Property Industry and Subsidized Housing's Respond to Macroeconomic Factors in Indonesia

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Abstract. This research aims to determine the subsidized housing's amount of distribution which is affected by house price index with determinants of macroeconomic factors and sharia compliance in order to improve the performance and participation level of Islamic banking to distribute more subsidized houses. This study attempts to examine more about subsidized housing's problem using a quantitative approach to develop the study about it. 154 data were collected from 14 banks that delivered the subsidized housing and be analyzed by using the Partial Least Square – Structural Equation Model method with software Warp PLS 7.0. The results stated that inflation and GDP significantly affect the house price index negatively. While interest rate and sharia compliance have no significant impact on house price index. Moreover, the house price index has no significant impact on subsidized housing's amount of distribution. This study could widen the insight which is related to subsidized housing. It could develop the strategy for sharia banks to increase their performance and participation level in delivering the government's program, especially during the Covid-19 pandemic.

Keywords: Subsidized Housing, Macroeconomics, Sharia Compliance, House Price Index

1 Introduction

In the last ten years, the property price in Indonesia always showed increasing trend every single year consistently which is proved by the result of Residential Property Price Survey (Survey Harga Properti Residensial) 2010–2019 published by Central Bank of Indonesia (Bank Indonesia). This increasing property price is caused by the population growth that escalates every year so that the housing needs become inevitable [1]. Besides, according to Survey Harga Properti Residensial the increasing index is caused by labor wages and also the increasing price of a building material which is the internal factor in the property industry [2][3]. This property price growth also is affected by macroeconomic factors in a country [4][5][6][7]. In addition, the ineffective economic development especially in settling poverty which is always a problem for Indonesia makes the number of poor population increased [8]. Particularly, during the pandemic of Covid–19 many people lose their job so that their source of income disappears and the consumption level is going decrease. Based on the problems that have been expressed above, the government of Indonesia decided to make a product called Fasilitas Likuiditas Pembiayaan Perumahan which is easily defined as a subsidized housing provided by the government of Indonesia through the Ministry of Public Works and Public Housing in 2010. This product was made for carrying out the mandate of UUD 1945 article 28H paragraph 1 which explained that one of the contents of the article is people of Indonesia

deserve a decent place to live. Also, the house ownership backlog in 2010 was around 13,5 million [9].
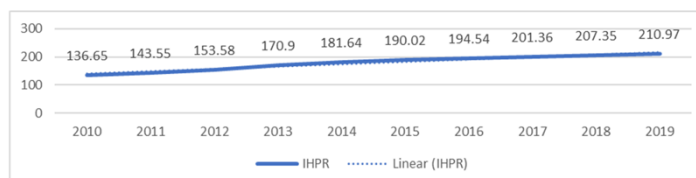
Fig 1. Property Price Trend in Indonesia 2010 - 2019
(Residential Property Price Survey by Bank Indonesia (collected from 2010 – 2019))

The backlog indicates the gap between the expectation of house ownership and its realization is huge. The government through the ministry urged the banking sector in Indonesia to become a bank that actively delivers the subsidized housing lending to people who deserve it based on some qualifications which have been stated by the ministry. Until 2019, there are 46 banks (13 Commercial Banks, and 33 Local Development Banks) that participate as a distributor of this lending product. The subsidized housing that has been delivered until 2020 by all the banks that actively distribute was 725.937 units.
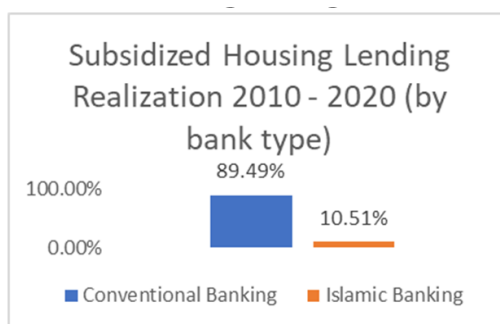
Fig 2. Subsidized Housing Lending Realization 2010 – 2020
(Survey Harga Properti Residensial (collected from 2010 – 2020))

Based on Figure 2, conventional banking has a lot more delivery levels than Islamic banking. Conventional banking has 89,49% of subsidized house units delivered which the total of subsidized housing until 2020 was 649.641 units that had been delivered. Otherwise, Islamic banking has 10.51% of subsidized house units delivered which the total of subsidized housing until 2020 was only 76.296 units delivered. Hitherto, conventional commercial banking is the largest bank that delivers this government's program rather than three sharia banking that is registered as a distributor of this program. It shows that the performance and participation level that sharia banking has is categorically low. Even though Islamic banking has to be an actual implementation of *rahmatan lil 'alaamiin* [10] so that to implement the procedure that had been constructed by the bank itself and built upon sharia value, Islamic banking not only enforces its function as a banking financial institution but also take part in social welfare. One thing to do to implement *rahmatan lil 'alaamiin* value is delivering the subsidized housing lending to the people who has low income. House prices, in general, is affected by macroeconomic factors such as income level, interest rate, and unemployment rate [2][7], gross domestic product, the number of population, and cumulatively housing

completions [11]. Islamic banking in practice has a much lower amount of lending than conventional commercial banking. Not only on delivering subsidized housing but sharia banking is also proven to have a lower performance level when compared to conventional banking. Islamic banking's lending is considered to have a higher price rather than the lending which is provided by conventional banking [12][13].

Previous researches that discussed this subject is relatively little done. In major, the discussion about subsidized housing is interpreted from policy evaluation interpretation only [14][9][15] and still, there is not any research that discusses the subsidized housing's amount of distribution particularly. Therefore, this research was conducted for analyzing variables that affect the subsidized housing's amount of distribution. If this doesn't get any further attention on it, not only the amount of distribution remains low, but also the values that existed on Islamic banking like prospering the people and as a *rahmatan lil 'alaamin* would be dimmed. In this hard time like Covid – 19 pandemic precisely, any businesses in various sectors that have been the income source of people is diminished [16][17] and even disappeared [18][19] which make people hardly to get a house.

2 Method

This research used secondary data which is obtained from Central Bureau of Statistics (BPS), Central Bank of Indonesia, Financial Service Authority (OJK), and ppdpp.id. The obtained data is collected started from 2010 – 2020 so the overall amount of data are 154 data. There are 14 banks which actively deliver the subsidized housing program.

Table 1. Variable Operational Definition

Variable	Definition	Data Source
Inflation	The event where the good and service prices was going escalated overall and tended continually [20] [21]	bi.go.id
Interest Rate	Price measuring instrument that exist on a resource used by consumer and must be fulfilled consumer's obligations to the fund provider [22]	bi.go.id
Gross Domestic Product	A market value of all final products that had been produced in the country at a certain period [21]	bps.go.id
Shariah Compliance	A significant and substantive factor that differentiate between conventional banking financial institutions and Islamic banking financial institutions which at sharia principles states prohibiting all transactions based on interest [23][24]	ppdpp.id
House Price Index	A house price indicator in Indonesia which is conducted by Central Bank of Indonesia through survey that held every quarter in a year [25]	bi.go.id (Survey Harga Properti Residensial
Subsidized Housing	The government program to raise the house ownership in Indonesia. The amount of distribution based on channeling bank and stated in units (Kementerian PUPR, 2019)	ppdpp.id

(Latumaerissa [20], Mankiw [21], Indriyani [22], Najib and Rini [23], Jaballah et al. [24], Anastasia and Hidayat [25], Kementerian PUPR [26])

All of the variables that used in this research has been defined on Table 1. There are two models that used in this research. Generally, those two models can be explained as below:

$$HPI = f(INF, INR, GDP, SC) \dots 1$$

$$Subsidized\ Housing's\ AoD = f(INF, SC, HPI) \dots 2$$

According to the previous general model that used in research, the developed formula is as follow:

$$Y_1 = \alpha + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + e \dots 3$$

$$Y_2 = \alpha + \beta_1 X1_{it} + \beta_4 X4_{it} + \beta_1 Y1_{it} + e \dots 4$$

The researched data in this research uses Partial Least Square – Structural Equation Model as an analyze tool. The advantage of applying this method are not required to have a large number of samples and also does not have to fulfill the normality principle [27]. And to execute the methods, the program that used is WarpPLS 7.0.

There are two research model evaluation to decide whether the research model is applicable and able to be continued to hypothesis test. These two evaluations model are outer model analysis and inner model analysis.

Outer model analysis is implemented to measure the validity and reliability level on the model which is tested. To measure the validity of a model, things to pay attention to is if the loading factor of a construct is more than 0.5 and t-statistic is more than t-table, the variable is categorized "invalid". Another measuring tool to determine a validity level is checking the Square Root of Average Variance Extracted (AVE) and could be stated "valid" if the value is more than 0,5. After that, to measure the reliability level, thing to do is to see the Cronbach's Alpha and Composite Reliability also. If these two have values more than 0,7, then the model could be said has a good reliability level [28].

Inner model analysis is applied to see the goodness of fit on a structural model consisting of structural path coefficients, and r-squared [29]. There are three parameters at this step. Those three are Average Variance Factor (AVIF), Average R-Squared (ARS), and Average Path Coefficient (APC). Average Variance Factor value must be lower than 0,5 in order to avoid the possibility of multicollinearity. The rest of two indicators also must be less than 0.05 so that can be categorized as significant [30].

3 Result and Discussion

3.1 The Result of Fit Model Analysis

The analysis of fit model is done by a WarpPLS 7.0. This analysis was conducted to observe if this data is supported by the data or vice versa. According to table 3, there are ten indicators that used to measure if the model is fit or not. The Average Path Coefficient (APC), Average R-Squared (ARS), and Average Adjusted R-Squared (AARS) denote a significant value due to p-value that those three indicators have. Then, the Average Block Variance Inflation Factor (AVIF) and Average Full Variance Inflation Factor (AFVIF) beside that these indicators have an acceptable value, these two indicators are in the ideal category.

Table 2. Model Fit Analysis

Indicator	Value	*P-values*	Criteria	Status
APC	0.181	0.005	P< 0.05	Fit
ARS	0.501	<0.001	P< 0.05	Fit
AARS	0.491	<0.001	P< 0.05	Fit
AVIF	2.405	-	*Acceptable < 5, ideally <= 3.3*	Fit
AFVIF	2.161	-	*Acceptable < 5, ideally <= 3.3*	Fit
GoF	0.708	-	*Medium >= 0.25, Large >= 0.36*	Fit
SPR	0.857	-	*Acceptable >= 0.7, ideally = 1*	Fit
RSCR	1	-	*Acceptable >= 0.9, ideally = 1*	Fit
SSR	0.857	-	*Acceptable >= 0.7*	Fit
NLBCDR	0.714	-	*Acceptable >= 0.7*	Fit

Tennehaus GoF value that this research has is 0,708 which is belong to category "large". This value indicates that the research model has a high possibility to be accepted because it has a high explanatory factor. Furthermore, Simpson's Paradox Ratio (SPR) that this model has is 0.857 which mean there is 85,7% path to be free from Simpson's Paradox. Statistical Suppression Ratio (SSR) in this model research is 0.857 which is categorized "fit". This value implies that 85.7% of this model is away from statistical suppression. And then, Non-Linear Bivariate Causality Direction Ratio (NLBCDR) value that this research has is 0,714 which mean that this is acceptable due to fulfilling criteria. This result stated that 71,4% of path example is related to the model.

Table 3. Outer Model Analysis Result

Variabel	Loading	P-Value	Status	Weight	VIF	Sig. Test
Inflation (X1)	0.65	<0.001	Valid	1	0.000	Sig
Interest Rate (X2)	0.65	<0.001	Valid	1	0.000	Sig
GDP (X3)	0.65	<0.001	Valid	1	0.000	Sig
Sharia Compliance (X4)	0.65	<0.001	Valid	1	0.000	Sig
House Price Index (Y1)	0.65	<0.001	Valid	1	0.000	Sig
Subsidized Housing's AoD (Y2)	0.65	<0.001	Valid	1	0.000	Sig

Table 3 reveals the analysis result of inflation, interest rate, gross domestic product, sharia compliance, house price index, and also subsidized housing's amount of distribution. The result shows the weight value of all variables are significant (<0,05). And also, the VIF value which are owned by all variables is less than 2,5. This indicates that there is no multicollinearity among all of variables.

Table 4. Inner Model Analysis Result

	X1	X2	X3	X4	Y1	Y2
R2					0.984	0.018

ADJ. R2					0.983	-0.001
COMPOSITE RELIAB.	1	1	1	1	1	1
CRONBACH ALPHA	1	1	1	1	1	1
AVG. var. extrac	1	1	1	1	1	1
Full collin VIF.	2.602	2.501	2.906	1.007	2.937	1.012
Q2					0.915	0.06

Table 4 shows the determination coefficient that this research has which is shown by r-squared. Variable Y1 (house price index) has a r-squared value of 0.984. this value implies that the house price index is explained by the independent variables such as inflation, interest rate, gross domestic product, and sharia compliance in the amount of 98,4%. These variables could define the house price index flow every single year. Furthermore, variable Y2 (subsidized housing's amount of distribution) has a r-squared value of 0.018. This implies that inflation, sharia compliance, and house price index has only 1,18% to explain the movement of subsidized housing 's amount of distribution. In assumption, the rest of it is explained by the variables that are not included or analyzed in this research and more relevant considering that the subsidized housing is non – commercial product and has a social orientation. E.g like variable as income level, total population, poverty line, and depends on the characteristic of house ownership, dependency ratio.

Table 5. Hypothesis Test Result

Independent Variable	Dependent Variable	*Path Coef.*	*P-Value*	Status
Inflation	HPI	-0.155	0.024	Significant
Interest Rate	HPI	-0.051	0.26	Insignificant
GDP	HPI	-0.856	<0.001	Significant
Sharia Compliance	HPI	0.000	0.5	Insignificant
Inflation	Subisidized Housing's AoD	0.052	0.259	Insignificant
Sharia Compliance	Subisidized Housing's AoD	-0.085	0.143	Insignificant
HPI	Subisidized Housing's AoD	0.07	0.19	Insignificant

Based on the hypothesis test result which shown on Table 5, there are two variables that influence the movement of house price index significantly. The first one is inflation. Inflation's p-value shows the value of 0.024 with the path coefficient of -0.155. It can be said that inflation has a significant impact on house price index negatively.

Gross domestic product's p-value shows the value of less than 0,001 with the path coefficient of -0,856. That is able to said that gross domestic product has a significant impact on house price index negatively same as inflation's influence on house price index. Interest rate's p-value shows the value of 0,26 with the path coefficient of -0.051. It could be assumed that the interest rate has an insignificant impact on house price index negatively. Sharia compliance's p-value shows the value of 0.5 with path coefficient of 0.000 which can be said that sharia compliance has an insignificant impact on house price index positively. Furthermore, there is one model that elucidate variables that affected another dependent variable which is the subsidized housing's amount of distribution. First, there is an inflation.

Inflation's p-value shows the value of 0,259 with path coefficient of 0,052 which can be said that inflation has an insignificant impact on subsidized housing positively. Sharia compliance's p-value shows the value of 0,143 with path coefficient of -0.085 which can be said that sharia compliance has an insignificant impact on subsidized housing's amount of distribution negatively. And the last one, house price index's p-value shows the value of 0,19 with path coefficient of 0,07. It could be explained that house price index has an insignificant influence on subsidized housing's amount of distribution positively.

Most of the findings on this research are not in line with the studies of Olowofeso [6] and Sunde [7] which previously stated that the inflation is affected house price index positively. However, this research's result has a similar result with Gupta and Kabundi [31] that stated that inflation has a negative effect on the house price movement. Considering that subsidized housing is a social orientation program provided by the government and non – commercial, the inflation has no effect on the amount of distribution. This phenomenon could be explained due to the subsidized housing's price is already set by the government.

The previous study that conducted by Mohan et al. [5] stated contrarily with this research that interest rate has significant impact on house price flow every year. But there is a research that has similar result conducted by Magdalena [32] that the interest rate has no effect on fluctuation of house price index.

The result of this research is in line with previous study with La Paz and White [33] which states that there are strong correlation between gross domestic product and the number of house availability. But also has contrast with the research that conducted by Li et al. [4] which states gross domestic product has a long term and positive effect on house price index.

Overall, the response and also the direction of sensitivity of property industry on monetary policy in Indonesia is different when compared to another country. This statement is supported by Gupta and Kabundi [31] that the property industry has a different response to the current monetary policy in every state and country.

Satria and Setiani [12] claim that the house ownership financing provided by Islamic Banking is way more expensive than the house ownership lending provided by conventional banking. At the end, the effect of sharia compliance is directly proportional on fluctuation of house prices in Indonesia. According to Figure 2, it reveals that Islamic banking has the lower level of distribution of subsidized housing than conventional banking in 10 years in a row. Especially, the participation level that Islamic banking has is poor so that the influence of Islamic banking has on the amount of distribution is negative.

The result of this research that related to effect of house price index on subsidized housing's amount of distribution has similarity with Castleberry and Greene's [34] research that arguments that housing's amount of distribution is not affected by house prices. They stated that the amount of distribution is affected by the strategic value of a location where the housing was located. This statement has a parity with Heyman's [35] research which states that the value of housing is influenced by the location of where the housing is.

Certainly, the discussions about subsidized housing and property industry in Indonesia need further research especially in terms of variable selection. Choosing the variable that has a closer and more relevant to the topic specifically discussing about subsidized housing is highly recommended. Such as income level, total population, poverty level, and depends on the characteristic of house ownership the future researcher can uses dependency ratio as their variables on their research. Besides, the respond and sensitivity of property industry to macroeconomic factors in Indonesia needs a further research also in a way more specific method.

4 Conclusion

The purpose of the subsidized housing was made by the government is to overcome and settle the house ownership problem in Indonesia. This research aims to analyze the impact of macroeconomic factors and sharia compliance on house price index along with the impact on subsidized housing's amount of distribution. The analysis result shows that inflation and gross domestic product have a significant on house price index in negative way and there are no other variables that has the same effect as those two. This thing indicates the monetary policy in Indonesia works different on property industry and has a lot of differences in responding to these policies when compared to other country. Other than that, as previously stated that the subsidized housing's amount of distribution is affected by any variables that related to the product which has social orientation and non – commercial thing such as gross domestic product per capita, total population, etc.

Therefore, apart from analyzing the economy situation, the Islamic bank that actively channeling the subsidized housing program should do some improvement on level of performance and participation to deliver the program. The improvement could be implemented by make more relation, communication, and coordination with the housing developer, raise the implementation level of business orientation to customers and the potential one also. Islamic banking should improve their flexibility on selecting a prospective customer of subsidized housing's financing by expanding their standard of economy sector especially that at least has less negative impact that which was caused by Covid–19 pandemic as well. These must be considered by Islamic bank in designing the improvement strategies to increase their performance and participation level to distribute the subsidized housing to people who deserves it. In thus, other Islamic bank that has not distributed this financing could adopt this in the future.

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