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## The Role of The Property Sector in Fiscal Policy Transmission: A Case Study of The Economic Stimulus Program

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**Abstract:** This study analyzes the role of the property sector as a channel for fiscal policy transmission through economic stimulus programs in Indonesia. The property sector has a significant multiplier effect on the national economy, contributing 15.3 percent to Gross Domestic Product in 2023. The research method uses a quantitative approach with secondary data analysis for the 2019-2024 period. The results show that tax incentives and easier home ownership loans can increase property transactions by 23.7 percent and absorb an additional 1.2 million workers. Fiscal policy transmission through the property sector has proven effective in stimulating real economic activity in related industries. These findings contribute to the public economics literature on the effectiveness of fiscal policy transmission channels in developing countries.

**Keyword:** fiscal policy, property sector, economic stimulus, policy transmission, multiplier effect

### INTRODUCTION

Fiscal policy is the government's primary instrument for managing economic stability and stimulating growth. The success of fiscal policy depends heavily on a transmission mechanism capable of effectively channeling policy impacts to various sectors of the real economy. The property sector is a crucial transmission channel given its broad interconnections with other industries and its ability to absorb a large workforce. Keynesian economic theory serves as the foundation for understanding the transmission mechanism of fiscal policy. Blanchard and Perotti (2002) developed an analytical framework showing that government spending and taxation policies can influence aggregate demand and economic output through various channels. Fiscal policy transmission operates through direct effects on aggregate demand, crowding-in or crowding-out effects on private investment, and effects on consumer expectations and confidence. The effectiveness of this transmission is highly dependent on the structure of the economy, macroeconomic conditions, and the design of the stimulus program implemented.

The Central Statistics Agency (BPS) noted that the construction and real estate sectors contributed approximately 15.3 percent to Gross Domestic Product in 2023, with average

annual growth of 5.8 percent from 2015 to 2023 (BPS, 2023). The value of residential property transactions is projected to reach IDR 387 trillion in 2023, up from IDR 312 trillion in 2019. The substantial economic value circulating in this sector indicates that policies targeting the property sector have the potential to significantly impact the overall economy, in line with Leung's (2004) findings, which show that the property sector acts as a link between the real and financial sectors. The multiplier effect of the property sector on the economy occurs through several channels. First, property development activity drives upstream industries such as cement, steel, and other building materials. Data shows that the building materials industry absorbs approximately 35 percent of total national cement production, which reached 78 million tons in 2023. Second, the property sector absorbs a large workforce, both skilled and unskilled. The construction sector employed 8.2 million people, or approximately 6.1 percent of the total national workforce, as of August 2023.

Third, property ownership drives the consumption of related goods and services, such as furniture, household appliances, and renovation services. Bank Indonesia estimates that each new residential property transaction generates derivative expenditures worth 25-30 percent of the property's value for furniture and home furnishings. The Indonesian government targeted the property sector for fiscal stimulus in 2020-2021 in response to the COVID-19 pandemic. The government-funded value-added tax incentive program for home purchases worth up to IDR 5 billion allocated a budget of IDR 17.9 trillion and successfully stimulated 326,175 property transactions between March 2021 and December 2021 (Ministry of Finance of the Republic of Indonesia, 2022). The economic literature has extensively discussed the role of the property sector in the transmission of economic policy. Blanchard and Perotti (2002) developed an analytical framework to identify the causal effects of fiscal policy on economic activity.

However, studies on fiscal policy transmission through the property sector are relatively limited in developing countries like Indonesia, as noted by Ilzetzki, Mendoza, and Vegh (2013), who found that fiscal multipliers in developing countries tend to differ from those in developed countries. Several international studies provide empirical evidence on the role of the property sector in fiscal policy transmission. Research in the United States shows that a tax credit program for first-time homebuyers increased home sales by 15–20 percent in 2008–2010, and it accelerated economic recovery following the global financial crisis (Mian and Sufi, 2012). Studies in developing countries have yielded mixed results depending on the economic structure and local property market conditions. In Indonesia, previous research has focused more on the impact of monetary policy on property prices or descriptive analysis of property industry developments. This gap in the literature creates a need for research that specifically analyzes the transmission mechanisms of fiscal policy through the property sector using relevant empirical data.

This study aims to analyze the role of the property sector in the transmission of fiscal policy in Indonesia through the economic stimulus program for the 2020-2023 period. The analysis identifies transmission channels, measures transmission effectiveness, and factors influencing transmission strength. The results are expected to provide input for policymakers in designing more effective fiscal stimulus programs.

## **METHOD**

This study uses a quantitative approach with an explanatory design to analyze the role of the property sector in fiscal policy transmission. The analysis period covers 2019 to 2024, with a focus on the implementation of the 2020-2023 economic stimulus program. Secondary data is sourced from Statistics Indonesia, Bank Indonesia, the Financial Services Authority (OJK), the Indonesian Real Estate Agency (Real Estate Indonesia), and the Ministry of Finance. The dependent variables include the volume of residential property transactions

measured in the number of units, the value of property transactions measured in rupiah, the property price index normalized to 2019, and employment in the construction sector measured in the number of people. Another dependent variable is the value added of the construction and real estate sectors, measured in constant rupiah. These dependent variables were selected based on the consideration that they can capture various dimensions of property sector performance relevant to fiscal policy transmission.

The main independent variable is the fiscal stimulus program, operationalized through a dummy variable for the program implementation period and a continuous variable for the amount of incentives received by households. Control variables include real Gross Domestic Product growth measured as an annual percentage change, the inflation rate measured using the Consumer Price Index, mortgage interest rates, a weighted average of bank lending rates, the rupiah exchange rate against the US dollar, and the unemployment rate measured as a percentage of the total labor force. Additional control variables include property market characteristics such as available property stock, apartment occupancy rates, and the average time to market for properties.

Data analysis employed several statistical and econometric methods to answer the research questions. The first stage was descriptive analysis to illustrate data trends and patterns over the study period. This analysis included calculating descriptive statistics such as the mean, median, standard deviation, and percentiles for all variables. Data visualization used time series graphs and bar charts to identify significant changes that occurred during the stimulus program implementation period. The second stage was an analysis of the stimulus program's impact on the property sector using the difference-in-differences method, which compares changes in property sector performance before and after the stimulus program's implementation.

The analysis used a difference-in-differences method to measure the impact of the stimulus program on the property sector, following the approach developed by Auerbach and Gorodnichenko (2012). The estimated econometric model is  $Y(it) = \alpha + \beta_1 \text{Stimulus}(t) + \beta_2 \text{X}(it) + \gamma(i) + \delta(t) + \varepsilon(it)$ , where  $Y(it)$  is the property sector performance variable for segment  $i$  at time  $t$ . The multiplier effect analysis uses a Vector Autoregression model to identify the dynamic relationship between property sector variables and macroeconomic variables, in line with the method used by Davis and Heathcote (2005) in analyzing the role of the housing sector in the business cycle. The multiplier effect calculation also uses the input-output table published by the Central Statistics Agency (2016). To ensure the validity of the analysis results, several statistical tests were performed. Stationarity tests using the Augmented Dickey-Fuller test and the Phillips-Perron test were performed for all time-series variables. If variables were non-stationary, a first-difference or detrending transformation was performed. Cointegration tests using the Johansen method were conducted to identify long-term relationships between variables. Granger causality tests were conducted to identify the direction of causal relationships between variables in the Vector Autoregression model. The validity of the difference-in-differences model was tested through a parallel trends assumption analysis, which verified that the treatment and control groups had parallel trends before the stimulus program was implemented.

This study has several methodological limitations that should be acknowledged. First, the use of aggregate data at the national and provincial levels may mask heterogeneity at more disaggregated levels, such as districts or cities. Second, causality identification in observational analysis always faces the problem of unobserved confounding variables, even when using difference-in-differences methods and control variables. Third, the relatively short analysis period, particularly for the post-stimulus period, may limit the ability to identify long-term impacts. These limitations are taken into account in interpreting the results and drawing conclusions.

## RESULT AND DISCUSSION

### Dynamics of the Indonesian Property Sector

The Indonesian property sector experienced significant dynamics during the 2019-2024 study period. National residential property transaction value decreased from IDR 312 trillion in 2019 to IDR 267 trillion in 2020 due to the COVID-19 pandemic. The implementation of the economic stimulus program starting in 2021 provided a boost to the recovery, with transaction value increasing to IDR 341 trillion in 2021 and reaching IDR 387 trillion in 2023. Transaction volume showed a similar pattern, declining from 587,000 units in 2019 to 498,000 units in 2020, then recovering to 614,000 units in 2021 and 672,000 units in 2023.

The property sector's financing is largely dominated by bank lending, with outstanding home ownership loans amounting to IDR 356 trillion, equivalent to approximately 4.8% of total bank loans as of the end of 2023. Disbursement of new home ownership loans during 2023 reached IDR 127 trillion, an increase of 14.3 percent compared to the previous year. The average mortgage interest rate was around 7.8 percent in 2023, down from 9.2 percent in 2020. The quality of credit in the property sector remained relatively stable, with a non-performing loan (NPL) ratio of 2.8 percent at the end of 2023, below the sector-wide average of 3.2 percent. This data indicates that the property sector is a relatively safe credit segment for banks, in line with the findings of Hakim and Anwar (2021) regarding the stability of housing credit in Indonesia.

According to Bank Indonesia (2024), the Residential Property Price Index rose from 100 in 2019 to 104.3 in 2021, and further to 112.8 in 2023, indicating a steady upward trend in residential property prices. This price increase was lower than the cumulative inflation rate of 15.6 percent during the same period. The geographical distribution of property transactions shows a high concentration in Java, particularly in Greater Jakarta (Jabodetabek), which accounted for 42% of the total national property transaction value in 2023, according to the Real Estate Indonesia (2024) report.

Table 1. Development of Indonesian Property Transactions 2019-2023

Year	Transaction Value (Trillion)	(Rp Volume Unit)	(Thousand Value Index)
2019	312	587	100,0
2020	267	498	101,2
2021	341	614	104,3
2023	387	672	112,8

Source: Central Statistics Agency and Bank Indonesia, processed

### Impact of the Stimulus Program on Property Transactions

Analysis of stimulus impact in the program using the difference-in-differences method showed statistically significant results. The government-funded value-added tax incentive program increased property transaction volume by 23.7 percent, with a significance level of 1 percent. The  $\beta_1$  coefficient in the model was 0.237 with a standard error of 0.042. This impact varied across price segments, with homes priced under Rp 2 billion experiencing the largest increase in transactions, reaching 31.4 percent, while homes priced between Rp 2 and 3.5 billion increased by 19.8 percent, and homes priced above Rp 3.5 billion increased by only 12.3 percent.

The second stimulus program involved a policy to reduce down payments on home ownership loans, reducing them to 0 percent for homes priced up to Rp 2 billion. This policy was implemented in collaboration with state-owned banks and national private banks from September 2021 to December 2023. Data shows that 0 percent down payment home ownership loans reached 412,000 accounts with a total value of Rp 278 trillion during the

program period. The average credit value per account was IDR 675 million, indicating that the program was primarily used for home purchases in the lower and lower-middle segments. The characteristics of the stimulus program beneficiaries indicate that the majority were first-time homebuyers from the formal sector. Data from the Indonesian Ministry of Finance (2022) shows that 72 percent of recipients of the government-funded value-added tax incentive were employees with monthly incomes of IDR 5-15 million, 18 percent were entrepreneurs or professionals, and 10 percent were other workers. The age distribution of beneficiaries shows a predominance of the 30-40 age group, accounting for 54 percent, followed by the 25-30 age group, for 28 percent. The geographic distribution of beneficiaries reflects the concentration of the property market, with Greater Jakarta (Jabodetabek) accounting for 39 percent, West Java 17 percent, and East Java 11 percent of the total recipients.

Analysis of the heterogeneity of impact by region reveals significant differences. Large urban areas, such as Greater Jakarta (Jabodetabek), experienced a 26.8 percent increase in transactions, higher than mid-sized urban areas, which saw a 21.3 percent increase. The interaction coefficient between the stimulus program and the large urban area dummy is 0.083, with a p-value of 0.015. The program's impact on property prices is relatively limited, with an average increase of 2.8 percent, indicating that the property supply response is quite elastic, in line with Poterba's (1992) findings, which show that the impact of tax policy on house prices varies depending on the elasticity of housing supply in each region.

Dynamic analysis using a Vector Autoregression model produces an impulse response function that shows the temporal pattern of the program's impact. A positive shock to the stimulus program significantly increased property transactions in the first and second quarters, with the peak impact occurring in the second quarter, at 28.5 percent above the baseline. The impact begins to subside in the third and fourth quarters, with the effect remaining positive but decreasing to around 12-15 percent. In the fifth quarter and beyond, the impact approaches zero, indicating that the stimulus effect is temporary, lasting around four to five quarters. This pattern is consistent with the theory that fiscal stimulus has intertemporal effects, as explained by Blanchard and Perotti (2002), where some of the increase in transactions is an acceleration of future transactions. This finding aligns with research by Mian and Sufi (2012), which identified significant intertemporal effects on the homebuyer tax credit program in the United States.

### **Property Sector Multiplier Effect**

The calculation of the property sector multiplier effect using the 2016 input-output table showed significant results. The construction sector output multiplier was calculated at 2.18, meaning that every Rp 1 billion increase in final demand in the construction sector generates a total economic output of Rp 2.18 billion through direct, indirect, and induced effects. This value is higher than the average output multiplier for all economic sectors, which is 1.86. The multiplier components consist of a direct effect of 1.00, an indirect effect of 0.73 through inter-industry linkages, and an induced effect of 0.45 through increased household income.

The construction sector's value-added multiplier was calculated at 1.64, indicating its contribution to Gross Domestic Product. The household income multiplier was 0.78, meaning that every Rp 1 billion increase in construction demand results in an additional Rp 780 million in household income. The construction sector's employment multiplier was calculated at 14.2 people per billion rupiah of output, indicating that this sector is relatively labor-intensive. Multiplier effect decomposition showed that the sectors with the largest impacts were the cement industry with a coefficient of 0.082, the steel industry with a coefficient of 0.061, trade services with a coefficient of 0.095, transportation services with a coefficient of 0.047, and financial services with a coefficient of 0.034.



A variance decomposition analysis of the Vector Autoregression model showed that shocks to the property sector explained approximately 18 percent of the variability in Gross Domestic Product over a two-year horizon. Conversely, shocks to Gross Domestic Product explained approximately 32 percent of the variability in the property sector, indicating a strong bidirectional relationship between the property sector and the macroeconomy. The shock to bank credit explains 24 percent of the variability in the property sector, underscoring the crucial role of financing in the sector's development. These results provide empirical evidence that the property sector is an effective transmission channel for fiscal policy in Indonesia, consistent with the findings of Davis and Heathcote (2005) regarding the housing sector's role in business cycle fluctuations.

The dynamic fiscal multiplier calculation using the Vector Autoregression model yields consistent estimates. The fiscal multiplier in the first quarter after program implementation is estimated at 1.15, increasing to 1.82 in the second quarter, and peaking at 2.03 in the third quarter. The average cumulative fiscal multiplier for the first two years is 1.68, indicating that each rupiah of fiscal stimulus channeled through the property sector generates an additional IDR 1.68 in Gross Domestic Product. This value is relatively high compared to the average fiscal multiplier for all economic stimulus programs, which ranges from 1.2 to 1.5, consistent with Ramey's (2011) findings that fiscal multipliers tend to be larger during recessions. This result is also consistent with the research of Ilzetzki, Mendoza, and Vegh (2013), which found that fiscal multipliers in developing countries range from 0.3 to 0.8 for general programs, but can be higher for programs targeting sectors with broad linkages such as property.

Table 2. Property Sector Multiplier Effect

Multiplier Types	Value	Units
Output Multiplier	2,18	Rp/Rp
Value Added Multiplier	1,64	Rp/Rp
Income Multiplier	0,78	Rp/Rp
Labor Multiplier	14,2	Person/Billion
Dynamic Fiscal Multiplier	1,68	Rp/Rp

Source: BPS 2016 Input-Output Table and VAR Model, processed

### Impact on Employment and Related Sectors

The fiscal stimulus program through the property sector has had a significant impact on employment. Analysis shows that the stimulus program created or retained approximately 1.2 million direct and indirect jobs during the 2021-2023 period. Of this total, approximately 600,000 were direct jobs in the construction sector, while another 600,000 were indirect jobs in related sectors such as the building materials industry, transportation services, and trade. The majority of the jobs created were for low- to medium-skilled workers, with 55 percent being unskilled, 30 percent semi-skilled, and 15 percent skilled.

The impact on wage levels in the construction sector shows a moderate upward trend. Data from the Central Statistics Agency (2023) shows that the average nominal wage for construction workers increased from IDR 3.2 million per month in 2020 to IDR 3.8 million per month in 2023, representing an average annual growth of 6.2 percent. Real wage growth, adjusted for inflation, was 2.8 percent per year, indicating an increase in the purchasing power of construction workers. This moderate wage increase indicates that the supply of construction labor is sufficiently elastic that the increase in demand due to the stimulus did not lead to an excessive wage spike. Analysis of the impact on the unemployment rate indicates a positive contribution from the stimulus program, with the national open unemployment rate decreasing from 7.07 percent in August 2020 to 5.32 percent in August 2023.

Related industries also experienced a positive impact from the property stimulus program. National cement production increased from 65.2 million tons in 2020 to 78.1 million tons in 2023. Steel consumption for construction increased from 8.3 million tons in 2020 to 10.4 million tons in 2023. Domestic furniture sales increased from IDR 42 trillion in 2020 to IDR 58 trillion in 2023. This increase in activity reflects the property sector's extensive linkages with various other industries, in line with Leung's (2004) findings regarding the property sector's role as a link between the real and financial sectors. These findings are also consistent with research by Winarno and Darmawan (2019), which showed that the property sector has strong links with various economic sectors in Indonesia, and research by Hakim and Anwar (2021), which identified a dynamic relationship between bank credit and property sector development.

The fiscal impact analysis indicates that the program is relatively efficient, with net fiscal costs accounting for only 24 percent of gross fiscal costs. The total direct fiscal cost of the value-added tax incentive program borne by the government during the 2021-2022 period was IDR 28.2 trillion. However, this program also generated significant additional tax revenue from various sources. Increased property transactions generated additional income tax revenue from property sellers and developers, estimated at IDR 8.4 trillion. Increased construction activity generated additional corporate income tax from construction companies of IDR 3.2 trillion.

Indirect tax revenue also increased due to the economic multiplier effect of the stimulus program. Increased activity in the building materials industry, trade services, and other related sectors generated additional value-added tax, estimated at IDR 5.8 trillion, in addition to that borne by the government. Increased household income and consumption generated an additional personal income tax of IDR 4.1 trillion. The total additional tax revenue generated by the stimulus program is estimated at IDR 21.5 trillion, resulting in the program's net fiscal cost of IDR 6.7 trillion, or approximately 24 percent of the gross fiscal cost. The cost per job created is around Rp 5.6 million, more efficient than labor-intensive infrastructure programs, which range from Rp 8-12 million per job.

## CONCLUSION

This study analyzes the role of the property sector in the transmission of fiscal policy through economic stimulus programs in Indonesia for the 2020-2023 period. The analysis shows that the fiscal stimulus program targeting the property sector through government-funded value-added tax incentives and relaxation of down payments for home ownership loans proved effective in increasing property transactions by 23.7 percent. The impact varied across market segments, with homes priced under IDR 2 billion showing the strongest response, reaching 31.4 percent.

Fiscal policy transmission through the property sector generated a significant multiplier effect on the economy. The fiscal multiplier for the property stimulus program ranged from 1.68 to 2.18, higher than the average fiscal multiplier for other stimulus programs, consistent with the findings of Ramey (2011) and Auerbach and Gorodnichenko (2012) regarding the variation of fiscal multipliers based on economic conditions. The stimulus program contributed significantly to employment by creating or retaining approximately 1.2 million direct and indirect jobs. The fiscal impact analysis indicates that the program was relatively efficient, with net fiscal costs accounting for only 24 percent of gross fiscal costs, with a cost per job of IDR 5.6 million.

The heterogeneity of the stimulus program's impact across geographic regions and market segments indicates that local conditions influence policy effectiveness. Large urban areas with high income levels and good infrastructure demonstrated a stronger response to the stimulus program. The lower-middle housing market segment, priced below IDR 2 billion,

demonstrated the most elastic response to fiscal incentives. These findings indicate that targeting programs based on regional and market segment characteristics can improve the efficiency of fiscal budget allocation, in line with the principles of effective and efficient state financial management.

The research findings contribute to the public economics literature on fiscal policy transmission in developing countries, complementing the research of Ilzetzki, Mendoza, and Vegh (2013) and Utami and Prasetyo (2022) on the effectiveness of fiscal stimulus in Indonesia. The property sector, with its labor-intensive characteristics and extensive linkages with other sectors, has proven to be an effective transmission channel for fiscal policy. From a policy perspective, the government can consider using fiscal incentives through the property sector as an economic stabilization instrument. Program design needs to consider the heterogeneity of responses across segments and regions to increase efficiency and equity in benefit distribution. Coordination between fiscal, monetary, and banking regulatory policies is necessary to maximize the program's impact.

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