

## Elasticity Measurement Of Local Taxes And Charges In Forecast Of Own-Source Revenue (PAD) Of Provincial Government In Indonesia

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### ABSTRACT

This research aims to measure the elasticity of local taxes and charges in the framework of Own-Source Revenue (PAD) forecasting of Provincial Government in Indonesia. By using Fully Modified Least Square (FMOLS) method, the result shows that long-term elasticity or local taxes growth of 0.865 is still under GRDP growth, in accordance with the growth of charges of 0.756 shows the same result. While short-term elasticity or local taxes stability of 0.568 gives an overview of local taxes that is not sensitive to changes in GRDP, while the stability of charges of 2.704 shows the result is sensitive to changes in GRDP, however the value of stability is not supported sufficient significance so that the sensitivity factor of PAD is influenced by factor in beyond that. Forecasting result using the model in 2013, both local taxes and charges show better result than actual forecasting shown with smaller Revenue Forecast Error (RFE) value.

**Keywords:** Local taxes, local charges, FMOLS, RFE

### INTRODUCTION

Own-Source Revenue (PAD) aims to authorize regional government to finance the implementation of regional independence in accordance with regional potential as a manifestation of decentralization (Andriyani and Siregar, 2013). The role of regional government in exploring and developing various regional potentials as a source of local revenue will determine the success of government task implementation, development and community service in the region.

In the planning of revenue target especially PAD should be more realistic in accordance with the potential of available resources by considering social condition of community (Basri, 2002). During this in the determination of budget,

the usual approach is incremental approach (Mokoginta, 2002). PAD projection phenomena at Provincial Government in Indonesia during the period of 2002-2012 from the data of Finance Ministry shows that Revenue Forecast Errors (RFE) reached 18.24% above revenue target which gives an overview that Provincial Government projected its revenue too low.

The more turbulent the market environment, technology, and the external economy, management will be encouraged to arrange strategy (Bastian, 2005). In planning the PAD, factors that influence should be considered in order to avoid refraction in budget planning. Adi (2007) stated that one of the factors that can encourage the region's financial capacity is economic growth. Thus Gross Regional Domestic Product (GRDP) can be used as a benchmark for economic improvement of a region.

Research on the effect of Gross Regional Domestic Product (GRDP) on PAD shows positive and significant influence (Hidayat, 2009; Aryanti and Indarti, 2010; Muchtholifah, 2010; Agustri, 2011; Sari, 2013; Kusuma, 2014; Gitaningtyas, 2014). This means GRDP (Gross Regional Domestic Product) is one of the important component to know the region potential as an effort to receive the Own-Source Revenue (Sari, 2013).

To measure the growth and stability of local taxes in relation to economic changes, it is necessary to study the relationship of local taxes revenue and GRDP fluctuation, this is to estimate the elasticity of local taxes revenue and show growth and stability of local taxes revenue (Ishida, 2011). Tax elasticity is defined as percentage of tax revenue change is divided by percentage of GRDP change (Ishida, 2011). 1% increase of GRDP should be positively responded by PAD. Accordingly, Cotton (2012) added in terms of monitoring of tax realization, elasticity historical data and tax buoyancy give an overview of tax collection performance and give input for the government to raise or lower tax rates and/or tax base in formulation of national budget.

Problem formulations in this research are: 1) How is the level of local taxes stability on province in Indonesia in the long-term and short-term? 2) How is the level of local charges stability on province in Indonesia in the long-term and short-term? 3) How is the level of revenue forecasting accuracy for 1 year after the period of measuring the stability of local taxes and charges? Purposes of this research are: 1) To know the level of local taxes elasticity of Provincial Government in Indonesia in long-term and short-term. 2) To know the level of local charges elasticity of Provincial Government in Indonesia in the long-term and short-term. 3) To know the accuracy of local taxes and charges forecasting results of Provincial Government in Indonesia at 1 year after the estimation period.

The results of this research are expected to give the following benefits: For Academics this research is the initial source for further research on the growth and stability of Own-Source Revenue (PAD) and forecasting effort (*forecast*) of PAD for the future of Provincial Government in Indonesia. For Regional government this research is expected to give benefits for improvement of PAD budgeting, especially local taxes and charges on Provincial Government in Indonesia and give an appropriate understanding for the actors of government, especially directly involved in the budgeting planning process of APBD. For Researcher this research is expected to increase the insight of researcher's knowledge about growth and stability of Own-Source Revenue (PAD) and forecasting effort (*forecast*) of PAD of Provincial Government in Indonesia, besides as one of the requirements of bachelor degree graduation.

Suparmoko (2002) in Badrudin (2012) stated that public economy is the study of how the government does tax levied and charges with the principles of taxation in an effort to increase the budget strength of government budget. Public economy is closely related in the process of decision-making based on democracy principle. If the electors of representatives monitor the activities of their representatives, these representatives will work harder and try to convince electors that their contribution to tax payments will lead to better condition (Badrudin, 2012). Government plays a role in the increase of Gross Domestic Product (GDP)

through public spending issued. Musgrave and Musgrave (1989) and Fuad, et.al (2005) in Badrudin (2012) Government is indispensable in the economy especially to carry out its function in accelerating economic growth so as to improve the living standard of population at a reasonable level. In other words, in the theory of public economy, government plays an important role in distribution of people's prosperity through tax instrument and economic stability.

Revenue shows the sum of all money received by a person or household for a certain period of time (usually one year). Revenue consists of wages or labor receipts, from property such as rent, interest and dividend, as well as payment of transfer or receiving payments from government such as social benefits, or unemployment insurance (Samuelson and Nordhaus 1993 in Muchtolifah 2010). According to Muchtolifah (2010), revenue can be measured by the sum of Consumption during a period, whether from revenue (factor of production or transfer) received by a person for a certain period of time or the use of durable goods obtained previously. Net growth in individual property during a certain period. So on that basis, national revenue can be defined as the value of production of goods and services created in an economic activity within a certain period.

Budgeting is process of preparing a budget containing a statement in the form of a unit of money that is a reflection of activity and performance target to be achieved for a period of time (Astuti, 2007). Further Glenn A. Welsch in Mokoginta (2002) defined budget as a form of statement of plan and management policy used in a certain period as a blue print in that period. While Astuti (2007) briefly defined budget as a plan that is arranged in quantitative form in monetary unit for a period.

One of the important things in budget preparation is the measurement of financing capability of activities to be implemented in the form of revenue estimate, in the era of regional independence as now PAD has become an important point in the effort to increase local revenue. Law No. 33 of year 2004 on Fiscal Balance Between Central Government and Regional Government

defines own-source revenue as revenue derived from regions levied based on regional regulations in accordance with regulation of law.

The magnitude of PAD shows the ability of regions to meet their own needs and to maintain and support the results of development that have been implemented and will be implemented in the future (Mamesah, 1995 in Abdullah and Halim, 2003). So that the addition of PAD plays an important role to create regional independence, therefore each region is competing to find a source from its own economic activities through extensification and intensification steps of Own-Source Revenue (PAD). Setiaji and Adi (2007) added that this level of autonomy is showed by the contribution of PAD (share) to fund the regional expenditures. Own-Source Revenue (PAD) based on Article 157 letter a Law No. 32 of Year 2004 concerning Regional Government consists of Local taxes, local charges, result of Local own source assets and Other Lawful Local Revenue.

Local taxes in Law No. 28 of year 2009, it is mentioned that local taxes is obligatory contribution to the region owed by private individuals or entities of enforced nature based on the law, without receiving direct compensation and used for the needs of the region mostly for the welfare of the people. Law Number 28 of Year 2009 concerning Local taxes and Charges, divides the taxes into 2 (two), namely. Types of Provincial Taxes consist of: 1) Motor Vehicle Tax, 2) Excise for transferring ownership of motor vehicle, 3) Motor Vehicle Fuel Tax, 4) Surface Water Tax, and 5) Cigarette Tax

Types of District / Town Taxes consist of: 1) Hotel Tax, 2) Restaurant Tax, 4) Entertainment Tax, 5) Advertising Tax, 6) Street lighting tax, 7) Tax on non-metal mineral and rock, 8) Parking Tax, 9) Ground Water Tax, 10) Tax on Swallow's Nests, 11) Rural and urban land and building tax, and 12) Excise/tax for acquiring right on land and building.

Local Charges is one type of local revenue collected as payment or direct rewards for services provided by regional government to community (Hidayat, 2009). Based on Law Number 28 Year 2009, local charges is local retribution as payment for services or certain permits specifically provided and/or given by regional government for the purpose interest and benefits and which private

person or entities. Thus the definitions of local charges in accordance with the main characteristics are: 1) Retribution is levied by the region, 2) retribution tariff is set by local regulations, and 3) Retribution is paid by them who enjoy certain facilities provided by the region. Law Number 28 Year 2009 states that the object of retribution consists of:

- a. General Services;
- b. Business Services;
- c. Certain Permits.

Management result of Local own source assets is the source of PAD derived from participation of regional government capital in business entity outside the governmental area. Datu (2012) explained local companies can be divided into two categories: First; an own-local company that is a regional company established by the region itself. And Second; a local company derived from his superior government. Supriatna (1993) in Datu (2012) stated that the results of regional company consist of First; For regional company with total capital is Local own source assets (without external capital), regional business results in the form of regional development funds for expenditures of magnitude in accordance with applicable regulations. and Second; For a regional company with capital partially is Local own source assets (with additional capital from outside), the results of regional company in the form of development funds and parts for regional budgets of magnitude in accordance with applicable regulations. On that basis, results of the management may be either dividend or profit sharing from business entity receiving capital participation.

Other Lawful source of PAD is derived from sale of regional property, giro service, the receipt of compensation for regional assets (TP-TGR), overpayment of third party payment, installments and/or installments of motor vehicle and other of revenue (Mawardi, 2002). In general, other lawful of PADs is Own-Source Revenue that can not be categorized into local taxes, local charges and Management Result of Local own source assets. Although there is realization of this PAD type but this revenue source is very fluctuation every year and there has not

been potential (Mawardi, 2002). In practice, Datu (2012) stated that other lawful source of PAD can be revenue from regional agencies and other revenues legally obtained by regional governments including various types of revenue from the sale of equipments and waste materials, revenue from rent, interest on bank loans and giro, and revenue of penalties imposed on the contractor

There are 4 (four) methodologies in estimating the growth and stability of revenue, namely: buoyancy, coefficient of variance, potential variability in tax revenue, and elasticity (Ishida, 2011). This research uses parameter used by Ishida (2011) to estimate the growth and stability of local taxes and charges on Provincial Government in Indonesia, namely the elasticity method for long-term and short-term assessment.

There are 2 (two) approaches in assessing the relationship between long-term and short-term elasticities. Groves and Kahn (1952) in Ishida (2011) stated there is a direct relationship between long-term and short-term elasticities which in this approach elasticity of long-term revenue is also defined elastic in the short term. Thus there is a trade-off between long-term and short-term stability. Sobel and Holcombe (1996) gave a different approach, which long-term and short-term elasticities don't have directly relationship. Long term tax elasticity  $> 1$  means the tax growth is higher than average of GDP, while short-term tax elasticity  $< 1$  means tax fluctuation is more stable. Thus there is no trade-off between long-term and short-term stability.

Long-term tax growth is estimated by the following equation:

$$\ln(R_t) = \alpha + \beta \ln(Y_t) + \varepsilon_t \dots \dots \dots (1)$$

Equation (2.1) is called Revenue Level Models (Ishida, 2011). In the equation,  $R_t$  and  $Y_t$  are real tax revenue and GDP during  $t$  period.  $\beta$  coefficient is the long-term revenue elasticity, which  $\beta$  coefficient  $> 1$  indicates that local taxes grows higher than GDP, while  $\beta$  coefficient  $< 1$  indicates that local taxes grows lower than GDP. Tax with long-term elasticity  $> 1$  means tax with the high growth, on the contrary Tax with long-term elasticity  $< 1$  means tax with the lower growth. Stability of short-term revenue is estimated by the following equation:

$$\Delta \ln(R_t) = \alpha + \beta \Delta \ln(Y_t) + \mu_{t-1} + \varepsilon_t \dots \dots \dots (2)$$

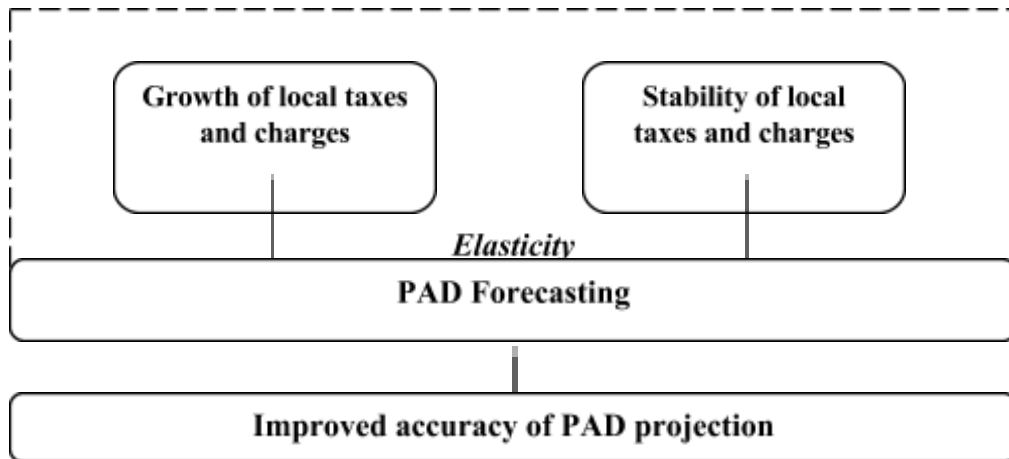
Equation (2.2) is called Error Correction Model (ECM), which this equation is the first derivative of equation (2.1) plus  $\mu_{t-1}$  which is lag of estimation error. Error Correction Model (ECM) is a model used to correct the regression equation among variables that are not stationary individually to return to the equilibrium value in the long term, with the main condition being the existence of cointegration relationships among the constituent variables (Ajija, et al , 2014).

Forecasting revenue is an activity to estimate the value that may be received in the future measured by money which is based on data and assumptions of the present. Forecasting is necessary because of the timelag between expected event and current condition. If the timelag is long then forecasting will be important and much needed, especially in determination of an event that will arise so that it can be prepared things or actions needed to anticipate the situation. In general, forecasting is divided into 2 (two), namely:

Qualitative Forecasting is a forecast based on qualitative data in the past based on intuition thinking, opinion and knowledge and experience of the preparation. Quantitative Forecasting is a forecast based on quantitative data in the past. Whether good or not a method used is determined by the difference or deviation between the forecast results with the reality that occurred. Forecasting method based on the use of relationship pattern analysis between variables that are estimated with time variable which is time series (time series). Forecasting methods included in this type are: 1) Smoothing Method, 2) Box Jenkins Method, 3) Method of Trend Projection with Regression.

Forecasting method based on the use of relationship pattern analysis between variables to be estimated with other variable that influence it, not the time, which is called correlation method or causal (causal method). Forecasting methods included in this type are: Regression and Correlation Methods, Econometric Method, and Input Output Method. Based on the above description of problem formulation in Chapter I, various theoretical studies that can support this research, the authors set conceptual framework as follows:





**Picture 1. Conceptual framework**

Elasticity assessment is conducted to see the growth and stability of local taxes and charges. The growth is measured by long-term elasticity while stability is measured by short-term elasticity. Forecasting of local taxes and charges is measured through the growth equation of local taxes and charges that reflect long-term elasticity. Stability is used to measure the short-term fluctuation in local taxes and charges. The use of growth value and stability of local taxes and charges in PAD forecasting is expected to improve the accuracy of forecasting.

## **RESEARCH METHOD**

This research is a developmental research that is quantitative. Developmental research is research that aims to investigate pattern and sequences of growth, development, and or change as a function of time (Partino, 2008). Research design is preparation of forecasting model of Own-Source Revenue (PAD) through the elasticity measurement of local taxes and charges with Gross Regional Domestic Product (GRDP) as revenue base (tax base). The out put expected can help regional government, especially Provincial Government in Indonesia, in estimating Budget of Own-Source Revenue (PAD) to make a more accurate by reducing Revenue Forecast Error (RFE) level as an indicator of success.

The research flow uses the financial and economic data of provincial government during the period of 2002-2012 as an estimator of growth model and stability of local taxes and charges in the long term and short term measured by the elasticity value to GRDP. Model equation is a forecasting model used to

assess Revenue Forecast Error (RFE) in 2013. This research uses secondary data obtained through relevant agencies authorized to issue data namely Ministry of Finance, Audit Board (BPK RI), and the Central Bureau of Statistics (BPS). Research data is limited in the period of 2002-2013 collected from November 2015 to January 2016.

Population used in this research is Budget Realization Report (LRA) and economic data of Provincial Government in Indonesia Year 2002-2013. Sample means taking a portion of population as the population representative (Partino, 2008). sampling technique used in this research using purposive sampling, namely sampling using criteria as follows:

- a. Provincial Government which presents the revenue budget and revenue realization for the period of 2002-2013 in full.
- b. The revenue and realization budget can be downloaded through the website [www.djpk-kemenkeu.go.id](http://www.djpk-kemenkeu.go.id) or the result of audit findings Report (LHP) of BPK-RI.
- c. Revenue realization presented by Provincial Government shall be stipulated in its budget in APBD.

The results of sampling with criteria determined are as follows:

**Tabel 1.**  
**Sampling**

Description	Value
Number of Provinces in Indonesia	34
Provinces that do not provide complete financial data for 2002-2013 (12 years)	(13)
Provinces that provide complete financial data for 2002-2013 (12 years)	21
<b>Sample of Research (21 Provinces x 12 Years)</b>	<b>252</b>

Research variables used and operational definition in this research: Independent variable ( $X_1$ ): Gross Regional Domestic Product (GRDP) of Province and Dependent variable: Local taxes ( $Y_1$ ) and Local charges ( $Y_2$ )

Research variables used are intended to measure the level of revenue base elasticity on revenue acquisition. Revenue base is proxied through the figure of Gross Regional Domestic Product (GRDP), whereas the revenue acquisition is proxied with realization figure of local taxes and charges. Operational definitions of each variable are as follows:

Gross Regional Domestic Product (GRDP) is calculated based on the constant price of 2000 and expressed in rupiah. Local taxes used is the budget data and realization of provincial tax in Indonesia for the period 2002-2013, which is the accumulation of Motor Vehicle Tax, Excise for transferring ownership of motor vehicle, Motor Vehicle Fuel Tax, Surface Water Tax, and Cigarette Tax. Local Charges used is the budget data and the realization of provincial retribution in Indonesia for the period 2002-2013 which is the accumulation of Public Services Retribution, Business Services Retribution and Certain Services Retribution. Stationarity test is done by using *Unit Root Test* on variables used. This is done to see the stationary condition of research data, because economic and financial data tend to be not stationary. The Unit Root Test results are as follows GRDP

**Tabel 2.**  
**Following Information**

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	13.5392	1.0000	21	208
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	17.3943	1.0000	21	208
ADF - Fisher Chi-square	1.32984	1.0000	21	208
PP - Fisher Chi-square	1.25872	1.0000	21	210

From the data it appears that the probability of 4 (four) methods used shows the value 1,0000 which the value is greater than the standard  $\rho$ -value set of 5%. So accepting  $H_0$  which states that GRDP data is not stationary.

a. Local taxes

Method	Statistic	Prob.**	Cross-	
			Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	-4.70039	0.0000	21	207
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.45223	0.9268	21	207
ADF - Fisher Chi-square	25.3492	0.9802	21	207
PP - Fisher Chi-square	65.0772	0.0127	21	210

From the data it appears that probability of 2 (two) methods used by Levin, Lin & Chu and PP - Fisher Chi-square show the value of 0.0000 and 0,0127 which means it is smaller than the  $\rho$ -value standard set namely 5%. However, the other two methods Im, Pesaran and Shin W-stat and ADF - Fisher Chi-square show probability values of 0,9268 and 0,9802 which the number is above the  $\rho$ -value standard. So on that basis, local taxes is categorized as receiving  $H_0$  stating that local taxes data is not stationary.

b. Local Charges

Method	Statistic	Prob.**	Cross-	
			Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu $t^*$	-4.68325	0.0000	21	207
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.92387	0.0272	21	207
ADF - Fisher Chi-square	54.1837	0.0985	21	207
PP - Fisher Chi-square	57.5496	0.0555	21	208

From the data it appears that the probability of 2 (two) methods used by Levin, Lin & Chu and Im, Pesaran and Shin W-stat show the value of 0,000 and 0,0272 which means it is smaller than the  $\rho$ -value standard set namely 5%. However, two other methods of ADF-Fisher Chi-square and PP-Fisher Chi-square show probability value of 0,0985 and 0,0555 which the number is above the  $\rho$ -value standard. So on that basis, Local charges is categorized as receiving  $H_0$  stating that Local charges data is not stationary. Changes in stationarity of data is done by converting data into first difference form with the following results.

a. GRDP

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.53745	0.0000	21	185
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.18724	0.0007	21	185
ADF - Fisher Chi-square	76.8515	0.0008	21	185
PP - Fisher Chi-square	99.8042	0.0000	21	189

From the data it appears that the probability of 4 (four) methods used show a value is smaller than the  $\rho$ -value standard set namely 5%. So it rejects  $H_0$ , and it means the GRDP data is stationary.

b. Local taxes

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-15.9688	0.0000	21	180

Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.95793	0.0000	21	180
ADF - Fisher Chi-square	159.397	0.0000	21	180
PP - Fisher Chi-square	230.870	0.0000	21	189

From the data it appears that the probability of 4 (four) methods used show a value of 0,000 which the value is smaller than the  $\rho$ -value standard set namely 5%. So it rejects  $H_0$ , and it means the local taxes data is stationary.

c. Local Charges

Method	Cross-			
	Statistic	Prob.**	sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-11.2699	0.0000	21	183
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.61649	0.0000	21	183
ADF - Fisher Chi-square	115.163	0.0000	21	183
PP - Fisher Chi-square	160.008	0.0000	21	187

From the data it appears that the probability of 4 (four) methods used show a value of 0,000 which the value is smaller than the  $\rho$ -value standard set namely 5%. So it rejects  $H_0$ , and it means data retribution area is stationary. The processing results of this test data show the following results:

**Alternative hypothesis: common AR coefs. (within-dimension)**

	Weighted			
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	0.072145	0.4712	-1.244596	0.8934
Panel rho-Statistic	1.019544	0.8460	0.561675	0.7128
	-			
Panel PP-Statistic	3.158977	0.0008	-5.175832	0.0000
Panel ADF-Statistic	-	0.0000	-6.115744	0.0000

4.769039

Alternative hypothesis: individual AR coefs. (between-dimension)

	<u>Statistic</u>	<u>Prob.</u>
Group rho-Statistic	2.631851	0.9958
	-	
Group PP-Statistic	5.884140	0.0000
	-	
Group ADF-Statistic	6.640433	0.0000

$H_0$  of Cointegration test states if Probability  $>$   $\rho$ -value standard namely 5%, then it receives  $H_0$ . From the results of processing, probability of Panel PP and Panel ADF are statistically and weighted statistical show the number of 0,000 which means it is under 5%, besides that individual Group PP statistic and Group ADF Statistic show the same number which is 0,000 which means it also under 5% significance. So data of GRDP, local taxes and charges are occurred cointegrasi.

Result of data processing, shows the equation result of FMOLS local taxes is as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPD RB	0.865986	0.001326	652.9160	0.0000

$$\text{LNPAJAK} = 0.865986440966 * \text{LNPD RB}$$

The equation illustrates the long-term growth of local taxes measured by the elasticity of GRDP. Equation model that occurs  $\text{LNPAJAK} = 0.865986440966 * \text{LNPD RB} + \epsilon$  with 0,0000 significance under  $\rho$ -value of 5% so

that the model can be stated valid. From the equation, it can be seen that the long-term elasticity or growth of local taxes is 0.865986 and significant at 5%. Equation of Fully Modified OLS (FMOLS) of Local Charges. The result of data processing, shows the equation result of FMOLS retribution area is as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPDRB	0.756540	0.001793	421.9555	0.0000

$$\text{LNRETRIBUSI} = 0.756540334188 * \text{LNPDRB}$$

The equation illustrates the long-term growth of local charges measured by the elasticity of GRDP. Equation model that occurs  $\text{LNRETRIBUSI} = 0.756540334188 * \text{LNPDRB} + \varepsilon$  with 0,0000 significance under p-value 5% so that the model can be stated valid. From the equation, it can be seen that long-term elasticity or local charges growth is 0.756540 and significant at 5%.

*Error Correction Model (ECM) of Local taxes.* Calculation results of local taxes ECM are known as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.153176	0.075595	2.026276	0.0444
D(LNPDRB)	0.568883	1.337961	0.425186	0.6713
UP(-1)	-0.430246	0.070633	-6.091295	0.0000

R-squared	0.186964	Mean dependent var		0.180528
Adjusted R-squared	0.177049	S.D. dependent var		0.287127
S.E. of regression	0.260472	Akaike info criterion		0.165159
Sum squared resid	11.12670	Schwarz criterion		0.221171
Log likelihood	-10.79075	Hannan-Quinn criter.		0.187893
F-statistic	18.85649	Durbin-Watson stat		2.515028
Prob(F-statistic)	0.000000			



Substituted Coefficients:

$$D(LNPAJAK) = 0.153175689507 + 0.568882828835 * D(LNPDRB) - 0.430246100068 * UP(-1)$$

The R<sup>2</sup> value of 0.186964 is smaller than the Durbin-Watson value of 2.515028 which means ECM of local taxes is not Spurious Regression so that ECM model of local taxes is valid. The lag of estimation error value indicated by the UP(-1) is negative value of -0.430246 at the significance of 0.0000 or less than the standard of 0.05 so that ECM equation of local taxes can be stated valid.

On the other hand, calculation of D(LNPDRB) value of probability shows the number of 0.6713 which the value is over the standard value of p-value 0.05 so that ECM equation is not significant, in other words, the short-term stability of the local taxes showed by the elasticity value has no clear relationship with GRDP. ECM equation of Local taxes:

$$D(LNPAJAK) = 0.153175689507 + 0.5688828288 * D(LNPDRB) - 0.430246100068 * UP (-1)$$

indicates the value of local taxes stability in short term that is equal to 0.5688 or less than 1 (one) so that the fluctuation is still under the fluctuation of GRDP.

*Error Correction Model (ECM) of Local Charges.* The calculation results of ECM retribution are known as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.083990	0.219253	-0.383074	0.7022
D(LNPDRB)	2.704118	3.881492	0.696670	0.4870
UR(-1)	-0.554198	0.073329	-7.557714	0.0000
R-squared	0.265631	Mean dependent var		0.055089
Adjusted R-squared	0.256675	S.D. dependent var		0.873254
S.E. of regression	0.752887	Akaike info criterion		2.287998
Sum squared resid	92.96161	Schwarz criterion		2.344010

Log likelihood	-188.0478	Hannan-Quinn criter.	2.310732
F-statistic	29.66042	Durbin-Watson stat	2.052951
Prob(F-statistic)	0.000000		

$$D(LNRETRIBUSI) = -0.083990249964 + 2.7041178626 * D(LNPDRB) - 0.554198242627 * UR(-1)$$

The R<sup>2</sup> value of 0.265631 is smaller than Durbin-Watson value of 2.052951 which means charges ECM is not Spurious Regression so that ECM retribution model is valid. Lag of estimation error value showed by a negative UR (-1) of -0.554198 on the significance of 0.0000 or less than the standard of 0.05 so that ECM equation of charges formed can be stated valid.

On the other hand, calculation of D(LNPDRB) value of probability shows the number of 0.4870 which is above the standard value of p-value 0.05 so that ECM equation is not significant, in other words, stability of short-term charges showed by its elasticity value has no clear relationship with GRDP. The ECM equation of charges is  $D(LNRETRIBUSI) = -0.083990249964 + 2.7041178626 * D(LNPDRB) - 0.554198242627 * UR(-1)$  indicates the value of charges stability in the short term that is equal to 2.7041 or more than 1 (one) so that it is so fluctuation above fluctuation of GRDP.

**Tabel 3.**

**Calculation of Local taxes and Charges Forecasting**

Description	RFE OF	RFE OF TAXES	RFE OF	RFE OF CHARGES
	TAXES 2013	MODEL 2013	CHARGES 2013	MODEL 2013
Average of RFE	11.08	8.76	41.71	31.94

The calculation results show that the RFE Model of local taxes is 8.76% and RFE model of charges is 31.94%. This condition is smaller than actual RFE 2013 for local taxes of 11.08% and charges of 41.71%.

From the results of data processing obtained the value of long-term growth equation and short-term stabilities of local taxes and charges as follows:

**Table 4.**  
**Elasticities of Local taxes and Charges**

Types of PAD	The growth of long-term		Stability of short-term		
	<i>B</i>	<i>R</i> <sup>2</sup>	<i>β</i>	<i>μ</i>	<i>R</i> <sup>2</sup>
Local taxes	0.865 (0.000)	0.801	0.568 (0.671)	-0.430	0.186
Local Charges	0.756 (0.000)	0.055	2.704 (0.487)	-0.554	0.265

Data of Table IV.1 show different results from the Sobel and Holcombe (1996) research taking place in United States and Ishida (2011) taking place in Japan despite using similar assessment methods. The difference in the results can be understood because of differences in taxation regulation in each country with different conditions and backgrounds. Ishida (2011) implied a major difference in tax collection in western countries with Japan in particular, namely in terms of the sensitivity of changes in tax rates. Western countries, in this case the United States, is very reactive in changing the tax rates adjusted to economic condition. In other words, the tax as a fiscal instrument has important role in improving the country's economy. Similar things are not seen in Japanese economy which changes in tax rates tend not to be sensitive to changes in economic conditions.

In Indonesia, changes in tax rates, especially local taxes tend not to change in a short time. Although in Law Number 28 Year 2009 implies limits of local taxes and charges that may be levied, in the meaning that it is not a binding benchmark for regions to set local taxes and charges rates, but in the field regional government very rarely changes the tax rates to adjust the economic condition. This is due to the length of bureaucracy of changes in local taxes and charges that must be approved by local DPRD and enacted in Local DPRD regulation. Seeing

the condition, local taxes and charges rates in Indonesia are unchanged in a short time, similar to the condition of taxation in Japan, as Ishida (2011) described in his research. Differences in research results of Sobel and Holcombe (1996) and Ishida (2011) can be seen in the following table:

**Table 5.**  
**Differences of previous research results**

Researcher	Period	Location	Result		
				<b>Tax</b>	
				<i>Long-run</i>	<i>Short-Run</i>
Sobel dan Holcombe (1996)	1951- 1991	United State	<i>Personal Taxable Income</i>	<i>High growth (1.235)</i>	<i>Netral (1.164)</i>
			<i>Corporate Taxable Income</i>	<i>Low growth (0.691)</i>	<i>Unstable (3.369)</i>
			<i>Retail Sales</i>	<i>Low growth (0.691)</i>	<i>Netral (1.039)</i>
Ishida (2011)	1980- 2007	Japan	<i>Prefectural tax</i>	<i>Low growth (0.672)</i>	<i>No clear</i>
			<i>Enterprise tax</i>	<i>No clear</i>	<i>Unstable (3.173)</i>
			<i>Municipal Tax</i>	<i>Low growth (0.590)</i>	<i>No clear</i>

Table IV.2 illustrates different results from previous research, while in Indonesia the condition is almost the same in Japan which insensitivity of changes in tax rates lead to lower tax growth compared to GRDP growth. Local taxes growth in Indonesia of 0.866 shows growth that is still under the GRDP. The low rate of growth, in addition to the insensitivity factor of rates change, is also due to the low level of tax extensification conducted by the region, as Purwanti (2009) explained that the growth of central tax in Indonesia is more dominated by the natural growth factor. In addition, stability of local taxes in short term shows a value of 0.568 but at a significance level of 0.671 which means that short-term stability of local taxes is not significant. That reinforces a statement that the process of collecting local taxes in Indonesia is more dominated by natural factor than extensification efforts of regional government.

Meanwhile, charges growth of 0.756 is also under the growth rate of GRDP. It is increasingly clear that the collection of PAD in Indonesia is still far from being expected. If seeing the short term stability of 2,704 which is far above the growth rate of GRDP gives hope that charges is very sensitive to the economic change, but at the significance of 0.487 it is clear over the  $\rho$ -value of 0.05 showing that the actual fluctuation of charges is not caused by economic change, but more on other factors such as the readiness of local DPRD regulations or other factors beyond that.

Seeing such condition, local taxes and charges are actually difficult to predict accurately, considering several factors such as extensification effort that have not been maximized by regional governments in levying taxes and charges. However, if holding on to the principle of using model to forecast the realization of taxes and charges will be found the following results:

**Table 6.**  
**RFE Comparison of Actual and model**

Description	Rfe Of Taxes 2013	Rfe Of Taxes Model 2013	Rfe Of Charges 2013	Rfe Of Charges Model 2013
Average Of RFE	11.08	8.76	41.71	31.94

In general, model can forecast the realization of local taxes and charges better than incremental method that has been used by regional government. RFE model of local taxes produce an average value of 8.76% less than the actual RFE of local taxes of 11.08% indicating that the financial and economic realization data proxied with GRDP can be better for forecasting own-source revenue. This is supported by the short-term stability value of 0.626 that under fluctuations of GRDP so it is easier to forecast revenue, although not significant.

Meanwhile, RFE Model of charges shows a value of 31,94% compared to RFE actual of charges of 41,71% so that it can better forecast the charges itself. RFE that is still very large, although the estimation model can be understood if looking at the short-term stability of charges of 2,704, although at an insignificant level, so that the fluctuation of charges revenue is so high and it becomes difficult to be forecasted more precisely.

## **CONCLUSIONS**

From the result of data processing that has been done, it can be concluded as follows: The growth of local taxes of provincial government in Indonesia is still under the rate of economic growth which illustrates that the increase in local taxes is more due to natural factor than the potential extensification of local taxes. Stability of local taxes on provincial government in Indonesia is smaller than the economic fluctuation so relatively stable in the short term, but not significantly indicating that local taxes revenue in the short term is not influenced by GRDP but more on other factors beyond that.

The growth of Local Charges of provincial government in Indonesia is lower than the rate of economic growth which gives illustration of natural factor of increasing charges more dominant than extensification effort. Stability of Local charges on provincial government in Indonesia is greater than the economic fluctuations so relatively unstable in the short term in this case charges is very sensitive to respond to economic changes. However, the condition is not significant which represents that in the short term GRDP is not the main factor

charges. RFE model generally gives better result than RFE actual in 2013. RFE model of local taxes and charges show smaller results than RFE actual so in other words it can forecast revenue more accurately.

With all the limitations in this research, for further research the authors suggest: 1) This research data is partly obtained from LHP BPK-RI and Ministry of Finance. Realization of provincial government financial data obtained from the Ministry of Finance is not obtained information of audited data so it can not be known the final data on the realization of revenue. Therefore, for further research it is expected to use realization data of revenue from financial reports that have been audited by BPK-RI so as to ensure the validity and legality of data input.

1) This research uses only 1 (one) macroeconomic variable as revenue data base that is GRDP, while Keene and Thompson (2007) stated that macroeconomic factor that affects certain types of taxes may vary depending on the characteristic. For the future, further research is expected to use variation of macroeconomic variables more complex according to the nature and character of each revenue to improve the accuracy of revenue forecast. 3) Revenue in this research is proxied with local taxes and charges of provincial government calculated accumulatively regardless of local taxes and charges types. While the nature and character of each types of local taxes and charges is not necessarily the same, so we hope further research can be done partially according to the types of taxes and charges so as to provide a more detailed illustration of the growth and stability of revenue base.

## **BIBLIOGRAPHY**

Abdullah, Syukriy dan Abdul Halim. 2003. *Pengaruh Dana Alokasi Umum (DAU) dan Pendapatan Asli Daerah (PAD) Terhadap Belanja Pemerintah Daerah: Studi Kasus Kabupaten/Kota di Jawa dan Bali*. Simposium Nasional Akuntansi VI Surabaya.

Acharya, Hem. 2011. *The Measurement of Tax Elasticity in India: A Time Series Approach*. MPRA Paper No. 47090

Adi, Haryo Priyo. 2007. *Kemampuan Keuangan Daerah Dalam Era Otonomi Dan Relevansinya Dengan Pertumbuhan Ekonomi (Studi Pada Kabupaten*

*dan Kota se Jawa – Bali*). The 1<sup>st</sup> Accounting Conference Departemen Akuntansi Fakultas Ekonomi Universitas Indonesia.

- Adriyani, Anisa dan Baldric Siregar. 2013. *Pengaruh Produk Domestik Regional Bruto terhadap Kinerja Keuangan Daerah dengan Pendapatan Asli Daerah sebagai Variabel Intervening*. Jurnal ekonomi & Bisnis Vol. 7, No. 2, Juli 2013.
- Agustri, Nella. 2011. *Analisis Pengaruh Produk Domestik Regional Bruto (PDRB) dan Jumlah Kendaraan Bermotor Terhadap Penerimaan Pendapatan Asli Daerah (PAD) di Sumatera Barat (1979-2008)*. Skripsi Universitas Andalas.
- Ajija, Shochrul Rohmatul, *et.al.* 2011. *Cara Cerdas Menguasai EViews*. Jakarta: Salemba Empat.
- Aryanti, Eni dan Iin Indarti. 2011. *Pengaruh Variabel Makro Terhadap Pendapatan Asli Daerah Periode 2000-2009 di Kota Semarang*. Sekolah Tinggi Ilmu Ekonomi Widya Manggala.
- Astuti, Eliya. 2007. *Anggaran, Penganggaran dan Kinerja*. dalam Abdul Halim (Ed) dan Theresia damayanti (Ed). 2007. *Pengelolaan Keuangan Daerah*. Yogyakarta: UPP AMP YKPN.
- BAPPENAS. 2003. *Peta Kemampuan Keuangan Provinsi Dalam Era Otonomi Daerah: Tinjauan atas Kinerja PAD, dan Upaya yang Dilakukan Daerah*. Direktorat Pengembangan Otonomi Daerah.
- Basri, Rachman. 2002. *Akuntabilitas Pengelolaan Pendapatan Daerah pada Sumber-Sumber Penerimaan Pajak dan Retribusi daerah*. dalam Abdul Halim (Ed). 2002. *Akuntansi dan Pengendalian Keuangan Daerah*. Yogyakarta: UPP AMP YKPN.
- Bastian, Indra. 2005. *Akuntansi Sektor Publik: Suatu Pengantar*. Jakarta: Erlangga.
- Bonga, Wellington Garikai, *et al.* 2015. *Tax Elasticity, Buoyancy dan Stability in Zimbabwe*. IOSR Journal of Economics and Finance (IOSR-JEF) Vol. 6, Issue 1, Ver. 1 (Jan-Feb 2015).
- Cotton, Joseph Jason. 2012. *The Buoyancy and Elasticity of Non-Oil Tax Revenues in Trinidad and Tobago (1990-2009)*. Working Papers Central Bank of Trinidad & Tobago.



- Ghozali, Imam dan Dwi Ratmono. 2013. *Analisis Multivariat dan Ekonometrika Teori, Konsep, dan Aplikasi dengan Eviews 8*. Semarang:Badan Penerbit Universitas Diponegoro.
- Gitaningtyas, Yeny Kurniawati. 2014. *Pengaruh Produk Domestik Bruto, Jumlah Penduduk, dan Investasi Swasta Terhadap Realisasi Pendapatan Asli Daerah pada Kabupaten/Kota di Provinsi Jawa Timur*. Skripsi Universitas Jember. Jember.
- Green, Kesten dan Len Tashman. 2009. *Percentage Error: What Denominator?*. Foresight Issue 12 Winter 2009.
- Hidayat, Afri. 2009. *Analisis Pengaruh Pertumbuhan Ekonomi Terhadap Posisi Pendapatan Asli Daerah (PAD) Provinsi Sumatera Utara*. Skripsi Universitas Sumatera Utara. Medan.
- [https://id.wikipedia.org/wiki/Pemerintahan\\_daerah\\_di\\_Indonesia](https://id.wikipedia.org/wiki/Pemerintahan_daerah_di_Indonesia), diakses 23 Januari 2016.
- [https://id.wikipedia.org/wiki/Daftar\\_provinsi\\_di\\_Indonesia](https://id.wikipedia.org/wiki/Daftar_provinsi_di_Indonesia), diakses 23 Januari 2016
- Ishida, Kazuyuki. 2011. *The Growth and Stability of the Local Tax Revenue in Japan*. Public Budgeting & Finance, Public Financial Publications, Inc.
- Kargbo, Brima Ibrahim Baimba dan Festus O. Egwaikhide. 2012. *Tax Elasticity in Sierra Leone: A Time Series Approach*. International Journal of Economics and Financial Issues Vol. 2, No. 4, 2012.
- Keene, Martin dan Peter Thomson. 2007. *An Analysis of Tax Revenue Forecast Errors*. New Zealand Treasury Working Paper 07/02
- Kusnandar dan Dodik Kuswanto. 2012. *Pengaruh Dana Alokasi Umum, Pendapatan Asli Daerah, Sisa Lebih Pembiayaan Anggaran Dan Luas Wilayah Terhadap Belanja Modal*. Simposium Nasional Akuntansi XV Banjarmasin.
- Kusuma, Putri Ambar. 2014. *Analisis Pengaruh PDRB, Pengeluaran Pemerintah, Inflasi dan Jumlah Penduduk Terhadap Pendapatan Asli Daerah (PAD) 33 Provinsi di Indonesia*. Skripsi Universitas Sebelas Maret. Surakarta.
- Kusuma, Tiara Rahma dan Sutaryo. 2015. *Pengaruh Faktor Keuangan Dan Non Keuangan Terhadap Budget Forecast Errors Pemerintah Daerah Di Indonesia*. Simposium Nasional Akuntansi XVIII Medan.

- Mawardi, Gusti. 2002. *Akuntansi Pendapatan Asli Daerah di Kabupaten Banjar Kalimantan Selatan*. dalam Abdul Halim (Ed). 2002. *Akuntansi dan Pengendalian Keuangan Daerah*. Yogyakarta: UPP AMP YKPN.
- Mokoginta, Abdullah. 2002. *Penyusunan Anggaran Tahunan*. dalam Abdul Halim (Ed). 2002. *Akuntansi dan Pengendalian Keuangan Daerah*. Yogyakarta: UPP AMP YKPN.
- Muchtholifah. 2010. *Pengaruh Produk Domestik Regional Bruto (PDRB), Inflasi, Investasi Industri dan Jumlah Tenaga Kerja Terhadap Pendapatan Asli Daerah (PAD) di Kota Mojokerto*. Jurnal Ilmu Ekonomi Pembangunan Vol.1 No.1 Januari 2010.
- Purwati, Evi Yulia. 2012. *Kajian Empiris Kinerja Penerimaan Pajak di Indonesia: tax buoyancy, tax elasticity, tax ratio*. Penelitian Dana DIPA PNBPFakultas Ekonomi Universitas Diponegoro.
- Republik Indonesia. 2004. *Undang-Undang Nomor 32 Tahun 2004 tentang Pemerintah Daerah*.
- .2004. *Undang-Undang Nomor 33 Tahun 2004 tentang Perimbangan Keuangan Antara Pemerintah Pusat dan Pemerintahan Daerah*.
- . 2009. *Undang-Undang Nomor 28 Tahun 2009 tentang Pajak daerah dan Retribusi daerah*.
- Sari, Putu Lia Perdana. 2013. *Analisis Variabel-Variabel yang Mempengaruhi Pendapatan Asli Daerah (PAD) Provinsi Bali*. Jurnal Ilmiah Akuntansi dan Humanika , Vol. 2, No. 2, Juni 2013.
- Voorhees, William R. 2006. *Consistent Underestimation Bias, The Asymmetrical Loss Function, And Homogeneous Sources Of Bias In State Revenue Forecasts*. Journal Of Public Budgeting, Accounting & Financial Management, 18(1), 61-76 SPRING 2006.