

THE INFLUENCE OF INFORMATION ASYMMETRY ON EARNINGS MANAGEMENT PRACTICE AND THEIR IMPLICATION ON SHARE PRICE CHANGES

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Abstract

The research conducted an empirical investigation on the influence of information asymmetry on earnings management and their implication on share price changes. When information asymmetry is high, the stakeholders do not have any information or resources to monitor and to know manager's activities, which then usually raise the earnings management practice.

To provide evidence on earnings management practice and information asymmetry, this research used aggregate accrual with modified Jones model and market microstructure theory.

This research employed quotes, trading volume, and return volatility for bid ask spread to proxy in market structure and used control variables for complete analysis. We employed multiple regressions with 34 firms' balanced data in the 2003-2005 periods. Empirical result suggested that independent variables have influence on earnings management, and they correlated with share price changes.

Keywords: information asymmetry, earnings management, and share price changes.

Field: Financial Accounting

Introduction

In modern company, including public company, there is a separation in management function between ownerships and controllerships. The investors hold the ownerships function, meanwhile the controllerships function is hold by the professional managers whom are under contract and paid to run the company operation in accordance to the goals of the stockholders. This separation of functions is the beginning of the agency problem between the stockholders (owner or principal) and managers (agents), which is the inharmonic condition between principal's interests and agent's interests. (Agus Zainul Arifin, 2006).

It is true that the stockholder (principal) need manager to work towards the maximization of the stockholder's wealth. On the other hand, manager could act not to maximize the stockholder's wealth but to his own. The problem lies naturally as human being that the agent also has rational basic nature.

Information asymmetry is a condition where manager has information access over the company's prospects which none outside could have. In accordance with the increasing value of the

company, when there is an information asymmetry, manager could signal the investors about the company profile through accounting information disclosures to maximize the company's stock value. The good quality of accounting information disclosure in financial reporting will be useful for investor to decrease the information asymmetry. The quality of information issued by other company in its financial reporting influences the behavior and the quality of investor's decision.

Apollo Daito (2005) stated that manager who works in the company that applies the bonus rules would choose accounting method and transaction time arrangement, which can increase the income (bonus plan hypothesis). It means, as the bonus compensation plan ties stronger to the income, there will be higher intention for the manager to increase the income reporting. The case shows that management has the interest in increasing the income reporting to get the bonus. There are three reasons the management want to achieve connecting to the earnings management, those are minimizing political costs, maximizing manager's wealth, and minimizing financial cost (Magnan and Cormier, 1997:12; Watts and Zimmerman, 1986:208).

In early years, earnings management was not popular, but nowadays earnings management becomes a new phenomenon that greatly disturbs global capital market. The hope for the good corporate governance has been destroyed and it is because of the earnings management practices in some big companies.

Healy and Wahlen (1998) stated that earnings management happens when management use a certain decision in the financial report and transaction to change the financial report as the basic of the company's performance, which has the objective to mislead the owners or stockholders or to influence the result of any contracts, based on reported accounting numbers.

The objective of this paper is to find out the influence of information asymmetry to a group of manufacture companies in Jakarta Stock Exchange during the research period.

Literature Review

Company Objective

The main objective of a company is to increase the value of the company through the raising wealth or to maximize the wealth of the stockholders (Brigham and Houston, 1998; Weston and Copeland, 1992; Gitman, 2000). Maximizing the value of a company is the proxy of maximizing the stockholders' wealth. The value of a company is the multiplication of stock price and the number of shares (Weston and Copeland, 1992; Keown, 2002). A company has other objectives besides maximizing the stockholders' wealth. However, the maximization of stock price is the main objective of a company.

Bradley and Myers (2000) stated that the price of a stock reflects the value of the company that is determined by stock market player.

Sanchez stated that the agency theory is built based on assumption of human models, that is:

1. People as a homo economicus have the characteristics of individualistic, opportunistic, and egoistic.
2. People are a rational being who try to maximize his individual utility.

3. As an agent of the owners (stockholders), an executor, he has a moral responsibility to maximize the wealth of the owners. Nevertheless, he accepts the status as an agent because he thinks he has an opportunity to maximize his own utility.

The company's objective is to maximize the wealth of its stockholders or owners. As long as the owner (a single individual) carries out the management of the company, there will be clear that the action, which may be done by the management, is to maximize his own wealth (Jensen and Meckling, 1976; Ang, Cole, and Lin, 2000; Copeland and Weston, 1983). In modern company, there has been a separation between the ownership function (principal) and the management function (agent). The two functional separations have created an agency relationship. Agency relationship is a contract between principal who uses other party (agent) to serve for the interest of the principal by delegating some authorities to make decisions to the agent (Jensen and Meckling, 1976; Gitman, 1997).

In modern company, ownerships –usually- are widely spread. Since there is a separation between ownerships function (principal) and management function (agent), there has been an agency conflict (problem) (Jensen and Meckling, 1976; Sarwoto, 2003). This function separation is also stated as the separation of the decision-making and risk bearing function of the firm (Wahidahwati, 2001).

One of the causes that raise the agency problem between the management and the stockholders is the problem of decision-making that connected to the fund raising activity and how the fund is invested (Jensen and Meckling, 1976). Fund decision potentially affects the value and the leverage of the company (Brailsford, Oliver, and Pua, 2002).

To reduce the conflict of interest between management and stockholders, there has to be an internal and external control mechanism in the company. The internal control of the company is fulfilled through the ownership of the stock by the management, auditor's presentation, and Board of Directors. On the other hand, the stockholders that actively do the monitoring do the external control (Bathala, Moon, and Rao, 1994).

Information asymmetry

From the financial management point of view, the information asymmetry is a condition, which shows that there is a group who has information and another group who does not have the information. The group who has the information is called the informed information group and the one who does not or only has a few information is called the uniformed information group. Information asymmetry could happen in the stock market as well as in other market.

The presence of information asymmetry between management as the manager of the company and investor and other financial statement has put the manager in the situation of knowing more of the company's condition and prospect compare to the investors. This condition has raised a theory called the signaling theory.

Earnings Management

Earnings management is a financial reporting phenomenon where manager do something to influence the amount of the income reported. Scott (1997) defined earnings management as: “Given that managers can choose accounting policies from a set (for example, GAAP), it is natural to expect that they will choose policies so as to maximize their own utility and/or the market value of the firm.”

Scott (2000) divided the manager’s comprehension of earnings management into two categories, those are:

1. To see it as a managers’ opportunistic behavior to maximize the utility in facing compensation contract, loan contract, and political costs (opportunistic earnings management).
2. To see earnings management in the perspective of efficient contracting (efficient earnings management), where earnings management could give manager a flexibility to protect himself and the company in anticipating unexpected events for the interest of the parties involved in the contract.

Therefore, manager could influence the value of the company stock price through earnings management, for example through income smoothing and constant income growing.

Research Method

This research measured earnings management using discretionary accounting accrual as a difference of expected accrual accounting less actual accrual accounting. Actual accrual accounting is a difference between the cash flow from operation activities and income before extraordinary items. As for the expected accrual accounting is the real accrual accounting for the previous period (Richardson, 1998; Murni, 2003; Wasifah, 2005).

In calculating discretionary accruals (DACC) as a measurement of earnings management, we used Modified Jones Model. Jones did these following steps in calculating discretionary accruals:

- a. Calculating Total Accruals (TACC) using the formula:

$$TACC_{it} = EBXT_{it} - OCF_{it}$$
- b. Calculating Non Discretionary Total Accruals (NDTACC) using the formula:

$$NDTACC_{it}/TA = \alpha_0 + \alpha_1 (\Delta REV_{it}/TA - \Delta REC_{it}/TA) + \alpha_2 (PPE_{it}/TA)$$
- c. Calculating Discretionary Accruals (DACC) using the formula:

$$DACC_{it} = TACC_{it} - NDTACC_{it}$$

Description:

$TACC_{it}$	=	Company i Total Accruals in t period
$EBXT_{it}$	=	Company i Earning Before Extraordinary Items in t period
OCF_{it}	=	Company i Operating Cash Flow in t period
$TA_{i,t-1}$	=	Company i Total Assets in t-1 period

REV_{it}	=	Company i Revenue in t period
REC_{it}	=	Company i Receivable in t period
PPE_{it}	=	Company i Property, Plant and Equipment in t-1 period
ε_t	=	Error = discretionary accruals or managed accounting accrual

Research Hypothesis

Based on the literature review and the research background we propose the hypothesis as follows:

1. Information asymmetry, consist of quates, sales volume, and return deviation standard, influence the earnings management individually and simultaneously
2. Control variable, consist of size, market to book value of equity, sales growth, and debt to equity ratio, influence the earnings management individually and simultaneously
3. Earnings management influence the stock price individually

Methodology

This research was designed as a descriptive and verification research through qualitative and quantitative approach using secondary data. The objective of the research was to find out the influence of information asymmetry (quates, sales volume, return volatility), and control variable (size, market to book ratio, sales growth, and debt to equity ratio) to earnings management and its implication to the company stock price.

The research plan was conducted the through explanatory method by survey research design, with secondary data as the source, which is the financial data from manufacture companies that actively reporting their financial statement to the Jakarta Stock Exchange in the 2003 through 2005 periods. We used multiple regression and correlation analysis for analyzing the data.

We observed the targeted population that is all manufacture company, which actively reporting the financial statements for the 2003 through the 2005 periods to Jakarta Stock Exchange. The choosing of the periods is based on the economic condition was relatively normal and considering the data availability.

Independent Variable (Information Asymmetry)

In this research the information asymmetry was measured using the bid-ask spread, that is the difference between the highest buying price and the lowest selling price of the trading stock. The proxy of the bid-ask spread are quates, sales volume, and return deviation standard (Richardson, 1998 in Wasilah, 2005). In details, the definitions of the information asymmetry are as follows:

+ Quates (QS):

Quates is defined as the stock market price, which is measured by the average bid-ask price at the last trading day for one particular year (Stoll, 1978 in Wasilah, 2005). The data for the research is for the 3 years period.

✦ Sales Volume (VP)

Sales volume is the amount of sales volume of the company measured by rupiah from one period of trading volume. The data for the research is for the 3 years period.

✦ Return volatility (VR)

Volatility return variable reflects the volatility of company earnings and is defined as the profit variation coefficient (Welker, 1995). We measured this variable using the deviation standards of the monthly stock price changes in the 3 years period.

Control Variable

For this research, we used some control variables as follows:

- ✦ Size of the company
- ✦ Market to Book Value of Equity (MBVE)
- ✦ Sales Growth (PP)
- ✦ Debt to Equity Ratio (DER)

Dependent Variable

The dependent variables in this research were as follows:

✦ Earnings Management (ML)

Earnings management is every management's activity that could influence the reported income and earnings management (Jones, 1991; Dechow, 1995; Richardson, 1998, Assih, 2004; Faidi, 2005). We measured the variable using discretionary accounting accrual as the difference function between actual accrual accounting $((TACC_{it}/TA_{i,t-1})$ less expected accrual accounting $((NDTAC_{it})$.

✦ Stock Price Changes (RS)

Stock price changes are the changes of stock price in the stock market in particular period which is determined by the market behavior. The variable is measured by the difference of the stock prices that is the difference of the stock price at the date of the auditor's report with the stock price at the next transaction day. The data for the research is for the 3 years period.

Data Source

The data for this research is the secondary data based on the yearly financial report of the companies and the information from Jakarta Stock Exchange in the period of 2003 to 2005. The data were: (1) bid-ask price, market price, (2) trading volume, (3) amount of outstanding shares, (4) equity value (total value and book value of the equity), (5) net sales value, (6) long term debt value, (7) total assets value, (8) revenue value, (9) receivable value, (10) fixed assets value, (11) earnings before extraordinary items value, and (12) operating cash flow value.

All the data used is from the period of 2003 to 2005 (pooled data), which was taken from the official public data source, that is the Indonesian Capital Market Directory, yearly report from JSX Value Line Jakarta Stock Exchange and other publication data.

Population and Sample

The target population of this research is the manufacture companies that are listed in the Jakarta stock Exchange and which issue the financial report during the research period (2003 – 2005). We did not calculate the company which did not issue financial report or which was unlisted. The reasons we choose Manufacture Company for the research were: first, there are similarities on the side of revenue producing activities, second, manufacture company dominated the Jakarta Stock Exchange, therefore we considered they could represent the whole population. Based on the Indonesian Capital Market Directory (ICMD), 150 Manufacture Companies issued financial report in the 2006.

We used stratified random sampling in this research. Based on the calculation of the sample measurement allocation for every group of companies, the table is as follow:

Table 1. Research Population and Sample

No	Company Groups	Population	Sample
1	Food and Beverages	20	5
2	Tobacco Company	4	1
3	Textile milling	9	2
4	Garment and other textile products	28	6
5	Cement industry	3	1
6	Glass and plastic products industry	13	3
7	Metal and Others	12	3
8	Metal Manufacturing	2	0
9	Concrete, glass and pottery products	4	1
10	Machinery and cable products	7	2
11	Automotive	19	4
12	Pharmaceutical and consumers products	13	3
13	Paper Manufactur	16	3
	Total	150	34

Source: Calculation of Proportional Allocation and Table 3.2

Research Models and Data Analysis

Based on the background of this research we made a research model for the basic of hypothesis tests. The model is as follow:

$$EM = f(QS, VP, VR, SIZE, MBVE, PP, DER)$$

$$SPC = f(EM)$$

Statistically as follow:

$$EM = \beta_0 + \beta_1 QS + \beta_2 VT + \beta_3 VR + \beta_4 Size + \beta_5 MBVE + \beta_6 SG + \beta_7 DER + \varepsilon_t \quad (1)$$

$$SPC = \alpha_0 + \alpha_1 EM \dots\dots\dots \quad (2)$$

Description:

ML	=	Earnings Management
SPC	=	Stock Price Changes
QS	=	Quates
VT	=	Trading Volume (Sales Volume)
VR	=	Return Volatility
Size	=	Company Size
MBVE	=	Market to Book Value Equity
SG	=	Sales Growth
DER	=	Debt to Equity Ratio

Finding/Discussion

Table 1
The Result of Determination Coefficient (R^2)

Model Summary

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.487 ^a	.237	.175	.1254609

a. Predictors: (Constant), X7, X6, X2, X3, X5, X1, X4

Sumber : Lampiran 3 Pengolahan Data

Tabel 2
The Result of Simultaneous Test (F_{test})

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.398	7	.057	4.175	.000 ^a
	Residual	1.280	94	.014		
	Total	1.678	101			

a. Predictors: (Constant), X7, X6, X2, X3, X5, X1, X4

b. Dependent Variable: Y1

Sumber : Lampiran 3 Pengolahan Data

Tabel 3
The Result of Partial Test (T_{test})

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.309	.122		-2.537	.013
	X1	.018	.008	.262	2.099	.038
	X2	.024	.010	.324	2.353	.022
	X3	.012	.005	.080	2.310	.025
	X4	-.011	.006	-.204	-1.811	.049
	X5	.006	.003	.060	2.113	.031
	X6	.079	.039	.176	2.029	.041
	X7	.003	.002	.049	1.875	.048

a. Dependent Variable: Y1

- X1 = Quates
- X2 = Volume Trading (Sales Volume)
- X3 = Volatilitas Return
- X4 = Size
- X5 = Market to Book Ratio
- X6 = Growth
- X7 = Debt to Equity Ratio

Table 4. Regression Result the Influence Varabel X_i to Y_1

Variable	Direction dan Significant		Significant
	Coefficient	p-value	
X ₁	Positive	0,038	Significant
X ₂	Positive	0,022	Significant
X ₃	Positive	0,025	Significant
X ₄	Negative	0,049	Significant
X ₅	Positive	0,031	Significant
X ₆	Positive	0,041	Significant
X ₇	Positive	0,048	Significant
$F_{test} = 4,175$		0,000	Significant

Table 5
Partial Regression Analysis the Influence Y_1 to Y_2

Variable	Direction dan Significan		Significant
	Coeffisient	p-value	
Y ₁	Negative	0,000	Significant

$F_{test} = 81,620$	0,000	Significant
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Based on Table 2, the result testing simultaneously shows the influence of independent variables ((X_i) to dependent variable, the value of F_{test} is 4,175 and has *p-value* 0,000 at the level significance 95% ($\alpha = 5\%$), degree of freedom (d.f = 7,94) so it appropriates in the testing criteria, if the *p-value* less than ($\alpha = 5\%$) so H_a accepted and H_o rejected. It means that variables independent which consist of *quotes* (X_1), trading volume (X_2), return volatility (X_3), size (X_4), *market to book ratio* (X_5), sales growth (X_6) and *debt to equity ratio* (X_7) are significantly influence to earnings management (Y_1).

Meanwhile based on table 3, we can see the computation that all variables independent partially influential to the company earnings management which also all the result appropriate with the testing criteria.

Table 5 presents the result of the regression between earnings management (Y_1) to shares price change (Y_2). According to the significance test (*p-value*) shows the negative influence from earnings management to the shares price change.

Table 4 shows that quotes or bid-ask quotes ((X_1) has positive influence and significantly to company earnings management (Y_1) which means that the bigger quotes (spread bid price and ask quotes) shows more wide information assymetry. It indicates there are market reaction to protect them selves from information assymetry which can drive the managers doing earnings management.

According to the statistic result in table 4 ascertainable the company trading volume or sales volume (X_2) individually has positive influence and significant to earnings management. It means that the higher company sales volume so the bigger managers doing earnings management.

Table 4 also presents that return volatility (X_3) individually has positive influence and significant to earnings management. It describes that the higher deviation standar return per month will drive the market to protect them selves with bigger spread and shows the higher assymetry information between managers and share holders. If the condition assymetry information knowed by the managers, then the opportunity to do earnings management is bigger.

Based on table 4 shows that size (X_3) individually has negative influence with earnings management (Y_1) which describes that the bigger company size will make the possibility managers making earnings management. With negative relationship between firm size and earnings management describes that small firm inclined doing earnings management.

The positive influence between market to book ratio (X_5) with earnings management at Table 4 shows that market to book value describes the high of market epectionation that company return at the future time could be higher which this condition probably drive managers doing earnigns

management or income smoothing then the market expectation continuously positive to the company.

Meanwhile, sales growth (X_6) individually has positive influence to earnings management (Y_1). The sales growth directly affected to the earnings growth. Sales growth gives big potential to the company for going concern or keep the growth of each company consistent so the company will need more fund and inclined keep their income while for the investor with undivided the dividend so the company facing the higher risk. Avoiding that assume, the managers will drive doing earnings management.

Table 4 also shows the positive influence between debt to equity ratio/DER (X_7) individually and significant with earnings management (Y_1). According to the research hypothesis that information asymmetry and controls variables simultaneously influence to earnings management (Y_1). Based on hypothesis testing, the research hypothesis can be proved, means independent variable information asymmetry and control variables simultaneously influence to earnings management (Y_1). The value of determination coefficient (R^2) is 23,7% or 17,5% after adjusted means that earnings management (Y) 23,7% or 17,5% can be explained by the information asymmetry variables and controls variables.

Based on testing use the partial regression analysis shows there are negative influence which significant between earnings management (Y_1) with shares price change (Y_2). The effect that (Y_1) variables could give to (Y_2) is 44,94%. The negative effect can be describes that by positive earnings management (increase company income) based on the standards of accounting method has give negative impact to the shares price which the share price of the company become decline.

Conclusion

Based on the research we conducted we made the conclusions as follows:

1. Based on the calculation using the multiple regression analysis we found out that the information asymmetry with the proxy using quotes (X_1), sales volume (X_2) and return volatility (X_3) had a positive and significant impact, both individually and simultaneously, to earnings management (Y_1) on the manufacture company group in the Jakarta Stock Exchange. And so it was the influence of the control variable, which consist of company size (X_4), market to book ratio (X_5), sales growth (X_6) and debt to equity ratio (X_7), both individually and simultaneously, to the earnings management (Y_1). It was shown by the p-value which was more than alpha (α) 5% both on individual test (t-test) and simultaneous (F-test)
2. Based on the calculation using the correlation analysis, we found out that earnings management (Y_1) have a negative and significant correlation to the stock price changes on the manufacture company group in the Jakarta Stock Exchange

Based on those conclusions, we suggest:

1. To get a comprehensive result, the next research should widen the approach used, for example base on forecast approach or investing approach. In this research the information asymmetry variable used was only based on microstructure approach, those are quotes

variable, sales volume, and return volatility. Other variables that could be used for example earning per share and market to book value of the assets.

2. To see whether earnings management are also used on other industry in Jakarta Stock Exchange such as banks, transportation, retail, hotel and travel, property and real estate, and others.
3. Management of a company should increase the understanding of earnings management to help the company avoid the risk because of the earning management practice. Inappropriate earnings management practice could lead major problems to the company's finance and financial reporting.

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Appendix 1 List of Manufactur Public Company at Jakarta Stock Exchange period 2003-2005 which become reseach sample

No	Emitten name
1	PT GT Petrochem Industries
2	PT Argha Karya Prima Industry
3	PT Asahimas Flat Glass
4	PT Asia Plast Industries
5	PT Aqua Golder Mississippi
6	PT Astra Internasional
7	PT Sepatu Bata
8	PT BAT Indonesia
9	PT Dyna Plast
10	PT Eratex Djaja
11	PT Goodyear Indonesia
12	PT Gudang Garam
13	PT HMI Sampurna
14	PT Indofood Sukses Makmur
15	PT Ineospring
16	PT GT Kabel Indonesia
17	PT Kedaung Indah Can
18	PT Kalbe Farma
19	PT Komatsu Indonesia
20	PT Lion Metal Work
21	PT Lion Mesh Prima
22	PT Multi Bintang Indonesia
23	PT Mustika Ratu
24	PT Panasia Filament Inti
25	PT Palm Asia Corpora
26	PT Schering Plough Indonesia
27	PT Sari Husada

28	PT SMART Corp
29	PT Semen Gresik
30	PT Sarasa Nugraha
31	PT Tembaga Surya Semen
32	PT Pabrik Kertas Tjiwi Kimia
33	PT Surya Toto Indonesia
34	PT Unilever Indonesia

Regression (For counting DACC)

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	PPE/TA, DREV/TA _a DREC/TA	.	Enter

- a. All requested variables entered.
b. Dependent Variable: TACC/TA

Model Summary^b

Model	R	R Square	Adjusted R Square	Sd. Error of the Estimate
1	.285 ^a	.081	.063	.1301947

- a. Predictors: (Constant), PPE/TA, DREV/TA-DREC/TA
b. Dependent Variable: TACC/TA

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.149	2	.074	4.387	.015 ^a
	Residual	1.678	99	.017		
	Total	1.827	101			

- a. Predictors: (Constant), PPE/TA, DREV/TA-DREC/TA
b. Dependent Variable: TACC/TA

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9.18E-03	.018		-.505	.615
	DREV/TA-DREC/TA	-.108	.040	-.266	-2.693	.008
	PPE/TA	-1.55E-02	.025	-.062	-.630	.530

a. Dependent Variable: TACC/TA



Multiple Regression Counting

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	X7, X6, X2, X3, X5, X1, X4 ^a	.	Enter

- a. All requested variables entered.
 b. Dependent Variable: Y1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.487 ^a	.237	.175	.1254609

- a. Predictors: (Constant), X7, X6, X2, X3, X5, X1, X4

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.398	7	.057	4.175	.000 ^a
	Residual	1.280	94	.014		
	Total	1.678	101			

- a. Predictors: (Constant), X7, X6, X2, X3, X5, X1, X4
 b. Dependent Variable: Y1

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.309	.122		-2.537	.013
	X1	.018	.008	.262	2.099	.038
	X2	.024	.010	.324	2.353	.022
	X3	.012	.005	.080	2.310	.025
	X4	-.011	.006	-.204	-1.811	.049
	X5	.006	.003	.060	2.113	.031
	X6	.079	.039	.176	2.029	.041
	X7	.003	.002	.049	1.875	.048

- a. Dependent Variable: Y1

Heterokedasticity Counting
Using Park Test

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	X7, X6, X2, X3 _a , X5, X1, X4	.	Enter

- a. All requested variables entered.
b. Dependent Variable: RES2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.407 ^a	.166	.103	.0235280

- a. Predictors: (Constant), X7, X6, X2, X3, X5, X1, X4

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.010	7	.001	2.664	.015 ^a
	Residual	.052	94	.001		
	Total	.062	101			

- a. Predictors: (Constant), X7, X6, X2, X3, X5, X1, X4
b. Dependent Variable: RES2

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.961E-02	.023		2.611	.011
	X1	-5.96E-03	.082	-.459	-.075	.950
	X2	-3.35E-03	.003	-.239	-1.050	.296
	X3	-8.41E-04	.003	-.030	-.297	.767
	X4	1.694E-03	.003	.165	.618	.538
	X5	5.976E-03	.007	.291	.854	.314
	X6	-9.99E-04	.009	-.012	-.115	.908
	X7	-1.84E-03	.001	-.166	-1.448	.151

- a. Dependent Variable: RES2

Partial Regression Counting

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	Y1 ^a	.	Enter

- a. All requested variables entered.
 b. Dependent Variable: Y2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670 ^a	.449	.393	183.196

- a. Predictors: (Constant), Y1

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1510485	1	1510485.000	81.620	.000 ^a
	Residual	1850632	100	18506.320		
	Total	3361117	101			

- a. Predictors: (Constant), Y1
 b. Dependent Variable: Y2

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	20.186	18.139		1.113	.268
	Y1	-54.861	15.422	-.388	-3.557	.000

- a. Dependent Variable: Y2