The Dynamics of Consumer Spending in the COVID-19 Pandemic

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ABSTRACT This cross-sectional research was conducted with the goal of assessing the Marginal Propensity to Consume (MPC) among individuals residing at regional level, both prior to and in the midst of the COVID-19 pandemic. The study aimed to gain an understanding of the significance of the MPC values. These MPC values serve as a reflection of the spending tendencies of the West Sumatra population, providing valuable insights into consumer behavior during distinct time periods. For this study, data was gathered using online surveys that were distributed to chosen samples across different regions and urban areas in West Sumatra. The analysis relied on the Ordinary Least Squares Method. The findings of the research highlight a significant contrast in MPC values prior to and amid the COVID-19 pandemic. To be precise, the MPC value was higher before the pandemic compared to what was observed during the pandemic. This difference can be attributed to increased economic uncertainty during the pandemic, which led to a reduction in autonomous consumption. Additionally, this research goes beyond exploring spending habits by investigating the portion of income dedicated to consumption prior to and amidst the COVID-19 pandemic. The results reveal that the percentage of income directed towards consumption during the pandemic is less than what was observed before the pandemic. These outcomes are in harmony with economic theories and underscore the influence of uncertain circumstances on how consumers allocate their funds. Keywords: Consumption, Covid – 19, Disposable Income, Marginal Propensity to Consume.

I. INTRODUCTION
The introduction serves as the gateway to this academic exploration, offering a comprehensive view of the subject matter and the trajectory of this research endeavor [1]. It begins by contextualizing the research within the broader landscape of existing knowledge, elucidating the pivotal gaps and unexplored dimensions that prompt this investigation. Within this section, the foundational groundwork is laid, elucidating the significance and relevance of the study within its field, encapsulating both the current state of understanding and the inherent limitations that drive the quest for deeper comprehension [2].

This opening chapter artfully navigates through the terrain of background information, seamlessly transitioning into a focused exploration of the research question or hypothesis [3]. By crystallizing the core objectives and aims of the study, it articulates the purpose with clarity, outlining the specific inquiries that propel the subsequent analysis. Moreover, the introduction acts as a guiding beacon, illuminating the path ahead, delineating the boundaries and scope within which the research unfolds [4]. It is a thoughtful synthesis of context, purpose, and direction, inviting the reader to traverse the intellectual landscape the study navigates, fostering an understanding of its relevance and promise [5].

II. LITERATURE REVIEW
The COVID-19 outbreak has significantly impacted global consumer expenditure. Customers’ purchasing habits have drastically changed due to company closures, declining earnings, and heightened uncertainty. The McKinsey & Company study found that 40% of consumers in the United States had switched to cheaper brands during the COVID-19 pandemic. These changes have been especially noticeable in developing nations, where the informal economy is more prevalent, and safety nets are frequently weaker. Households in poor nations cut back on non-essential spending during the pandemic on basic necessities as a result of job losses or income decreases (World Bank, 2021). Pandemics and natural catastrophes are two other variables that affect how resilient small and medium-sized enterprises’ and households’ economies are. (Games, 2009).
The decline of consumption can be seen from many contexts in many countries. For example a study in China observed that daily offline consumption, including transactions made via UnionPay cards and QR scanners, experienced a substantial decline of 32%. Both the purchase of goods and services were notably affected, with declines of 33% and 34%, respectively. Further analysis within specific categories revealed that dining and entertainment, as well as travel, suffered the most significant drops, with declines of 64% and 59%, respectively. This decline in consumption was evident across cities, with the most significant reduction occurring in the epicenter, Wuhan, where it plummeted by 70%. (Haiqiang et all, 2020).

There is a common notion that the alterations in individuals' spending habits can be observed through the concept of the marginal propensity to consume. This value illustrates how fluctuations in people's income lead to changes in their consumption patterns. A study conducted in Thailand and Vietnam in the midst of the COVID-19 pandemic, discovered that the marginal propensity to consume is notably higher in response to positive income shocks than to negative one. (Bui, et all 2022). A study in Europe found that marginal propensities to consume decrease with income but are not as clearly related to wealth. (Khatarina el all). The marginal propensity to consume (MPC) among single families in South Korea during the COVID-19 pandemic stood at around 0.40, and it exhibited a decline as the transfer amount increased. From this explanation we can see that the Covid pandemic has an impact not only on developed countries but also on developing countries.

Our paper investigates the marginal propensity to consume in regional level. This study can contribute positively to the body of knowledge on the topic of shifts in consumer spending in regional level during the COVID-19 pandemic. A notable gap in existing research is the absence of studies that break down data according to income level, age groups, and various demographic factors. This research, however, concentrates on examining alterations in consumption patterns linked to fluctuations in income levels in West Sumatera Province, Indonesia by using the marginal propensity to consume theory. Ordinary Least Square method is employed to examine the marginal propensity to consume before and during the Covid-19.

In this investigation, we focus on West Sumatra, Indonesia, to capture the dynamics of consumer spending. The choice of West Sumatra is motivated by several factors. Firstly, residents of the region are Muslim residents and traditionally experience an upsurge in consumption during religious holidays and the fasting month, events that unfortunately coincided with the onset of the COVID-19 pandemic. This study’s primary objective is to analyze the shifts in consumption patterns and explore whether these changes are still influenced by variations in income, as outlined in the concept of the Marginal Propensity to Consume. The repercussions of the pandemic have been widespread across all regencies and cities in West Sumatra. Consequently, it is crucial to delve deeper into consumption behavior, particularly in areas most impacted by the pandemic, especially those with the highest population in the province. This exploration is essential for gaining insights into how consumption patterns adapt in response to income fluctuations caused by the effects of the COVID-19 pandemic.

The consumption theory posits a direct connection between the present level of consumption and income. This relationship between the two variables forms the foundation of the consumption function, which delineates how consumption levels correspond to different income levels. John Maynard Keynes emphasized that, within an economy, household consumer spending fluctuates in direct proportion to the disposable income available to those households. The primary and most critical theory is the Keynesian theory of absolute income hypothesis, particularly concerning the short-term consumption function. In this theory, the general level of consumption spending is contingent upon the income level, expressed as \( C = C_0 + bY + e \). The consumption level when there is no income, often referred to as autonomous consumption, is denoted as \( C_0 \). The parameter 'b' that determines the slope represents the marginal propensity to consume (MPC), indicating the extent to which consumption changes when income increases by one unit. The ‘e’ term introduces a random shock, such as the impact of unforeseen events like the COVID-19 pandemic in the present context. The relationship between consumption and income is known as Consumption Function. Marginal Propensity to Consume (MPC).

Some assumptions hold for the theory of Marginal Propensity to Consume are the first is marginal propensity to consume is the amount consumed from the income received is between zero and one. From this assumption, it is explained that if someone's income is getting higher, the level of consumption and savings will also be higher. Based on the theory explained by Keynes, it can be concluded that the level of consumption of a person is strongly
influenced by the level of income, not an interest rate. The second assumptions for this theory, MPC is a concept that gives an idea of how much consumption will increase if disposable income increases by one unit Keynes suspects that the marginal propensity to consume the amount consumed in each additional income is between zero and one. Keynes states that the ratio of consumption to income, called the propensity to consume, decreases when income rises. So, he hopes the rich save in a higher proportion of their income than the poor. The last assumptions for the theory of Keynes argues that income is an important determinant of consumption and the interest rate has no important role. In the short term, people can consume using past savings, so if this happens then the person has made negative savings (dissaving).

The study of Canbari et all (2019) found that households exhibiting elevated socio-economic status display a reduced inclination to consume marginally. It indicated that a heightened marginal propensity to consume following the financial crisis of 2007-2009. This research aligns with the proposition that lower-income groups face more pronounced credit constraints. Christelis et all (2020)’s study found that financial concerns stemming from the pandemic lead to a substantial decrease (increase) in the marginal propensity to consume when faced with a positive (negative) income shock. This pattern aligns with the predictions of precautionary saving and liquidity constraint models. These findings remain robust even when addressing endogeneity concerns using panel fixed effects models and partial identification methods that consider time-varying unobservable variables. Furthermore, the study offers informative identification regions for the average treatment effect of COVID-19-induced financial concerns, relying on weak assumptions.

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III. MATERIAL AND METHOD

1. DATA COLLECTION

The research focuses on the residents of West Sumatra, encompassing various regencies and cities. The sample for this study has been selected not only from areas with the highest number of positive COVID-19 cases but also from regions with the largest populations. These specific areas include Padang City, Padang Pariaman Regency, Bukittinggi City, Pesisir Selatan Regency, Agam Regency, and Tanah Datar Regency. The total sample size amounts to 155 individuals. According to Sugiyono (2010), the sample represents a portion of the overall population, reflecting its characteristics. The researchers employed a purposive sampling method to choose respondents or samples based on their suitability to address the research questions. The study employs a cross-sectional design.

The data collection method for this study involves primary data through the distribution of online questionnaires. Additionally, data related to the research topic will be collected from surveys conducted on relevant websites.

2. RESEARCH DESIGN

MPC theory is a concept that gives an idea of how much consumption will increase if disposable income increases by one unit. MPC is a number that shows a comparison between the magnitude of changes in consumption expenditure ($\Delta C$) with the magnitude of changes in the disposable income balance or national income ($\Delta Y$) received resulting in consumption expenditure.

$$\text{MPC} = \frac{\Delta C}{\Delta Yd}$$
MPC = Marginal Propensity to consume
\( \Delta C \) = change in consumption
\( \Delta Yd \) = change in disposable income
a = autonomous consumption

The level of consumption must be met, even though the level of income is zero, that is what is called autonomous consumption. The graph shows the relationship between consumption and income.

Data Analysis Design and Hypothesis Testing

1. Validity Test
   Validity test is used to measure the validity of the questionnaire in order to use it to explain something from the questionnaire. The level of validity can be measured by looking at the column and row tolerance scores. If there is asterisks (a sign) in column and rows it means the question is significant. (Keller, 2017)

2. Reliability Test
   The reliability test is aimed to determine whether the questionnaire is reliable or not. Questionnaires is said reliable if the respondents answer the questionnaire consistently overtime. In measuring reliability, there are two ways, namely Cronbach Alpha and Compassite reliability. The use of Cronbach alpha is used in testing the construct reliability which will be declared reliable if it produces a Cronbach Alpha value (a) > 0.60. (Ghozali, 2018)

3. Classic assumptions test
   Research with regression processing must be free of deviations from classical assumptions
   a. Normality Test
      This is done with the aim of ensuring that data is normally distributed, for both variables, dependent and independent variables. One way to do the normality test by using residual value. If the value of residual more than the value of significance (0.05) means that the data is distributed normally. Statistical analysis is another way that can be used in the normality test, namely the Kolmogorov-Smirnov (K-S) non-parametric statistical test. (Ghozali, 2018). dependent variable and the independent variable is linear or not. Linearity test is done by Ramsey Reset Test. If the statistical F value > 0.05 then the regression model meets the linearity assumption and if the statistical F value
   b. Linearity test
      It is used to determine whether the relationship between the <0.05 then the regression model does not meet the linearity assumption dependent variable and the independent variable is linear or not. Linearity test is done by Ramsey Reset Test. If the statistical F value > 0.05 then the regression model meets the linearity assumption.
   c. Autocorrelation Test
      Autocorrelation is a condition where the interruption variable at a certain period correlates with variables at another period. If autocorrelation occurs, the estimated parameters become biased and the variants are minimum so that it is inefficient. The test most often used to detect autocorrelation is the test developed by Durbin and Watson. (Gujarati & Econometrics, 2004)
   d. Heteroscedasticity
      The Heteroskedasticity Test is the variance of the data used to make the model inconstant. The aim is to detect whether in the regression model there is an unequal variance from the residuals of one observation to another. The study stated no heteroscedasticity when the Chi-square Probability value > 0.05. Heteroscedasticity test uses the Breseuch-Pagan-Godfrey test.
   e. Multicollinearity
      Multicollinearity is a situation where two or more variables can be very linearly related. The basis for decision making in multicollinearity tests is as follows:
      i. If the tolerance value > 0.10 and VIF value <10, it can be concluded that there is no multicollinearity between independent variables in the regression model
      ii. If the tolerance value <0.10 and VIF value >10, it can be concluded that multicollinearity exist.

4. Regression Test
   Regression analysis is the study of the relationship between dependent variable and one and more independent variables. The method used in analyzing the data in this research is Ordinary Least Squares (OLS). This method estimate the line regression by minimizing the total squares of error for every single observation on the line. (Gujarati & Econometrics, 2004)
   a. R2 (Coefficient of Determination)
The coefficient of determination test (R2) is a tool used to measure how far the model’s ability to explain the dependent variable. The value of the coefficient of determination is between zero or one. The small value of R2 indicates the ability of the independent variable in explaining the dependent variable is limited, but the value of R2 close to 1 indicates all the information needed is provided by the independent variable in predicting the dependent variable.

b. Simultaneous Significance Test (F Test)

F test is performed to determine whether all independent variables included in the model have simultaneous influence on the dependent variable. The results of the F test can be seen by looking at a significant probability number that is if the significance probability number is greater than 0.05, it means that the independent variables do not affect the dependent variable together. However, if the significance probability number is less than 0.05 then the independent variables influence the dependent variable together. (Ghozali, 2018)

c. Test of the Coefficient of Regression (t Test)

The t test explains how far the influence of one independent variable individually in explaining the variation of the dependent variable. If the significance value is smaller than the error rate (alpha) which is equal to 0.05, it can be said that the independent variable has a significant effect on the dependent variable. If the calculated significance value is greater than the error rate (alpha) which is 0.05, it can be said that the independent variable does not significantly influence the dependent variable.

IV. DATA ANALYSIS

The empirical results of the study consist of two conditions, explaining the marginal propensity to consume before the pandemic Covid 19 and during the pandemic Covid 19, based on regression statistics.

1. Before Pandemic Covid 19

The following table can tell the result of the data regression before pandemic Covid-19.

<table>
<thead>
<tr>
<th>Table 4.1 Coefficients*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
</tr>
<tr>
<td>Income Before Covid</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Consumption before Pandemics

b. Independent Variable: Income before Pandemic

The value of significance is lower than 0.05 Based on the table of regression, the Consumption Function will become:

\[ C = a + bY \]

\[ C = 503.218,41 + 0.643Y \]

Based on the questionnaire that was given to the respondents, there are a number of ways in which respondents might obtain the money for consumption. These include borrowing from conventional or Syariah banks, using their own savings, or receiving support from neighbours, friends, or close family members. The results show
that the autonomous consumption, denoted as 'a' has a value of Rp 503,218.41. This implies that if respondents
do not have any income, their consumption remains at Rp 503,218.41.

The coefficient 'b' holds a value of 0.643, revealing that 64.3% of their income is directed towards consumption,
while the remaining portion is allocated for other purposes. In simpler terms, this indicates that the Marginal
Propensity to Consume (MPC) before the pandemic stands at 0.643.

2. During the Pandemic Covid 19
The following tables can tell the result of the data regression during pandemic Covid

Table 4.2 Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>2.022E6</td>
<td>407908.63</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Income during Covid</td>
<td>.625</td>
<td>.102</td>
<td>.443</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Consumption during Pandemics
b. Independent Variable: Income during pandemics

Based on the table of regression, the Consumption Function will become:

$C = a + bY$

$C = 2.022,000 + 0.625Y$

The regression analysis reveals that the coefficient for autonomous consumption is Rp 2,022,000. This
indicates that respondents tend to engage in consumption, regardless of their income status. In other words,
respondents are willing to spend their money on consumption, even in the absence of their own income. They
may source this money from various means, such as friends, neighbors, banks, and other sources.

Additionally, the coefficient for the variable Y or Disposable Income is 0.625, signifying that 62.5% of their
income is allocated towards consumption. This percentage illustrates the portion of their income that
respondents direct toward their consumption habits.

Comparing the value of autonomous consumption (a) before and during the pandemic, we observe a
significant increase, from Rp 503,218.41 to Rp 2,022,000. The coefficients of the Y variable are 0.643 and 0.625,
respectively, when we compare them to values obtained before and during the pandemic. The Marginal
Propensity to Consume (MPC) value decreased both before and during the epidemic, according to these
numbers. Put more simply, this means that for increase, 1% of income, the consumption will rise by around
0.634.

The primary reason for this surge can be attributed to the phenomenon of panic buying, driven by the
prevailing uncertainty during the pandemic. This finding aligns with studies conducted in Britain (Dimitris et
Crossley et al. (2021) revealed that the recorded Marginal Propensity to Consume (MPC) stands at an average of approximately 11%. While slightly higher, it remains within the modest range for individuals residing in households with elevated current needs. A noteworthy portion of respondents indicates intentions to utilize a windfall to reduce debt or adjust transfer payments with family and friends.

V. CONCLUSION

The existence of a pandemic has been found to either directly or indirectly effect people's income in both theoretical and empirical studies. The middle class of society is represented in this study by the income levels of the local population. According to the MPC theory, this decline in income has the consequence of lowering public consumption.

Before the pandemic, autonomous consumption was Rp 503,218.41, while during the COVID-19 pandemic, it increased to Rp 2,022,000.00. This surge in consumption during the pandemic can be attributed to widespread panic buying in response to the crisis. As a result, there was a noticeable increase in people's consumption habits amidst the pandemic. Analyzing the Marginal Propensity to Consume (MPC) values before and during the pandemic reveals a decrease in the proportion of income spent by the population. The MPC value was 64.3% before the pandemic and decreased to 62.5% during the pandemic, indicating a slight reduction in the percentage of income that people allocated to consumption during this challenging period.

Preceding the pandemic, autonomous consumption stood at Rp 503,218.41, but amid the COVID-19 crisis, it surged to Rp 2,022,000.00. This increase in consumption during the pandemic can be attributed to the widespread phenomenon of panic buying prompted by the crisis. Consequently, there was a noticeable shift in people's consumption patterns amidst the pandemic. A closer examination of the Marginal Propensity to Consume (MPC) values before and during the pandemic highlights a decrease in the proportion of income spent by the population. The MPC value was 64.3% before the pandemic and reduced to 62.5% during the pandemic, signifying a slight decrease in the portion of income that individuals directed towards consumption during this challenging period.

These results align with the findings from a study conducted in six European Union countries, indicating that worries about the financial consequences of the COVID-19 pandemic result in a substantial decrease in the marginal propensity to consume. It's important to note that the data utilized in this study focused exclusively on household income and consumption levels, without taking into account any financial stimulus provided by either the central or regional governments. The results of this study are accordance with surveys conducted in Thailand and Vietnam amid the COVID-19 pandemic: the marginal propensity to consume is markedly higher for positive income shocks compared to negative ones, Bui et all (2022). This outcome contradicts expectations derived from the lifecycle permanent income model with borrowing constraints, as well as contradicts empirical evidence from developed nations.

Research conducted by Albuquerque and colleagues in 2022 revealed a crucial factor influencing variations in Marginal Propensity to Consume (MPC) among households. The study found that households hide their concerns about their financial stability, specifically their ability to meet basic needs, exhibit a 20% higher MPC compared to households without such concerns.

VI. References


