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Agricultural Land Conversion and its Impact on Farmers' Income and Food Availability

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Abstract

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The conversion of rice fields impacts both food availability and farmer income. The increase in population and infrastructure development drives agricultural land conversion. The research aimed to analyze the driving factors and barriers to land conversion and assess its impact on farmer welfare and food self-sufficiency. The study was conducted in Subak Gadon, Tabanan Regency, located in the Tanah Lot tourism area. Factor analysis was used to identify structural dimensions, and descriptive analysis was employed to analyze farmer welfare. The research found that the main driving factors for land conversion are both external and internal to the farmers. External driving factors include better-paying alternative jobs, fluctuations in agricultural product prices, and difficulty obtaining agricultural labor. Internally, driving factors include disrupted water supply, high risks in paddy farming, and economic pressure within farmer families. In terms of income, agricultural land conversion led to an average increase in farmer income of IDR 240,650 per hectare per month. Regarding food availability, land conversion did not affect farmer food self-sufficiency but impacted regional food availability. Suggestions for controlling land conversion include strengthening the presence of *subak*, providing production facility subsidies, and providing land tax exemptions.

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INTRODUCTION

Bali, renowned for its magnificent natural landscapes and rich cultural heritage, is currently grappling with the urgent issue of relentless land usage conversion, resulting in the conversion of productive rice fields into non-agricultural purposes. In a study conducted by Mulyani et al. (2016), it was found that the rate of conversion of rice fields in nine rice-producing centers in South Kalimantan, South Sulawesi, East Java, West Java, Gorontalo, West Nusa Tenggara, South Sumatra, North Sumatra, and Bali was projected to be 96,512 hectares between 2000 and 2015. The rice field conversion rate is a source of concern, as it is anticipated that by 2045, just 5.1 million hectares of paddy fields will remain out of the existing 8.1 million hectares.

Rice fields serve as an essential place for producing many crops, including food and non-food crops. Additionally, they fulfill multiple functions that may be evaluated from socio-cultural, environmental, and economic perspectives (Sudrajat, 2015). The conversion of rice fields has implications beyond just farmers and landowners; it also has greater implications for food security. According to the Central Bureau of Statistics or Badan Pusat Statistik (2019), Indonesia had a significant and fluctuating increase in rice imports from 2014 to 2018. In 2018, the biggest amount of rice imports reached 2,253,824.5 tons. These data suggest a growing risk to the autonomy of the national food supply. Dzikrillah et al. (2017) found that the diminishing size and quality of land resources, combined with conflicts of interest, pose a significant challenge to food availability. One of the main causes of this problem is the permanent conversion of agricultural land into non-agricultural land.

The association between population increase and tourism growth, which serves as the foundation of Bali Province's economy, is undeniably responsible for the land use shift in the region (Yulandari et al., 2021). According to data provided by the Bali Provincial Agriculture and Food Security Office (Indonesian: Dinas Pertanian dan Ketahanan Pangan), the size of rice fields in Bali Province is diminishing annually. From 2013 to 2017, a total of 2,539 hectares of land underwent conversion, compared to a larger area of 81,165 hectares in 2013 (Dinas Pertanian Tanaman Pangan Provinsi Bali, 2019). The most significant conversion took place in Tabanan Regency, including 1,055 hectares (4.93% of the total area). Buleleng Regency had the second-largest conversion, with 569 hectares (5.22% of the total area), while the lowest conversion occurred in Karangasem Regency, covering 35 hectares (0.49% of

the total area). The rice fields that saw significant conversion were situated in suburban areas and zones designated for tourism development.

Many factors play an important role in the conversion of agricultural land, especially rice fields. Several primary factors contributing to this phenomenon include increased economic demands, the expansion of economic hubs, soaring land prices, the growth of settlements, and the development of transportation networks (Irawan, 2005). Furthermore, a significant contributing factor to the phenomenon of conversion is the waning enthusiasm of younger generations to pursue a career in farming (Santoso et al., 2017; Wati et al., 2020). The factors encompass the agricultural sector's inability to enhance living standards, the fluctuation of agricultural product prices, escalating production expenses, restricted technology accessibility, and the substantial risks and uncertainties linked to agriculture due to its strong reliance on seasonal variations (Pakpahan, 2012; Wirama, 2013; Linda et al., 2018).

When the agricultural industry fails to ensure improved living conditions and stability in production and prices and faces rising input costs, people engaged in farming will gradually abandon the sector. The abandonment of the agricultural sector is not solely caused by labor shifts but also by the transformation of agricultural land into residential or settlement areas, or its transfer to third parties, as agriculture becomes economically unsustainable (Lestari, 2005). Restricting the transformation of rice fields is crucial for Bali Province to uphold the long-term viability of the food supply and the sustainability of Bali's tourism industry. The rice fields in Bali serve as valuable natural resources and are considered assets for the tourism industry. The *subak* system, which is responsible for managing these fields, must be preserved to ensure a harmonious development that takes into account economic, environmental, and socio-cultural factors. According to Djelantik et al. (2023), incorporating laws about land use change in the *subak's awig-awig* (regulations) can help preserve the *subak* and reduce the rate at which rice fields are converted.

The causes of land conversion have been the subject of frequent research, but the inhibiting factors that can control land conversion, both internally and externally, remain largely unexplored. Local wisdom in Bali, embodied in the form of norms, beliefs, and the function of *subak* as a social organization institution, has not been significantly involved in regulating land conversion. Therefore, it is crucial to investigate the role of local wisdom and identify internal and external factors that can impede land conversion, which is also a novel aspect of this research. Given the

background information, the objectives of this research are as follows: 1) To analyze the factors driving and inhibiting the conversion of rice field agricultural land into non-agricultural land use and 2) To analyze the impact of land conversion on farmers' income and food availability for farmer families.

RESEARCH METHODS

The study was conducted in Tabanan Regency, specifically chosen due to its strategic location in an area experiencing rapid tourism development. The Tabanan District experiences a significant annual increase in land conversion, particularly in rice field areas. This district serves as Bali Province's food barn. The research specifically examines Subak Gadon in Beraban Village, Kediri District, Tabanan Regency. This *subak* is currently undergoing significant land conversion due to rapid tourism growth, with Tanah Lot being the main attraction.

The Slovin formula was employed to ascertain the quantity of samples collected for this investigation. This survey employed 80 farmers as respondents, with a population of 172 farmers and a tolerable level of precision of 5%. For the purpose of social research, this tolerance limit is deemed acceptable. In order to guarantee that all members of the population had an equal opportunity, simple random sampling was implemented without regard for population strata or levels. Respondents were predominantly farmer household heads in Subak Gadon, who were selected based on population homogeneity and had equal rights to contribute to the study.

This study utilized both primary and secondary data. The primary data was directly obtained from the data source, specifically the driving and inhibiting factors of agricultural land conversion and its influence on the welfare of farmers. Data were collected through direct interviews with respondents using a pre-prepared questionnaire. Secondary data was obtained from agencies or entities related to this study, such as the Bali Provincial Statistics Agency and other relevant authorities. This study used two data collection methods: interviews and direct observation at the research location. Interviews were conducted through a questionnaire-based question-and-answer approach with selected respondents, including *subak* administrators and key informants.

The first objective was addressed using multivariate analysis to examine the factors that encourage and inhibit the conversion of rice fields. This analysis identifies structural dimensions and assesses the extent to which each variable can be associated with these dimensions (Anderson, 1984). The multivariate analysis was

conducted using the SPSS 19.0 software program (Ghozali, 2006). The factor analysis model was employed to evaluate variables and data in the following manner:

$$X_i = A_{i1}F_1 + A_{i2}F_2 + \dots + A_{im}F_m + V_iU_i \dots \dots \dots (1)$$

Wherein:

X_i : standardized i -th variable

A_{ij} : standardized multiple regression coefficient of variable (i) on common factor j

F : common factor

V_i : standardized regression coefficient of the i -th variable on the special factor

U_i : factor unique to variable (i)

m : number of common factors

The common factor (F) can be expressed as a linear combination of observable variables with the following formula:

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 + \dots + W_{ik}X_k \dots \dots \dots (2)$$

Wherein:

F : i -th factor estimate

W_i : weight or coefficient of the i -th factor value

K : number of variables

To address the second objective, which is to assess the impact of converting rice fields on farmers' income and food availability for their families, researchers employed a descriptive quantitative analysis approach. This involved examining the changes in farmers' income before and after the conversion of rice fields to non-rice field uses.

RESULTS AND DISCUSSION

Analysis of Factors Driving and Inhibiting the Conversion of Rice Fields to Non-Agricultural Land Functions

The analysis revealed that all 80 respondents agreed with the conversion of agricultural land. Respondents cited seven indicators as reasons for their support of land conversion: land conversion can resolve family economic issues, land is more useful when used for housing, land needs for settlement, income from the agricultural sector is inadequate, low production, and agricultural land is an economic asset that can be traded and converted.

Based on the abovementioned reasons, it is obvious that agricultural land, rice fields, is no longer considered a valuable resource that should be preserved for the sake of socio-cultural and religious values, especially when it does not contribute to improved economic well-being. When rice fields no longer yield satisfactory results and fail to meet economic demands, farmers agree that changing them for more productive purposes is a viable solution. The perception of rice fields as a cultural legacy that must be conserved and maintained due to its vital significance has now transitioned to an economic rationalization perspective, emphasizing the costs and income associated with its cultivation.

Land conversion for alternative purposes becomes quite probable when rice fields fail to yield expected profits and the agricultural sector no longer offers promising prospects or future certainty. The study's results indicate that, on average, farmers in Subak Gadon have transformed land for diverse non-agricultural purposes, covering an area of 500 m². The allocation is intended for housing and various economically valuable businesses such as food stalls, photocopying, laundry, and other essential services. The primary factor influencing landowners' decisions to convert land is the economic value of rice fields rather than considering land as a communal asset. The land has become a valuable economic asset and is now being freely sold due to the growing demands and economic pressures within the community. Furthermore, the following show the factors that drive and also inhibit the conversion of agricultural land:

a. Factors Driving Land Conversion

The acceleration of land conversion is influenced by two factors: internal and external. These factors can either drive or hinder the land conversion process. The analysis revealed unanimous agreement among respondents regarding the ten indicators contributing to land conversion. These indicators include economic pressure, scarcity of water resources, decreased productivity, diminished land area, high production costs, deteriorated land quality, high risk, a negative perception of farming as a low-status occupation, limited technological expertise, and the strategic location of land with high economic potential. These factors are identified as the driving factors of land conversion.

The pace of land conversion is determined by the land's location. Subak Gadon's location near the popular tourist destination Tanah Lot makes it an appealing location for both landowners and farmers to transform their rice fields into more profitable businesses, resulting in increased economic contributions. This is particularly advantageous due to the convenient access to strategic road

infrastructure. Furthermore, the limited water supply caused by the downstream situation in Subak Gadon serves as a driving factor for farmers to convert their land. Farmers also aspire to benefit from the growing tourism industry in the surrounding area by allocating a small portion of their rice fields to establish business ventures that cater to the local community's needs, such as food stalls and laundry services. This trend is further fueling the conversion of agricultural land into commercial spaces.

The external factors that drive land conversion were measured based on respondents' perceptions of the indicators that drive land conversion. The analysis showed that all respondents agreed with the following: land being turned into other uses because of population growth, interference from the private sector, influence from others, rising land prices, rising needs for non-agricultural land, the development of infrastructure facilities, other jobs that pay more, price fluctuations in agricultural products, the amount of land and building tax that does not match the income of rice fields, the lack of government subsidies, the difficulty of finding workers in the agricultural sector, and the chance to buy land at a lower price. All of the aforementioned factors externally drive land conversion.

The continuous rise in population has a substantial influence on changes in land usage. Access to land is essential for human habitation, and it can be acquired through the process of land conversion, either by utilizing one's own land or by purchasing it. The surge in land demand would result in a rise in land prices, enticing farmers to sell their land due to the lucrative value of the money. Furthermore, there is uncertainty about the cost of agricultural commodities, resulting in a lack of assurance regarding the revenue generated throughout the harvest period. This situation is worsened by the challenge of locating hired labor to work in the agriculture industry. Throughout the entire process of cultivating crops, including tasks like tillage, planting, maintenance, and harvesting, there is a significant labor shortage. The scarcity of local workers willing to serve as farm laborers is resolved by recruiting labor from outside the region, such as from Java. The scarcity of manpower during harvest season is the primary factor for farmers to adopt the "tebasan" method (Indonesian: a way of selling their agricultural product before it is harvested). Out of the 80 farmers surveyed, 58 (72.50%) of them utilized the "tebasan" method to sell their harvests. This aligns with the findings of other studies conducted by Andalusia et al. (2014); Asmani (2013); Kulsum et al. (2015); Kusumaningtyas and Chofyan (2013); Prihatin (2015); Ashari, (2003); Zakaria and

Rachman (2013), and Santoso et al., (2017), that investigated the factors contributing to the conversion of rice fields.

b. Factor Inhibiting Land Conversion

Inherited land is considered one of the inhibitors that can impede the process of land conversion. However, land acquired through inheritance does not consistently impede the pace of land conversion. The land received through inheritance is relatively small (less than 0.5 hectares). Furthermore, it will be shared among the heirs, allowing the landowner to contemplate selling or converting it for greater profitability. All participants unanimously agreed that factors such as inherited land, well-maintained irrigation channels, community trust, and land fertility would inhibit land conversion. In order to decrease the rate of land conversion, it is necessary to maintain and improve these internal inhibiting factors.

Government regulations pertaining to green spaces or Sustainable Food Agricultural Land (LP2B) are believed to inhibit land conversion, although they necessitate the supply of compensation and subsidies to farmers. Offering fertilizer, seed aid, and introducing high-value crops can effectively prevent land conversion by boosting farmers' income. External factors exert significant influence in limiting the pace of land conversion. The analysis of all participants in the study shows that government regulations, pricing certainty, compensation, and subsidies have the potential to impede land conversion.

The research results on the factors influencing land conversion in Subak Gadon were examined by factor analysis and multiple linear regression. The stages in component analysis involve utilizing the determinant of correlation matrix analysis to identify variables that show a strong correlation with other variables. The analysis reveals a strong correlation among the five variables: land conversion, internal driving factors, external driving factors, internal inhibiting factors, and external inhibiting factors of land conversion. The analysis conducted using the SPSS program reveals that the coefficient of determination (R^2) is 0.727, indicating that 72.70 percent of the conversion of rice fields can be attributed to the four variables: external and internal driving factors and external and internal inhibiting factors. While 27.30 percent is caused by other variables not included in the model. Further tests using *Principal Component Analysis* (PCA) revealed the following results:

- (1) The condition of land conversion in Subak Gadon is 92.0%, explained by seven indicators;
- (2) The condition of internal factors that drive land conversion in Subak Gadon is 65.0%, explained by ten indicators;

- (3) The condition of external factors that become drivers of land conversion in Subak Gadon is 60.0%, explained by twelve indicators;
- (4) The condition of internal factors that inhibit land conversion in Subak Gadon is 73.0%, explained by five indicators;
- (5) The condition of external factors that inhibit land conversion in Subak Gadon is 62.0%, explained by four indicators.

The sustainability of rice fields will be jeopardized by the growing conversion of paddy fields to other purposes. According to the findings of a study by Djelantik (2023), pests and diseases, the selling price of rice fields, the availability of production facilities, housing needs, the growth of tourism, the presence of marketing institutions, the enforcement of *awig-awig subak* (related to sanctions for conversion of rice fields), the condition of irrigation channels, and the state of roads to farming places are all factors that threaten the sustainability of rice fields in Tabanan Regency in the future. These factors are classified as external factors; however, low family participation in the management of rice fields is an internal factor that poses a threat to land conversion. The findings of comparable research conducted by Santoso et al., (2017), Wati et al., (2020); Pakpahan (2012); Wirama (2013); Linda et al. (2018) concluded that the younger generation's diminished interest in becoming farmers is the primary factor contributing to land conversion. These factors include the agricultural sector's inability to enhance living standards, fluctuations in agricultural product prices, increasing production costs, limited access to technology, and the high risks and uncertainties associated with agriculture due to its reliance on the season.

Analysis of the Income and Food Availability of Farmer Families

Further analysis shows that the average income of farmers per growing season is IDR 1,681,575, which represents a decrease from IDR 13,655,750 to IDR 11,974,175. The income loss resulting from the conversion of rice fields is IDR 420,393.75 per month, assuming a four-month growing season. The increased income from converting land to various business activities covers the income loss from rice fields. Farmers operate a variety of businesses on previously converted land. These businesses are either directly administered by the farmers or leased to other parties through land contracts. An average additional income of IDR 1,120,111/month was generated by business operations, including laundry, house contracts, food stalls, workshops, and shops. When comparing the income of farmers who converted and those who did not, the impact of land conversion led to an

additional monthly increase of IDR 699,717.25. This increase in welfare can be attributed to the impact of land conversion. The analysis also revealed that land conversion in certain areas would not jeopardize family food availability, as there are still sufficient rice fields to meet the family's rice needs. However, land conversion will jeopardize food availability at the regional and national levels.

CONCLUSIONS

The primary external factors that are driving land conversion are the growing demand for land in the non-agricultural sector, the availability of jobs in more promising sectors, the uncertainty surrounding the price of agricultural products (price fluctuations), and the difficulty of obtaining labor in the agricultural sector. The internal factors that drive land conversion include economic constraints, high risk, and difficulty obtaining water resources for irrigation. Land conversion is impeded by the following factors: fertile land, well-maintained irrigation channels, community trust, and land inheritance. According to the analysis, converting rice fields into business ventures resulted in an average increase in farmers' income of IDR 699,717.25 per month. Land conversion does not impact the food security of the farmer's household; however, it does impact the food supply at the regional and national levels.

RECOMMENDATION

The suggestion made in this research is the establishment of a Local Regulation (Perda) on the Determination of Sustainable Agricultural Food Land (PLP2B) in accordance with the abovementioned conclusions. This regulation will establish the area and quantity of land designated as LP2B, ensuring that it is preserved and maintained as a sustainable food provider. The establishment of LP2B must be accompanied by compensation for farmers whose land is affected by LP2B. This compensation can take the form of tax exemptions, the provision of production facilities, or other forms of assistance to ensure that farmers do not feel disadvantaged. Therefore, it is crucial to include the subak in the design of PLP2B, guaranteeing each subak a solid legal foundation for preparing *awig-awig* at the *subak* level. Additionally, the local government's assertiveness is essential for successfully controlling land conversion, as it is necessary to enforce local regulations regarding violations in implementing Sustainable Agricultural Food Land (LP2B).

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REFERENCES

- A, J., & S, R. (2013). Dampak Pembangunan Perumahan Terhadap Perubahan Penggunaan Lahan dan Kondisi Sosial-Ekonomi Penjual Lahan di Kecamatan Mlati. *Jurnal Bumi Indonesia*, 2(2), 192–201.
- Andalusia K, D. R., Panuju, B. H., & Trisasongko. (2014). Dinamika Perubahan Penggunaan Lahan di Kabupaten Subang. *SNIJA*, 289–295.
- Anderson, R. (1984). *Multivariate Data Analysis*. Prentice-Hall Internasional. Inc. New Jersey.
- Ashari. (2003). *Tinjauan Tentang Alih Fungsi Lahan Sawah Ke Non Sawah dan Dampaknya di Pulau Jawa*. Litbang Departemen Pertanian.
- Asmani, N. (2013). *Pengelolaan Sumberdaya Alam Lestari Melalui Usaha Pertanian Pangan Sistem Korporasi (Sustainable Corporate Farming) Dalam Kerangka REDD+*. Prosiding Seminar Nasional Perhepi Kemitraan dalam Pengembangan Agribisnis Sumberdaya Lokal.
- Badan Pusat Statistik. (2019). *Impor Beras Menurut Negara Asal Utama*.
- Dinas Pertanian Tanaman Pangan Provinsi Bali. (2019). *Luas Lahan Sawah di Provinsi Bali Tahun 2013-2017* Food and Agriculture Organization (November 1996).
- Djelantik, A. A. A. W. ., Mahendra, I. M. ., Windia, I. ., & Sudarma, I. . (2023). The Impact of Rice Field Functional Shifts on Sustainability and Greenhouse Gas Emissions in Tabanan Regency, Bali, Indonesia. *International Journal of Design & Nature and Ecodynamics*, 18(3), 685–692.
- Dzikrillah, G. F., Anwar, S., & Sutjahj, S. . (2017). Analisis Keberlanjutan Usaha Tani Padi Sawah di Kecamatan Soreang Kabupaten Bandung. *Jurnal Pengelolaan Sumber Daya Alam Dan Lingkungan*, 7(2), 107–113.
- Ghozali, I. (2006). *Aplikasi Analisis Multivariate dengan Program SPSS*. Badan Penerbit Universitas Diponegoro.
- Irawan, B. (2005). Konversi Lahan Sawah: Potensi Dampak, Pola Pemanfaatannya, dan Faktor Determinan. *Forum Penelitian Agro Ekonomi*, 23(1), 1–18. <https://doi.org/10.21082/fae.v23n1.2005.1-18>
- Kusumaningtyas, R. (2013). Pengelolaan Hutan dalam Mengatasi Alih Fungsi Lahan Hutan di Wilayah Kabupaten Subang. *Jurnal*, 8–19.
- Lestari, T. (2005). *Dampak Konversi Lahan Pertanian bagi Taraf Hidup Petani*. IPB Press.
- Linda, A. M., Ambarawati, I. G. A. A., & Ustriyana, I. N. G. (2018). Status Keberlanjutan Usaha Tani Padi Sawah di Kota Denpasar (Studi Kasus Subak Intaran Barat, Desa Sanur Kauh, Kecamatan Denpasar selatan). *Jurnal Manajemen Agribisnis*, 6(1), 55–62.
- Mulyani, A., Kuncoro, D., Nursyamsi, D., & Agus, F. (2016). Analisis Konversi Lahan Sawah: Penggunaan Data Spasial Resolusi Tinggi Memperlihatkan Laju Konversi yang Mengkhawatirkan. *Jurnal Tanah Dan Iklim*, 40(2), 121–133.

- Pakpahan, A. (2012). *Investing In Farmers' Welfare*. Cetakan pertama. PT. Penerbit IPB Press.
- Prihatin, R. . (2015). Alih Fungsi Lahan di Perkotaan (Studi Kasus di Kota Bandung dan Yogyakarta). *Aspirasi*, 6(2), 105–118.
- Santoso, P., Widiatmaka, Sabiham, S., Machfud, & Rusastra, I. W. (2017). Analisis Pola Konversi Lahan Sawah dan Struktur Hubungan Penyebab dan Pencegahannya (Studi Kasus Kabupaten Subang, Provinsi Jawa Barat). *Jurnal Pengelolaan Sumberdaya Alam Dan Lingkungan*, 7(2), 184–194.
- Sudarma, I. M., Djelantik, A. A. A. W. S., Mohan, G., Melts, I., Kadulin, A., & Syakur, A. R. A. (2024). Agricultural Land Conversion and its Impact on Farmers' Income and Food Availability. *SOCA: Jurnal Sosial Ekonomi Pertanian*, 18(2), 255–266. <https://doi.org/https://doi.org/10.24843/SOCA.2024.v18.i02.p10>
- Sudrajat. (2015). *Mengenal lahan Sawah dan Memahami Multifungsinya bagi Manusia dan Lingkungan*. UGM Press.
- U, K., Arifin, B., & Abidin, Z. (2015). *Determinan Kepurusan Petani Terhadap Konversi Lahan Sawah Menjadi Pemukiman*.
- Wati, N. M. A. ., Sudarma, I. ., & Widhianthini. (2020). Alih Fungsi Lahan Sawah di Badung Utara (Studi Kasus di Subak Latu Kecamatan Abiansemal dan Subak Dukuh Kecamatan Mengwi). *Jurnal Manajemen Agribisnis*, 8(2), 176–187.
- Wirama, K. . (2013). *Faktor Dominan Penentu Terjadinya Alih Fungsi Lahan Sawah di Subak Delod Sema dan Subak Buaji Kecamatan Denpasar Timur*.
- Zakaria, A. ., & Rachman, B. (2013). Implementasi Sosialisasi Insentif Ekonomi dalam Pelaksanaan Program Perlindungan Lahan Pertanian Pangan Berkelanjutan. *Forum Penelitian Agro Ekonomi*, 31(2), 139–149.