit sector, and all sectors offset each other. The government's position reflected the strong tax revenues during the bubble period and the subsequent decline in tax revenues and increase in public investment and other expenditures.

From the late 1990s to the early 2000s, Households further reduced their financial surpluses against the backdrop of an aging population and declining savings rate, while Private Nonfinancial Corporations increased their financial surpluses by reducing investment in real assets and financial restructuring, exceeding the level of Household surpluses in the early 2000s after the IT bubble burst. This period coincided with a time when the problems of bad loans from financial institutions and excessive debts of corporations were the focus of much public attention.

Subsequently, Households' financial surpluses stopped falling in the early 2000s. At that time, there were some who thought that Households would turn into underfunded entities due to the aging of society. However since then, Households have maintained their financial surpluses and have remained mostly within a level range against the backdrop of further increases in longevity, intermittent increases in the timing of pension payments, and rising labor participation rates among the elderly. In 2020, the year of the COVID-19 pandemic, Households significantly increased their financial surplus due to the receipt of special cash payments and reductions in household consumption expenditures. In contrast, for Private Nonfinancial Corporations, the financial restructuring trend peaked in the early 2000s, and the financial surplus decreased as the economy recovered, but after the Great Financial Crisis, the financial surplus increased again due to fixed investment compression. In the improving Japanese economy of the 2010s, the financial surplus in Private Nonfinancial Corporations decreased moderately, and the financial surplus itself was maintained.

On the other hand, as for General Government, it has been the largest underfunded entity in many periods since the collapse of the bubble economy, with expenditures continuing to outpace revenues against the backdrop of continuous increases in social security-related expenses due to the aging of the population. Its level has also been significantly negative during major negative impacts on the Japanese economy, such as the financial system crisis since the late 1990s, the Great Financial Crisis in the late 2000s, and the COVID-19 pandemic in 2020. During this period, Overseas had a financial surplus in 1980 (during the second oil crisis), and have been the main source of financial deficits after that. Overseas' financial deficit basically corresponds to Japan's current account surplus.

Thus, Households and Private Nonfinancial Corporations have been in a state of financial surpluses, while General Government and Overseas have been in a state of financial deficits in recent years. In addition to examining these trends, the financial surplus or deficit can also be used to check the background of income and expenditure movements, the level and extent of changes in the savings-investment balance, and other factors. For example, Households had a large financial surplus while General Government had a large financial deficit in 2020, the year of the COVID-19 pandemic aforementioned.³⁹

³⁹ In addition, the following (1) and (2) can also be confirmed: (1) Households' financial surplus in 2013 was low due to rush demand before the consumption tax rate hike. (2) General Government's financial deficit for 1998 was also large, however this included the portion (24.2 trillion yen) for which the government inherited the debt of the Japanese National Railways Settlement Corporation (public nonfinancial corporation). If this was excluded, the financial deficit for 2020 would be considerably larger. Note that in the previous Figure 6-1, this transaction is offset within Public Sector because Public Sector includes Public Nonfinancial Corporations.

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