
Bolstered Balance Sheets: Assessing Household Finances since 2019

Mitchell Barnes, Wendy Edelberg, Sara Estep, Moriah Macklin

Technical Appendix

March 2022

This technical appendix describes data sources and calculations underlying the analysis presented in “Bolstered Balance Sheets: Assessing Household Finances since 2019.”

National Income and Product Accounts—Personal Income and Outlays

- [Figure 1. Household Income, Spending, and Excess Savings](#)
- [Figure 2. Components of Households’ Real Disposable Personal Income Relative to 2018–19 Trend](#)

Estimation of Real “Excess” Savings is based on the monthly Personal Income and Outlays release from the U.S. Bureau of Economic Analysis (BEA). We define households’ “excess savings” as the cumulative sum of monthly surpluses of disposable personal income (DPI) and shortfalls in expenditures where each is relative to its own pre-pandemic trend.

Figure 1 compares real DPI and real personal outlays from January 2020 through December 2021, relative to their pre-pandemic trends. Specifically, trends are

based on chained-dollar series over the period January 2018 through December 2019, while each series is displayed in inflation-adjusted 2020 dollars using the personal consumption expenditure (PCE) price index annual average. Figure 1b aggregates these monthly income surpluses and spending shortfalls to show their individual contributions to excess savings.

Figure 2 decomposes real DPI using components from BEA’s NIPA Table 2.6. Similar to the approach above, each component is compared to its own 2018–2019 trend, calculated using chained-dollar series and scaled to average 2020 dollars. The income components reflect the following definitions: Compensation of employees includes wages and salaries as well as employer contributions to pensions and social insurance programs. Proprietors’ income refers to the BEA account that includes inventory valuation and capital consumption adjustments. Government social benefits include Social Security, Medicare, Medicaid, Unemployment Insurance, veterans’ benefits, and other federal and state social benefits. Other forms of income include rental income, personal income receipts on assets, and other current net transfer receipts from business. Reductions in personal current taxes increase DPI.

Census Household Pulse Survey

- Figure 3. Planned Use of Economic Impact Payments, Selected Months
- Figure 4. Finance Resources Used to Pay for Household Spending, Jun. 2020–Jan. 2022

Estimations of how households planned to use their Economic Impact Payment (EIP) and which sources of spending households used to meet their spending needs are from the Census Bureau’s Household Pulse Survey (June 2020-January 2022). Shares in each of the figures were calculated using household weights after dropping non-respondents from each population.

Figure 3 is sourced from the Household Pulse Survey (HPS) question: “In the last 7 days, did you or anyone in your household receive a ‘stimulus payment,’ that is a coronavirus related Economic Impact Payment from the Federal Government?” For respondents reportedly receiving an EIP payment, they were asked: “Thinking about your use of the ‘stimulus payment,’ did you: mostly spend it; mostly save it; mostly use it to pay off debts?” We exclude all non-responses and those who reported not receiving an EIP. Note that the HPS did not include a survey question on EIP usage until June 11, 2020. As a result, earlier responses are unavailable for the period immediately following the first EIP disbursement in March 2020. Figure 3 captures all survey dates where questions pertaining to EIP use were available: June 11–July 21, 2020, and January 6– June 9, 2021.

Figure 4 is sourced from the HPS question: “Thinking about your experience in the last 7 days, which of the following did you or your household members use to meet your spending needs? Select all that apply.” Note that the shares of households using each spending source do not sum to 100 percent as respondents were able to choose multiple sources. HPS choices included: (1) Regular income for sources like those received before the pandemic; (2) Credit cards and loans; (3) Money from savings and selling assets (including withdrawals from retirement accounts); (4) Borrowing from friends or family; (5) Unemployment

Insurance benefit payments; (6) Stimulus (economic impact) payment; (7) Money saved from deferred or forgiven payments (to meet your spending needs); (8) Supplement Nutritional Assistance Program (SNAP) [added in phase 2]; (9) Child Tax Credit (CTC) [added in phase 3.2]; (10) School meal debit/EBT cards [added in 3.2]; (11) Government rental assistance [added in 3.2]; (12) Other [added in phase 3.1]. Figure 4 focuses on all non-regular sources of income that can be used to meet a variety of household spending needs. We exclude responses for SNAP, school meals, rental assistance, and other due to lack of data availability in earlier phases, while also consolidating several HPS answer choices for simplicity. We define the category for “Debt” to include households reportedly using either credit cards and loans or using funds borrowed from friends or family. “Savings” combines responses for households who used money from savings and selling assets, and money saved from deferred for forgiven payments. Lastly, we choose to include receipt of CTC funds as a spending source, despite being unavailable prior to late-July 2021, in order to capture the impact of households receiving the temporary monthly “advanced” CTC in the same timeframe that other federal pandemic programs began to wind down.

Financial Accounts of the United States

- Figure 5. Household Net Inflows into Assets and Liabilities, Four-Quarter Moving Average
- Figure 9. Cumulative Change in Real Household Wealth, 2019 Fourth Quarter to 2021 Fourth Quarter

Quarterly net transactions into assets and liabilities as well as the contribution to cumulative wealth gains from asset revaluations and net savings are sourced from the Federal Reserve Board’s Financial Accounts of the United States. Specifically, transactions are sourced from Table F.101 while wealth gains are from the Integrated Macroeconomic Accounts Table S.3.Q, each capturing balance sheet items for the sector including both households and nonprofit institutions.

Figure 5 shows net inflow transactions for major groups of assets and liabilities, displayed as four-quarter moving averages. Each seasonally-adjusted annual rate (SAAR) series was divided by four and translated to average 2020 dollars using the PCE price index. Figure 5 groups transactions by combining groups according to the following:

- *Total Deposits* combines the accounts for checkable deposits and currency with time and savings deposits
- *Real Assets* captures total capital expenditures including consumer durable transactions, less consumption of fixed capital, structures, equipment, and intellectual property products on a current cost basis
- *Equities, Mutual Funds, and Pensions* combine accounts for corporate equities, mutual fund shares, pension entitlements, and life insurance reserves
- *Debt Securities and Money Market Funds* combine accounts for household holdings of debt securities and money market fund shares
- *Mortgage Debt* refers to one-to-four-family residential mortgage liabilities
- *Consumer Debt* refers to the consumer credit account which includes student, auto, credit card, and other personal liabilities

Figure 9 decomposes the cumulative change in wealth from 4Q2019 through 4Q2021 into contributions from revaluations and savings. Specifically, net saving was divided by four to attain quarterly saving from the SAAR reported value and also converted to 2020 dollars using the PCE price index. Asset revaluations are not reported as SAAR values allowing a simple conversion to 2020 dollars only. Revaluations represent the net effect of market price changes of assets held by households. “Net savings” refers to the difference between disposable income and personal consumption expenditures presented in the current account, which includes capital transfers paid and excludes consumer durables, government insurance, and pension fund reserves. Change in wealth can be decomposed into asset revaluations plus total net acquisition

transactions of assets, less net acquisition of liabilities. Total net transactions from the financial account should equate to total net saving in the current account, after reconciling discrepancies for net capital formation, other changes in volume, and differences in methodology (not shown).

Quarterly Debt Balances, Credit Card Utilization, and Delinquencies

- Figure 7. Year-over-Year Quarterly Change in Real Household Debt, by Type, 2000-2021
- Figure 8. Change in Credit Card Utilization after Great Recession and COVID-19 Recession
- Figure 15. Delinquencies Over Time

Figures 7, 8, and 15 rely on the Quarterly Report on Household Debt and Credit, released by the Federal Reserve Bank of New York based on the Consumer Credit Panel, constructed from an anonymized, nationally representative sample of Equifax credit report data.

Figure 7 displays the year-over-year quarterly change in household debt balances by type from 2000 through the fourth quarter of 2021. Data from the most recent 4Q2021 publication spanning 1Q2003–3Q2021 was combined with historical data offered separately from the Federal Reserve Bank of New York covering 1Q1999–4Q2002. Data on student loan balances were unavailable in the earlier period. For simplicity, Figure 9 combines balances for mortgage debt and home equity lines of credit (HELOCs). All balances are displayed in real average 2020 dollars based on the annual PCE price index.

Figure 8 compares changes in average credit card balances and in the unused portion of available credit relative to the quarter preceding each recession: in 4Q2019 for the COVID-19 recession and in 4Q2007 for the Great Recession. Per account averages were calculated by dividing aggregate quarterly measures of credit card balances and unused credit limit by the

number of active credit card accounts. Note that these percentage changes are based on nominal values and do not account for inflation differences between the two periods.

Figure 15 examines the changes in delinquency over time by number of days delinquent and product type from 2003 to 2021. It does not alter the data from the Federal Reserve Bank of New York.

J.P. Morgan Chase Customer Checking Accounts

- [Figure 10. Median JPMorgan Chase Checking Account Balances, by Income Quartile, January 2020–December 2021](#)

Greig, Deadman, and Sonthalia (2022) from the J.P. Morgan Chase Institute (JPMCI) is the source for data on median checking account balances by income quartile. JPMCI uses anonymized bank data from 7.5 million J.P. Morgan Chase customers, focusing on account holders for whom Chase checking account is likely their primary checking account. Specifically, the customer population is restricted to those with at least \$12,000 in total income deposited in their Chase account in each of 2019, 2020, and 2021. These characteristics limit the representativeness of the sample.

Figure 10. Income quartiles are based on total income in 2019, which is defined as inflows via direct deposit paycheck and represents take-home pay after taxes and other deductions and contributions. Households in income quartile 1 earned between \$12,000 and \$26,171, quartile 2 earned less than \$40,826, quartile 3 earned less than \$64,974, and quartile 4 earned more than \$64,974.

Estimates of the Distribution of Excess Savings

- [Figure 11. Estimates of the Distribution of Excess Savings, by Income](#)

Batty, Deeken, and Volz (2021) is the source for “Traditional” Distributional Financial Accounts (DFA) as well as “Adjusted” DFA come from based on data from 1Q2021.

- *Traditional DFA:* The quarterly estimates offered by the Traditional DFA project the distribution of wealth by combining the group shares of assets and liabilities observed in the triennial Survey of Consumer Finances (SCF) from 2019 with quarterly flows in aggregate wealth components from the Financial Accounts and other macroeconomic sources.
- *Adjusted DFA:* This estimate uses reconfigured DFA models that first excluded the then-estimated \$1.8 trillion in pandemic-specific excess savings before reallocating that sum according to a range of alternative distributions. After comparing various distributions, including equal distribution across all income groups and distribution of all of the excess savings to only the bottom 50 percent of households by income, the authors concluded that a scenario of “somewhat equally distributed” excess savings, halfway between Traditional DFA shares and the equally distributed scenario, to be more realistic. That is presented as Adjusted DFA in Figure 11.

The Goldman Sachs estimate refers to Hatzius et al. (2021c) based on data through 3Q2021, however authors’ estimates for the first and second quarters of 2021 found consistent savings shares across estimates (see 2021a, 2021b). The authors estimate disposable income and consumption across income quintiles, applying adjustments to reflect expected effects of fiscal support and shifts in consumption patterns between high and low-income households, as well as people aged 65-and-over. The authors then extend those shares of excess savings to the aggregate accounts provided by the Federal Reserve’s Flow of Funds, H.8 banking report, and the SCF. Each group’s excess savings can then be separated into the forms in which they reside by assuming that the residual of a group’s excess savings, after accounting for debt reduction and changes in bank account balances, have been invested in more illiquid assets.

The Moody’s Analytics estimate is sourced from Zandi (2022) based on data through 3Q2021. The author linearly interpolates shares of assets and liabilities from the 2019 SCF and derives savings shares based on the aggregate changes in value of those wealth components sourced from the quarterly Financial

Accounts. BEA-measured savings is then distributed to income groups based on these derived shares.

The Morgan Stanley estimate is sourced from Wolfe et al. (2021) using data through 2Q2021. These authors' estimates closely tie to the DFA baseline and appear to rely on a similar method of extending 2019 SCF shares through 2021 using aggregate data from the quarterly Financial Accounts.

Distributional Financial Accounts (DFA)

- Figure 12. Cumulative Changes in Real Net Worth, Excluding Deposits, by Income Percentile, 2019 Fourth Quarter to 2021 Third Quarter
- Figure 13. Cumulative Changes in Real Net Worth, Excluding Deposits, by Demographic Characteristics, 2019 Fourth Quarter to 2021 Third Quarter
- Figure 14. Debt-to-Asset Ratio, Excluding, Deposits, by Income Percentile

Figures 12 through 14 leverage data from the Distributional Financial Accounts (DFA) which uses SCF data to model the distribution of various assets and liabilities across demographic clusters and the Financial Accounts of the United States to estimate their asset or liability changes on a quarterly basis. The most recent SCF was conducted in 2019 and reflects pre-pandemic asset and liability allocations. The DFA data begin in the third quarter of 1989 and end in the third quarter of 2021.

Batty and coauthors have estimated that most of the components of wealth measured by the SCF in 2019 are still informative since we can expect the apportionment of their price-driven gains to be unbiased, however inflows to deposits were biased by pandemic specific factors including economic impact payments, expanded unemployment benefits, and changes to spending patterns. The DFA models are based upon historical precedent; therefore, the 2019 distribution may not accurately reflect these recent changes. We remove deposits from our figures to reflect only the

streams that can be predicted with greater accuracy. We use the income, age, race, ethnicity, and educational demographic data provided by the DFA.

The DFA uses the same demographic definitions provided in the SCF for race, ethnicity, income, age, and education. Black includes Black or African, non-Hispanic respondents; white includes white, non-Hispanic respondents; Hispanic includes Hispanic or Latino respondents of any race; other consists of Asian, American Indian, Alaska Native, Native Hawaiian, Pacific Islander, other race, and all other respondents reporting more than one racial identification who were non-Hispanic. The education categories follow the DFA and SCF definitions except for the category of high school or less which combines the categories of people with less than a high school diploma and those who completed high school or its equivalent. If a person had completed, or is currently completing, one or more years of college or held an associate degree they were grouped with some college. If a person had completed a college degree or higher, they were grouped in college or more.

Deposits are the sum of deposit accounts and currency and time deposits and short-term investments and are derived from the financial accounts data. Deposit accounts and currency include checking accounts and physical cash. Time deposits and short-term investments include savings accounts, certificates of deposit, money market accounts through banks, and a small number of foreign deposits. Assets include real estate, consumer durable goods, corporate equities and mutual fund shares, pension entitlements, private businesses and other assets. Liabilities include home mortgages, consumer credit and other liabilities. Net worth or wealth is the difference between total assets and total liabilities.

References

- Batty, Michael, Ella Deeken, and Alice Henriques Volz. 2021. "Wealth Inequality and COVID-19: Evidence from the Distributional Financial Accounts." FEDS Notes, August 30, 2021. Board of Governors of the Federal Reserve System, Washington, DC. Accessible at <https://www.federalreserve.gov/econres/notes/feds-notes/wealth-inequality-and-covid-19-evidence-from-the-distributional-financial-accounts-20210830.htm>.

- Board of Governors of the Federal Reserve System. 2019. “2019 Survey of Consumer Finances.” U.S. Federal Reserve, Washington, DC. Accessed January 12th, 2022, at <https://www.federalreserve.gov/econres/scfindex.htm>.
- 2021. “Distributional Financial Accounts: Distribution of Household Wealth in the U.S. since 1989.” Board of Governors of the Federal Reserve System, Washington, DC. Accessed January 17th, 2022, at <https://www.federalreserve.gov/releases/z1/dataviz/dfa/index.html>.
- 2022a. “Table F.101 Transactions for Households and Nonprofit Organizations.” Z.1 Financial Accounts of the United States. Accessed March 10th, 2021, at <https://www.federalreserve.gov/apps/fof/DisplayTable.aspx?t=f.101>.
- 2022b. “Table S.3.Q Integrated Accounts for Households and Nonprofit Institutions Serving Households.” Z.1 Financial Accounts of the United States. Accessed March 10th, 2021, at <https://www.federalreserve.gov/apps/fof/DisplayTable.aspx?t=s.3.q>.
- Federal Reserve Bank of New York. 2022. “Quarterly Report on Household Debt and Credit 2021: Q4”. Federal Reserve Bank of New York Center for Microeconomic Data, New York, NY. Accessed March 6th, 2022 at <https://www.newyorkfed.org/microeconomics/hhdc>.
- Greig, Fiona, Erica Deadman, and Tanya Sonthalia. 2022. “Household Pulse: The State of Cash Balances at Year End.” Updated with December 2021 data. JPMorgan Chase Institute, New York, NY. Accessed March 3rd, 2022 at <https://www.jpmorganchase.com/institute/research/household-income-spending/household-pulse-cash-balances-at-year-end>.
- Hatzius, Jan, Alec Phillips, David Mericle, Spencer Hill, Daan Struyven, Joseph Briggs, et al. 2021a. “Pent-Up Savings and Post-Pandemic Spending (Briggs/Mericle).” Goldman Sachs Economic Research, New York, NY. Published February 15, 2021 at <https://www.gspublishing.com/content/research/en/reports/2021/02/15/e52e6826-59ec-4c7a-9ebb-732af6ce3946.html>.
- 2021b. “An Update on Spending from Stimulus Checks and Pent-Up Savings (Briggs).” Goldman Sachs Economic Research, New York, NY. Published April 1st, 2021 at <https://www.gspublishing.com/content/research/en/reports/2021/04/14/f108ba9c-428a-4020-b784-f68084adb1c3.html>.
- 2021c. “Updating Our Distributional Income and Spending of Pent-Up Savings Estimates (Briggs).” Goldman Sachs Economic Research, New York, NY. October 27, 2021.
- U.S. Bureau of Economic Analysis. 2022a. “Table 2.6 Personal Income and Its Disposition, Monthly (M).” National Income and Product Accounts. Accessed March 1st, 2022, at <https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>.
- U.S. Bureau of Economic Analysis. 2022b. “Table 2.8.6 Real Personal Consumption Expenditures by Major Type of Product, Monthly, Chained Dollars.” National Income and Product Accounts. Accessed March 1st, 2022, at <https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>.
- U.S. Census Bureau. 2021a. “Household Pulse Survey.” U.S. Census Bureau, Suitland, MD. . Accessed February 17th, 2022, at <https://www.census.gov/programs-surveys/household-pulse-survey.html>.
- Wolfe, Sarah, Ellen Zentner, Zuri Z. Zhao, Jay Bacow, James Egan, Shikhar Agarwal, Carolyn L. Campbell, Richard Hill, and Robert Rosener. 2021. “A Housing Boom for Whom”. Morgan Stanley Research, New York. November 1, 2021.
- Zandi, Mark. 2022. “2022 Economic Outlook: Time to Heal.” Moody’s Analytics, New York, NY. January 5, 2022, accessible at <https://www.economy.com/economicview/analysis/387142/2022-Economic-Outlook-Time-to-Heal>.