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The Impact of Economic Pressure and Macroprudential Policies on Consumption Patterns between Household Groups*

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Abstract

In a pandemic situation, the role of financial inclusion and macroprudential policies are very important for mitigating household vulnerabilities. This study analyzes the role of financial inclusion on household consumption during the pandemic using Indonesian household data at the micro-level and analyzing differences in consumption during a pandemic and macroprudential policies loosening period. This study uses descriptive analysis and logistic regression. The study shows that households who receive formal financial services, especially access to household credit, reduce the chances of being vulnerable during a pandemic. Furthermore, increases in GDP, education, and social assistance also reduce households' chances of vulnerability.

Meanwhile, the decrease in the share of consumption of housing and household facilities to total expenditure occurred after implementing the Loan to Value (LTV) tightening. The increase in the share of housing and household facilities consumption also occurred after implementing the LTV loosening. This study recommends strengthening financial inclusion to mitigate the potential vulnerability of households during economic pressure. In addition, the LTV policy can be used as one of a countercyclical instrument.

Keywords: Consumption, Financial Inclusion, Household, Loan to Value, Pandemic

1. Introduction

The household (HH) is one of the dominant economic agents and is important in the Indonesian economy. The role of HH in shaping economic output is reflected in the share of HH consumption to total gross domestic product (GDP), which reached more than 54% from 2017 to 2021. The high share of HH consumption has implications for the relatively strong influence of HH consumption behaviour on the economy. HH is also an important factor

* The results and opinions expressed in this paper are the authors' own and do not necessarily represent those of the Central Bank of Indonesia.

in maintaining financial system stability. In addition, the role of HH is not only as a user of funds (debtors) but also as a provider of funds (creditors). As a result, the dynamics of HH financial conditions, such as HH vulnerabilities, will impact financial system stability.

One of the efforts to mitigate HH vulnerabilities is through the support of financial institution services. HH's access to financial services such as savings and credit provides HH with higher income and consumption smoothing opportunities. HH access to financial services on a wider scale indicates more inclusivity in financial services, which prevents households from being vulnerable. Financial inclusion also plays a role in encouraging economic growth, creating financial system stability, reducing poverty, and reducing disparities between individuals or between regions (Ministry of Finance Indonesia, 2021). In 2020, the share of Indonesian adults who have used formal financial services grew significantly to 81.4%. In a pandemic situation, the role of financial inclusion is very important to mitigate HH vulnerabilities. Therefore, in tackling the impact of the pandemic, it is necessary to strengthen access to financial services.

Some previous researches studied about financial inclusion's impact on household welfare. A study by Song, Li, Wu, & Yin (2020) shows that access to formal financial institutions has a positive impact on HH consumption in China. The study by Iddrisu & Danquah (2021) shows that financial inclusion has a positive impact on HH welfare, especially for low-income groups. This study also takes part in the discussion on the role of financial inclusion in increasing HH consumption during a pandemic. Further, this study is expanded by analyzing differences in housing consumption during macroprudential policies, especially the Loan to Value (LTV) loosening policy. The hypothesis of this research is financial inclusion can reduce HH vulnerability due to the economic crisis.

2. Method

This study uses secondary data from the National Socio-Economic Survey (Susenas), Bank Indonesia, and the Central Bureau of Statistics (BPS). This survey explained socio-economic characteristics in individual and HH levels. The data analysis tools are divided into two parts: descriptive and inferential. Descriptive analysis is used to answer research questions regarding how macroprudential policies, especially LTV, affect on consumption patterns among HH income groups. The data used in the descriptive analysis include consumption data from Susenas, credit, and policy interest rates in 2015-2020.

Meanwhile, inferential analysis is used to answer research questions regarding the resilience of HH to pandemic pressures if they have access to banking financial services. The data period used in the inferential analysis is March and September 2020. The data used in this study are as follows:

Table 1: Variables and hypothesis

Variable	Description	Source	Hypothesis
Inferential statistics analysis data			
HH expenditure	Dummy variable describes the difference in HH monthly expenditure (September 2020 minus March 2020) (0=stable/increase; 1=decrease).	Susenas	
Financial inclusion			
Credit	Credit ownership in the banking industry (0=respondent does not have credit in the banking industry, 1= has credit)	Susenas	Negative
Saving	Saving ownership (0= respondent does not have saving, 1= has saving)	Susenas	Negative
Credit+Saving	Savings and credit holdings at the same time; Dummy (0=respondent does not have credit and saving at the same time, 1=has credit and saving at the same time)	Susenas	Negative
Control variables			

Variable	Description	Source	Hypothesis
Macroeconomic Variables			
Gross Regional Domestic Product (GRDP) per capita	GRDP per capita; Rupiah/Total Population	BPS	Negative
Government transfer			
Social Assistance	Receiving social assistance from the regional or central government; Dummy (0=Get; 1=Not Get)	Susenas	Negative
Human capital			
Education	Length of education of the family head; Year	Susenas	Negative
HH characteristic			
Age	Age of family head; Year	Susenas	Negative
HH Head's Gender	Head of a family gender (0=Woman; 1=Man)	Susenas	Negative
Family Member	Number of family members; People	Susenas	Positive
Descriptive statistics analysis data			
Total Expenditure	Total monthly HH expenses; Rupiah	Susenas	
Food Expenditure	Total monthly HH food expenditure; Rupiah	Susenas	
Non Food Expenditure	Total monthly HH non-food expenditure; Rupiah	Susenas	
HH Credit Growth	Individual credit growth in the banking industry; Percent	Central Bank of Indonesia	
HH Housing Credit Growth	The growth of individual mortgage loans in banking; Percent	Central Bank of Indonesia	
BI Rate	Bank of Indonesia interest rate; Percent	Central Bank of Indonesia	

The approach used in the inferential analysis is logistic regression. Logistic regression is a regression model that can explain the relationship between response variables that are categorical dichotomous (nominal or ordinal scale consisting of two categories) or polychotomous (nominal or ordinal scale of more than two categories) with one or more predictor variables that are categorical or continuous or a combination of categorical and continuous.

The logit model to be estimated is as follows:

$HH \text{ expenditure}_i = f(\text{Financial Inclusion}_i, \text{HH Characteristics}_i, \text{Macroeconomic Indicator}_i)$

Where:

- Financial inclusion includes savings ownership and credit ownership.
- HH characteristics include age, number of family members, length of education, gender of the family head, and receipt of social assistance.
- The macroeconomic indicator used is GRDP per capita.

3. Results

3.1 Differences in consumption patterns before and during the pandemic Covid-19

HH consumption patterns are different between income groups. Figure 1 shows that HH with higher decile or high-income levels tends to have a lower share of food consumption and a higher share of non-food consumption. Meanwhile, the lower decile group tends to have a higher share of food consumption. The pattern is consistent both before the pandemic (2016-2019) and during the pandemic era (2020).

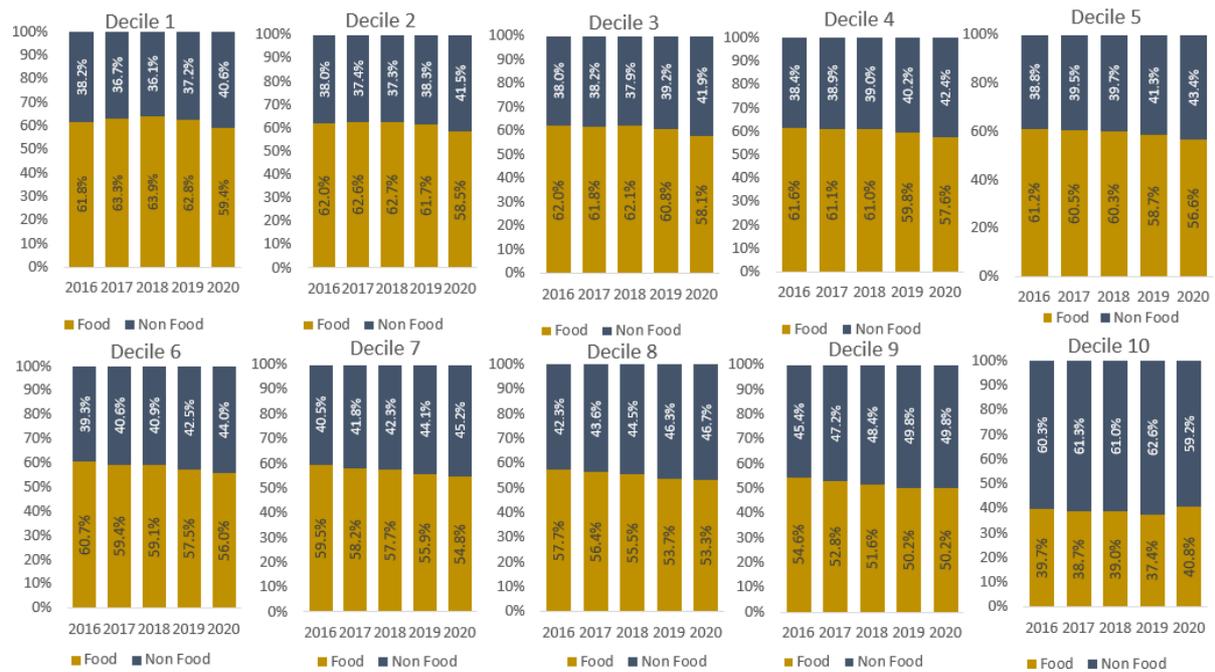


Figure 1: Share of credit and third-party fund based on HH expenditure decile group

Source: Susenas, author's calculation

Figure 1 shows that the average share of food expenditure from 2016-2020 for decile five is 59.78%, while the average share of non-food expenditure is 40.22%. Then, the average value of food expenditure share from 2016-2020 in decile 10 is 38.53%, while the average non-food expenditure is 61.47%. The data shows that most of the expenditures of low-income HH are used for food, while most of the expenditures of high-income HH are for non-food consumption.

Economic pressure can reduce consumption, reducing the HH's standard of living. Table 2 shows that HH spending grew in all deciles from 2016 to March 2020. However, during the COVID-19 pandemic in September 2020, HH consumption decreased compared to March 2020 (before the pandemic) almost in all deciles, particularly deciles 1 to 9. The HH expenditure of decile 1 was the hardest hit by the pandemic, with average decline of -3.19% (quarter to quarter), whereas those of decile 9 was the least hit with average decline of -1.1% (qtq). The data shown that the higher decile or income level, the more resilient to economic pressures.

Table 2: Average HH expenditure based on decile 2016-2020

Decile	Sept 2020	Mar 2020	2019	2018	2017	2016
1	Rp1,070,863	Rp1,106,148	Rp1,089,519	Rp1,005,167	Rp961,514	Rp878,961
2	Rp1,726,357	Rp1,769,612	Rp1,747,117	Rp1,621,268	Rp1,555,428	Rp1,418,404
3	Rp2,180,684	Rp2,234,088	Rp2,195,907	Rp2,057,834	Rp1,987,270	Rp1,815,010
4	Rp2,603,742	Rp2,674,270	Rp2,617,691	Rp2,473,556	Rp2,390,895	Rp2,189,773
5	Rp3,055,817	Rp3,139,456	Rp3,069,777	Rp2,915,224	Rp2,811,966	Rp2,592,477
6	Rp3,581,545	Rp3,665,153	Rp3,588,218	Rp3,427,206	Rp3,303,253	Rp3,053,797
7	Rp4,229,091	Rp4,311,857	Rp4,220,220	Rp4,038,106	Rp3,900,097	Rp3,612,149
8	Rp5,109,193	Rp5,202,222	Rp5,101,177	Rp4,883,181	Rp4,724,137	Rp4,375,727
9	Rp6,592,282	Rp6,666,353	Rp6,539,827	Rp6,277,733	Rp6,085,081	Rp5,681,723
10	Rp12,400,000	Rp12,367,661	Rp12,013,809	Rp11,579,168	Rp11,497,758	Rp10,951,644

Source: Susenas, author's calculation

The decrease in consumption during the COVID-19 pandemic in HH included a decrease in total food and non-food expenditure. Based on the results of Susenas data processing in September 2020 compared to March 2020,

the share of HH experiencing a decrease in total expenditure was higher than those with an increase in total expenditure. Based on table 3, most of HH's total expenditure is decreased, especially for food consumption.

Table 3: Share of Respondents that increase/decrease in their spending in a pandemic era based on the type of consumption

Type of consumption	Share of respondent	
	Increasing in spending	Decreasing in spending
Total	49.20%	50.80%
Food	46.00%	54.00%
Non-Food	52.90%	47.10%

Note: 67.253 Respondents

Source: Susenas, author's calculation

Figure 2 shows that in March 2020, there was still an increase in total HH expenditure for all HH deciles compared to March 2019. This indicates that the impact of pandemic was still mute based on Susenas data in March 2020. Total HH spending showed a significant decline in September 2020 data. However, the upper-middle class (deciles 7 – 10) still has a positive growth in total expenditure. In September 2020, there was a decrease in spending on food for deciles 1-9, while for decile 10, there was an increase in food expenditure. This was presumably due to restrictions on mobility during a pandemic; the high-income group cannot spend their money on non-food consumption such as travelling, entertainment, etc.

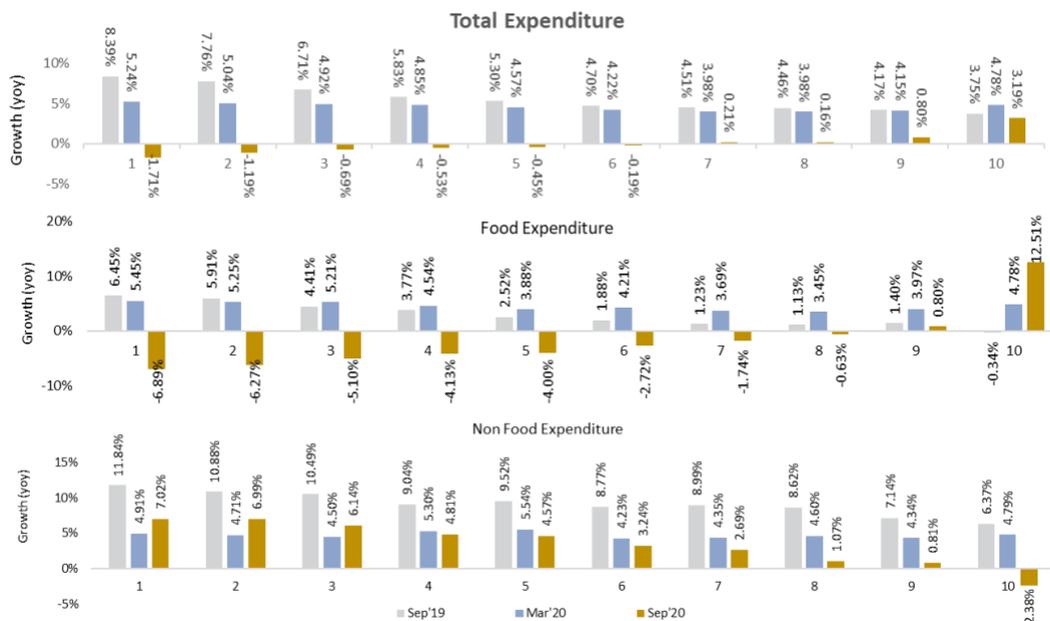


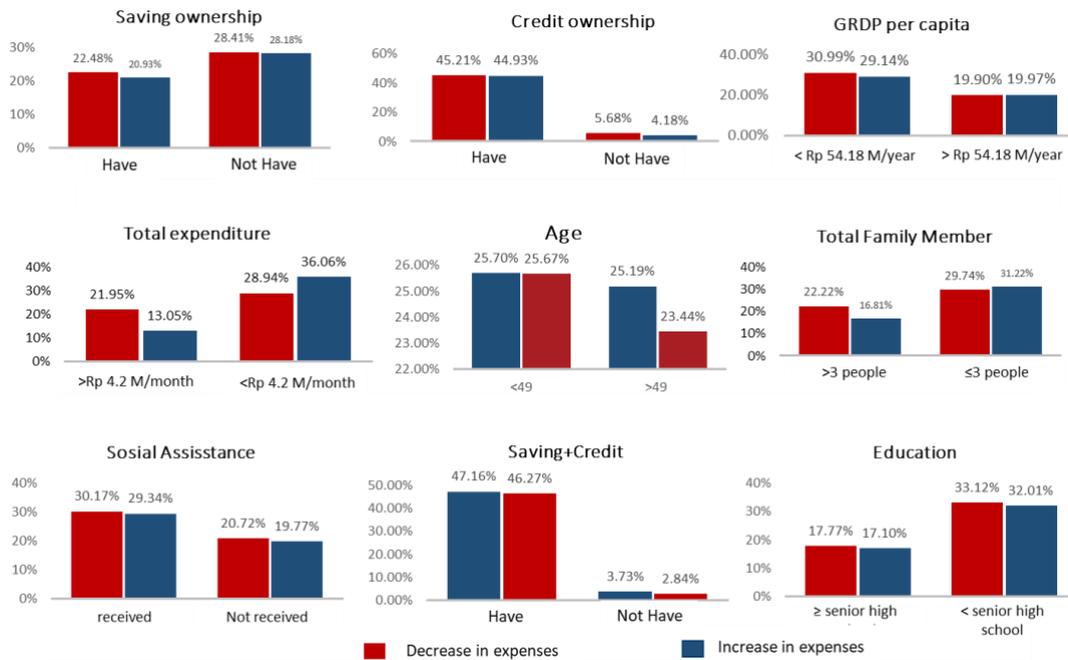
Figure 2: Growth of total expenditure, food expenditure, and non-food expenditure based on HH deciles

Source: Susenas, author's calculation

3.2 Impact of Financial Inclusion on HH Consumption during Pandemic Covid-19

The difference consumption patterns are influenced by several factors, including HH access to financial institutions (inclusiveness), HH characteristics, and macroeconomic conditions. Comparative analysis was carried out by using a cross-tabulation approach between the share of HH that has an increase or decrease in spending with several other indicators such as ownership of credit, saving, credit and saving, GRDP per capita, Social Assistance, Length of Education, Age of Family Head, Gender of Family Head, and Family members.

Figure 3: Cross-tabulation between dependent and independent variables



Source: Susenas, author's calculation

Figure 3 shows that during the pandemic, HH expenditures without savings tended to decrease compared to those with savings. Likewise, HH who does not have credit tends to have lower spending during the pandemic. Moreover, Figure 4 shows HH with low-income decile tend to have less credit and savings. The share of HH with credit increases for higher decile HH. The share of HH with savings also increased along with the increase in deciles. It means that low-income and vulnerable groups are typically characterized by unbankable people, while their consumption or expenditure during the pandemics tend to be lower than higher income.



Figure 4: Share of HH saving and credit ownership

Source: Susenas, author's calculation

Then, based on Figure 3 for HH in areas with GRDP per capita less than Rp. 54,180,000 per year, their spending tends to decrease during the pandemic. HH group with consumption before the pandemic was less than HH average consumption (Rp. 4,200.00 per month); their spending tends to decrease during the pandemic than HH with expenditures more than Rp. 4,200.00 per month. Then, HH with more than three family members and family heads with lower education tend to be more affected during the pandemic. Likewise, their consumption tends to decrease with HH with social assistance recipients during pandemics.

Table 4: Logit model result

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Y = Dummy (Decreasing. Increasing) Expenditure							
Financial inclusion							
Credit	0.740***				0.792***		0.739***
Saving		1.065***		1.047***			1.079***
Credit+Saving			1.288***			1.226***	0.884**
Control variables							
Macroeconomic Variable							
GRDP per capita				0.997***	0.997***	0.997***	0.997***
Government Transfer							
Social Assistance				0.939***	0.936***	0.905***	0.943***
Human Capital							
Education				0.989***	0.997***	0.996***	0.993**
HH Characteristic							
Age				1.006***	1.006***	1.007***	1.006***
Gender				0.952***	0.943***	0.902***	0.947**
Family Member				1.241***	1.238***	1.227***	1.237***
Classification and Model Fitting				57.4%***	57.4%***	57.30%***	57.5%***

The estimation results show that financial inclusion reduces the probability of HH vulnerability. The seventh model has the highest goodness of fit indicator compared to other models. The seventh model shows that HH with credit and having both credit & savings have a lower chance of being vulnerable during the pandemic (coefficient<1). HH that has a saving account only (including those with a balance of Rp0) has a higher chance of being vulnerable (coefficient>1).

Table 5: Correlation between HH with savings and HH expenses in pandemic

Decile	Share HH that has savings (%)	
	Decreasing Expenditure	Increasing Expenditure
1	72.5	27.5
2	68.5	31.5
3	66.3	33.7
4	62.7	37.3
5	59.8	40.2
6	58.4	41.6
7	55.0	45.0
8	49.9	50.1
9	43.8	56.2
10	29.9	70.1

Based on the logistic regression results, HH living in areas with a higher GRDP per capita, receiving social assistance, characteristic of head of the family is male and higher education have a lower chance of decreasing

spending during a pandemic. Then, HH with older family heads and more family members are more likely to experience a decrease in spending during a pandemic.

Table 6: Marginal effect logit model

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Y = Dummy (Decreasing, Increasing) Expenditure							
Financial inclusion							
Credit	-0.07479				-0.056132		-0.0730913
Saving		0.01572		0.0195675			0.0184767
Credit+Saving			0.06285			0.049195	-0.0295794
Control variables							
Macroeconomic Variable							
GRDP per capita				-0.000685	-0.000662	-0.00067	-0.0006787
Government Transfer							
Social Assistance				-0.015104	-0.016041	-0.01612	-0.0139454
Human Capital							
Education				-0.001278	-0.000809	-0.00086	-0.0015842
HH Characteristic							
Age				0.0015138	0.0014997	0.001494	0.0015265
Gender				-0.011808	-0.014159	-0.01346	-0.0131405
Family Member				0.0522155	0.0516872	0.052019	0.0515834

Based on the results of the marginal effect, the variables that have the most significant influence on total expenditure are credit ownership and credit & savings ownership, with absolute values of 0.07 and 0.03, respectively. It indicates that credit ownership and credit & savings ownership will affect the probability of changes in expenditure by 0.07 and 0.03, respectively. The results show that the impact of credit and savings is robust.

3.3 Impact of Macroprudential Policies (LTV) on HH Consumption during Pandemic.

Figure 5 shows that the loosening policy of LTV in mid-2015 has not been able to encourage an increase in mortgage loans. Therefore, BI loosened LTV again in 2016 to increase mortgage loan growth. In 2018, LTV was tightened to suppress mortgage loan growth, followed by a decline in mortgage loan growth. Meanwhile, the loosening of LTV at the end of 2019 and early 2021 to encourage credit was hampered by the Covid-19 pandemic.

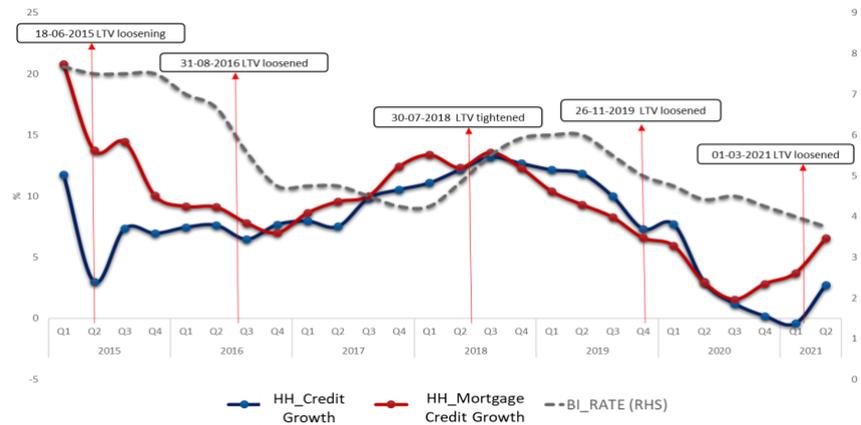
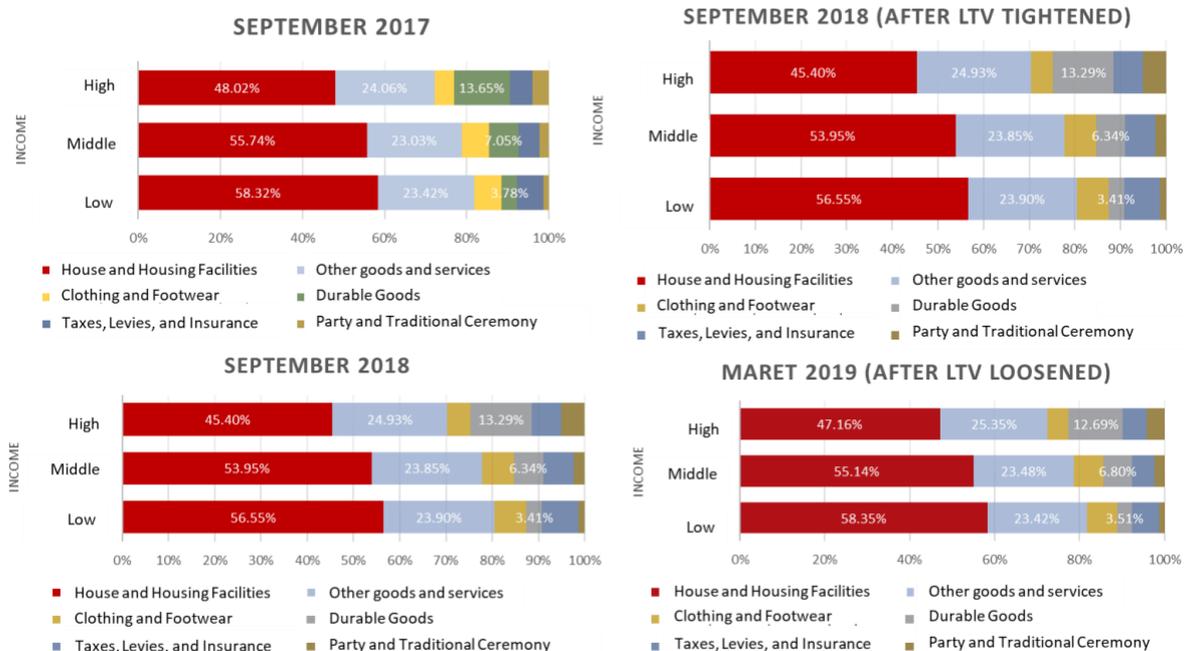


Figure 5: Series of HH credit growth and mortgage credit growth as a response to LTV policy
 Source: Bank of Indonesia, Author's calculation

Next, a paired t-test was conducted to determine whether there was a difference in mortgage credit between the tightening and loosening of LTV. Based on table 7, the results show that the tightening and loosening of LTV caused a significant difference in mortgage credit.

Period	P-Value HH_mortgage credit growth
2017-2018 (LTV Tightening)	0.076*
2018-2020 (LTV Loosening)	0.002***

Furthermore, Figure 6 also shows that the tightening of LTV policies in 2019 resulted in a decrease in HH spending on housing and facilities. Then, the loosening of the LTV policy in 2019 increased housing consumption and HH facilities, including housing installments.



*) Low income → decile 1-4, middle income → decile 5 – 8, high → Tinggi: decile 9 - 10

Figure 6: Changes in consumption patterns before and after LTV policy
 Source: Susenas, Author Calculation

Figure 6 shows that during the LTV policy tightening in 2018, there was a decrease in HH spending on housing and HH facilities in all income groups due to the tightening of mobility during the pandemic. The share of high decile HH spending on housing and HH facilities reached 48.02% in 2017 and then decreased to 45.4% in 2018. The decrease was also experienced by medium and low decile HH, each from 55.74% (2017) to 53.95% (2018) and from 58.32% (2017) to 56.55% (2018). Meanwhile, there is no significant changes in other non-food expenditures.

Table 8: Discriminant test for non-food consumption and house and housing facilities consumption

Period	P-Value	
	Non food consumption	House and housing facilities consumption
2017-2018 (LTV tightening)	0.005***	0.043**
2018-2020 (LTV loosening)	0.004***	0.000***

Table 8 shows that the tightening of LTV causes significant differences in non-food expenditure on Susenas respondents because the p-value is smaller than the 1% significance level. Meanwhile, in 2018, after LTV loosening, there was a significant difference in the non-food expenditure of Susenas respondents because the p-value was smaller than the 1% significance level.

Moreover, it was found that the tightening of LTV caused significant differences in spending on house and HH facilities from Susenas respondents because the p-value was smaller than the 5% significance level. In 2018 after the LTV loosening led to a significant difference in house and housing facilities expenditures of Susenas respondents because the p-value was smaller than the 1% significant level.

4. Discussion

Based on these results, it can be concluded that the pandemic caused a decrease in total HH spending. This study shows that HH that experienced a decline in total expenditure during the pandemic has a larger share of food consumption than HH with an increase in total consumption. During the pandemic, people with lower spending, especially whose income is categorized in first up to sixth deciles, are more affected compared to the remaining deciles. A decrease in HH spending may indicates an increase in the vulnerability of households. HH in deciles 7 up to 10 experienced increased spending during the pandemic.

From the estimation results of several logit models in Table 4, the seventh model is considered as the best model since it provides the best goodness of fit indicator compared to other models. The seventh model shows that HH with both credit and savings accounts are less likely to become more vulnerable during the pandemic. This result indicates that financial inclusion reduces opportunities for HH vulnerabilities to occur. The research conducted by Holmes (2010) shows similar result with ours, i.e. credit ownership tends to increase HH consumption.

Meanwhile, HH members who only have savings account, including those whose banking accounts nominal balance is zero, have a higher chance of being vulnerable. This behaviour relates to the non-cash government's social assistance strategy granted to decile groups of HH. Many unbankable HH in the lower decile group has to open a banking account in order to be able to obtain the social assistance grant. Moreover, they must receive the grant via and dispense all the money in their banking account to indicate they are eligible for the social assistance. This requirement makes most of them own banking accounts with zero final balance. Therefore, they are vulnerable to pandemic since they only have banking accounts without having sufficient savings to maintain their consumption during the pandemic.

All control variables used in this study are significant, and the impacts are appropriate to the hypothesis. HH who live in areas with higher GRDP per capita has a lower chance of decreasing their spending during the pandemic. Keynesian theory (1936) stated that countries with higher national income tend to have higher HH consumption. Moreover, HH that eligible for social assistance have a lower chance of decreasing spending during a pandemic.

This argument is also in line with the Keynesian theory. According to him, disposable incomes will increase if social assistance from the government exists.

Meanwhile, control variable related to human capital, which is proxied by the length/level of education of the family head, shows that the head of a family with higher education has a lower chance of decreasing spending during a pandemic compared to the head of a family with lower education. This finding is in line with the research conducted by Song, Li, Wu, & Yin (2020). They conclude that people with higher education levels tend to have better jobs and incomes than HH with lower education levels. With this argument, consumption tends to become higher.

HH characteristic variables, such as the age of the family head, the number of family members, and the gender of the family head, have significant effects on HH spending during a pandemic. The family with older family head tends to decrease in spending during the pandemic. This finding refers to Modigliani's life cycle theory (Modigliani & Ando, 1957). Older people tend to be less productive and reduce consumption than younger people. Meanwhile, HH with more family members are more likely to reduce spending during a pandemic. It indicates that families with more than three members have higher non-food expenditures, such as spending on vacations, parties, and so on. The pandemic limits mobility, accordingly the chance of decreasing spending in HH with family members more than three members will be higher than in HH with fewer family members. Finally, male family heads are less likely to experience a decline in spending during a pandemic. It is estimated that the chances of termination of employment for men are lower than for women (United Nations, 2020), so male family heads are more resilient to pandemics than female family heads.

The decrease in the share of house and housing facilities consumption to total expenditure occurred after implementing macroprudential policies in LTV tightening. The opposite happened after the implementation of the LTV loosening. The discriminant test on mortgage credits, non-food expenditures, housing expenditures, and HH facilities showed a significant difference between the periods of tightening and loosening of LTV. Mortgage credit growth and non-food expenditures, especially house and housing facilities, were lower during the LTV tightening period. Meanwhile, during the loosening period, the increase was not statistically significant.

The recommendations that can be drawn from the results of this study are: (1) encouraging financial inclusion as a strategy to mitigate HH vulnerabilities during economic pressure, such as during a pandemic, since financial services, like MSME loan and consumption loan, could increase household income and consumption; (2) LTV policy can be used as a countercyclical instrument because this policy will be accompanied by HH spending related to housing consumption, without reducing HH consumption in other categories.

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