Comparing Conventional Bank Credit Vis A Vis Shariah Bank Musharakah: Experimental Economic Approach

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Abstract

Central Bank of Indonesia with dual banking system – i.e Shariah and Conventional Bank – keep on developing system that considered as an answer to generate the national economic growth. One of the banking activities that emphasized by the Central Bank of Indonesia is fund distribution through either conventional bank credit or shariah bank financing. Having the Experimental Economic Approach based on Induced Value Theory and employing ANOVA, this paper found that shariah bank musharakah financing system would come up with higher profit opportunity compare to conventional credit system. One main reason is that musharakah financing in shariah bank applies profit and lost sharing (PLS) scheme so that will not be a burden to the customer when he find low profit.

I. Introduction

A. Background

As with most science, economics is observational; economic theories are devised to explain market activity. Economist have developed an impressive and technically sophisticated array of models, but the capacity to evaluate their predictive content has lagged behind. Traditionally, economic theories have been evaluated with statistical data from the existing "natural" markets. Although econometricians are sometimes able to untangle the effects of interrelated variables of interest, natural data often fail to allow "critical tests" of theoretical propositions, because distinguishing historical circumstances occur only by chance. Even when such circumstances occur, a host of confounding extraneous factors usually surrounds them. These problems have become more severe as models become higher precise and intricate (Davis & Holt, 1993).

In the late 1940s and early 1950s, a number of economists independently became interested in the notion that laboratory methods could be useful in economics. Early interests ranged widely, and the literature evolved in three distinct directions. At one extreme, Edward Chamberlin (1984) presented subjects with a streamlined version of a natural market. The ensuing literature on market experiments focused on the predictions of neoclassical price theory. The second strand of experimental literature grew out of interest in testing the behavioral implications of non-cooperative game theory. These game experiments were conducted in environments that less closely resembled natural markets. Payoffs, for example, were often given in tabular (normal) form that suppresses much of the cost and demand structure of an economic market but facilitates the calculation of game-theoretic equilibrium outcomes. The third series of individual decision-making experiments focused on yet simpler environments, whereby the only uncertainty is due to exogenous random events, as opposed to the decisions of other agents. Interest in individual decision-making experiments grew from a desire to examine the behavioral content of the axioms of expected utility theory. Although the line separating these literatures have tended to fade somewhat overtime, it is useful for the purposes of perspective to consider them separately (Davis & Holt, 1993).

Indonesia has applied two operational systems of banking since 1992, which is Islamic banking, and conventional one. Islamic banking is a bank with Islamic principles in its intermediary functions (Manurung & Rahardja, 2004).

The Islamic banking products were created based on Islamic concepts and principles (Economics Department BNM, 1994). Hence, Islamic banking needs an institution or a council that control and supervise them as to meet shariah compliance practically; namely Sharia Advisory Council, and the members are not only ulemas but also bankers.

Either Islamic bank or conventional one, they provide certain funds according with credit loan or financing. In Islamic bank, all transactions must comply with Islamic principles and concepts, especially in *mu'amalah*.

Some differences between credit in conventional and financing in Islamic banking is financing products that offered by Islamic bank must comply with Islamic *akad*, and the benefits gained are not generate *dzolim*. The benefits that conventional gained are based on interest rate tools, whereas Islamic banks are not.

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B. Problem Statements

According to the data provided by Bank Indonesia October 2006, the Composition of Islamic Banking Financing for *musyarakah* in Indonesia is still below fifteen percent. However, Islamic bank"s market share is still huge to be considered as the biggest bank in Indonesia. The question that might arise from the musyarakah financing figure is either clients/customers or Islamic banks that create slow growth on *musyarakah* financing proportion. Are the clients don"t attracted with Islamic financing system? Or, it is from the Islamic banks that implement strictly prudential system with regard to the financing process.

C. Objectives

In line with the above problem statements, therefore, the objectives of this research are:

1. To compare the benefit and loss between Islamic financing and conventional credit that customers might have in each transaction.
2. To compare the benefit and loss between Islamic financing and conventional credit that banks might have in each transaction.
3. To compare the amount of financing funds and credit funds those customers would take, according to both systems.

All of those objectives are only valid for Indonesian case, in Jakarta.

D. Scope of Research

This research is only observe the economic transactions output between the subjects of the research and the banks, which is the benefit earned by each subjects and each banks for every combinations of transaction, Islamic bank with low risk business as well as high risk business and conventional bank with low risk business as well as high risk business.

2. Research Methodology and Data

A. Data

The data used in this research is primary data from the experimental design that employing twenty four people as the experimental units with certain treatments.

This research is use two factors namely type of financing and type of risk of business. Each factor has two levels, *musyarakah* financing from Islamic bank and credit from conventional bank, and for risk, there are high-risk business and low risk business.

All of those twenty-four people are divided in to four blocks of design of experiment that is:

a. Six people join Islamic financing with high risk of business.

b. Six people join Islamic financing with low risk of business.

c. Six people join conventional credit with high risk of business.

d. Six people join conventional credit with low risk of business

B. Methodology

To analyze those comparisons, the Analysis of Variance (ANOVA) will be used. The first step will be exploring data whether it is fulfilling the required assumptions. The experimental designs used in this research are Factorial in Randomized Block Design. The equation is;

$$Y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \rho_k + \varepsilon_{ijk} \quad \dots\dots\dots\dots\dots (1)$$

Where;

Y_{ijk} = Response for the i-th system with the j-th risk in the k-th period.

μ = General Average

α_i = Effect from the i-th financing/loan system.

β_j = Effect from the j-th risk.

ρ_k = Effect from the k-th period.

$(\alpha\beta)_{ij}$ = Effect of interaction between the i-th financing/loan system and the j-th risk.

ε_{ijk} = Error of experiment for the i-th financing/loan system, the j-th risk, and the k-th period.

The hypothesis that will be tested is:

a. H0 : $\alpha_i = 0$ (No significant differences between the systems for response)

b. H0 : $\beta_j = 0$ (No significant differences between the risk for response)

c. H0 : $(\alpha\beta)_{ij} = 0$ (No significant differences between the interactions of system and risk for response)

d. H0 : $\rho_k = 0$ (No significant differences between the period/block for response)

The experimental economics simulation procedure is enclosed in Appendix 1.A and Appendix 1.B.

3. Analysis and Result

Assumption testing would be done in the first step and following afterward is data analysis. This assumption testing consists of test for equal variances of residuals, normality test for residual, and the independence of residual toward the order of the data. If such testing results do not violating any required assumptions, it is time to do the analysis by employing ANOVA.

A. Assumptions Testing

Amount of Loan/Financing

With regards to financing/loan rate response or financing given to the experimental units, equal variances assumption has been fulfilled by having P-value 0.202 higher than α = 0.05 (Figure 1).

Normality test to the residual using Kolmogorov-Smirnov Normality Test provides P-value higher than 0.15. This indicates to accept H0, or in other word the data has normally distributed. In addition, the assumption of residual independence toward the order of the data is also provides a satisfied result (see Appendix 2.A).
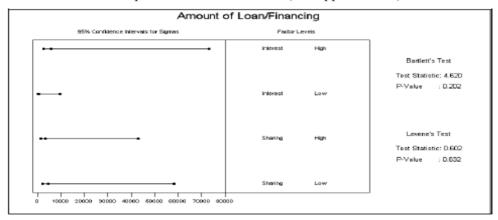

Figure 1. Test for equal variances: Loan/Financing versus Sistem-Risk.

Profit Earned by Bank

With regards to profit rate response gained by the Bank every transaction period, equal variances assumption has been fulfilled by having P-value 0.063 higher than α = 0.05 (Figure 2).
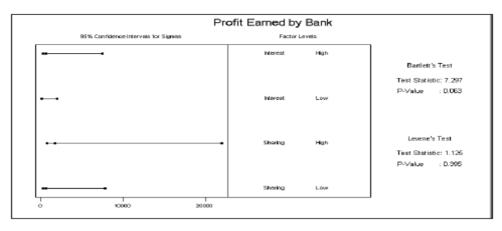
Figure 2. Test for equal variances: Profit earned by bank versus Sistem–Risk.

Normality test to the residual using Kolmogorov-Smirnov Normality Test provides P-value indicating that residual normally distributed that is 0.08. As for the assumption of residual independence toward the order of the data also provide a satisfied result. (see Appendix 2.B).

Profit Earned by Customer

Customer‟s profit dataset in every transaction period has been fulfilled the equal variances assumption by having P-value 0.170 higher than $\alpha = 0.05$ (Figure 3).

Normality test to the residual using Kolmogorov-Smirnov Normality Test provides P-value indicating that residual normally distributed that is higher than 0.15. As for the assumption of residual independence toward the order of the data also provide a satisfied result. (see Appendix 2.C).
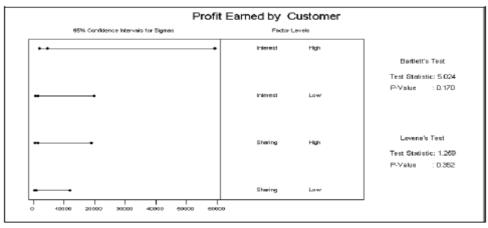

Figure 3. Test for equal variances: Profit earned by customer versus Sistem–Risk.

B. Analysis of Variance: Factorial in Randomized Block Design

Amount of Loan/Financing

Table 1 shows that there are no significant factors could influence the response, which is amount of loan or financing. All factors, either system or risk, even the interaction between them, does give score of P-value higher than α. Therefore, looking at the amount of loan or financing, there is no significantly difference between people who know Islamic system and who don"t; and people who take high risk trade and who don"t.

Table 1. Anova for response: Amount of Loan/Financing.

Source	Degree of Freedom	Mean Square	F-Value	P-Value
Periods	2	6655833.33	0.47	0.64
System	1	2900833.33	0.21	0.66
Risk	1	1140833.33	0.08	0.78
System*Risk	1	35707500.00	2.54	0.16
Error	6	14031388.89		
Total	11			

In fact, the amount of financing in conventional bank is always higher than the amount of financing in Islamic bank. This is due to the fact that loss risk in Islamic Bank is bore jointly between debtor and the bank. In this context, bank could do their supervision or get involve in the project being funded either in field project or in the accounting process. It is one factor that subject to the loss of debtor mark-up fund. Financing that being submitted should in line with real sector.

As for conventional bank debtor always deal with speculation activities and compete artfully with banking side. Hence, Bank do not conduct any supervision of fund utilization and projects being financed except debtor repayment schedule every month.
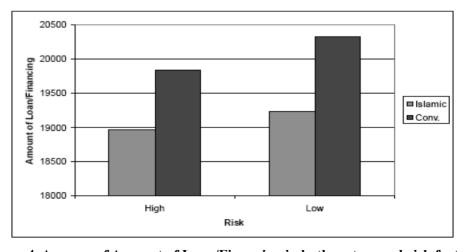

Figure 4. Average of Amount of Loan/Financing in both system and risk factors.

Eventhough there is no evidence that there exist real effect from system factor as well as risk, but clearly shown from Figure 4 that there exist loan gap in term of volume.

Profit Earned by Bank

In term of profit earned by bank, conventional bank is always higher than Islamic bank (Figure 5). The main cause of this difference is "system" that being applied by those parties. In addition to profit, in Islamic bank, risk should bore collectively between debtor and bank as to ensure no harm to debtor. Whereas in conventional bank, in whatever conditions, total installment repayment should be made accordingly as to ensure the profit would earn by conventional bank.
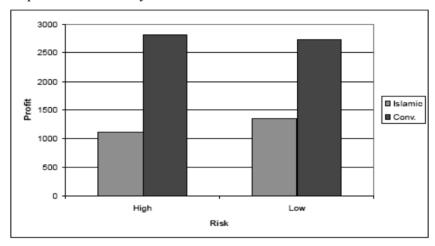

Figure 5. Average of profit earned by bank.

Having ANOVA analysis, it is obtained that system factor has significant effect at α = 5% to the profit volume of Bank. This strengthens the previous analysis that the height profit of conventional bank is due to the system which do not ready to bear the business loss of their debtor.

Table 2. Anova for response: Profit Earned by Bank.

Source	Degree of Freedom	Mean Square	F-Value	P-Value
Periods	2	676318.03	1.12	0.3853
System	1	7085032.20	11.76	0.0140
Risk	1	1751355.41	2.91	0.1391
System*Risk	1	957533.75	1.59	0.2542
Error	6	602456.03		
Total	11			

Profit Earned by Debtor

The afflicting result is shown at the response profit earned by debtor. Profit average earned by Islamic bank‟s debtor is considered small. However, it is considered better compare to the conventional bank‟s debtor. Profit from conventional bank‟s debtor is having a negative average in both of risk types, which mean that they do not get any surplus from their business. It is shown in Figure 6, whereby at business with high risk, their profit lies under negative/minus 12.000, whereas at business with low risk lies under 2.000. And for both types of risk, Islamic bank‟s debtor earns positive profit average.
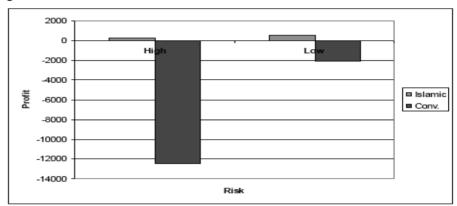

Figure 6. Average of profit earned by debtor.

Moreover, it is emphasized with the result of ANOVA analysis at Table 3 which shows that there is significantly different – profit response earned by debtor – between Islamic bank‟s debtor and Conventional one.

Table 3. Anova for response: Profit Earned by Debtor.

Source	Degree of Freedom	Mean Square	F-Value	P-Value
Periods	2	25490764.95	1.03	0.4119
System	1	176530782.24	7.15	0.0369
Risk	1	1869604.70	0.08	0.7924
System*Risk	1	15238286.64	0.62	0.4620
Error	6	24697691.30		
Total	11			

IV. Conclusion and Suggestion

A. Conclusion

The system had been applied by bank in the financing process has significant effect to both of bank and customer‟s profit. Conventional bank systems, which do not account for whether debtor, suffer a financial loss, having profit assurance with the existence of

interest. As for debtor whose suffer lose would also suffer a huge negative surplus. This would subject to detrimental for Small-Medium Enterprises that aim to develop their business. Instead of developing their business, these SMEs would be bore huge debt.

While in the Islamic bank, debtor that suffers financial loss will have balanced-load with that of banking side. The emergence of financial loss will be carried out by both of bank and customer. It is for this reason, Islamic Bank ought to be well known and acceptable by all community especially Muslim in this world compare to conventional ones.

B. Suggestion

It is urged for Islamic bank to socialize their mechanism to the community as clear as possible especially to Muslim. The more customer whose apply for financing, the more profit and people living standar might be increased accordingly. At the end, this would address to the welfare of community. In order to sharpen the analysis and strengthen the research result, it is advised for those who will extent this research to add more experimental unit as well as repetition used. And for the last but not the least is to add up design of experimental with another types according to the economic behavior development, (eg. Nested Factorial etc).

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Appendix.1. Simulation Procedure

A.   Experimental Instruction for *Musharaka*

1.   Every single period, participant will be borrowed start up capital Rp. 2.500,-, and guaranty Rp.5.000,- by researcher. Start up capital and guaranty would be returned back every period.

2.   Mudharib/You (borrower) will start business with start up capital, but you feel that such capital amount do not fit with your business plan so that you are going to Islamic Bank to get financing.

3.   **Maximum financing** that might obtained from bank is Rp. 5.000,-.

4.   Now, your **Total Business Capital (TBC) = Start up capital + Financing**.

5.   Before providing financing, bank should have clear info about business profit projection. **In this simulation, business profit projection that will be financed by bank is15%.**

6.   **Equivalent Rate** required by bank is **15% per annum** from bank''s financing.

7.   Bank Profit Sharing Ratio=

$$\frac{(Bank'sM\arg in \times Bank'sFinancing) + Bank'sFinancing}{(Bu\sin ess\Pr ofit\Pr ojection \times TotalBu\sin essCapital)} \times 100\%$$

8.   Actual Business Profit (obtained from data generation randomly):

Business	Business Profit	
Low Risk	-20% up to 20%	or actual profit 80%-120%
High Risk	-25% up to 20%	or actual profit 75%-120%

So that actual business Income (ABI) in rupiah = **(%ABI x TBC)**

9. Profit Sharing that should be paid to the Bank = ((% Profit Sharing Ratio) x APU) – bank's financing

10. Return that should be paid to the Bank***)** = Bank"s Financing + Profit Sharing

11. Debtor profit = Actual Business Profit (ABP) – Return to the Bank

12. Inflation rate based on data generation randomly:

    a. Low risk = 1.5 % - 2.5 %

    b. High risk = 2 % - 5 %

13. Net Present Value (NPV) from the debtor profit =

$$\frac{Debtor's Income}{(1 + Inflation)}$$

*) If Return to the Bank Negative, customer should consider for time extention (6 months)

A. The first debtor Actual Business Income used to do another business, and customer needs more capital that financed by bank (maxsimum Rp10.000,-), so that: **Bank Total Financing = Return to the bank + New Financing**.

B. New **Total Business Capital** (**TBC**) = **ABI + New Financing**

C. In this extention period, **business profit projection that will be financed by bank is 15%**.

D. **Equivalent Rate** required by bank is **15% per annum** from bank financing.

E. Bank Profit Sharing Ratio =

$$\frac{(Bank's M \arg in \times Bank's Financing) + TotalOfBank's Financing}{(Business Profit Projection \times TheNewTBC)} \times 100\%$$

F. Actual Business Profit (obtained from data generation randomly):

Business	Business Profit	
Low Risk	-20% s/d 20%	or actual profit 80%-120%
High Risk	-25% s/d 20%	or actual profit 75%-120%

So that actual business Income (**ABI**) in rupiah = **(%ABI x NewTBC)**

G. **New Profit Sharing** that should be paid to the Bank =

((%Bank ratio:12) x 6 months x New ABP) – Total Bank Financing

H. **New Return** that should be paid to bank =

(Total Return to the Bank + New Profit Sharing)

I. Debtor New Profit = (New ABP – New return to the bank)

J. Inflation rate based on data generation randomly:

    a. Low risk = 1.5 % - 2.5 %

    b. High risk = 2 % - 5 %

K. New Netto Present Value (NPV) from debtor profit =

$$\frac{Debtor's Income}{(1+Inflation)}+\frac{TheNewDebtor's Income}{(1+Inflation)}$$

Cumulative Profit at period:

| Period I | NPV period I – Start up capital |
| Next Period | NPV related period – Start up capital + previous profit |

A. If participant do not have financing from the bank, it is considered that participant do not running the business in that period, because it assumed that business could be runned only if its capital more than Rp. 5000,-. NPV that would be reached (if do not running the business):

$$\frac{StartUpCapital}{(1+Inflation)}$$

Experimental Path

1. Experimental participants enter the class and would be provided decision sheet and experimental instruction by the researcher.
2. The Bank will open the transaction within 3 periods, with each transaction of maximum time is 15 minutes.
3. Debtor rises his hand to propose the transaction.
4. The transaction will be proceed when the bank appoint particular debtor.
5. Once the transaction is done, debtor will wait to another transaction
6. In the next period, start up capital and guarantee would be used accordingly.
7. Once the whole experimental are done, researcher will pay profit/loss according to the participant receipt (NPV)+ start up capital + guarantee.

B. Experimental Instruction for Credit

a. Every single period, participant will be borrowed start up capital Rp. 2.500,-, and guaranty Rp.5000,- by researcher. Start up capital ang guaranty would be returned back every period.
b. You (borrower) will start business with start up capital, but you feel that such capital do not fit with your business plan so that you are going to conventional bank to have loan.
c. **Maximum Loan** that might obtained from bank is Rp. 5.000,-.
d. Now, your Total Business Capital (TBC) = start up capital + loan
e. Before providing loan, bank should have clear info about business profit projection.

In this simulation, business profit projection that will be loaned by bank is 15 %.

f. **Bank interest** obtained ramdomly 13% - 14% from the bank loan, so that **interest actual** that should be paid to the bank = %bank interest x credit

g. **Actual** Businees Profit (dari hasil pembangkitan data secara acak):

So that actual business income (**ABI**) in rupiah = **(%ABI x NewTBC)**

h. Return that should be paid to the Bank = Bank Loan + Bank Interest

i. Debtor income***)** = Actual Business Income – Return to the Bank

j. Inflation rate base on data generatioan randomly:

1. Low risk è 1.5 % - 2.5 %

2. High risk è 2 % - 5 %

k. Net Present Value (**NPV**) from the debtor income =

$$\frac{Debtor's Income}{(1+ Inflation)}$$

*) If debtor income Negative, Customer should consider for time extention (6 months)

A. The first debtor Actual Business Income might be used to do another business, and customer needs more capital that financed by bank (maximum Rp10.000,-), so that: **Bank Total Loan = First Loan + New Loan**.

B. New **Total Business Capital** (**TBC**) = **ABI + New Loan**

C. Actual New Business Profit (obtained from data generation randomly):

Business	Business Profit	
Low Risk	-20% s/d 20%	or actual profit 80%-120%
High Risk	-25% s/d 20%	or actual profit 75%-120%

So that actual business income (**ABI**) in rupiah = **(%ABI x NewTBC)**

D.   Return that shoul be paid to the Bank =

(%bank margin:12) x 6 months x New ABI) – Total Bank Loan

E. Fine that should be paid by the debtor is 4% per-month from the loan payment every month, so that fine = 4% x 6months x (payment that should be paid to the bank : 12)

F. **Bank Interest** that obtained randomly 13% - 14% from the bank loan, so that **Actual Interest** that should be paid to the bank, = %bunga bank x ((new loan + First year of bank actual) : 12) x 6 months

G. **New Payment** that should be paid to the bank =

(Total Bank Loan + Actual Interest First Year + fine + actual interest next year)

H.   Debtor New Income**)** = (New ABI – New payment to the bank)

**) If new debtor income still negative, the Bank will take debtor's guaranty.

I.   Inflation rate based on data generation randomly:
1.   Low risk è 1.5 % - 2.5 %
2.   High risk è 2 % - 5 %

J.   New Netto Present Value (NPV) from the debtor income =

$$\frac{Debtor's Income}{(1+Inflation)} + \frac{TheNewDebtor's Income}{(1+Inflation)}$$

K.   If participant do not have any loan from the bank, it is considered that participant do not running the business in that period, because it assumed that business could be runned only if its capital more than Rp. 5000,-. NPV that would be reached (if

do not running the business) = $\dfrac{StartUpCapital}{(1+Inflation)}$

Experimental Path

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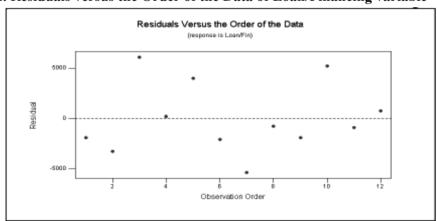
Appendix.2. Assumptions Testing

A. Loan/Financing Variable
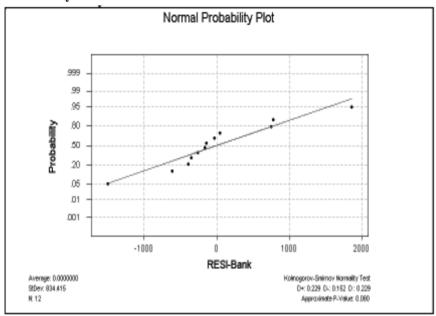
A. 1. Normality Test for Residual

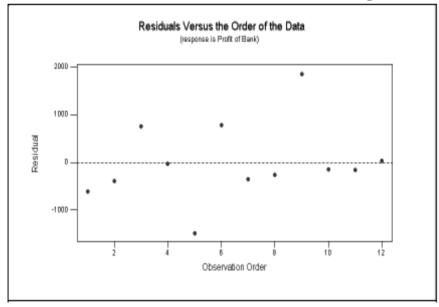**A. 2. Residuals versus the Order of the Data of Loan/Financing variable**

B. Profit Earned by Bank Variable

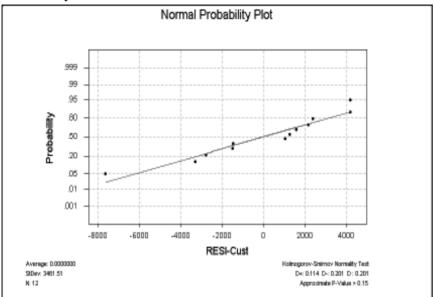## B. 1. Normality Test for Residual

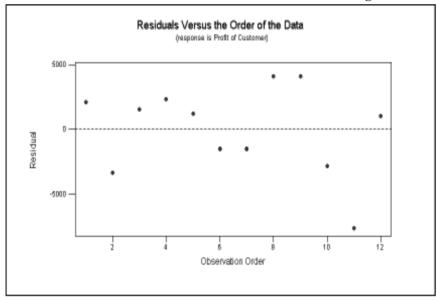## B. 2. Residuals versus the Order of the Data of Loan/Financing variable

C. Profit Earned by Customer Variable

C. 1. Normality Test for Residual

C. 2. Residuals versus the Order of the Data of Loan/Financing variable