The Concept and Development of Land Value Assessment

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Abstract - Problem in land acquisition increasingly complex, this problem can be related directly to the land acquisition process from planning to project delivery, as well as indirect effects of the reasonableness of the value of the land. Land value is expected to accommodate attributes as physical development and infrastructure projects in a more comprehensive city, thus the value of the land can represent a reasonable condition and can be estimated in accordance with the development that is influenced by multiple attributes (discrete and continuous) as well as the spatial effect of the gradient measured geographical. Based on a review of empirical, conceptual and literature, the value of land is affected by several variables that can be explaned as follows: supply and demand ; highest and best use ; phisic, legal, social and economic. The method can combine the data value of the land and the land characters are more accurate and spatially, it is necessary to use Computer-Assisted Mass Appraisal (CAMA) and Geographic Information System (GIS).

Keywords - *supply and demand ; highest and best use ; phisic, legal, social and economic, CAMA, GIS*

I. EMPIRICAL REVIEW

The land issue is not a minor issue and can be ignored. Just because it does not look real, does not mean that the lack of proper land policy will not cause severe problems. In fact the problem may be a systemic problem and affects many other aspects (Indonesia Policy Briefs, 2005).

Closely related to land acquisition and systematic assessment mechanism is implemented . In many developing countries there are considerable problems in relation to the valuation of the property. Those problems resulted in a decline in revenues and the distribution of the tax burden that is not fair. Taxpayer can sometimes affect the assessment process and falsified lease revenues. Assessment procedures lacked transparency, the lack of a database, administrative capacity and qualifications of the staff is also inadequate (Müller, 2002). As shown in Table 1.1 there is a big difference between different types of countries about the problems that occur in relation to assessment.

Changes in the market value of the land in line with changes in land use. Dominance of settlement activities that occur evenly across the region both in the center and on the outskirts of the city, both of which occurred in the upper middle class and lower middle class as dense settlements and slums, linear impact on the development of activities - business activities in urban areas. This leads to an increase in the occurrence of a change in land use. The land use change in a zone will affect the market value of land in an area (Olayiwola et al, 2005). Tendency of physical changes related to land use city basically according to spatial Surabaya in 2007 can be divided into two land use changes and changes in building use. Changes in land use in the city indicated from the change of agricultural land, vacant land and green belt into residential areas as well as trade and services as well as residential areas where multiple fields are used for trade and services. This condition will affect the value of the land is no longer suitable due to land use established by the City (Putra et al, 2011).

Table 1.1
Concerns about Data Collection and Assessment

Type of State	Data Collection	Assessment
Industrial Countries	No problem	Only minor issues: a. Computerized system to function properly b. Some countries do not have a revaluation for several years c. Some states require a computerized assessment system
Transition Countries	Relatively small problem	Major challenges in the years ahead: a. Building a scoring system to replace area-based assessment system of property tax assessment and tax-based system of book value b. Simplify the system needed
Developing Countries	Frequent major problem	Common major problems: a. The method is used in which the taxpayer subjectivity may affect assessment / appraisal b. Mass appraisal system takes a more objective c. The existence of missing and misleading information related to the selling and rental prices d. Weak unit responsible for the administration of the assessment and the lack of qualified staff

Source: Müller, 2002

Based on the phenomenon that occurs on land that has not been indicative value reflects fair value, it is necessary to the development of the method of valuation of land in Indonesia (Tamtomo et al , 2008). Many methods can be used to generate land valuation for tax purposes and the land market and the traditional method based methods geograhic information system (German et al, 2000).

One element that affects the value of the land is a geographical element. Density and the development of the allotment of residential areas and business areas affects the value of the surrounding land. This is particularly relevant to the research that has been done before (Johnson and Wade, 1987). In the study stated that the land value is strongly influenced by accessibility, distance to the city center, land

use change (land use), zoning, density and spatial gradient effect.

Based on the above phenomenon, the value of the land is expected to accommodate attributes as physical development and infrastructure projects the city is more comprehensive, thus the value of the land can represent a reasonable condition and can be estimated in accordance with the development that is influenced by multiple attributes (discrete and continuous) as well as the effects spatial gradient measured from geography.

II. CONCEPTUAL REVIEW ON LAND VALUE ASSESSMENT

Previous research that influenced the assessment of land and physical infrastructure development projects have been carried out. At Baranzini research and Schaerer (2011) analyze the effect of land use and accessibility of the market value of housing. Similarly, the research Cho et al (2008) who analyze the value of the land on vacant lots and parcels of land that have been developed as residential, commercial and industrial. Higher land prices if the closer the distance to the Empire State Building (Haughwout et al, 2008). Land value is strongly influenced by the distance to the surrounding infrastructure of the local trading centers, schools, colleges and health care facilities (Imawan, 2007). According Olawande (2011) states that the accessibility variables showed a statistically significant relationship with the value of commercial property. On research Putra et al (2004) stated that the facilities and accessibility correlated to changes in the value of land. Rahayu (2009) revealed that the campus and distance affect the increase in land value. Similarly, research conducted by Subagiyo (2007) states office area development and infrastructure affect land values rise. As well as the research conducted by Sutawijaya (2004) that the width of the road, road conditions, availability of transportation and flood free environment factors greatly affect the value of the land.

Research assessment of land and/or property also has a lot to do in the world but also many research opportunities in developing land valuation. In a comprehensive assessment of land in urban and rural areas may include assessments in the field of contaminated land , land mines, land area golf, wet land area, which has a beautiful land, forest land, agricultural land, commercial land and residential areas of land/housing. Field assessment of land consisting of soil as a natural resource, the principles of land valuation, valuation methods and ground as a useful public resource (Thunen, 1826 ; Shenkel, 1978; Sujarto, 1982; American Institute of Real Estate Appraisers, 1987; Santoso, 2000; Boykin, 2001; Hidayati and Harjanto, 2003; Ratterman, 2004; Gwartney, 2011).

Most land valuation research done in the field of the principles of valuation of land, especially in the sub-field of the factors that contribute to the value of the land (Baranzini et al, 2011; Cho et al, 2008; Halim et al, 2008; Hamid and Nadila, 2005; Haughwout et al, 2008; Imawan, 2007; Johnson and Wade, 1987; Kabba and Jiangfeng, 2011; Kok et al, 2011; Leksono et al, 2010; Lin and Min, 2009; Olawande, 2011; Putra et al , 2004; Rahayu, 2009; Sidik, 1998; Sutawijaya, 2004; Subagiyo, 2007; Wang and Hong, 2009). While research on the sub- field assessment of land valuation procedures on the ground is still relatively small (Leksono et al, 2010; Putra et al). Research on the assessment of land associated with the sub- areas of highest and best use of the land (Dani, 2007; Jaeger et al, 2012) and is associated with two sub- areas of the factors that contribute to the value of land and the use of the highest and best on ground (Oshiro, 2003) is still relatively small.

Research sub-field assessment of land on lease land than the market value performed by Bolen et al (1996). In a study that examines the combined assessment of land use restrictions and sub-fields of land ownership with land valuation procedures performed by Dye and Richard (2010).

Land valuation studies that examine individual sub-areas with the income approach valuation in relation to the level of public or social benefits made by Fujino (2010). In the sub-field of research assessment with the individual subdivision development method assisted statistical analyzes were performed by the Putra (2002). Jirong et al (2011) have examined the property valuation method combined with Genetic Algorithm (GA) - Suport Vector Machine (SVM) (G-SVM). Development of the land mass valuation studies are relatively few, so far (with various limitations author) is only done by Kahonde and Jennifer (2007) as well as Suartana (2008).

In the journey of previous studies related to the Land Assessment developed empirically and conceptually widely organigram and can be viewed in Figure 1.1.

III. DEFINITION VALUE AND PRICE

Values have a different understanding with the price and costs. Value can be defined as the force that is used to exchange goods (Shenkel, 1978). Meanwhile, according to the 1871 Shenkel W.Stanley Jevons (1978) states that the value depends entirely upon utility and on request of the offer, it is assumed that the utility of goods exchanged in the proportion of the goods.

Market value is defined as the sale of property in an average situation, assuming that both parties have complete information and the freedom to make choices. Average situation means that there are no special circumstances that affect their decisions (Dovring, 1987).

The fair value is a market-based measurement, not an entity specific measurement based, and fair value as the price that would be received by the owner/seller of the assets and liabilities paid by the carrier in an orderly transaction between market participants at the set time. Measurement of fair value for the benefit of certain assets or liabilities, therefore, when measuring the fair value of an entity should consider the characteristics of the asset at the date of measurement. These characteristics include, for example: a).condition and location of the asset, and b).restrictions, if any, on the sale or use of assets (NZ IFRS 13, 2011).

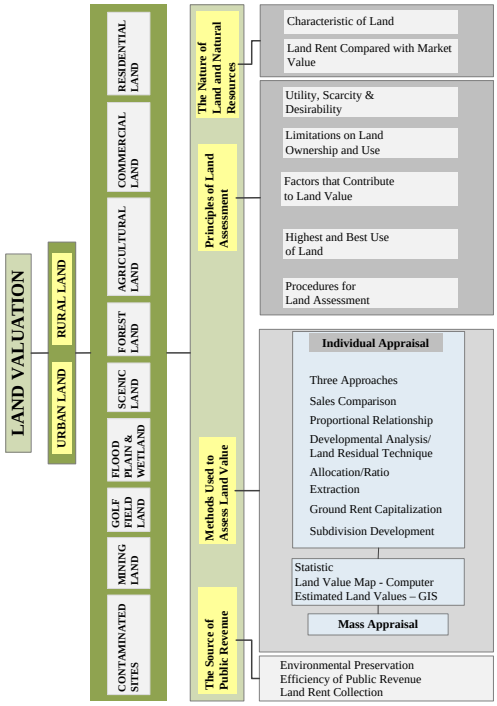

Figure 1.1. Using various models of Land Assessment by previous researchers

Source: Thunen, 1826; Shenkel, 1978; Sujarto, 1982; American Institute of Real Estate Appraisers, 1987; Santoso, 2000; Boykin, 2001; Hidayati and Harjanto, 2003; Ratterman, 2004; Gwartney, 2011 and results of literature review

Price according Rattermann (2004) is a sum of money agreed upon by the buyer and seller of real estate for the benefit. Price is known as the transaction price by Sidik (1998) is a real paid by the buyer to the seller, an event that can be verified truth transaction to suatru approved goods or services to be purchased by a buyer at a specified price and the seller agreed to sell with the requirements transaction is approved by both parties. Furthermore the cost is a measure of expenditure to produce something good or service.

IV. LAND ASSESSMENT

Land in the economic sense is defined as the entire material universe beyond the product itself and the people . It includes all natural resources, materials, airwaves, as well as land. All air, land, minerals and water are included in the definition of the soil. Everything is freely given by nature, and not made by humans, categorized as land. Soil holds a unique and important position in the social, political, and economic environment. Soil supports all life and standing in the middle of human culture and institutions. Land has no cost of production. It is a gift of nature to mankind, which allows life to continue and prosper. The uniqueness comes from the fixed supply of land and immobility. Land can not be produced or reproduced. Land required directly or indirectly in the production of all goods and services. Soil is the most basic resource and source of all wealth (Gwartney, 2011).

A piece of land into a land when the land has been improved function (improved) and ready to be used for a more specific purpose. Land has value because the land can provide potential usefulness both in terms of its structure, can provide recreational facilities, agriculture and as a means of transportation. Have specific land uses means the land has special value for its users as well. Therefore the assessment of land needed caution in analyzing and also includes some of the factors understood by the assessor (American Institute of Real Estate Appraisers, 1987).

The concept of a comprehensive assessment of land include land as a natural resource, the principles of land valuation, methods of valuation of land and public land as a useful resource.

Assessors in the assessment must identify the legal status, legal barriers, physical characteristics and increase in land that has been done on the ground. Physical characteristics of a piece of land that should be considered by the appraiser include several criteria (American Institute of Real Estate Appraisers, 1987), namely: location, accessibility, community and the surrounding environmental conditions, land area, ground elevation, land conditions, designation and zoning, legal status.

A. Land Value

Value of the land is a land supply and demand conditions (supply and demand) in the market power of the soil. Value is usually realized in selling in the currency market, the competitive situation between the seller and the buyer (Renne, 1958).

B. Land Price

The price of land is owned by the real price of land and is often caused because of the cause and effect of land availability and needs. Existing value of the land is a land use patterns (Lean and Goodall, 1966). The price of land is the land valuation as measured by nominal price in terms of money for a specified unit area of land on the market. Land values and land prices have a functional relationship that is the price of land will be determined by the value of land or high land prices will reflect the low value of the land. Thus, the price of land is a function of the value of the land or the high and low prices of land will be regulated by changes in the value of land (Putra, 2002).

C. The Concept of Supply and Demand

The concept of land or land at least include the concept of space, land, production factors, situations, property and capital (Jayadinata, 1999). Furthermore, according to Sutawijaya (2004), land is a resource that provides the room (space) that can support all of the needs of living things. Basically the room provided very limited, while the demand for land has an increasing trend from year to year, both for housing, agriculture, industry and so forth. This is what requires the development of a theoretical value of the land.

According Hubacek and Vazquez (2002) that the supply of land in the physical view is always considered as being fixed and limited. But the supply of land is economically dependent on the supply of physical, institutional factors, the availability of technology and location. Supply may be limited as the economic unit of land which include specificity in response to stimuli such as price and institutional. Landowners in determining the type and intensity of use of land depends on the price of land to be acquired per hectare. Describes the current supply of land utilization practices, the availability of the economy now and the ability to adapt to the needs of demand. Under these conditions, when the supply of land is large enough, then demand to be unlimited.

Mechanism of supply and demand will determine the pattern of land use. Supply and demand is the function of the price of land and using, it can be seen in Figure 1.2.

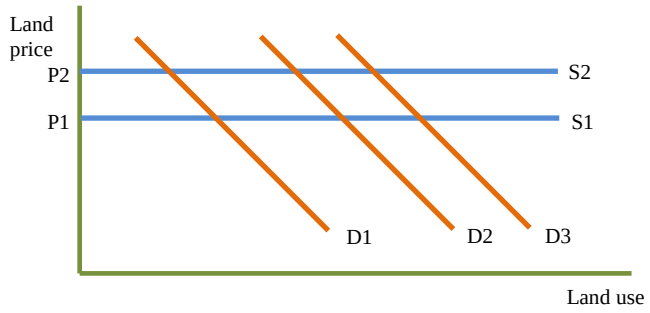

Figure 1.2. Interactions between Land Use and Land Prices and availability conjunction with Land and Land Needs
Source: Lean and Goodall, 1966

Explanation:
P = Price, S = Supply, D = Demand

According to Dunn (2010) and Carr et al (2003) explains that the concept of the value of the affected land values due to the economic characteristics as follows:

1. Supply
   a. Utility
      The ability of an object (product or service) to satisfy human wants and needs
   b. Scarcity
      Goods are available in a limited number will further increase its value
2. Demand
   a. Desirability
      The greater the desire of man to an object, the increasing value of the object. Real estate has caused commodity value of real estate to satisfy human wants
   b. Effective Purchasing Power
      The ability of the community to participate in the market to obtain a commodity in exchange for cash or other goods equivalent

D. The Concept of Highest and Best Use

Analysis of the best and highest use of the land as the land looked empty land still vacant or can be made hollow to destroy all the buildings standing on it. There are four criteria in analyzing the highest and best use of vacant land or improved property (Betts dan Ely 2001), namely:

1. Physically possible:
   location, accessibility, size, shape, soil conditions as well as the ability to adapt.
2. Legally permissible depends on public restrictions, such as:
   zoning, rules of cultural heritage and environmental control
3. Financial feasibility are reviewed against:
   rate of return and net operating income.
4. Maximally productive
   productivity levels in accordance with the limits the rate of return for the highest price and still have a market.

E. Factors Affect Land Value

The factors that contribute to the value of the land according to Gwartney (2011) and Wolcott in Sutawijaya (2004), namely:

1. Soil physical factors including the quality of the location, fertility, climate, convenience, schools, parks, water, sewer, utilities, public transport, pollution, land use, topography, roads and other facilities.
2. Legal and governmental factors include the type and amount of taxes, zoning, regulatory, planning and restrictions.
3. Social factors include population growth, age, law attitudes, order, dignity, crime rates and education levels.
4. Economic factors include the level of income, growth areas, construction and land development.

V. LAND ASSESSMENT METHODS

The determination of the value of land depends on the valuation problems faced, the approach used in the analysis as well as an indication of the accuracy of the values obtained.

According to German et al (2000) that the method for generating land valuation for tax purposes and consists of a land market:

1. Traditional methods
   Comparable sales, income analysis, cost analysis and cost of development
2. New approach methods
   Computer-Assisted Mass Appraisal (CAMA) dan Geographic Information System (GIS) a method that can combine the data between the sales price and the

character of the location where the land is located. Sophistication can be fully integrated GIS with CAMA to spatially analyze the value of the land. According Kahonde and Whittal (2007), CAMA assessment is an assessment system that uses a property group that standardized procedures and can be integrated with GIS and Multi-Criteria Decision Analysis (MCDA).

On the assessment of a wide area and assessed at the same time, must use mass appraisal methods. This must be done because the costs incurred assessment will be smaller when compared to using individual assessment. On the assessment of individual and mass appraisal, the process can use the market data comparison approach, income and expenses (Müller, 2002).

VI. CONCLUSIONS

1. Based on a review of empirical, conceptual and literature, the value of land is affected by several key variables that:
   a. Supply and demand
   b. Highest and best use
   c. Physical, legal, social and economic
2. The method can combine the data value of the land and the land characters are more accurate and spatially, it is necessary to use Computer-Assisted Mass Appraisal (CAMA) and Geographic Information System (GIS).

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