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A Flow-of-Funds Analysis of the Japanese Economy: Inequality among Households and among
Firms

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Funds was one of the popular academic topics, both in law and economics, at the turn of the nineteenth and twentieth centuries after the excavation at Pompeii of a boxful of tabulae ceratae that had belonged to Lucius Caecilius Iucundus, a first-century argentarius. It was Davenport (1908, 1913) and Taussig (1911) who invented the modern concept of funds in relation to the banking operations as is summarized and illustrated in Tsujimura and Tsujimura (2018). The first economist who made a systematic use of flow-of-funds account was Frisch (1935). He not only invented the concept of open market operation, the indispensable tool for modern central banking, but also demonstrated the effects of the operations with his three-sector model. Paolo Baffi of Banca d'Italia, who examined the problem of drawing up financial statements to predict the impact of central bank's monetary policies before and during World War II, was another pioneer. (See De Bonis and Gigliobianco (2012).) The Moneyflows Accounts, the direct ancestor of today's flow of funds accounts, as conceived by Copeland (1947, 1949, 1952), consisted of two accounts: the 'statement of payments' that depicts the payments and receipts of each institutional sector, and the 'statement of balances', an equivalent of today's financial balance sheets. The name 'flow of funds' is attributable to Flow of Funds in the United States 1939–1953, which was the first official statistics based on the Copeland's idea, published by the Board of Governors of the Federal Reserve System in 1955. The 'statement of payments' was omitted from the Flow of Funds Accounts in 1959 when the Fed started to publish the statistics on a quarterly basis. While 'statement of payments' includes both the financial and non-financial transactions, the statement known as financial accounts today does not cover the non-financial payments. It is problematic because the statistics no longer depict the entire circulation of funds throughout the economy. As Taylor (1991), a prominent economist at the Fed, has remarked, “it is these changes, more than that followed, that may have let Copeland feel that Moneyflows Analysis have been lost somewhere along the way.” Copeland's original idea was completely lost as time passed.

After the Bank of Japan (BOJ) first introduced quantitative easing as a policy to the world in 2001, Tsujimura and Tsujimura (2003) applied input-output methods to analyze the effects of the policy using the formulae proposed by Stone (1966) and Klein (1983). The study analyzed the effects of each policy option on each sector of the economy while accounting for the lender-borrower relationship among sectors. Some central bankers commented that it was misleading because the analysis was based on the asset-liability matrix derived from the financial balance sheets, which was published by the BOJ. Their argument was that the analysis only accounted for the financial market, so that the policy effects on the broader economy, such as on production and employment, were overlooked. When Tsujimura and Tsujimura (2018) applied similar analysis to the U.S. quantitative easing, they used newly developed flow-of-funds matrix reviving the Copeland's original idea of 'statement of payments'. While asset-liability matrix (lender-borrower matrix) is a matrix of stock variables that covers only financial transactions, flow-of-funds matrix (payer-payee matrix) is a matrix of flow variables that includes both financial and nonfinancial transactions.

Tsujimura (2004) investigated the inequality among firms, namely big manufacturers, small manufacturers, big non-manufacturers, and small non-manufacturers using the asset-liability matrices of the fast-growing Japanese economy 1954-1999. The analysis showed that the small companies had difficulty raising funds directly from financial institutions. After the 1970s, the small manufacturers were mainly financed by the big manufacturers as subcontractors. The small non-manufacturers, most of them belonged to either commerce or service industries, were less lucky. They were mostly depending on local financial unions, however, the small non-manufacturers had hard time raising funds after many of the unions found themselves in a financial crisis while the real estate bubble had collapsed in the early 1990s.

The proposed paper will examine not only the inequality among firms but also among households using both asset-liability and flow-of-funds matrices of Japan before and during the COVID-19 pandemic. Japan's population distribution is highly variable. The mountainous character of the country has caused the population to concentrate within the limited plains and lowlands — notably along the Pacific littoral. The increased population there, however, was absorbed into the expanding urban areas, while the population of rural districts declined considerably; this had the effect of further concentrating population in a limited area. Despite the increases in Japan's overall housing stock, housing shortages persist in large metropolitan areas. Even though housing prices fell significantly after the real-estate boom of the late 1980s, the prices of homes in these urban markets usually have continued to far exceed annual incomes.

Fortunately, the Family Income and Expenditure Survey published monthly by the Statistics Bureau of Japan includes both income/expenditure and financial asset/liability data for home owners, mortgaged home owners, rent-paying tenants and free tenants. We have disaggregated

the household sector of the SNA, prepared by the Cabinet Office of Japan, accordingly before converting it into flow-of-funds matrices following the indirect method of preparing cash-flow statement for a business, which uses profit and loss statement and the changes between the opening and closing balance sheets as data sources. Our preliminary asset-liability analysis, which is based on the Financial Balance Sheets prepared by the BOJ and the Financial Statements Statistics of Corporations by Industry compiled by the Ministry of Finance, has revealed that the largest beneficiaries of the central bank's monetary policy among households are mortgaged home owners; both rent-paying and free tenants are the least benefited. Among firms, the largest beneficiaries are large non-manufacturers while small manufacturers are the least benefited. Generally speaking, the firms get more benefits than the households.