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Re-Examine the Rise in Household Liquidity

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Abstract: ***La Cava and Wang (2021) argue that the effect of household liquid assets remain unexplored. Using a variety of Australian household surveys, the original paper's research empirically examines the connection between household liquidity cushion and uncertainty. The author discovers a less well-known pattern: household liquid assets have increased significantly compared to income over the same time period. Using evidence from 1995-2019, this evidence remains significant for Australia and most developed economies. Following original paper's concept, this study first reproduces original paper's results for 10 OCED nations by utilising a wider period from 1989 to 2019. The results are congruent with the result of the original paper. The article then re-analyses the regression by introducing a new dummy variable when the FED raises interest rates. FED raises its interest rate to manage the risk of the potential financial crisis, but it also affects the global economy. The results indicate that when the FED raises interest rates, liquidity will expand more. The results indicate that when households are confronted with greater uncertainty, they choose to maintain a higher level of liquid assets. The outcome is essential for comprehending the behaviour of households and hence provides policymakers with more macro-level governance recommendations.***

1. INTRODUCTION

Cash and other liquid assets are necessary for households to weather financial hardships because they provide a buffer against cutting back on spending when income is low (Andersen et al., 2021; Ganong and Noel, 2018). A household's level of financial security is directly correlated with the level of risk it faces and its ability to manage it. Enhancing the financial stability of households is essential for reducing all forms of economic risk. Since its debut, home financial health has attracted a lot of attention as a cutting-edge subject for researching families' risk tolerance and financial stability. According to a 2013 research, the most distinctive elements influencing financial goals and values and, consequently, household financial wellbeing are education, employment, and marital status (Garrett and James III, 2013). Financial health indicators are useful for assessing the state of various areas of household finances, extending beyond the head of the household's financial literacy to include financial behavior. Therefore, it is crucial to do research to comprehend household liquidity preferences.

La Cava and Wang (2021) separately assessed the financial health of economies of different ages using data from an Australian national survey and came to the conclusion that household liquidity is highly correlated with life cycle variables like age and property tenure. While household liquidity has increased over the past several decades, it has increased most significantly among those who owe money on their mortgages. Before this study, little was known about the impact of household heads on the financial well-being of households utilizing microdata to evaluate family finances nationally. Furthermore, the study did not address how microdata affects households' financial stability. This study is significant because it not only shows that the household sector may have become less sensitive to short-term fluctuations in wealth and income, but it also concludes that the reduction in liquidity constraints suggests that the household sector may have become less sensitive to short-term fluctuations in wealth and income, assuming other factors stay constant (Wang, 2022). Then, the decrease in liquidity constraints—especially for individuals who have mortgage debt—has decreased the probability of default related to the total amount of mortgage debt accumulated during the preceding several decades. This data offers the Australian household liquidity pattern and closes the gap in the research on the subject at hand.

The goal of the original paper's research is to have a thorough understanding of the relationship between income and liquidity buffers. The authors find that during the previous 20 years, families in OECD countries have expanded their buffers using data from 1995 to 2009. The goal of this endeavor is to extend the reach of earlier research. The same regression algorithm is used in the paper's replication of the data, which covers a larger time span from 1989 to 2019. This study makes the assumption that the results will be consistent with the original paper's findings because of how close the time periods are.

The research is then furthered in this study by introducing a new variable and a fresh research question. The Federal Reserve has increased interest rates six times (Kuttner, 2001). The global financial crisis and the behavior are strongly correlated (Tuckwell and Mendonca, 2016). The OECD countries may see different effects from the FED's increase in interest rates (Kishor and Marfatia, 2017). Therefore, by investigating whether different interest rate rise times could have varied effects on the economy, this research seeks to expand on the work of the original paper. According to the second theory, as interest rates rise, the liquidity buffer will increase.

The main goal of this study is to confirm the findings of the first publication. The replication took a little longer than the original study's duration, thus the results are not very different from the article in the original publication. Through replication, study findings may be tested by other researchers, and this study confirms the findings of the original work. This paper's second contribution is to clarify the role of the OECD liquidity buffer in relation to FED interest rates. This study concludes that the OECD nations would experience greater uncertainty when the FED raises interest rates, which will result in an increase in the liquidity buffer.

The outline of this paper is organized as follows: An introduction, the study subject, a synopsis of the relevant literature, the contribution of the article, and the conclusions are all included in this part. The details of the data are in Section 2. The empirical strategy is covered in the third part. An extension leads to Section 4. The discussion is covered in the fifth section, and the conclusion is covered in the last section.

2. DATA

This work uses aggregate cross-national accounts data together with other original paper data factors to investigate the liquidity of household balance sheets. An unbalanced panel of 37 OECD countries and a sample that spans from 1995 to 2019 with more than 25 observations annually form the basis of the original model. The data used by the authors covers the years 1989 through 2019, and the study plan is to use the entire duration. The data are all panel data at the national level. There are 804 people in all from 10 different nations in the sample. The OECD database is cited in the original publication as the data's source.

Using the longer time span, this study will first replicate the previous findings. As a result, the variables are constructed in line with the idea of the original work.

2.1 Dependent Variable

One dependent variable is present. a change to the liquidity buffer. A household's liquidity buffer is measured as the ratio of liquid assets to disposable income. A household's liquid assets consist of cash, bonds, stocks, and bank accounts.

2.2 Separate Variables:

The two main independent variables are changes in the debt-to-income ratio and the housing price-to-income ratio. It is computed by deducting the ratio of period t's house price to income from period t-1's ratio. Likewise, the debt-to-income ratio change is determined by deducting the debt-to-income ratio for this year from the debt-to-income ratio for the prior year.

The control variables for borrower characteristics that are pertinent to the accumulation of liquidity are also included in this paper. These variables include changes in the employment rate, real long-term interest rate, population growth rate, and the ratio of elderly people.

This paper additionally includes the FED rate dummy variable to address the second research issue. The FED quickly raised interest rates in five different situations. The value will be 1 in the event that the FED hikes interest rates, and 0 otherwise.

The following are the five eras: Black Thursday in 1987 and an interest rate hike from 6.5% to 9.8125% occurred from March 1988 to May 1989. The second period began in February 1994 and ended in February 1995. During this time, interest rates increased from 3.25 percent to 6 percent, and the Asian financial crisis started in 1997. The interest rate spiked from 4.75 percent to 6.50 percent between June 1999 and May 2000, which burst the Internet boom. In July 2006, the rate will rise from 1% to 5.25%, having increased from June 2004. The fifth phase, which spans from December 2015 to December 2018, introduces unlimited quantitative easing (QE) in response to the crisis and raises interest rates from 0% to 2.25%.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variable					
diff_liquidity buffer	220	0.021	0.084	-0.372	0.625
Independent variable					
diff_debt to income ratio	220	0.059	0.237	-0.293	1.900

diff_house price to income ratio	220	0.037	0.075	-0.295	0.346
Control variable					
change in real long-term interest rate	220	-0.1929	0.365	-1.201	3.45
Population ratio change	220	0.006	0.005	-0.018	0.03
diff_employment	220	0.001	0.040	-0.442	0.416
diff_aging	220	0.014	0.011	-0.033	0.060
FED	220	0.333	0.582	0	1

(Data source: The data are from OCED database)

3. EMPIRICAL STRATEGY

The original paper contains two different regression models. The first one is the reduced form of the main regression. The main regression function is:

$$Buffer_{i,t} = \beta Uncentainty_{i,t} + \mu Control_{it} + \varepsilon_{it}$$

The reduced form is

$$\Delta Buffer_{i,t} = \Delta\mu Control_{it} + \Delta\varepsilon_{it}$$

The dependent variable is the yearly change in the ratio of liquid family assets to disposable income, and the explanatory variables are the explanatory factors. The model is adjusted to guarantee stationarity and exclude national fixed effects—country-specific components that may explain the liquidity buffer's size—given a sufficiently long time series. These variables include differences in culture and institutions. Liquid assets include money and deposits, securities, stocks, and other types of equity. Long-term interest rates are based on ten-year government bonds.

Their empirical findings should help in the development of new theoretical models that better explain why households hold such a large portion of their wealth in liquid assets, as the authors claim to be the first to document the trend increase in household liquidity and its potential causes (La Cava and Wang, 2021). In the second section, the authors provide the institutional features of the Australian mortgage market and suggest a connection between uncertainty and the liquidity buffer, but they do not provide a theoretical model for the research (La Cava and Wang, 2021). However, both the overall reality and the regression results point to a relationship between the two. As a result, this study will follow the author's recommendation and apply the OLS methodology. In economic models, the endogeneity problem is typically a concern. If interest rates are generally lower during recessions and borrowers choose to enter the market to take advantage of these lower rates, endogeneity may have an impact on the regression results. The authors estimate the model control by subtracting to take this problem into account. This study takes the difference in the ratio and uses it to recalculate the regression results along with the inclusion of one additional instrument variable.

To test the second hypothesis, this study reanalyses the model by adding a new dummy variable. FED. Because reverse causality is improbable, the estimation method remains unaltered.

4. RESULTS

Table 2 displays the regression findings, while Figure 1 displays the data from the original publication. If all other variables remain same, an increase of 0.473% in the liquidity buffer results from a one-unit shift in the home price-to-income ratio. At the 1% significance level, the result is noteworthy. If all other variables remain same, an increase of 0.454% in the liquidity buffer results from a one-unit change in the debt-to-income ratio. At the 1% significance level, the result is noteworthy.

In the work of the original study, the regression results from the control variables are not mentioned. The result shows that a one-unit change in the employment ratio difference causes a 0.167 decline in the change in liquidity buffer, holding all other variables equal. When using the ratio of house price to income as the independent variable, the results are statistically significant at the 5% significance level. A one-unit change in the employment ratio difference contributes to the 0.574 increase in the liquidity buffer while all other variables remain same. When using the ratio of house price to income as the independent variable, the results are statistically significant at the 5% significance level. There is statistical insignificance for other variables.

Overall, the regression findings show that variations in mortgage debt and home values are correlated with

variations in liquidity buffers. These results also suggest that countries with aging populations have larger buffers, which makes sense given that older families hold a higher percentage of their wealth in liquid assets. The findings suggest that higher liquidity buffers are associated with lower interest rates, however the relationship is not very significant from an economic perspective.

Table 2: Reproduce Change in Liquidity Buffer OECD countries, 1989–2019

	(1)	(2)
	Model 1	Model 2
VARIABLES	diff_liq_dinc	diff_liq_dinc
diff_hprice_income	0.473***	
	(0.138)	
diff_dti		0.454***
		(0.116)
diff_inflation	-0.000167	-9.99e-05***
	(0.000665)	(2.49e-05)
diff_ltrate	-0.0280	-0.0119
	(0.0243)	(0.0159)
population_growth	-0.0126	0.152
	(0.589)	(0.391)
diff_employment	-0.167**	-0.122
	(0.0540)	(0.0722)
diff_aging	0.526	0.574**
	(0.293)	(0.266)
Constant	-0.00535	-0.00373
	(0.00938)	(0.00719)
Observations	193	329
R-squared	0.224	0.075
Year FE	Yes	Yes
Controls	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 1 original paper's result Liquidity Buffer OECD countries, 1995–2019

Table 3 presents the regression result using the FED dummy variable in order to address the second study issue.

Table 3: Reanalysis Change in Liquidity Buffer OECD countries, 1989–2019

	(1)	(2)
	m_3	m_4
VARIABLES	diff_liq_dinc	diff_liq_dinc
diff_hprice_income	0.432***	
	(0.131)	
diff_dti		0.396***
		(0.0973)
FED	0.0251***	0.0347***
	(0.00705)	(0.00768)
diff_inflation	-0.000409	-0.000137***
	(0.000717)	(3.81e-05)
diff_ltrate	-0.0197	-0.00558
	(0.0219)	(0.0104)
population_growth	0.0303	0.308
	(0.533)	(0.406)
diff_employment	-0.175**	-0.127*
	(0.0553)	(0.0669)
diff_aging	0.504	0.535**
	(0.279)	(0.251)
Constant	-0.00952	-0.0111
	(0.00912)	(0.00689)
Observations	193	329
R-squared	0.247	0.124
Year FE	Yes	Yes
Controls	Yes	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

A gain of 0.432% in the liquidity buffer results from a one-unit change in the home price-to-income ratio, holding all other variables unchanged. At the 1% significance level, the result is noteworthy. In the event of a FED interest

rate hike, the liquidity buffer rises by 0.0251. The result is likewise significant at the 1% significance level. The liquidity buffer increases by 0.396% for every unit change in the debt-to-income ratio, all other things being equal. At the 1% significance level, the result is noteworthy. Entering the FED interest rate rise window results in a 0.0347 increase in the liquidity buffer. The result is likewise significant at the 1% significance level.

5. DISCUSSION

Table 2 produces comparable outcomes. The longer period produced considerably lower coefficients for the two independent variables when compared to the baseline model. Furthermore, the significance level doesn't change. An hypothesis that might be put up is that uncertainty and anxiety are increased in the information era. The coefficients increase with the date of the data. Even yet, the little discrepancy implies that the results of the original research were convincing and reliable.

The reanalysis presents a revised narrative using the new data. The regression's findings show that as the FED raises interest rates, the liquidity buffer grows. The financial crisis and the year the Federal Reserve raised interest rates are both strongly correlated with the dummy variables. Even if the financial crisis wasn't entirely worldwide, it did have an impact on the more developed countries' liquidity issues.

The two tables indicate that debt and real estate have a crowding-out effect on asset liquidity, which is exacerbated with repeated increases in FED interest rates, which is in line with earlier findings. Investment in real estate "displaces" investment in other financial assets, according to Clark (2001). According to Cocco (2005), buying expensive residences makes a household's financial liquidity less available, which discourages certain young, low-income households from investing in the stock market. The detrimental impact on family engagement in the financial industry is greater than the positive impact of rising property values and, as a result, rising household wealth overall. By reproducing the findings of the original study over an extended period of time and offering new evidence, this work adds to the body of literature.

Risk is higher for families with unjustifiable wealth allocation ratios in the event of significant macroeconomic and financial market shocks. The most likely outcome will be a lack of liquid assets to meet emergency hedging requirements, which might have unpredictable consequences for the family. A proportion of household assets that is appropriate and efficient will immediately improve the lives of people and contribute to social stability.

An illogical home asset allocation ratio would, on the macro level, reduce the effectiveness of social resource allocation and impede the expansion of the real economy. A high percentage of property allocation also implies a high ratio of household debt, which might easily lead to systemic financial issues, as the household sector would mostly select bank mortgages for the purchase of the property. Thus, research on how debt or property prices affect a family's financial asset allocation structure is extremely important from a macro to a micro perspective.

6. CONCLUSION

It is often known that throughout the previous several decades, family wealth has significantly increased along with the value of both debt and assets. The original paper's study reveals a lesser-known trend that has emerged in almost all contemporary economies: the growth of household liquid assets relative to income over the same period of time. Liquidity buffers and life cycle variables, such as age and length of residence, are positively correlated, according to household surveys. The authors conduct an empirical study to investigate the relationship between households and the recent increase in household buffers, based on the facts as an inference. The results show a sharp decline in the percentage of households with low liquidity, which is consistent with the idea.

Using OECD data from 1989 to 2019, this study replicates the conclusions of the original paper about the dynamics of household liquidity. Subsequently, our research validates that household liquidity buffers to income and debt to income in OECD countries have been influenced by property price ratios. Including the extra variable implies that there is a greater liquidity cushion during FED-induced rate increases than there is otherwise. The result demonstrates that people choose to hang onto more liquid assets when faced with increasing uncertainty.

Over the previous few decades, there may have been a drop in the repayment risk associated with total mortgage debt, as seen by the significant decline in liquidity limits among mortgage debtor families. However, rising house debt may be detrimental to macroeconomic welfare to the degree that it has increased the risks of future income shocks and, consequently, forced families to reduce spending out of caution. It is also surprising, according to

OECD evidence, how unique they are by international standards, given the significance of mortgage offset and redraw accounts to the process of debt amortisation and the accumulation of liquidity buffers. These accounts greatly increase the liquidity of real estate and may help homeowners better manage their consumption in the event of unanticipated changes in wealth and income.

One limitation of this paper is its insufficient theoretical base. The results of this work will spur scholars to develop a more precise model of the relationship between uncertainty and liquidity buffer.

Examining the macroeconomic and financial stability implications of such mortgage accounts would be an intriguing area of future study on household liquidity. For example, these accounts could reduce the volatility of Australia's total consumption relative to other similar countries. Furthermore, developing countries could not do as well as more developed ones, like Australia.

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