

# **Integration of Market Price Comparison Approach and Income Approach in Urban Land Assessment**

**Nanin Trianawati SUGITO, Irawan SUMARTO, S. HENDRIATININGSIH, and Bambang Edhi LEKSONO, Indonesia**

**Key words:** Land Value, Market Price Approach, Income Approach, Urban

## **SUMMARY**

The rapid development of urban development and the high rate of population growth is a factor driving the increasing urban land demand in various countries in the world. Increasing urban land demand has resulted in increased demand for land. This causes urban land prices tend to continue to rise. Information on land prices is absolutely necessary in urban land management.

Bandung became the location of the study selected, where the land prices tend to experience a very significant increase. To get the price of land, it must first look for the value of land that can be obtained through the process of land valuation. There are three approaches in land valuation, which are market price comparison approach, cost approach, and income capitalization approach. Currently land valuations in Indonesia generally use a market price comparison approach. This still leaves the problem, namely the technical calculation of land valuation is still subjective by averaging the market value so that the assessment does not reflect the true value.

This study integrates a market price comparison approach with an income capitalization approach. The advantages of income capitalization approach are able to explain the effect of macroeconomic factors and expectations of future income on current market price of land, especially urban land. The income capitalization approach can be applied to complement and simultaneously control the results of the land price estimation of the market price comparison approach. The method of analysis used is Geostatistika, which is one of the sciences that use spatial analysis. The results of research in the form of a definitive land value zone that can be used as a reference for various interests.

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## **1. INTRODUCTION**

The land is a precious gift of God where every activity of a living thing whether plant, animal, or human will rest on the ground. Land for man is the main place. Due to the immense human dependence on land, it is undeniable that the land becomes an infinite object of value.

Land becomes one of the resources that have strategic role in urban development. Information on land prices is required in urban land management (Sari et al., 2010). The rapid development of urban development and the high rate of population growth are the factors driving the increasing urban land demand. Meanwhile, land available in urban areas is limited. This raises the problem of urban land, such as an increase in uncontrolled land prices due to a conflict of interest.

The rise in land prices is above the increase in property, inflation, and BI Rate Indonesia. This condition proves that the land is an economic goods that have a uniqueness that has a tendency to increase prices over time. Especially in urban areas, land prices always experience a significant increase.

The price of land and the value of the land into one unity can not be separated. The land value is related to the location theory (Von Thunen) which states that the value of the land is determined by the distance of the land to the center of the city (Hermit, 2009). Information on the value of land is needed in determining the price of land. The value of the land is obtained from land valuation.

In Indonesia, there are three commonly used valuation approaches: market data comparison approach, cost approach, and income capitalized approach. In this study aims to integrate the approach of comparison of market data with income capitalization approach so as to derive land value model using geostatistical analysis. The cost approach is not used in this study because the cost approach is only suitable for the assessment of new construction / construction proposals.

A comparison approach to market data is the most commonly used approach to assessing land. In this case the market price comparison approach is the easiest approach to apply when comparable sales data are reasonably available. But the problem is very difficult to obtain

comparable sales data, so the need for a solution in the assessment of land through integration with the approach of capitalization of income.

Appraisal Institute advises appraisers to use the income capitalization approach to complement and simultaneously control the results of the land price appraisal of the market price comparison approach and Von Thunen. The advantage of the income capitalization approach is to explain the effect of macroeconomic factors and future income expectations on the current market price of land, especially urban land (Hermit, 2009).

## **2. METHODOLOGY**

The study area covers all areas of Bandung City. The city of Bandung is located in the area of West Java and is the capital of West Java Province. Geographical position of Bandung is located between 107° 33' - 107° 45' East Longitude and 6° 50' - 6° 59' South Latitude.

Data used in this study include:

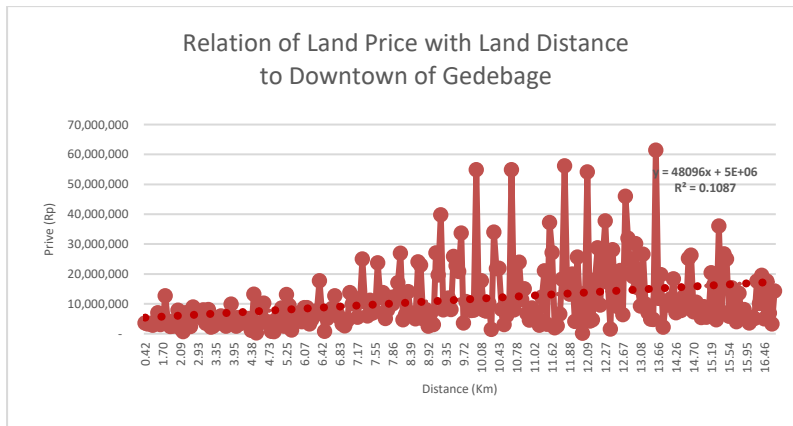
- a. Sample data of land offer price spread in Bandung City. The land offer price consists of the selling price and the land lease price in 2017 from the website of a property agent company in Bandung, namely [www.urbanindo.com](http://www.urbanindo.com). The selling price of the land amounted to 358 samples and the land rent price amounted to 44 samples.
- b. Map of administrative boundaries of Bandung.

The data used in this study use a geodetic coordinate system with the 1984 WGS datum.

## **3. RESULT AND DISCUSSION**

The area of Bandung City is divided into two Municipal Service Centers is the center of Alun-alun and Gedebage. The data is classified based on geographical location, distance to the city center, and the price of land that can be visualized in the following figure.

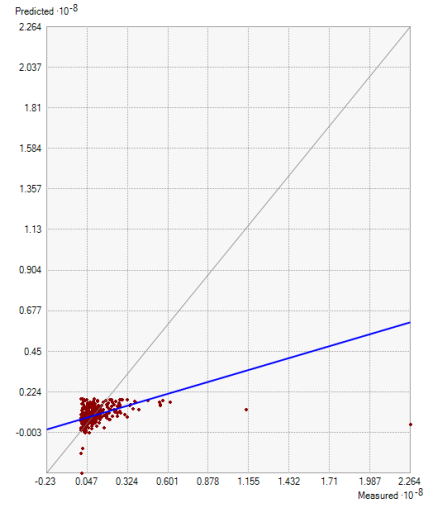
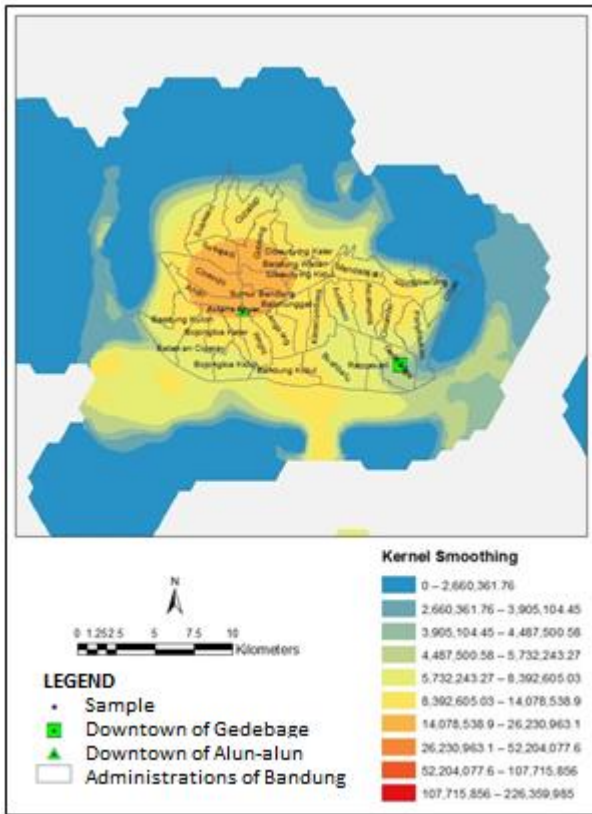




Source: Doc. Private, 2017

Figure 2. The relationship between geographical location, distance to city center, and land price

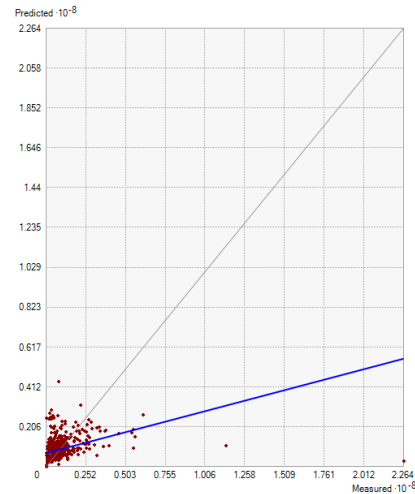
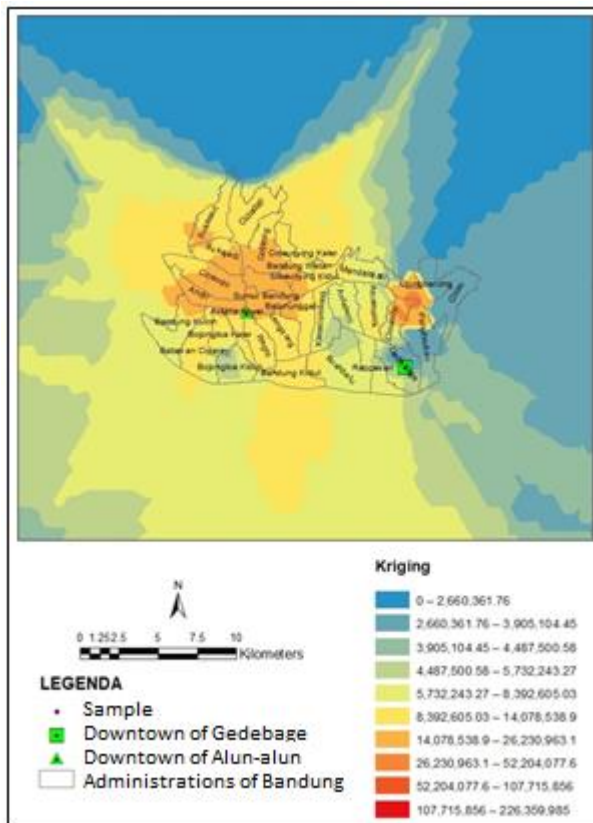
From the graph seen has happened a different phenomenon when viewed from both downtown. The closer to downtown of Alun-alun, land prices tend to increase. Conversely, the closer to downtown of Gedebage, land prices tend to decline. The town center of Alun-alun and Gedebage has a different appeal to the price of the land. This condition is visualized in the land price contour map which is the result of modeling using geostatistical analysis of Kernel Smoothing and Ordinary Kriging method.



Regression function  $0.24018105759878 * x + 6844347.36039094$

Prediction Errors  
 Samples 400 of 407  
 Mean -837905.6332497614  
 Root-Mean-Square 14710878.264223486  
 Mean Standardized -0.05367389511566478  
 Root-Mean-Square Standardized 0.9819627352583705

Average Standard Error 15245178.616776954



Regression function  $0.215445422549656 * x + 6901542.38256091$

Prediction Errors  
 Samples 407 of 407  
 Mean 145254.13637934398  
 Root-Mean-Square 15266139.965626366  
 Mean Standardized 0.008139154126543473  
 Root-Mean-Square Standardized 0.876023740778149

Average Standard Error 17369701.637605727

Source: Doc. Private, 2017

Figure 3. Result of modeling using geostatistical analysis of Kernel Smoothing and Ordinary Kriging method

Downtown of Alun-alun has a greater appeal compared to downtown of Gedebage. This is evidenced by the price of land that is high enough for the land that is in the vicinity of downtown of Alun-alun. Some of the factors that cause low land prices around Gedebage downtown are infrastructure facilities that are still under construction, unsuitable ground water quality, and are in flood disaster areas.

#### 4. CONCLUSION

Based on the results of the analysis that has been done can be concluded that the geostatistical approach with Kriel Kickel Smoothing and Ordinary Kriging methods can be used to model urban land prices. This can be reinforced by a near-standard Root-Mean-Square Standardized 1. The income capitalization approach can be integrated to complement and control the results of the land price appraisal of the market price comparison approach and Von Thunen. The advantage of the income capitalization approach is to explain the effect of macroeconomic factors and future earnings expectations on the current market price of land, especially urban land.

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## BIOGRAPHICAL NOTES

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