

Household Liquidity Measurement: A New Approach

by Dasol Kim and Nicholas Schwartz¹

How households save and accumulate liquid assets affects economic and financial stability, as it directly influences household savings and investment allocations and, given the household sector's size, market prices. Over the past several years, household liquidity has been a central focus of policymakers due to the global pandemic, generational inflationary pressures, and unprecedented monetary tightening. However, monitoring tools for household liquidity remain limited. This brief aims to address a monitoring gap by proposing a novel methodology that leverages micro data to construct granular liquidity measures. It allows us to readily estimate the full liquidity distribution across U.S. households during periods when data are limited. We find that current household liquidity has largely reverted to pre-pandemic levels, though these dynamics have been uneven across the liquidity spectrum. The analysis also provides insights into the various policy interventions over the past several years. We show that government transfers have had a disproportionate effect on households with the lowest levels of liquidity.

Factors that contribute to the rapid depletion of liquidity reserves, such as savings and liquid assets, and to the general stress to household balance sheets pose significant threats to financial stability. Weaker household balance sheets are more vulnerable to economic and financial shocks.² During the 2007-09 financial crisis, limited household liquidity buffers exhibited low resilience to adverse economic and financial threats, contributing to the prolonged recession that followed.³ The effects of the COVID-19 pandemic and the lingering economic aftershocks in recent years underscored the limitations of existing household liquidity indicators and reinforced the need for improved monitoring tools.

This brief proposes and analyzes a methodology to construct a detailed measure of household liquidity at more regular frequencies than what the Survey of Consumer Finances (SCF) allows.⁴ There is a dearth of tools that policymakers can use to measure household liquidity conditions in a timely manner, and having precise and timely measures can better inform policies relevant to the household sector. This new methodology allows for more accurate estimates of household segments with low and high liquidity while also accounting for changes over time.

A greater understanding of household liquidity conditions informs policymakers on the impact of

interventions that relate to the household sector as well as the resulting feedback to the real economy. During the pandemic, to lessen the impact of deteriorating economic conditions, Congress provided aid to individuals, as well as corporations, through the Coronavirus Aid, Relief, and Economic Security (CARES) Act; the COVID-related Tax Relief Act of 2020; and the American Rescue Plan Act of 2021. Through these government responses, households received unprecedented liquidity injections to help prevent potential financial hardships associated with the pandemic.⁵ Although the economic impact payments (EIPs) ultimately helped many households, the measurement of household liquidity, particularly for the most vulnerable segments, was a major blind spot. More timely and refined measures of household liquidity could have influenced those policies differently and been integral to validating their effects.

Even though commonly used aggregated household liquidity measures are available at more regular frequencies, they lack the precision to provide a complete picture. Aggregate household net worth, for example, is a snapshot of one component of the household sector's balance sheet and is likely to be skewed by the wealthiest households. Also, it does not provide details on how long those assets can be used to sustain prolonged balance sheet shocks.

In simple terms, we present an approach that estimates a standard measure of household liquidity: the number of months a household can meet its expenditures based on its liquid assets. This measure conveys the ability of households to withstand negative shocks, such as job loss, and identifies households that are liquidity-constrained, or have limited assets to meet their expenditures and stay current on debt.

Our approach is to use survey data and interpolate the components that determine household liquidity to estimate conditions in years where SCF data are not available. We incorporate relatively higher frequency data that are applicable for real-time monitoring to address the infrequent survey data used to measure household liquidity. The approach accounts for cumulative economic effects to provide sharper estimates of household liquidity conditions compared to traditional, aggregate measures.

We use the methodology to describe current household liquidity conditions and show that liquidity conditions improved during the pandemic. More recently, the data suggest that household liquidity has reverted to pre-pandemic levels. To better understand the reversion and the interim dynamics, this brief also presents an analysis of the effects of the government transfer programs during the pandemic. These effects were disproportionate for households with the lowest levels of liquidity, and the fraction of liquidity-constrained households decreased by 50 percent. This indicates that the reversion was most pronounced for low liquidity households.

Analyzing and Interpolating the SCF Data

Monitoring the state of households and household liquidity in particular is a challenge because of data limitations. Commonly used indicators do not always provide a complete picture of measures used to calculate household liquidity. Most data sources do not collect data frequently enough to reflect economic conditions that may occur over months rather than years. Economic downturns have become shorter in part because governments have access to more data and tools that help them lessen the effects of a recession. The Great Recession lasted 18 months, for example, and the most recent contraction during the pandemic was only two months.

The SCF is one of the more robust data sources that is used to accurately capture and analyze household liquidity and other consumer metrics because the survey provides sufficiently granular data on household balance sheets. Every three years, the Board of Governors of the Federal Reserve Board (FRB) conducts the SCF by collecting information on household demographics, income, financial assets, and debts. This triennial survey is incomplete though because survey dates may not fully capture the range of economic conditions that affect households. Specifically, the recent 2019 and 2022 surveys reflect economic conditions before and after the most recent recession during the pandemic.

We focus on fields that the SCF collects along two key dimensions that are relevant to household liquidity:

household financial resources and expenditures. We only include financial resources that a household can easily access and draw upon in the event of an income shock. Examples of some liquid financial resources available in the SCF include checking accounts, savings accounts, money market accounts, and quasi-liquid assets, such as mutual funds and direct holdings of stocks and bonds that can be easily sold. We do not include 401(k)s or individual retirement accounts (IRAs). Expenditures captured by the SCF consist mostly of discretionary spending on food in addition to nondiscretionary spending on rent and debt obligations, such as mortgages, car loans, and student loans.

Importantly, we can construct additional expenditures for each household for categories that are not part of the survey. To do so, we make assumptions based on a household's demographics and expenditures about other expenses that are not collected in the SCF.⁶ If a household owns their home, we multiply their home value by 0.5 percent to estimate the amount they may spend on utilities, such as gas, electric, and water. For homeowners whose mortgage payments exclude home insurance, we calculate that amount as 0.5 percent of the home's current value. Expenditures on home maintenance are also estimated at 1 percent of the home's reported value.

For renters, we calculate spending on utilities to be 10 percent of the rent if the reported rent excludes utilities, 5 percent if their rent includes some utilities, and zero if their rent includes all utilities. For households that own cars, we estimate spending on routine maintenance to equal \$500 a year per vehicle, gas expenditures to equal \$1,000 per year per adult family member, and car insurance to equal \$800 per year for the first car and then an additional \$600 per year for each additional car. For other household expenditures, we assume spending on internet and cable television equals \$100 per month together and cell phone expenses equal to \$50 a month per adult family member over the age of 16.

We then take the 2019 SCF fields along with the generated fields and interpolate the values between survey dates. By doing so, we capture economic conditions that occur between survey dates. Factors affecting financial resources largely stem from wage dynamics, asset valuations, and government transfers. Inflationary pressure and other factors that affect spending behavior can

also influence a household's expenditure outflow. As individual components provide an incomplete view of household liquidity positions, it is critical to account for both changes in financial resources and the effects of inflation on expenditures when interpolating liquidity conditions.

In doing so, we calculate the changes in various financial assets and inflation categories to adjust the values of total liquid assets and total monthly expenditures. With these measures, we calculate months of household liquidity by dividing total liquid assets by total monthly expenditures.

To capture total liquid assets, we interpolate estimates of cash and cash equivalents, such as checking accounts, savings accounts, prepaid accounts, and money market accounts using changes in account balances reported by the JP Morgan Chase Institute (JPMCI). For quasi-liquid assets that include directly held stocks and bonds, mutual funds, and savings bonds, we simply interpolate these values using the change in financial assets found in the Federal Reserve's Financial Accounts data that report aggregate balance sheet items for households and nonprofit organizations.

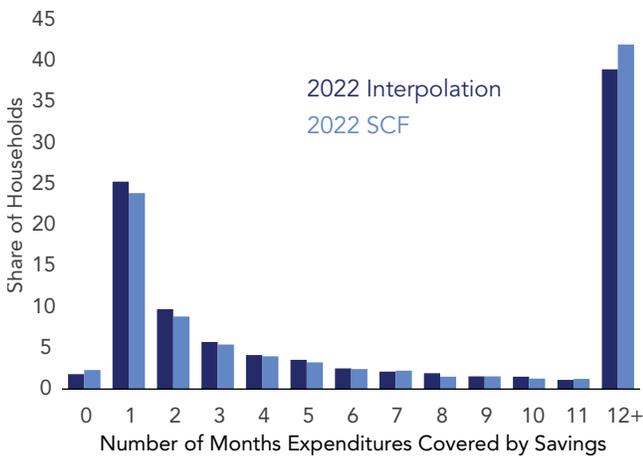
Total monthly expenditures include a household's spending on discretionary and nondiscretionary expenses. Estimates for expenditures affected by inflation are interpolated using Bureau of Labor Statistics (BLS) Consumer Price Index (CPI) data by category. The BLS reports the CPI for food at home and dining out separately, for example. Using changes in these different CPI categories, we adjust the reported SCF fields on household food spending separately for food at home and food from dining out.

We chose to calculate the interpolated fields for 2021 and 2023, which are, respectively, the years before and after the most recent SCF data release. To validate the results and methodology, we also interpolate the estimates to 2022. This interpolation approach uses already available data and does not forecast data to a future date.

We validated our approach by comparing the distribution of the number of months households can cover expenses, or their months of liquidity, calculated using actual 2022 SCF data and using the 2022 data interpolations from the 2019 survey. Overall, the

two distributions illustrated in **Figure 1** are similar except for small differences for certain months. The interpolated months of liquidity measure slightly underestimates the proportion of households with sufficient liquidity for 12 months or more. The other discrepancies are negligible. Even so, the analysis demonstrates the accuracy and validity of the methodology to estimate household liquidity conditions and illustrates that this method can be a powerful tool for policymakers to monitor estimates of liquidity conditions where data are not available.

Figure 1. Comparing Months of Liquidity 2022 Interpolation to 2022 SCF (percent)



Note: Measure has been collapsed into 13 bins based on the months a household can use savings to cover expenses.

Sources: Survey of Consumer Finances, BLS Consumer Price Index, FRB Financial Accounts, JPMorgan Chase Institute, Authors' analysis

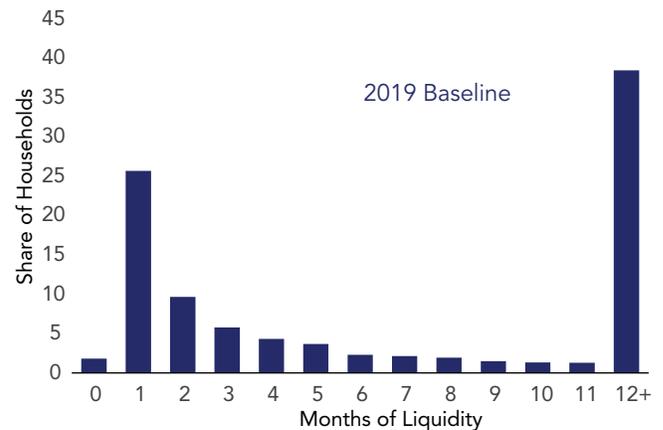
Baseline Months of Liquidity and The Pandemic's Effect on Household Liquidity

Using the 2019 SCF data, we can characterize household liquidity prior to the pandemic across a large cross section of U.S. households. Aggregating this information creates the distribution of liquidity conditions across U.S. households.

Figure 2 displays the percentage of households that can cover expenditures for a particular number of months. The data indicate a bimodal distribution regarding household liquidity constraints: 42.9 percent

of households experience some degree of liquidity constraints while 38.5 percent of households have savings that could cover at least one year of expenditures. Of those households identified as liquidity-constrained with up to three months of liquid savings, more than 25 percent of these households could cover one month or less of expenditures. Those with zero months of liquidity are households with either no savings buffer or no debt obligations and expenses.

Figure 2. Baseline 2019 Months of Liquidity Distribution across all Households (percent)



Note: Measure has been collapsed into 13 bins based on the months a household can use savings to cover expenses.

Sources: Survey of Consumer Finances, Authors' analysis

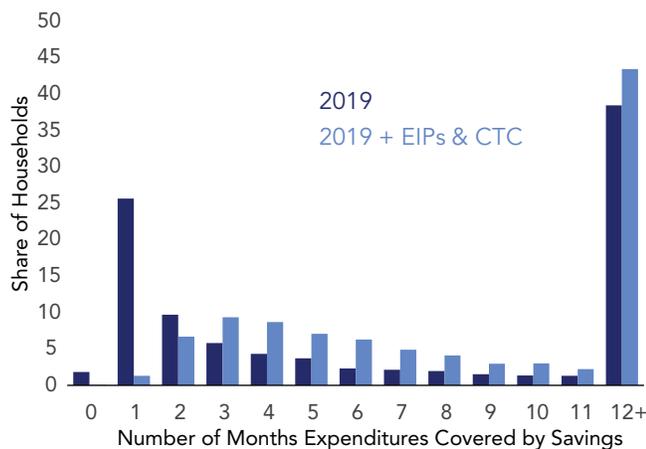
These results show that at the start of the pandemic, a sizable fraction of households were liquidity-constrained, consistent with existing literature.^{7,8} A study from the Federal Reserve Board of Governors using different survey data prior to the pandemic indicates that 40 percent of households were unable to cover a modest, unexpected expense with existing savings; they would need to borrow or sell something to cover the expense.⁹

Payments from the pandemic-era government transfer programs were important to the liquidity positions of many vulnerable households.¹⁰ Government transfer programs did not distribute payments equally, and families received different payment amounts. A household's total income and number of dependents dictated the size of the three rounds of EIPs and the Child Tax

Credits (CTC) payments. The SCF data provide detail for each responding household, which allows us to properly account for the size of both sets of payments.

While payments received through the pandemic-era government programs represented a sizable fraction of liquidity buffers, many households immediately drew down on these payments and retained only a fraction in bank accounts. Evidence suggests that some of these households may have used the funds to pay down existing debts or increase investments, which would enhance liquidity positions. The share of households holding stocks increased from 52.6 percent in 2019 to 58 percent in 2022. Households may have also changed their spending behavior during the pandemic, improving their liquidity in the short run as they spent less on travel, entertainment, daycare, and various work-related expenses.¹¹

Figure 3. Household Months of Liquidity with COVID-19 Interventions (percent)



Note: Measure has been collapsed into 13 bins based on the months a household can use savings to cover expenses.

Sources: Survey of Consumer Finances, Authors' analysis

Figure 3 shows that the combination of the EIPs and CTC transfer payments represented a sizable portion of household expenditures. Adding the total payments to existing savings decreases the percentage of liquidity-constrained households by more than half to about 20 percent. The liquidity injections had a disproportionate effect on households with the lowest liquidity levels. The payments represented an average of 4.5

months of expenditures for households with only up to one month's worth of expenses in savings as of 2019.

One aspect not considered here is the role of expanded unemployment insurance. A large fraction of households benefitted from these programs. The national unemployment rate hit 14.7 percent in April 2020 before rapidly declining to less than 10 percent by August 2020. We cannot consider their effects given that we cannot observe which households experienced unemployment at the time the expanded programs went into effect. In this regard, the calculations can be viewed as a lower bound on the liquidity injection.

Finally, Bhutta et al (2020) use the 2016 SCF data and perform a similar analysis based on the CARES Act. The study focused on unemployment scenarios, including insurance expansion. Using the 2016 data, the study found that 17 percent of U.S. households remained liquidity-constrained after only accounting for payments associated with the CARES Act as of early 2020. Our study accounts for the cumulative effects of the pandemic-era government programs, excluding the expansion of unemployment insurance during this time. The analysis assumes an income shock and computes liquidity at a point in time to observe how many months households can maintain their expenditures and debt obligations. We focused on the effects that direct lump-sum stimulus payments had on household liquidity.

Interpolated Estimates of Current Liquidity Conditions

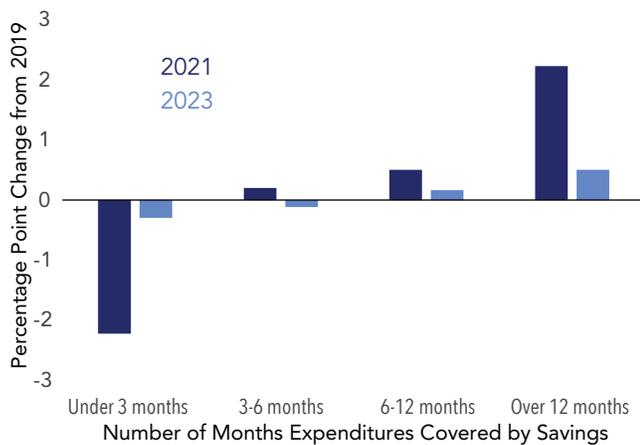
Current liquidity conditions inform future resilience to economic shocks. To estimate current household liquidity conditions, we developed an approach that interpolates the components used to calculate the number of months of liquidity to future years where these data are not directly observable in the SCF. This approach accounts for the effects of financial asset growth against the inflationary effects on a broad range of expenditure categories.

Incorporating aggregate trends, we can interpolate household balance sheets and expenditure fields in the 2019 SCF data to the present so that we can more accurately estimate current liquidity conditions. We caveat that the interpolations are based on aggregate

trends and are likely to overlook cross-sectional factors that could affect the analysis. This includes changes in debt servicing obligations due to larger or smaller debt balances, as well as gains or losses from certain investments.

We focus on two periods for the interpolations: December 2021 and July 2023. This allows us to estimate household conditions during and after the pandemic. The calculations for 2023 displayed in **Figure 4** suggest that the cumulative effects of the wide-ranging set of shocks to household balance sheets have largely reverted household liquidity to 2019 levels. In particular, the fraction of liquidity-constrained households as of 2023 is now 42.6 percent, which is essentially at 2019 levels. Liquidity conditions remaining stable through the pandemic suggest that the EIPs provided a sufficiently robust buffer for most households against the economic shocks caused by the pandemic.

Figure 4. Change in Interpolated Household Months of Liquidity Distribution since 2019 (percent)



Note: Months of liquidity measure has been collapsed into four groups based on a period of time.

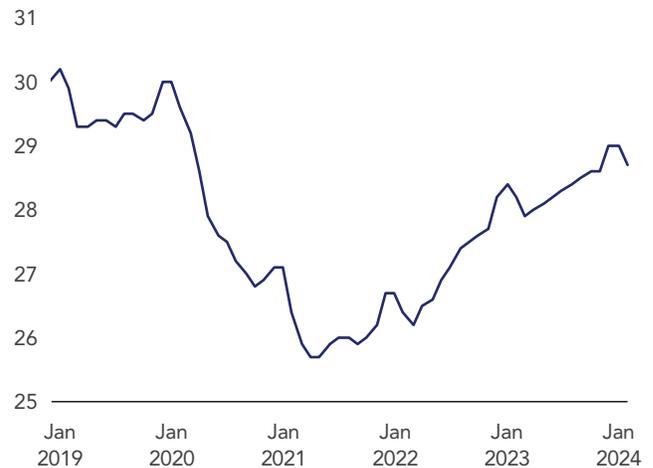
Sources: Survey of Consumer Finances, BLS Consumer Price Index, FRB Financial Accounts, JPMorgan Chase Institute, Authors' analysis

We also examine liquidity conditions in 2021 for comparison. Relative to 2019 levels, the fraction of households unable to cover at least three months of expenditures decreased by 2.3 percentage points. In contrast, the fraction of households able to cover at

least one year of expenditures increased by approximately the same magnitude.

These figures are more modest than what would be suggested based on our earlier calculations on the government transfer payments but still consistent with other sources using checking account and credit data. Even though checking account balances of households receiving such payments initially spiked when the payments were distributed, they quickly reverted to near pre-pandemic levels in the following weeks based upon data from the JPMCI.¹² This implies that many of those funds were spent relatively quickly. The Office of Financial Research 2021 Annual Report shows that utilization rates of bankcards and home equity lines of credit fell dramatically during this period, which could have resulted from lower household expenses because of stay-at-home orders in some states or because some households used the government transfer payments to pay down debt.¹³

Figure 5. Bankcard utilization rate (percent)



Sources: Sources: Equifax, Authors' analysis

Extending the timeframe of bankcard utilization to the beginning of 2024 in **Figure 5** shows that the decline experienced in 2020 and 2021 reverted to near pre-pandemic rates. This suggests that although liquidity conditions buffered by the EIPs decreased dramatically, this may have been offset by households paying down existing loans which would reduce their

debt burdens going forward and their need for that liquidity.

Conclusion

The heightened levels of economic uncertainty over the last few years show why monitoring household liquidity conditions going forward is critical. Factors that contribute to the rapid depletion of liquidity and general stress to household balance sheets pose significant risks to financial stability. Weakened household balance sheets are associated with higher default rates, heightening stress experienced by financial institutions. This paper presents a new tool for monitoring household liquidity conditions. We demonstrate that the approach is effective in providing measurements of household liquidity even when survey data are unavailable. It also provides an account of current household liquidity conditions. Using this methodology, we show that household liquidity positions have largely reverted to pre-pandemic levels. This result is striking because of the large liquidity injections made through pandemic-era government transfer payments.

Endnotes

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2 Mian, A., Rao, K. and Sufi, A., 2013. Household balance sheets, consumption, and the economic slump. *The Quarterly Journal of Economics*, 128(4), pp.1687-1726

3 Jones, C., Midrigan, V. and Philippon, T., 2022. Household leverage and the recession. *Econometrica*, 90(5), pp.2471-2505.

4 Aladangady, Aditya, Jesse Bricker, Andrew C. Chang, Sarena Goodman, Jacob Krimmel, Kevin B. Moore, Sarah Reber, Alice Henriques Volz, and Richard A. Windle (2023). Changes in U.S. Family Finances from 2019 to 2022: Evidence from the Survey of Consumer Finances. Washington: Board of Governors of the Federal Reserve System, October, [https:// doi.org/10.17016/8799](https://doi.org/10.17016/8799).

5 Bhutta, N., Blair, J., Dettling, L. and Moore, K., 2020. COVID-19, the CARES Act, and Families' Financial Security. *National Tax Journal*, 73(3), pp.645-672.

6 This brief follows the methodology outlined in Bhutta et al. (2020) when calculating additional expenses that were not covered by the SCF.

7 See, for example, Lusardi et al. (2011), Kaplan et al. (2014), Bhutta et al. (2020), Federal Reserve (2020).

8 In untabulated results, we compared estimates using our methodology based on the 2016 SCF data to the results in Bhutta et al. (2018). We find consistent results. See also Bhutta and Dettling (2018).

9 Bhutta, Neil and Dettling, Lisa, 2018. Money in the Bank? Assessing Families' Liquid Savings using the Survey of Consumer Finances.

10 These programs were enacted by the Coronavirus Aid, Relief, and Economic Security (CARES) Act (2020); The COVID-related Tax Relief Act of 2020; and The American Rescue Plan Act of 2021.

11 The SCF underreports discretionary spending categories of households. This analysis assumes that the expenses reported by households in the SCF are not changed when interpolating the months of household liquidity measure.

12 Wheat, Chris, Erica Deadman, Daniel M Sullivan. 2024. Household Pulse: Balances through October 2023. JPMorgan Chase Institute.

13 Office of Financial Research, 2021. Annual Report. pp.33.