

# Prediction Model for Transparency of Land Values Data Base on The Transaction Report

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**Key words** : Prediction model, Land transaction report, Average Indicated Land Value (AILV), Land Value Zone (LVZ), Sale Value of Taxation Object (SVTO), Land and Building Taxation (LBT)

## SUMMARY

The monthly transaction report of land market is the data used for determining and analyzing the Average Indication Land Value (AILV) of the certain region. The transaction data mostly from some agencies who responsible to manage land transfer and transaction in some particular areas. In Indonesia, the agencies were called the notariate offices or PPAT's offices. The monthly reports contain of data and informations about land transaction values that were recorded within one month, and those land transaction values normally were sent to the land and building tax office to be used to determine and analyzing the AILV in the certain region. The problem is the land and building values data which is reported by the notariate offices or PPAT offices, generally less than the real market values.

Average Indicated Land Values (AILV) normally determine by using sales comparison method which must be adjusted to the transaction values data concerning the location characteristics, transaction time for the kind of datas. This AILV sometime has subjective value characteristics where the transaction values data reported was indicated not giving the real values.

Model selected to be used get the real estimate sales price which reported by Notariate dan PPAT offices. It is simple linear regression model where variable of Y= estimate of real sales price and variable of X= sales price indicated from the transaction report. The result of analysis selected linear-Linear model with  $R_{sqr} = 93\%$  and  $SEE = 22.827.004$  as best model to estimate sales price from the transaction report. Later on the selected model will be used to analyse in determining of The AILV for research region. If the AILV result of model considered to be market value compared to The AILV of Land and Building Tax Office, only 8% code of Land Value Zone (LVZ) have AILV according to tax office decree No.09/Pj.6/2003 which is expecting to assesment ratio is 0.80 from market value. While 92% code of other LVZ, The AILV still not yet give to minimum assesment ratio 0.8 from market value. While the ammount of adjustment against land transaction value of land transaction report on 18 codes Land Value Zone (LVZ) in average is equal to 56%

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## BACKGROUND

Autonomy of region, forced to every district at the moment not depending to central government aid anymore, and also insist to fulfill and manage their sources of local government revenues which consist of routine and development expenditure. Some of their efforts in every district is to conduct the intensification and ekstensification of their source local government revenues.

Land and Building Taxation is a kind of central government taxes which the results are mostly redistributed to local government according to the potential economy of every district. The rule of this kind of distribution was mention on the law no.12 year 1994 about Land and Building Taxation (LBT) where the composition are 10% for central government, 9 % for colectivity cost, 16.2% for Provincial government and 64.8% for Local government (district and town government). Later on the shares of central government will be reimbused by local government with certain calculation of revenues and at the end, the central government only entitled to the small part of local government revenues from the land and building taxation( LBT). Considering of most result of LBT is belong to local government, some district which has a low revenue in resources can do some extention of the original local resource income of the region by developing the revenue from the sector of Land and Building Taxation for improving the development expenditure and encouraging the people to pay the LBT.

In determining the rate of LBT debt is mentioned base on SVTO ( Sale Value of Taxation Object)., which stated on section 6 ( 1) Law number 12 year 1994 about Land and Building Tax. In section 6 ( 1) of SVTO is obtained the average value of sales price transaction in real land market, and if there is no transaction, the SVTO is determined by the sales comparison to the similar object taxed, or the new value can be obtained or sale value of object substitution.

Stipulating of SVTO of land with comparative method need to have sale price. The sale price is obtaiend by some information source where come from the montly report of Notary and PPAT Offices and later on the reported data can be used to analyse of determining AILV of the region. The monthly report of Notary and PPAT office consist of sales transaction of land and building within one month periode.

Base on some observation to the montly report of Notary and PPAT, and the effect of using Law number 21 year 1997 which is later be modified to *Law number 20 year 2000 about The transfer taxation of Land and Building right (TTLBR)*. There is a tendency of transaction value that happened during the certain time become not far different to the SVTO which have been specified/ditermined. It can be happend perhaps is to minimize the tax and provision of

the land to be transferred and also some people want to avoid paying the land taxation legally (tax avoidance) or perhaps some people want to avoid paying the land taxation illegally (tax evasion).

There is a strong tendency of the sales transfer price from the monthly report of Notary and PPAT is not far different to SVTO, this will give some problems in servicing of LBT office to get reclassification activity of land values in that region and also some revenue losses of the local government. This means that Local Governments will lose opportunity to add their revenue base on LBT, because no incremental result in new land classification.

Considering the importance of monthly report of Notary and PPAT office for determining SVTO of the land, hence it will be necessary to conduct some research just to check and verification of the truth value of land on monthly report data of Notary and PPAT office.

## **PROBLEMS AND RESEARCH QUESTIONS**

Based on the background, the research questions can be raised :

1. How big is the difference between sales transfer price in monthly report of Notary and PPAT office compared to the real price of transaction in fact?
2. How sales transfer price in monthly report of Notary and PPAT office can reach near with a SVTO of the land in the region?
3. How sales transfer price in monthly report of Notary and PPAT office can be approached to some mathematical model equation in order to get near value of real transaction?
4. How big is assessment ratio of regional research compared to market value?

## **OBJECTIVES**

The Research purposes is to know the truth of sales price data base on monthly report of Notary and PPAT office.

*Objectives of research is to:*

- Analyze the difference between price of transaction in monthly report of Notary and PPAT office compared to the real price in fact.
- Determination model of regresi best linear as predict to get approach price in fact to sales transfer price in monthly report of Notary and PPAT office.
- Forming the land market value at research region
- Identifying and interpretation in determining of AILV to each LVZ in research region compared to its market value.

## **GOALS**

This expected goals of this research :

1. Service facility of Land and Building Tax office to use the sales transfer price data from monthly report of Notary and PPAT office for the activity of reclassification of determined SVTO of land in the research region.
2. Revenue improving of Local Government after reclassification of AILV for each LVZ.

## WORKING HYPOTHESIS

The sales transfer price in montly report of Notary and PPAT office can be anticipated smaller than the real sale transfer price in fact.

## RESEARCH METHODOLOGY

- Collecting the data from the montly report of Notary and PPAT office within period of year 2002 until month of Mei year 2005 about the land and building sales transfer price at research region during those period to be used as data samples.
- Confirmation to get sales transfer price in fact.
- Tesing out the selected model to achieve the significance variables
- Selecting models base on determination coeficient and the smallest of standard estimation error.
- Do some Stastical testes for the significance of each dependent and independent variables
- Perform the best fitting model by using data of sale trafer price from the montly report of Notary and PPAT Office which later on to be used for determination analysis of AILV in every LVZ.
- Consider the new AILV of the model result to be a market value, then compared to original AILV , if the result is under tolerance of LBT where should be 80 % of market value.

### Notariate cost.

According to Law number 30 year 20004 section 36 mentioned that a Notarist is entitled to get honorarium for 1.0 to 2.5% of sale transfer price in some variation.

The handicap of implementation to Land transfer Tax is depended on the attention of the societies :

- Passive threats: the society does not want to pay taxes because of the intelectual development of society, the tax system is difficult to understand and the control system is not work.
- Active threats : the society try to avoid paying taxes by doing tax avoidance and tax evasion

### Sampling Methods

The use of purposive sampling to select the sample at the moment of land and building sale transfer is happened on the research area. And the number of samples are 63 transactions.

### Models

models of linear regression is :

$$Y = b_0 + b_1X + u \quad (\text{model lin-lin})$$

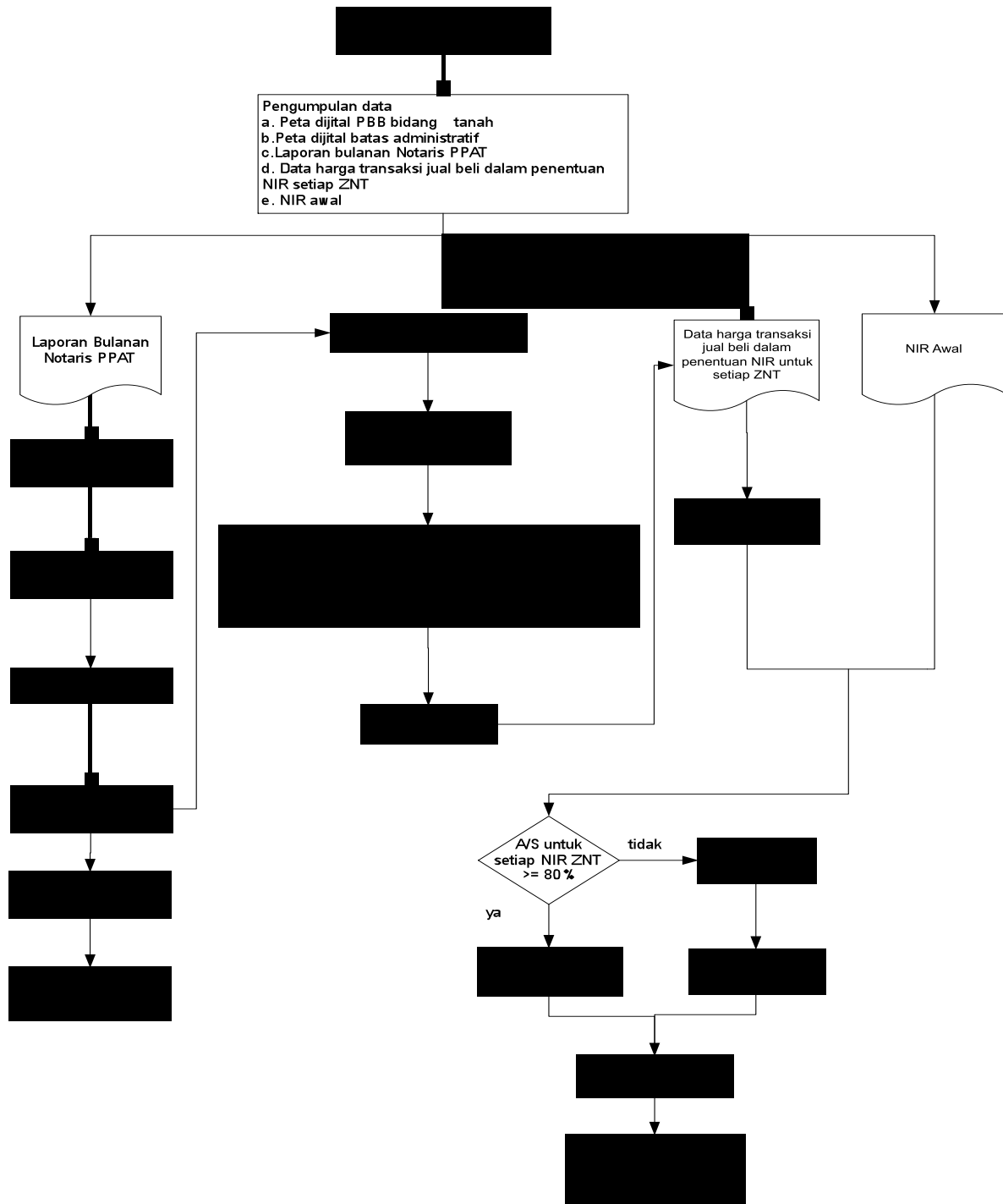
$$Y = b_0 + b_1Ln(X) + u \quad (\text{model lin-log})$$

$$\text{Ln}(Y) = b_0 + b_1X + u \quad (\text{model log-lin})$$

$$\text{Ln}(Y) = b_0 + b_1\text{Ln}(X) + u \quad (\text{model log-log})$$

*Ln = logaritma natural (bilangan berbasis 2.71828182845904)*

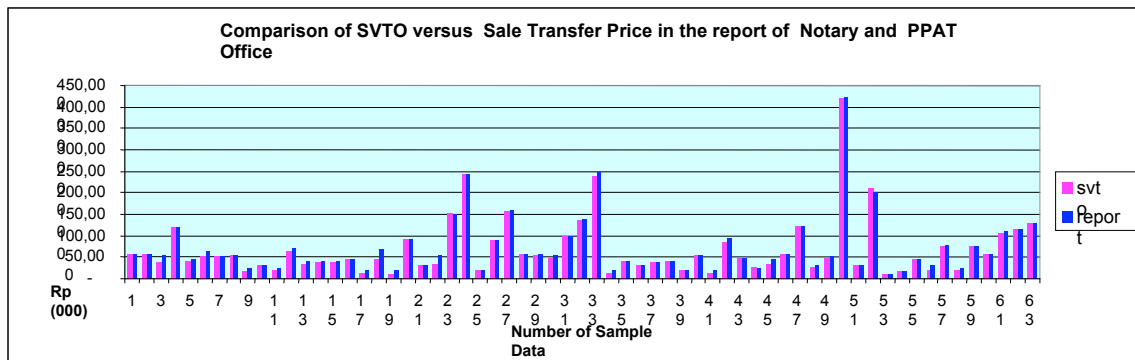
## **Flow Diagram**



Picture 2. Diagram Emit a stream of Research

### Sample Data

Base on the overall data observation, in general the *land and building sale transfer prices* which montly reported by Notary and PPATOffice is far different to SVTO which have been specified by LBT Office. The Sale Price Comparison can be seen below:

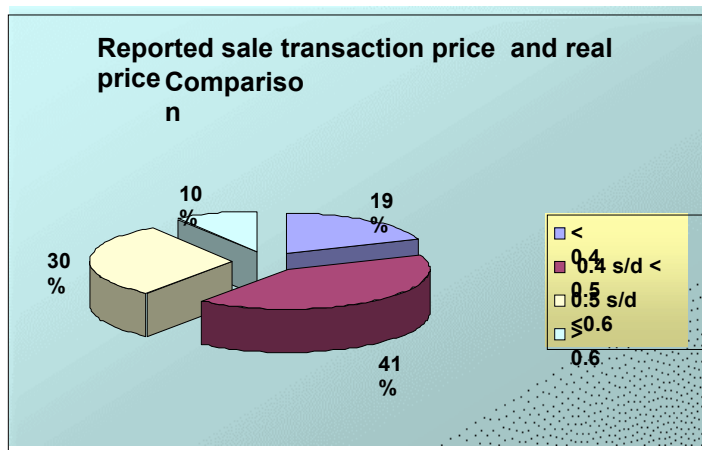


Picture 3. Comparison Of *Sale Transfer Price In Report Notary and PPAT to SVTO*

From the picture above, indicated that sales transfer price in report in general is bigger than SVTO. while modus value is equal to 1 indicating that sales transfer price in Notary report of PPAT most often the same to SVTO where : average value = 1.128, Median value= 1.032

### Interviews

In order to get the real land sale price from cross checking activity the interviews technique was implemented in this research. The results is below :



Picture 4 Comparison between the sale transfer price result from field interview and the sale transaction price reported by Notary and PPAT Office

If sales transfer price in reported by Norary and PPAT compared to the result of interview of sales transfer price which in fact, hence will get the ratio of its.

Base on this ratio indicated that sales transfer price **mean value** is reported only equal to **0,48**. With **minimum value** equal to **0,35** and maximum value is **0,67**. By this results there are some reasons that the land sale transaction price is reported not equal to the real land sale price in fact.

### Hypothetical Test

This test is conducted to prove the truth of hypothesis which have been formulated previously where sale transfer price in monthly report of Notary and PPAT office was anticipated smaller than the real sale transfer price in fact. The use of Z test with difference of two mean. Hypothesis will be tested as follows :

Ho = Sales Transfer price from Notary and PPAT report is equal to real sale transfer price in fact

H1 = Sales Transfer price from Notary and PPAT report is smaller than the real sale transfer price in fact

**Tables 1 Result of statistical test with Z-test = 0,05 examination 2 side)**

No	Z <sub>counting</sub>	Z <sub>table</sub>	conclusion
1	-43196,64	±1,96	H <sub>0</sub> reject H <sub>1</sub> accepted

By Z -test with difference two mean got by Z- count = - 43196.64 if in comparing with Z-table with  $\alpha= 5\%$  by examination two sides got Z -tables = + 1,96 The Result of calculation by using 2 mean of Z-count is far above Z-table Thereby hypothesis zero ( Ho) is refused and H1 accepted. From examination of those hypothesis prove that *Sale Transfer Price in report of Notary and PPAT office* compared to *the Real Sale Transfer Price in fact* is **smaller**.

### Development Models.

Base on the research results hence the equation model of mathematics have been made which later can be utilized for prediction of real sale transfer price in fact. There are four alternative models can be used such as : lin-lin model, lin-log model, log-lin model, and log-log model. The following table will represent the result of calculation of parameter to all model above by using SPSS package software.

**Tables 2 Summary Result after parameter calculation by SPSS.**

No	Parameter	Model			
		lin-lin	lin-log	log-lin	log-log
1.	b <sub>0</sub>	23820190.422	-2239686590.147	17,858377	2.0589
2.	b <sub>1</sub>	1,737098	133772308.51444	1.0502E-08	0.9279

Based on tables of above hence can be compiled by the following equation :



### 1. Model-1 **lin-lin**

$$Y = 23820190.422 + 1,737098X$$

### 2. Model-2 **lin-log**

$$Y = -2239686590.147 + 133772308.51444 \ln(X)$$

### 3. Model-3 **log-lin**

$$\ln(Y) = 17,858377 + 1.0502E-08 X$$

### 4. Model-4 **log-log**

$$\ln(Y) = 2.0589 + 0.9279 \ln(X)$$

## Testing Models

By statistical Test with T-test

This test is used to know if independent variable is better to dependent variable (Koutsoyiannis, 1985). To know this, need to do some test to regression coefficient of model. Testing done with two sides test, with  $\alpha = 0,05$ ,  $df = 61$ . Criteria of passing grade if T-count bigger than T-table, and also the other way around. The result of T-count completely as follows :

**Tables 3 Result of Statistical test with T-test**  
( $\alpha=0.05$   $df=48$ ,  $T_{table}=2.01063358$ )

No	Model	$t_{count}$	Significant/ not significant
1	lin-lin	27.133	significant
2	Lin-log	19.491	significant
3	Log-lin	12.203	significant
4	Log-log	27.507	significant

By statistical Test With F-test.

F-test principally conducted to know if all independent variable in model simultaneously have an effect to dependent variable (Gujarati, 1995). Examination conducted with  $\alpha = 0,05$ ,  $df = (1)(48)$ . Criterion of get away test if F-count bigger than F-table, and conversely. The result of F-count completely as follows:

**Tables 4 Result of Statistical test with Uji-F  $\alpha = 0,05$   $df = (1)(48)$ , F-Tabel = 4.042647106**

No	Model	F <sub>-hitung</sub>	Significance/ not significance
1	lin-lin	736.22549	Significance
2	Lin-log	379.91795	Significance
3	Log-lin	148,29545	Significance
4	Log-log	756.63550	Significance

From all result of model examination of F-count is bigger than F-tablel thereby Ho refused and H1 accepted, in other word that all independent variable have an effect to dependent variable.

### ***Selected Model.***

The model selection base on parameter coefficient of determination ( $R^2$ ) and standard of error. With parameter of  $R^2$ , the selected model is a model with value of  $R^2$  is the biggest and standard of error is the smallest.

The coefficient of determination ( $R^2$ ) is the one of statistical value which able to be used to know if there is influence relationship between two variable ( Gujarati, 1995). Coefficient value of determination shows the percentage of variation of dependent variable that able to be explained by those regression equation.

While Standard Estimation Error (SEE) show an accuracy of estimate equation to explain the real independent variable (Algifari,2000). The Smaller of SEE means that estimate equation gave the result with high accuracy performance to explain real dependent variable value.

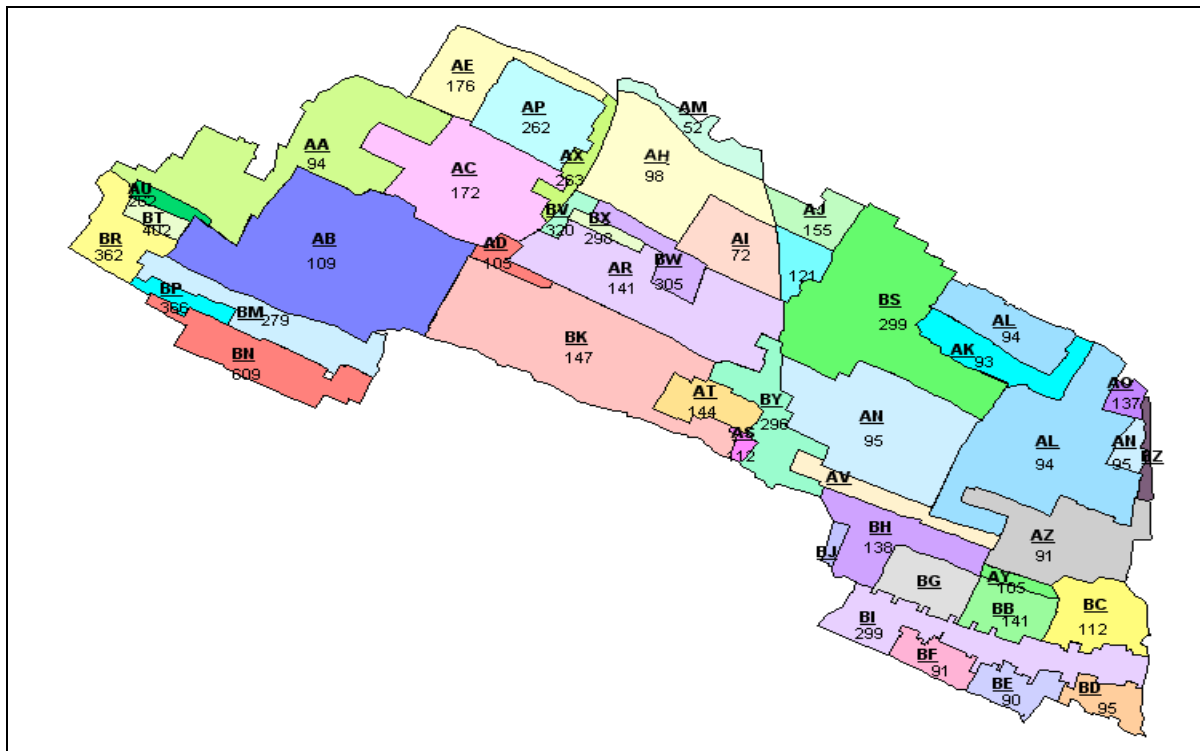
**Tables 5 Coefficient of Determination and SEE of all model.**

No	Model	$R^2$	SEE	Conclusion
1	lin-lin	0,93	22.827.004	Best Model Lin-Lin
2	Lin-log	0,88	30.902.022	
3	Log-lin	0,75	76.543.482	
4	Log-log	0,94	23.701.013	

The conclusion is **best model selected is lin-lin model**, eventhough have coefficient of determination not the biggest equal to 0,93 but have smallest SEE from entire model. With coefficient of determination equal to 0,93 this means that model abble to explain 93% variable dependent. While SEE belong to this lin-lin model gave the smallest SEE compared to the other models.

## AILV At Research Region

In classification of land value which conducted by LBT office, the determination of LBT is specify to each sub-district and divided into several LVZ. Every zone has a AILV ( Average Indicated Land Value) and that will be assumed as market land value for each zone.



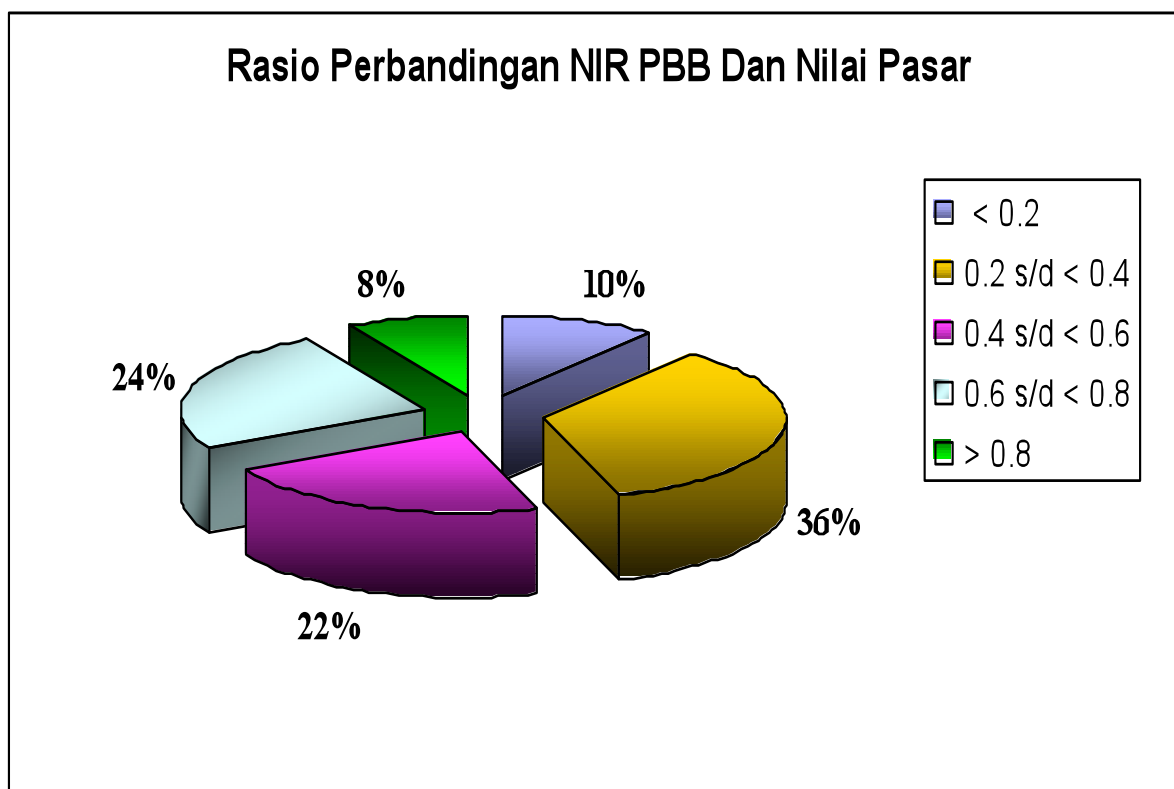
Picture 5. AILV to each;every LVZ sub-district of Tulusrejo

## Forming Of Market Land Value

The Selected model, will be used to predict *land sale transfer price data* for determining AILV to each LVZ within research region in order to get the real land sale transfer price in fact. The Prediction of land sale transfer price in fact from the model can be used for analysis determination of AILV by using AILV data from LBT Office to form land market value classification in the year 2005.

## Ratio of AILV of LBT office to Market Value

According To Letter of Directorate of LBT No.09/Pj.6/2003 is expected **assesment ratio** is **0.80** of land market value. Based on the rule of analysis result of AILV by utilizing model considered as land market value and later, it will compare to the result of determination analysis of AILV which have been conducted by LBT Office hence will get a **ratio**.



**Picture 6. Ratio Comparison of AILV of LBT office with Land Market Value.**

From Result of analysis only 8 % code of LVZ which have fulfilled the condition of Directorate of LBT No.09/Pj.6/2003 which expected assesment ratio should be 0.80 of land market value. While 92% of LVZ of AILV still below land market value. The lowest Assessment Ratio equal to 0.18 was at code of LVZ : **BJ, BG, BRA, BK**. And assesment ratio which iequal to market value was coded of LVZ : **AF, AB** and. Base on the datas above LBT office can do reclassification, specially for year 2006. In order to approaching near the land market value and relaying to the letter of Directorate of LBT, hence the expected assesment ratio should be reached **0.80**.

## CONCLUSION

- Base on datas of research sampel, land sales transfer price in monthly report of Notary and PPAT office is smaller than the real land sale transfer price in fact. This could be happened perhaps for reducing cost or expenditure of the land seller and buyer, other than the real land sale transfer price in fact.
- The Land sale transfer price in monthlu report of Notary and PPAT Office have a variation difference with minimum **0.35** ( around) and maximum the reported is **0,67** ( around), while the mean of land sale transfer price is reported arround **0,48** . This means that the land and building sale transfer price which has been reported by the Notary and PPAT Office will be 48% in average, compared to the real land & building

sale transfer price in fact. The minimum price that was reported is 35% and the maximum price that was reported is 68%. 3. The selected model which can be used for the prediction of land sale transfer price in fact from the monthly report data of Notary and PPAT office in this research is the **lin-lin model** with the following equation :

- $Y = 23820190.422 + 1,737098X$
  - $Y$  = Prediction of land sale transfer price in fact
  - $X$  = land sale transfer price data in monthly report of Notary and PPAT office.
- If the determination of AILV for each LVZ by using the selected model and assumed as a land market value hence only 8% LVZ with AILV at research region with the assessment ratio minimum 0.80 from its landmarket value. While 92% LVZ of AILV under its land market value. If relayed to the letter of Directorate LBT No.09/Pj.6/2003 which expected assesment ratio is 0.80 from land market value, For the codes of LVZ which not yet ruled from Letter of Directorate LBT, it need to do some reclassification by LBT Office in the research region.

## SUGGESTION

1. it will be necessary to pay attention of land sale transfer price below Rp.60 million and above Rp.60 million. Considering costs besides the sales transfer price for the transaction of sales above Rp.60 million compared to bigger of transfer price under Rp.60 million, and also pay attention time value of money. So that accuracy in at cost can reach
2. Similar research require to be done at other kelurahan, considering assessment ratio of AILV of LBT compared to land market value in a different region such as one sub-district with other sub-district. So that needed to create model for land sale transfer price prediction in fact.
3. In general sales transfer price in Notary report of PPAT do not far differ from SVTO, anticipated by SVTO made by base as transfer price which is submitted in Notary report of PPAT. For that in analyse AILV a region strived not differ far with its market value.

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