

**CORRELATION AND COVARIANCE PCA TOOLS FOR TAX ANALISYS:  
EVIDENCE FROM INDONESIA**

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*Abstract*

*This study aims to analyze the level of compliance, examination of tax revenues in the Primary Land tax office abang 1 and 2. This study uses monthly data for the amount of billing, inspection and monthly tax revenues in the office KPP pratama Jakarta land abang 1 and 2. This study using monthly data for these 3 variables from 2010-2017. From the research that has been done by using PCA tool in obtaining the result that for further research can expand the research data and variables that are in use. Statistically explain that variable amount of bill number, inspection and acceptance of taxes influence, and this is confirmed by some previous research, but by using placed and different data.*

*Keywords: compliance, taxes, audits, and tax services*

**I. PRELIMINARY**

The Ministry of Finance will still work extra to boost tax revenues in the remaining two months of 2017, one of which is by conducting more incentive tax audit and collection. Director of Inspection and Billing of the Directorate General of Taxes of the Ministry of Finance Angin Prayitno Aji said the space for inspection of the DGT became more freely after the issuance of Government Regulation No. 36 of 2017. The performance of non-oil and gas income tax gradually improved. The government claims that the achievement indicates that the taxpayers' compliance level both personal (OP) and the body is also increasingly shot after the implementation of tax forgiveness.

Based on data on tax receipts as of March 7, 2018, total non-oil and gas tax revenues reached Rp156.8 trillion or grew by 19%. The performance of tax revenue was sustained by non-oil / non-tax revenues by Rp88.7 trillion, growing 20.26% compared to the same period last year and VAT amounted to Rp67 trillion or grew by 18.37%.

## II. LITERATURE REVIEW

### Understanding Tax Inspection and Billing

#### Tax audits

Tax inspection contained in the provisions of article 29 paragraph (1) of Law Number 6 Year 1983 regarding General Provisions and Procedures of Taxation (UU KUP) as already amended several times and lastly by law number 16 of 2009 which explains that: "Director General Tax shall be authorized to conduct an inspection to verify compliance with taxpayers' tax obligations and for other purposes in performing the provisions of the taxation legislation. Tax audit arrangements have also been regulated in detail in Regulation of the Minister of Finance Number: 184 / PMK.03 / 2015 governing the Procedure of Inspection. Tax audit is an integral part (built-in) with self assessment system adopted in the taxation system in Indonesia. Tax audit is conducted in the context of supervision (control) compliance fulfillment of tax obligations. Without supervision, Taxpayers in carrying out their tax obligations tend to avoid paying taxes. In fact, many taxpayers avoid taxpayers in a way that is not true such as lowering turnover, or increase the cost that ultimately eliminates fiscal benefits or minimize taxable income.

The function of tax audit is to encourage the Taxpayer to report his / her business activities correctly. True in the sense that the Taxpayer reported his business activities, income, property, and debts according to the actual circumstances. Nothing is covered, nothing is hidden and open. True because the Taxpayer has calculated the tax payable in accordance with applicable taxation legislation. True because the Tax Payer deposits the taxes to the State Treasury that has been levied or cut from the other party.

At the time of examination, the examiner will test:

Payment or settlement of taxes which have been carried out solely and / or by deductions or collection of other parties in 1 (one) Year of Tax or Year of Tax section;

Income which is the object of tax and / or non taxable object;  
Assets and liabilities; and / or

Payments from the cutters or collectors concerning the withholding or collection of tax on an individual or other entity within 1 (one) Tax Period in accordance with the provisions of the taxation legislation, Implementation of examination in order to test the fulfillment of taxpayer tax obligations is done by tracing the truth of the Notice, Bookkeeping or recording, and the

fulfillment of other tax obligations compared with the circumstances or the actual business activities undertaken by the Taxpayer.

Taxpayer duties on own taxpayer, namely Income Tax or known as Corporate Income Tax and Personal Income Tax, as well as cutting and collecting duties such as Value Added Tax, Income Tax Article 21, Income Tax Article 22, Income Tax Article 23, and Income Tax Article 26. Implementation of inspection in order to test the fulfillment of Taxpayers' tax obligations is done by collecting and processing data, information, and / or evidence that is conducted objectively and professionally based on inspection standards. After testing of data, information, and / or evidence, the auditor shall issue tax assessment letters:

1. No Tax Assessment Letter (SKPN) in the case of the principal amount of tax equal to the amount of tax credit or tax is not payable and no tax credit;
2. Underpayment Tax Assessment Letter (SKPKB) in the amount of tax principal, amount of tax credit, amount of underpayment of principal, amount of administrative sanction, and amount of accrued tax;
3. In SKPLB for the rate of tax overpayment, which is caused by the presence of tax credit is considered greater than the amount of tax payable.
4. For STP which has been given and received by the taxpayer, for administrative sanction given in the form of interest and fine;
5. And for SKPKBT tax that has been received by the taxpayer, then there is the amount of additional tax for a number of tax value predetermined by the tax directorate general.

In contrast to the examination to test tax compliance, checks for other purposes do not issue tax assessment letters. Checks for other purposes include:

1. The granting of Tax Payer Registration Number in the position;
2. The abolition of the Taxpayer Identification Number;
3. Inauguration or revocation of the Taxable Entrepreneur inauguration;
4. Taxpayer filed an objection;
5. Collection of materials for the preparation of the Net Income Sum Norms;
6. Matching data and / or information tool;
7. Determination of Taxpayers located in remote areas;
8. Determination of one or more premises subject to Value Added Tax;
9. Inspection in the framework of tax collection;

10. Determination on the start of production in connection with the tax facilities; and / or
11. Fulfillment of requests for information from partner countries of Double Taxation Avoidance Agreement.

### Tax Billing

Tax Billing is a taxpayer (WP) billing action if the tax debt until the due date of payment has not been paid. The legal basis for tax collection is Law No. 19 of 2000 regarding the amendment of Law Number 19 of 1997 concerning Tax Collection by Forced Letter. The tax collection billing steps are as follows:

1. Warning Letter, ie unpaid tax debt after seven days from the due date of payment, will be issued a Tax Record Letter. Submission of warning letters is the beginning of the implementation of tax collection by tax authorities (tax apparatus) to warn taxpayers who do not pay off their tax debt in accordance with the decision of determination (STP, SKPKB, SKPKBT) until the maturity date.

A warning letter is a letter issued by an official to reprimand or warn a Taxpayer to pay off his tax debt. A warning letter is issued if the tax debt stated in the SPT, SKPKB or SKPKBT is not settled until the time of day from the due date is 1 month from the date of issuance. According to the decision of the Minister of Finance no. 561 / KMK.04 / 2000 Article 5, paragraph 2 states that letters of reprimand are not issued against the taxpayers approved to repay or delay the payment of taxes.

2. Forced Letter, ie tax debt after 21 days from the date of Reprimand Not repaid, issued Letter of Forcedness notified by the Tax Jurusita with burden of tax collection fee with the Forced Letter of Rp 50,000. Tax liability must be paid within 2 x 24 hours after the Letter of Force is notified by the Tax Bailer. Collateral billing is made when the amount of the tax invoice is not or less paid up to the due date of payment, or until the due date of payment delay or does not meet the installment of tax payment. If the Taxpayer fails to perform the obligation to pay the tax within the time specified in the warning letter then the subsequent collection shall be made by the tax bailer.

The definition of a forced letter has been regulated in Article 1 number 12 of Law no. 19 of 2000 concerning Tax Collection by Forced Letter which reads: "Force is a warrant to pay tax debt and tax collection fee". Based on this understanding it can be concluded that the forced letter is a warrant paying tax debt and tax collection fees issued if the taxpayer does not pay off his tax debt until the due date. A forced letter is issued if the Tax Payer or the Tax Payer does not repay

his tax debt until the due date and the Taxpayer does not meet the provisions in the approval of the installment agreement or delay payment.

3. Sita and Foreclosure Letter of seizure ie tax debt within 2 x 24 hours after the Letter of Force is notified by the Taxable Bailee is not settled, the Tax Jurusita can perform the foreclosure action, with the burden of the implementation of the Order of Forfeiture Confiscation of Rp 100,000. Foreclosure is a further billing action after the Forced Mail. The Foreclosure Letter is issued if the tax debt has not been paid within 2 x 24 hours after the Forced Letter is notified, therefore it can be foreclosure of Taxpayer goods. In tax collection by a forced letter, the tax bailer is authorized to seize the Taxpayers' property. To carry out the confiscation of property of the Taxpayer is required a procedure that regulates in detail, clear and decisive covering the status, value and storage or depository of confiscated goods belonging to the Tax Payer while still providing protection of the interests of third parties and the taxpayer community. According to Law Number 19 of 2000 concerning Collection by Forced War, the seizure is a tax bailer's action to take possession of goods with taxes, to be used as collateral to pay off the tax debt according to the law.

4. Confiscated and Foreclosure Agreement, Letter of seizure that is tax debt within 2 x 24 hours after Letter of Force is notified by the Taxable Jurusita not settled, the Jurusita Pajak can perform foreclosure action, with the cost of the implementation of the Letter of Order for Rp 100.000.

Foreclosure is a further billing action after the Forced Mail. The Foreclosure Letter is issued if the tax debt has not been paid within 2 x 24 hours after the Forced Letter is notified, therefore it can be foreclosure of Taxpayer goods. In tax collection by a forced letter, the tax bailer is authorized to seize the Taxpayers' property. To carry out the confiscation of property of the Taxpayer is required a procedure that regulates in detail, clear and decisive covering the status, value and storage or depository of confiscated goods belonging to the Tax Payer while still providing protection of the interests of third parties and the taxpayer community. According to Law Number 19 of 2000 concerning Collection by Forced Mail, foreclosure is a tax bailer's action to control goods with tax collateral, in order to be used as collateral to pay off the tax debt according to the laws and regulations. Law Number 19 of 2000 Article 14 paragraph (1) explains "that the seizure may be carried out on the property of a resident Taxpayer, in a place of business, in a place of domicile or in another place including his control which is in the hands of another party who burdened with mortgages as security for certain debt repayment, in the form of:

- Non-moving goods including land, buildings and ships with certain gross content
- Moving goods include cars, jewelry, cash, time deposits, savings accounts, current account balances or other forms.

Moving goods that are excluded from foreclosures are:

- Clothes and bedding and equipment used by the taxpayer and the dependent family.
- A month's supply of food and beverages and home cooking utensils.
- Provision of an authorized service taxpayer from the State.
- Books relating to the occupation or employment of taxpayers and the tools used for education, culture and scholarship.
- Equipment in a state of the road that is still used to carry out work or daily business with a total of not more than Rp 20,000,000 (twenty million rupiah). The amount of equipment is determined by Decree of the Minister of Finance or the Decree of the Head of Region.
- Disabled equipment used by the taxpayer and dependent family. Confiscation cannot be executed on goods that have been seized by the District Court or other authorized institution. Against the confiscated goods, the Taxpayer submits the letter of Attorney to the District Court or other authorized institution. The District Court of the next hearing stipulates the goods as collateral for the settlement of tax debt. The State Court or other authorized institution shall determine the distribution of the proceeds of the sale of goods under the provisions of the right of the State to precede the tax bill.

5. Auction, ie within a shortest period of fourteen days after the foreclosure action, the tax debt has not yet been repaid shall proceed with the announcement of the auction through the mass media. Auction sales through the State Wealth Service Office and the Auction (KPKNL) on seized goods shall be executed at least fourteen days after the auction announcement. In the case of forced collect fees and unforced seizure fee costs will be charged together with advertising costs for auction announcements in newspapers and auction fees at the time of the auction. Note: Goods with a maximum value of Rp 20,000,000 do not have to be announced through the mass media. Implementation of Auction is not executed if the Tax Payer repay the tax debt and tax collection fee prior to the auction.

Taxpayers / Taxpayers' Rights In Tax Inspection and Billing  
In tax billing, Taxpayers have the right to:

1. Requesting the Tax Administration to show the Taxpayer Identification Card.
  2. Receiving Copies of Forced Letters and Copies of Foreclosure Event Reports.
  3. Determine the order of goods to be auctioned.
- Given last chance before auction to settle tax debt including foreclosure fee, advertisement, and auction cancellation fee, and report the payment to the Head of Tax Office (KPP) concerned.



### III. RESEARCH METEODOLOGY

In this study used monthly data for the amount of billing, the amount of inspection and monthly tax revenues in the office of KPP Pratama Tanah Abang 1 and 2 during the period of 2010 until 2017. This study used data analysis techniques using correlation and covariance model of PCA. This research is done at the time of March 2018. Here in present picture data of research data with make correlogram.

**Table 1 : Result for cross correlogram data**

Correlations are asymptotically consistent approximations

KPTHN,PMRKN(-i)	KPTHN,PMRKN(+i)	i	lag	lead
.   **	.   **	0	0.1617	0.1617
.   **	.   *	1	0.1744	0.1506
.   **	.   ****	2	0.2183	0.3947
. *   .	.   *	3	-0.0921	0.0679
. *   .	.   .	4	-0.0592	-0.0324
.   .	***   .	5	-0.0236	-0.2525
.   .	***   .	6	0.0313	-0.2966
.   .	****   .	7	0.0168	-0.3685
.   *	****   .	8	0.0551	-0.3623
. *   .	***   .	9	-0.0611	-0.2919
.   **	.   .	10	0.1621	0.0155
. *   .	.   *	11	-0.1454	0.0698
. *   .	.   *	12	-0.1341	0.1443
.   .	.   *	13	-0.0101	0.1261
.   *	.   ****	14	0.0797	0.2678
.   *	.   *	15	0.0841	0.0519

Sourced: Proceed by author with software

### IV. RESEARCH RESULT AND DISCUSSION

In modeling and analysis using PCA, there is a distribution of data values on a single channel can be represented by a graph in the form of a histogram and mathematically in the form of variance, which summarizes all differences in pixel values with a single channel mean value, where data range of data values on a channel indicates channel variability and does not indicate how the value is distributed between the maximum and minimum values. The correlation between two or more image channels can be shown graphically in the form of a scatter plot or

scattergram and mathematically can be represented by covariance. Scattergram is a two-dimensional graph with horizontal axis is one channel image and vertical axis one channel of another image. The points on the graph are pixel values. The value of covariance also indicates a correlation value, where a high negative value indicates a strong but negative relationship, whereas a positive value indicates a perpendicular or positive relationship and a near-zero covariance value indicates a weak correlation or no correlation. From the data in though the results can be as follows:

**Table 2 : Result PCA Correlation analisys**

Principal Components Analysis					
Computed using: Ordinary correlations					
Eigenvalues: (Sum = 3, Average = 1)					
Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	1.517195	0.660667	0.5057	1.517195	0.5057
2	0.856528	0.230251	0.2855	2.373723	0.7912
3	0.626277	---	0.2088	3.000000	1.0000
Eigenvectors (loadings):					
Variable	PC 1	PC 2	PC 3		
KPTHN	0.599928	-0.480087	0.640002		
PMRKN	0.479668	0.856067	0.192532		
TAX_REVENUE	0.640316	-0.191483	-0.743861		
Ordinary correlations:					
	KPTHN	PMRKN	TAX_REVENUE		
KPTHN	1.000000				
PMRKN	0.161746	1.000000			
TAX_REVENUE	0.363408	0.235893	1.000000		

**Sourced: Proceed by author with software**

The above results show the correlation value between the images, on the value located diagonally is 1 because the correlation between the same channel, so perfect, while the other channels show varying values. then sought the eigen value and eigen vector. Eigen value and eigen vector will be used to find the main component which is first in the form of linear combination equation. Eigenvalues and eigenvectors are obtained as in Table 1 in aats and 2 below.



**Table 3 : Result PCA Covariance analisys**

Principal Components Analysis					
Computed using: Ordinary covariances					
Eigenvalues: (Sum = 6.2434900017, Average = 2.0811660017)					
Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	6.240017	6.240017	1.0000	6.240017	1.0000
2	108040.0	107916.6	0.0000	6.240017	1.0000
3	123.3960	---	0.0000	6.240017	1.0000
Eigenvectors (loadings):					
Variable	PC 1	PC 2	PC 3		
KPTHN	1.620007	0.999997	-0.002376		
PMRKN	2.850009	0.002376	0.999997		
TAX_REVENUE	1.000000	-1.620007	-2.470009		
Ordinary covariances:					
	KPTHN	PMRKN	TAX_REVENUE		
KPTHN	124602.044105				
PMRKN	545.516330	91.289977			
TAX_REVENUE	101360899390	1780900715	6243497231349		

**Sourced: Proceed by author with software**

Table 2 above shows the covariance matrix value, which shows the value of the variance at the value located on the diagonal line, and the cell represents the value of cross-channel covariance.

## V. CONCLUSION

Up to now corporate taxpayers are a very complex part of taxation. Both in terms of various businesses including the agency in terms of taxes and how the income tax calculation itself. Likewise with the rights and obligations of corporate taxpayers. Obligation to organize bookkeeping for corporate taxpayers regardless of turnover because the taxpayer felt to have been formed in a targeted organization so as to hold tax bookkeeping. And the difference that occurs in the commercial financial statements with the tax financial statements make the taxpayer must make adjustments in order to obtain fiscal profit by way of reconciliation. Corporate taxpayers also have various facilities provided with certain provisions and criteria in order to facilitate the taxpayer in carrying out its tax obligations. Therefore, the billing process and tax audit cannot be separated from the tax revenue that will be received.

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