<u>Lecture 9:</u> Regression Analysis by SPSS

<u>Model</u>

<u>*Dataset 6*</u> indicates the determinants of Impulse Buying based on a cross-sectional survey. In particular, it attempts to establish an understanding of how impulse buying behaviour may affect the wealth of investors on the stock market and this can be modelled in the following form:

Impulse = β_0 + β_1 Gender + β_2 Age Band+ β_3 Portfolio+ V_i

Where α's and β's are the estimated parameters, U and V the error terms.

<u>Data Description</u>

The data collected is cross sectional in nature. Questionnaires were used to provide a spread of information from different ages and classes. The data itself was collected manually over a period of a few weeks. The majority of the subjects were approached in the street, in their place of work and in public establishments such as bars and restaurants in Leicester city.

<u>Tasks</u>

1. How well can we predict the willingness in purchasing share (ib) if we know something about the decision of portfolio (P)? (i.e., Simple Regression).

2. Regress p, g, and ab on ib (i.e. Multiple Regression).

3. Use the log version of the existing variables and repeat Task 1.

4. Use the log term of the relevant variables and repeat Task 2.

5. Decompose the gender variable using **recode** procedure into two groups such as male and female and regress the following steps to estimate the effects of the two variables separately:

    a) regress p, **m**, and ab on ib

    b) regress p**, f,** and ab on ib

Tips For Task 1

*To conduct the analysis (i.e. simple regression), from the **Analyze** pull-down menu, select **Regression,** then choose **Linear**. When the dialog box appears, select "i**b**' as the dependent variable and "**p**" as the independent variable (see Fig 1). Choose **statistics** button and click on the boxes of **estimates**, **model fit**, and **descriptives** (see Fig 2) and then click on continue to return to the main regression dialog box. Finally, click on the **OK** button to run the analysis (see Fig 3).*
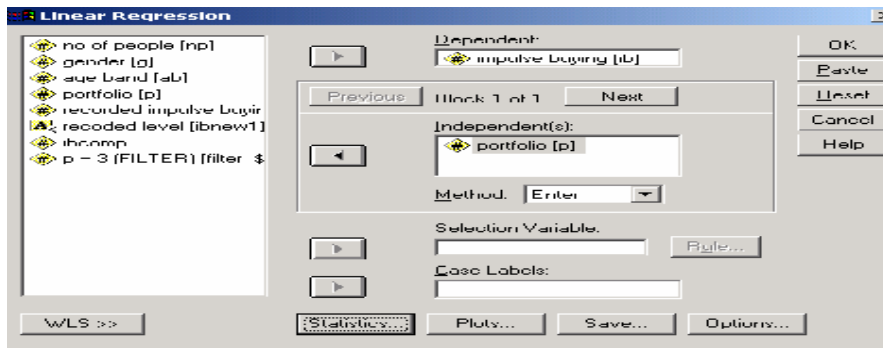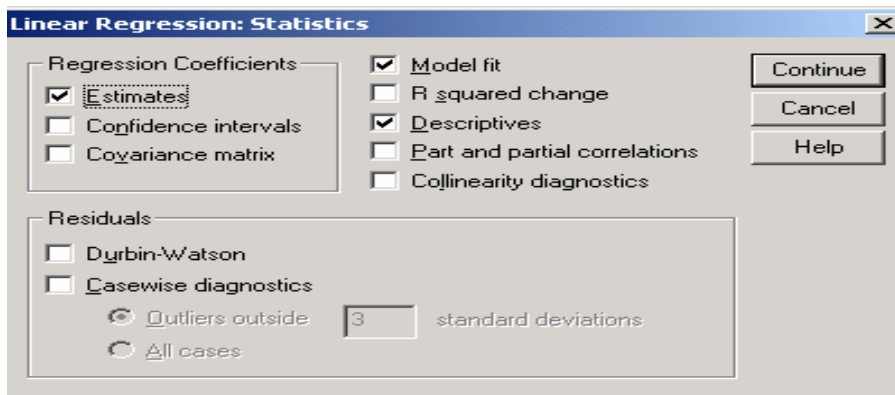

FIG 1

FIG 2

	3	

FIG 3

Tips For Task 2

This is a multiple regression analysis. To conduct this analysis, from the ***Analyze*** *pull-down menu, select* ***Regression,*** *then choose* ***Linear****. When the dialog box appears, select "**ib'** as the dependent variable and the rests as independent variables (see Fig 4). Now, select* ***statistics*** *button and click on the boxes of* ***estimates****,* ***model fit****, and* ***descriptives*** *(see Fig 5) and then click on continue to return to the main regression dialog box. Finally, click on the* ***OK*** *button to run the analysis (see Fig 6).*
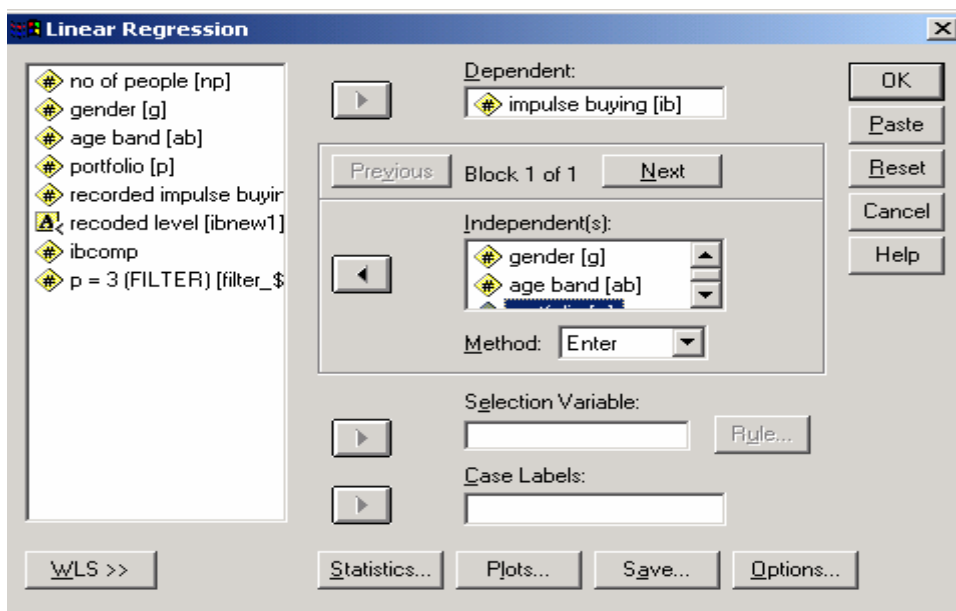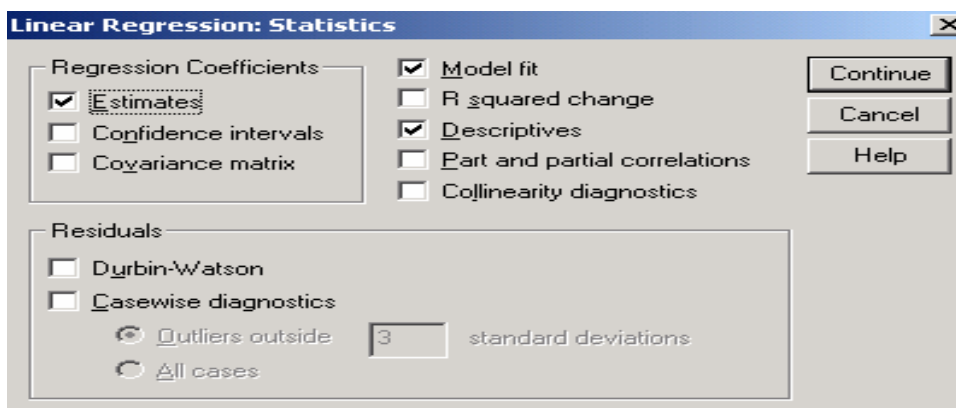

FIG 4

FIG 5

FIG 6

How to take natural logarithm of a variable?

*To create the natural log of the existing variables, go to **the transform drop-down menu** and choose **compute** option and type **lg** in the **target variable** box (see fig 6a) then click **type & label** button to open the dialog box as appears in fig 6b. In this dialog box, type **log of gender** to make it recorded in **the variable view** section and press **continue** button to get back to **compute variable** dialog box. (see fig 6b and the variable view section). Having completed these processes, select the relevant function (**LG10**) from the **function box** and click function button to get it into the upper screen, then choose the relevant variable (i.e. **gender**) with clicking the nearest button (see fig 6c). To get the final product, look at the **data view** section. Apply the same process for **the other variables** (see fig 6d)*
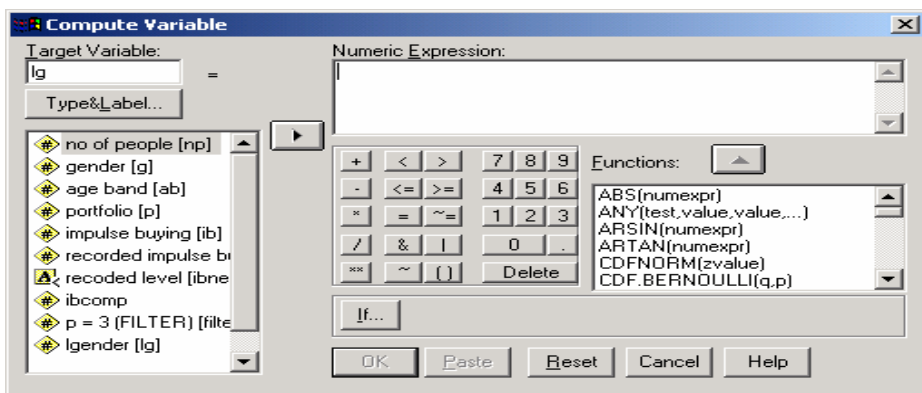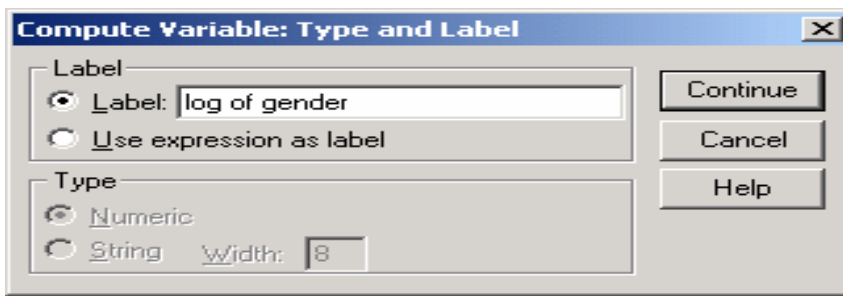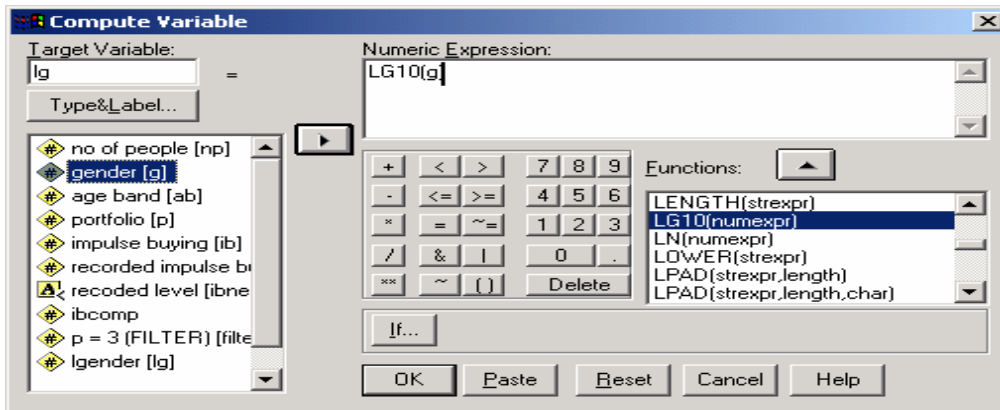

FIG 6a

FIG 6b

FIG 6c

	lg	lab	lp	lib
1	.00	.48	.00	.00
2	.00	.48	.30	.60
3	.00	.30	.30	.48
4	.00	.30	.00	.48
5	.00	.60	.30	.60
6	.00	.70	.00	.48
7	.00	.48	.00	.60
8	.30	.48	.00	.48
9	.00	.60	.00	.00
10	.00	.30	.48	.70
11	.00	.30	.30	.48
12	.00	.70	.30	.60
13	.30	.30	.30	.85
14	.00	.70	.48	.78
15	.00	.30	.00	.90
16	.00	.70	.00	.30
17	.30	.70	.30	.00
18	.30	.70	.48	.60
19	.00	.60	.48	.78
20	.00	.30	.48	.70
21	.00	.30	.30	.48
22	.30	.30	.00	.90

Data View / Variable View

FIG 6d

Tips For Task 3

*Use the log version of the relevant variables to conduct the relationship between, **"lib"** and **"lp".** From the **Analyze** pull-down menu, select **Regression,** then choose **Linear**. When the dialog box appears, select "**lib**"*

*as the dependent variable and "**lp**" as the independent variable (see Fig 7).*
*Choose **statistics** button and click on the boxes of **estimates**, **model fit**, and*
***descriptives** (see Fig 8) and then click on continue to return to the main*
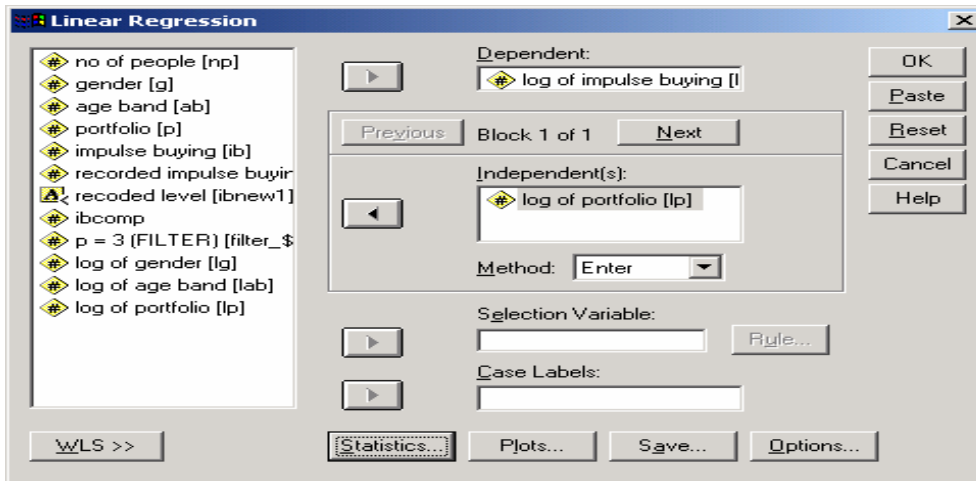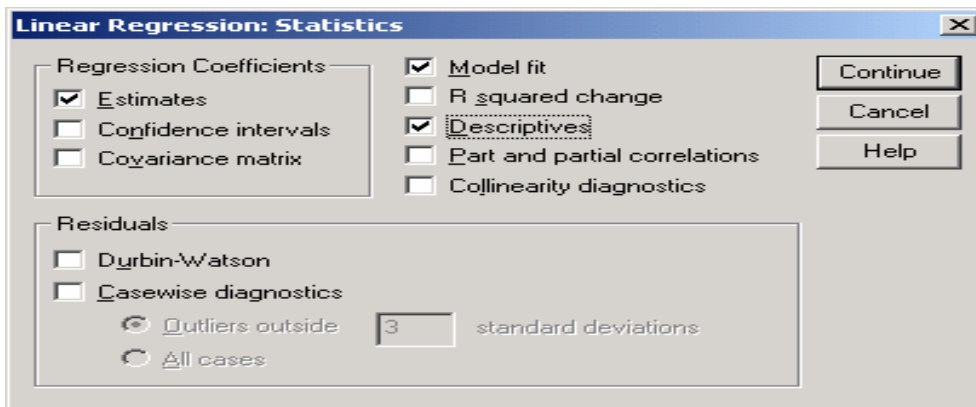*regression dialog box. Finally, click on the **OK** button to run the analysis (see*
*Fig 9).*

FIG 7

FIG 8

FIG 9

Tips For Task 4

*From the **Analyze** pull-down menu, select **Regression,** then choose **Linear**. When the dialog box appears, select "**lib"** as the dependent variable and the rest as independent variables (see Fig 10). Now, select **statistics** button and click on the boxes of **estimates**, **model fit**, and **descriptives** (see Fig 11) and then click on continue to return to the main regression dialog box. Finally, click on the **OK** button to run the analysis (see Fig 12).*
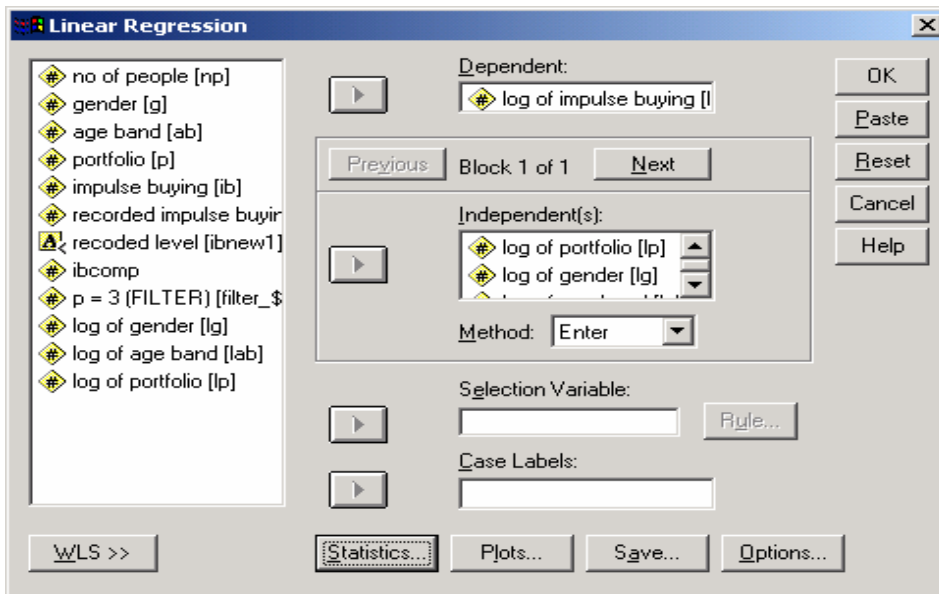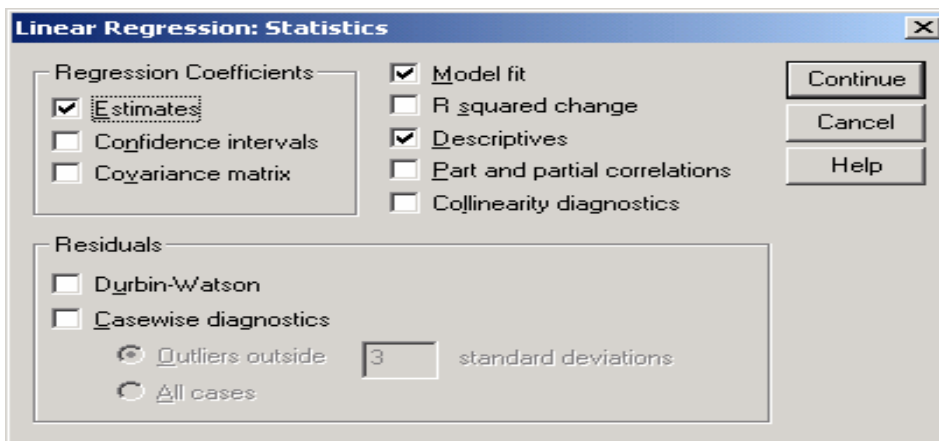

FIG 10

FIG 11

FIG 12

In the interpretation of the t-statistics, we will be looking at its p-value. The situations that you will need to interpret the p-value. If the p-value is less than 0.05 (0.01), the null hypothesis is rejected and the result is significant beyond the 5 percent (1 percent level).

Tips For Task 5

*Before we estimate the relevant regressions, we recommend you to create two new variables as **m** (male) and **f** (female) by using **Data > Insert Variable** (see Fig 13). These variables can be generated conducting by copy and paste from the original gender variable. Then, decompose the gender variable using **Recode** procedure into two groups such as male and female. Now, click on **Transform> Recode** and select **Into Same Variables** (see Fig 14).*
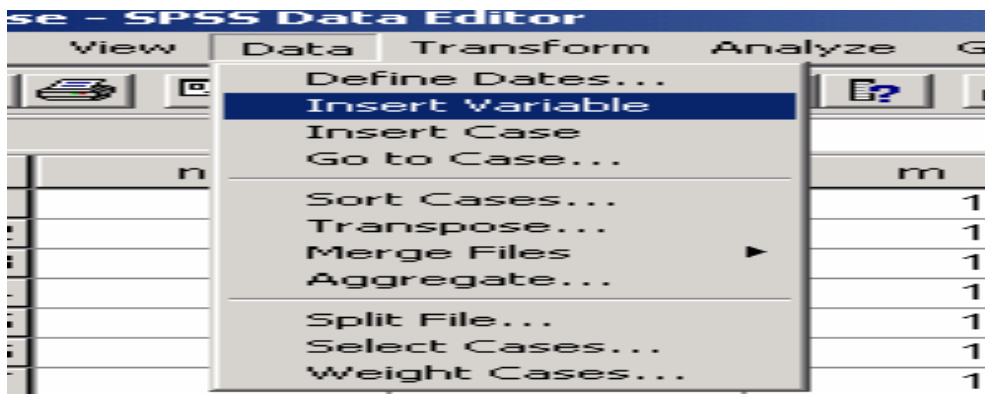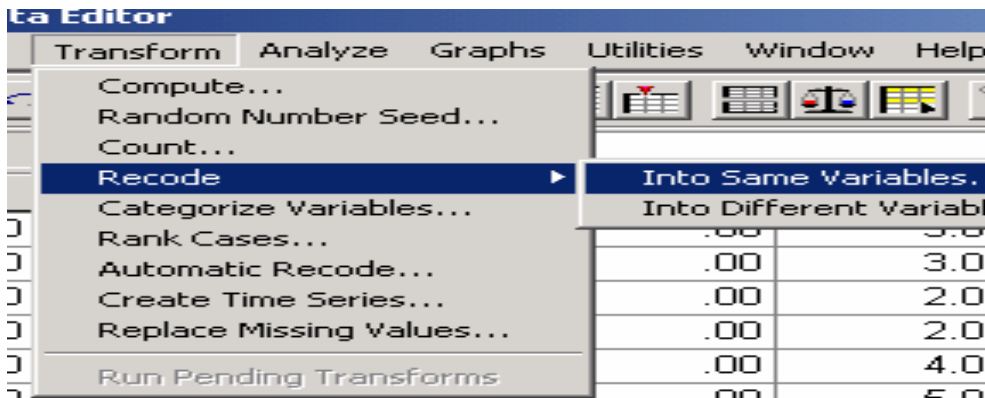
FIG 13

FIG 14

The resulting dialog box, shown in Fig 15, contains a list of your variables on the left. Put the relevant one (i.e. male) into the right box and then click on old and new values.
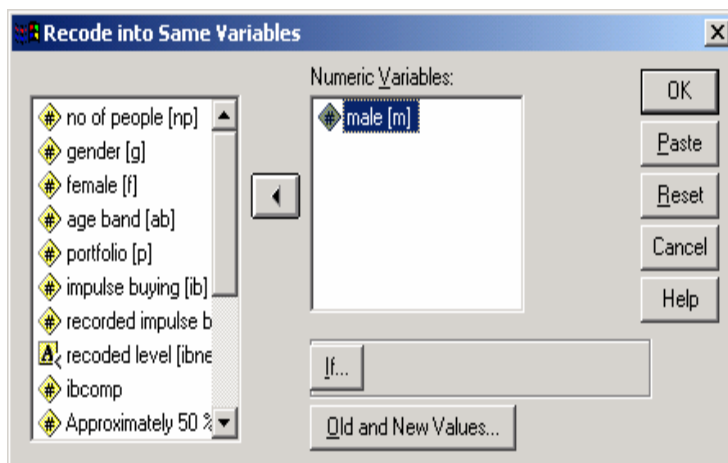

FIG 15

*In the left column under **Old Value** and next to the word '**Value**' type **2** and then click in the box to the right, under **New value**, type **0**. Finally, click on **Add** and use **Continue** button when they are done. This procedure is for **male** variable (see Fig 16). Then use **1** and **0** for **Old value** and **New value** to*

*create **female** variable respectively as in Fig 17. At the main recode dialog box, click on OK to execute the changes as in Fig 18 and 19.*
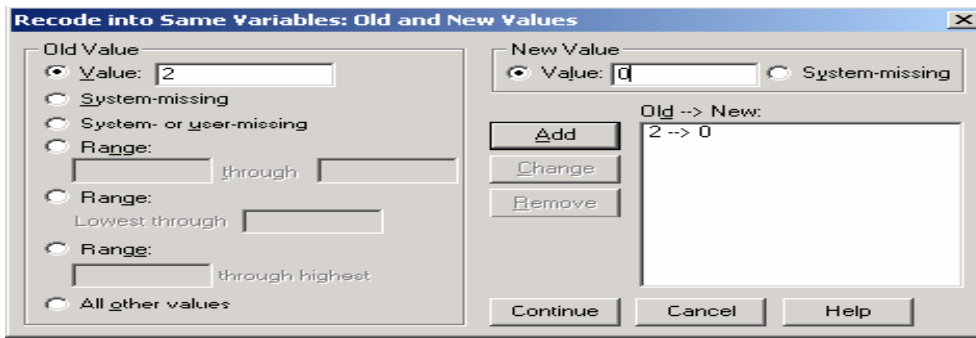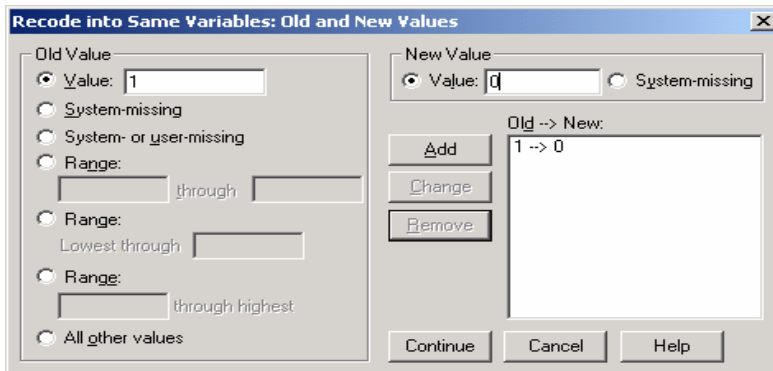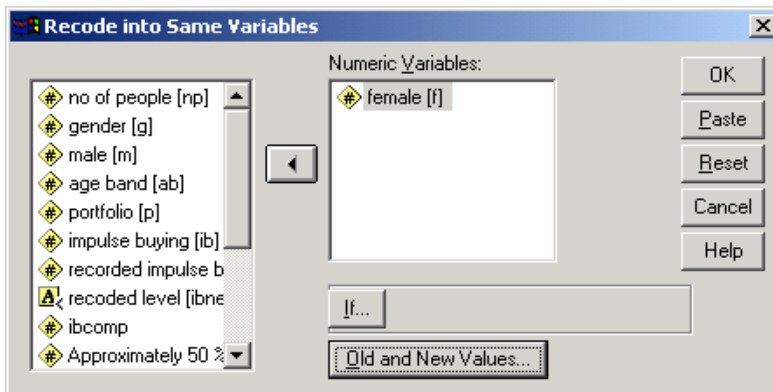

FIG 16

FIG 17

FIG 18

FIG 19

*Now, from the **Analyze** pull-down menu, select **Regression,** then choose* *Linear. The dialog box will appear. Select **"ib'** as the dependent variable and* *"ab", "p" and "f" or "m" as the independent variables (see Fig 20). Choose* *statistics button and click on the boxes of **estimates**, **model fit**, and* *descriptives and then click on continue to return to the main regression* *dialog box. Finally, click on the **OK** button to run the analysis to get the* *estimated results for both male and female separately (see Figs 21 and 22).*
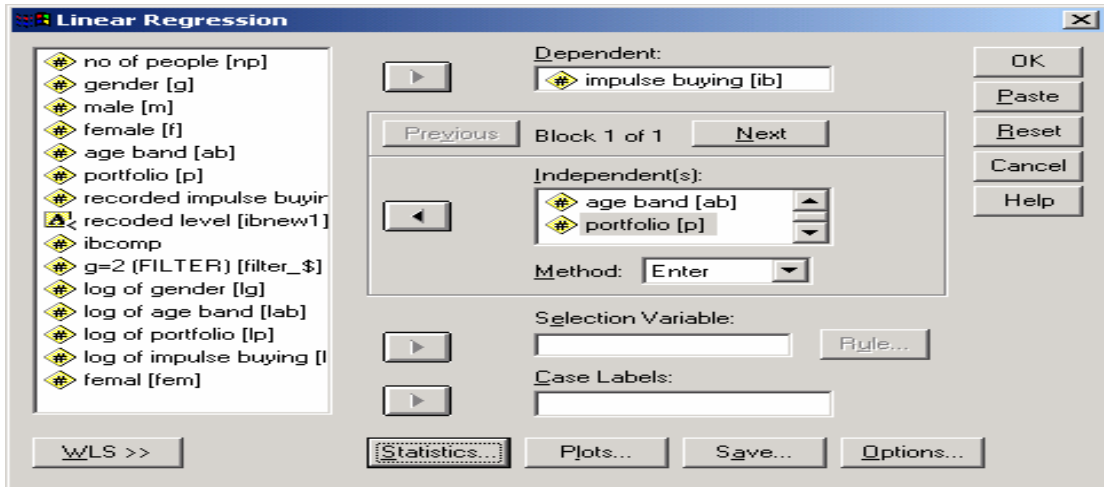

FIG20

FIG 21

FIG 22

Table 1: Codebook for Impulse Buying questionnaire

Variable Label	Impulse buying
Variable name	**IB**
Values	0-3 not/less interested in purchasing share 4-7 more interested in purchasing share 8-10 most interested in purchasing share
Variable Label	**Portfolio**
Variable name	**P**
Values and its label	1 Infrequent
	2 Occasional
	3 Frequent
Variable Label	**Age Band**
Variable name	**AB**
Values and its label	1 16-20
	2 21-30
	3 31-40
	4 41-50
	5 51-60
	6 61-70
	7 71-80
Variable Label	**Gender**
Variable name	**G**
Values and its label	1 Male
	2 Female