Urban Land Rating

Author: Marco QUINDE

Universidad Técnica del Norte, Av. 17 de Julio 5-21, Ibarra, Imbabura

marcoquinde@yahoo.com

Summary. This article is a description of the valuation of urban land, using the methodology of the Association of Municipalities of Ecuador (AME), with this method we determine the value per square meter of each block, which is the cadastral unit used in most cadastre of the country for the assessment of soil. First we make a description of the problem, then we indicate the methodology we use to find square meter value, we describe the calculations, and came to the determinations.

Keywords

Value soil, homogeneous sectors, cadastral apple, apple weight, base value.

1. Introduction

The land value is obtained from a matrix, currently the matrix value with which you are working is the obtained from calculations performed in a practically manually, so it is susceptible to errors, to obtain we start from two processes The first is the calculation of the values of soil of homogeneous sectors obtained from the values of the market research is a process that is done in Excel spreadsheet and the second is filled with information infrastructure by apple like working in an Excel spreadsheet, this makes all this information is provided to manipulations, typing errors, loss of information. The calculation of the values equals a statistical process that generates a manual calculation is complex and it handles a lot of information, it makes a critical process because with this calculation the values of the properties that are the base is then obtained for the determining the property tax that becomes a very important economic resource for the city, all these calculations are not automated slow the process of updating property values is a duty and responsibility of the Directorate of Appraisals and Catastros. All this results in a loss of time, loss of confidence, loss of economic resources and can even lead to sanctions.

Furthermore, the valuation of the property, which contains the value of land that is the subject treated is an obligation that must be done by permanently by municipalities, in this case the Municipality of Ibarra which is where it will develop the system and where they intend to apply this study, this is very important because it will allow us to improve the land valuation process.

What we will do with this study is to get an updated display given by a market research process value and a technical way of finding a base value and a value for each block infrastructure.

2. Valuation Method

The valuation of land is a valuation method that is recommended by SMA and is used in most municipalities, has several processes individually lead, but then come together to get to determine the value of land.

The first is to determine the weighted value of the block, which comes to be obtained by the sum of the values given to each of the infrastructure it has. These infrastructures are:

- The basic infrastructure.

- Complementary infrastructure.

- Municipal Services.

- Urban conditions.

Once we have the values for each block according to these factors have a first part of the assessment of soil.

The second process starts with market research in which data field values collected throughout the city. Taking all this information we can qualify for further calculations.

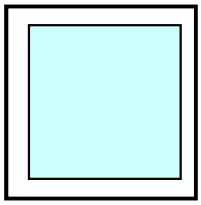
The quantification of the values homogeneous infrastructure sectors, which are also called sectors that are not worth more than a certain area that has similarities in their trading price and its characteristics ie possessing infrastructure is determined.

And certain homogeneous sectors, we proceed to calculate the range of the base value for each of them, for

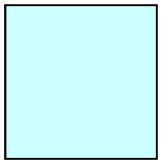
this we classify market research according to homogeneous sector and apply statistical formulas to find that range, then we can choose a value that range It called value basis for simulation and get the value of each apple.

2.1 Application Method

Weighting of apple infrastructure, we have several types of infrastructure as we have said, each representing a value, which are: water supply, sewerage, electricity, public lighting, road network, telephone network, sidewalks, curbs, garbage collection, land use and street cleaning. A standard block has four sides, each of which may or may not have service infrastructure and in this connection is reached to obtain the weighted value, and:



4 Infrastructure sides = maximum value.



Neither side infrastructure = zero.

We also have the urban morphology that is the value of neighborhoods, obtained according to three factors, legal status, age, neighborhood, status of the neighborhood, the value of the neighborhood is what moves the block because each belongs to a neighborhood.

We also have built density, which is the value obtained from dividing the number of properties built for the number of apple farms.

Street furniture, which are all facilities that generate influence on each apple among them: education, health, recreation and sports, religious and security. Hence apples that have more features have a higher value.

With these items we find the weight value of the apple.

Determining the value ranges by industry, for this we do with methodology recommended by the AME.

For the calculation we need the information we collect price research subsequently responsible for the technical assessment, together with the departmental director and responsible for valuations and land registers determine the homogeneous sectors. And then make the process of calculating the value per sector, following the calculation method recommended by the technicians of the Association of Municipalities of Ecuador (AME) which is being used in most of the country's municipalities:

Organize information gathered from high to low, this is important for subsequent statistical calculations to be performed.

The following is with this data in the calculation of the median, with the following formulas:

FORMULA	DESCRIPTION
$\boldsymbol{Mediana} = \frac{\boldsymbol{X_{\frac{n}{2}} + X_{\frac{n}{2}+1}}}{\boldsymbol{2}}$	X = Valor o dato N = posición en la lista de datos.

Formula for calculating the statistical median variable, even number data.

FORMULA	DESCRIPTION
$\boldsymbol{Mediana} = \boldsymbol{X_{\frac{n+1}{2}}}$	X = Valor o dato N = posición en la lista de datos.

Formula for calculating the statistical median variable, odd number data.

From the median we choose the values that are within a range of plus 25% and minus 25%. This recommendation by AME technicians. That is the range is given by:

Lower value = Medium - (0.25 * Medium)

Upper value = Medium + (0.25 * Medium)

With these new data we carry out the order and took the frequency of each one, then multiply the frequency for each item and found the summations of frequencies and the product we make. Often times we mean that each data this way is repeated eliminate duplicates.

We calculate the arithmetic mean in this case we do dividing the sum of the data for the number of data. In this case we apply the formula:

Arithmetic Mean ($\bar{x}$) = Sum F * D / Sum F

We then calculated the standard deviation of the data which already eliminate repeated.

FORMULA	DESCRIPTION
$\boldsymbol{\sigma} = \sqrt{\frac{\boldsymbol{1}}{\boldsymbol{N-1}} \sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} (\boldsymbol{x_i - \bar{x}})^2}$	x = Valor o dato N = Número de datos $\bar{x}$ = Media aritmética i = número de dato.

Formula for calculating the standard deviation.

The Student t statistical table, choose the tc factor that we take depending on the number of data we have to perform the calculation and the level of reliability that we want to use as methodology AME 90% confidence. This helps us confidence interval value sector.

We tc factor, standard deviation and the number of data. We calculate the range of fluctuation or variation of the following formula:

Variation factor factor tc = * ((Standard Deviation (σ)) / √ (N-1))

Then we already have a range of values between the lower and upper value of which you can choose the base value homogeneous sector, based on the arithmetic mean we have:

Lower value = Arithmetic Mean - Variance Factor.

Upper value = arithmetic mean + Factor Variation.

3. Conclusions

New methods of land value was not investigated, since the law determines the method for valuing the property, which includes land value and which the Association of Municipalities of Ecuador, created a standard for the process.

The Directorate of Appraisals, through their officials is responsible for the process of valuation of the property, in which land valuation is immersed. To know the technical steps to follow in this process, learning and using the system later will be easier.

The valuation method used is a method and tested, the same that is implemented for assessment in most municipalities, practically consider it a standard and they established the Association of Municipalities of Ecuador, an entity that is responsible for technical assistance in the training of land registry together with the municipalities, when the latter were assigned the responsibility of managing the farm land.

The unit of analysis in the assessment process is the cadastral block and this works to find the value of land.

Homogeneous sectors determined by the cadastral analyst, are directly related to the individual weight of the block which is given by the infrastructure that has it.

The block is made up of smaller units that are the land, the land will take the value of the block and will be affected by known factors increase reduction individualize their value, among these factors are the location of the property on the block, shape, your area, your foreground and background, its topography and the individual services it has.

Acknowledgements

I thank the officials of the Directorate of Appraisals and Cadastral Municipality of Ibarra, for having provided all facilities both knowledge, time and material resources for the development of this work.

Bibliographic References

[1] López, J. (2001). Formación, Actualización Y Mantenimiento Catastral. Quito: DINAC.

[2] Borrero Ochoa, O. (2002). Avalúos de Inmuebles y Garantías (2da. Ed.). Bogotá, D.C.: BHANDAR EDITORES LTDA.

About the Author ...

Marco QUINDE, systems engineering student, experience in land registers for 10 years, work in the city of Ibarra.