

Econometrics

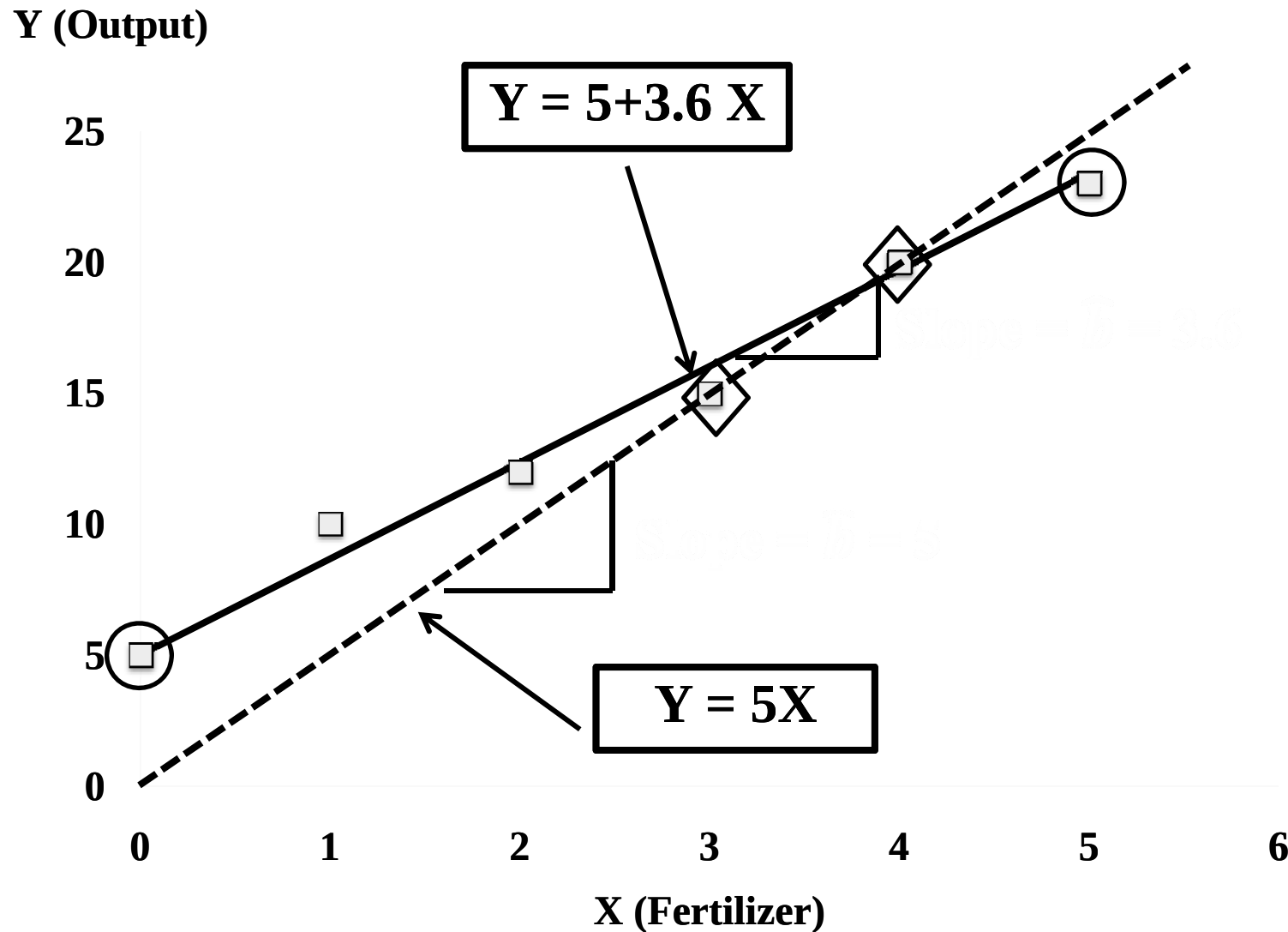
Introduction to Estimation

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Model: $Y = a + bX$

Observation	X	Y
	Fertilizer	Output
1	0	5
2	1	10
3	2	12
4	3	15
5	4	20
6	5	23

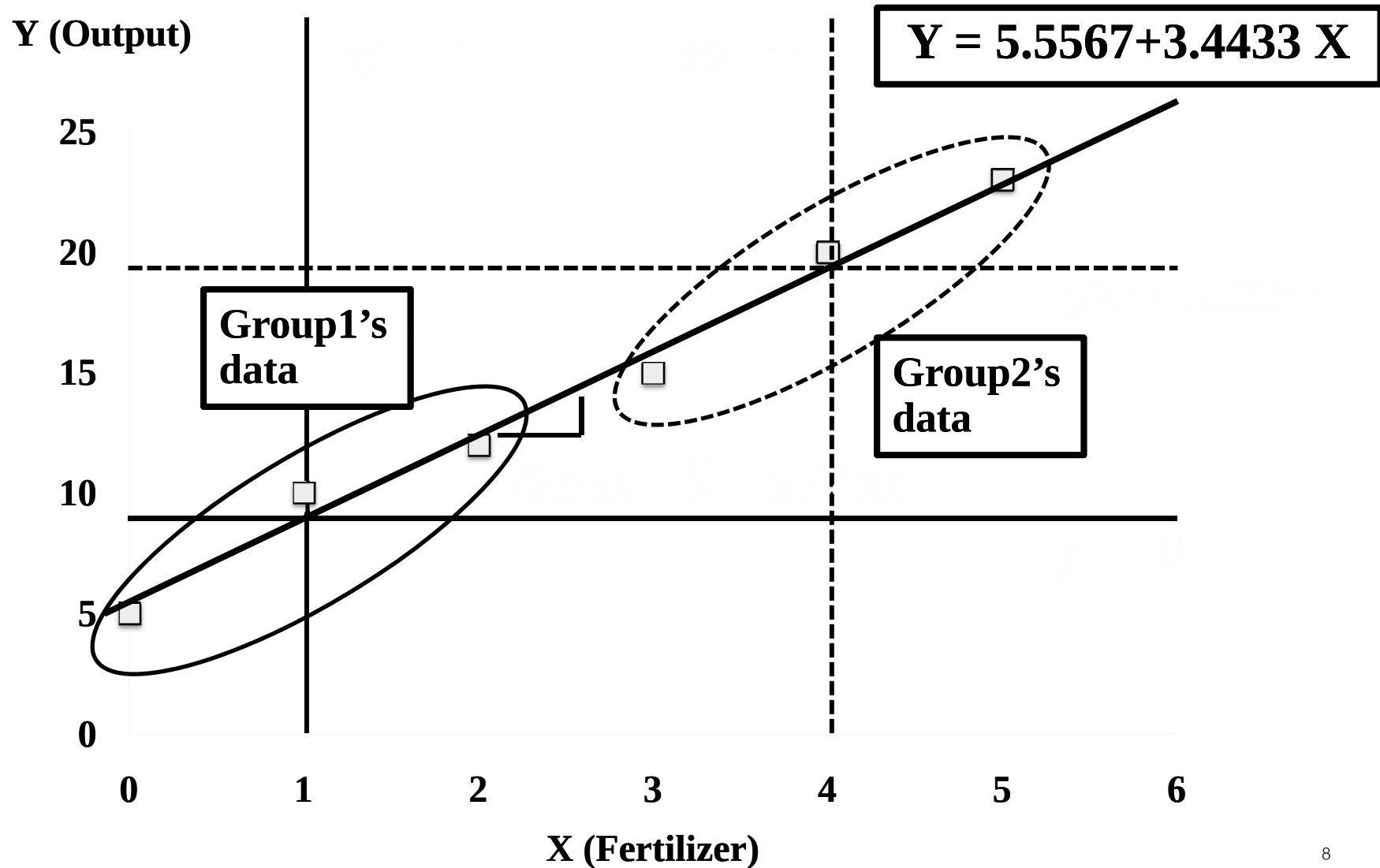
Scatter Diagram between Y (Output) and X (Fertilizer)



Model: $Y = a + bX$

Group of Data	X (Fertilizer)	Y (Output)
1	0	5
1	1	10
1	2	12
Mean	$(0+1+2)/3 = 1$	$(5+10+12)/3 = 9$
2	3	15
2	4	20
2	5	23
Mean	$(3+4+5)/3 = 4$	$(15+20+23)/3 = 19.33$

Scatter Diagram between Y (Output) and X (Fertilizer)



PART ONE: SINGLE-EQUATION REGRESSION MODELS

TABLE 2.1 WEEKLY FAMILY INCOME X , \$

$\begin{matrix} X \rightarrow \\ Y \downarrow \end{matrix}$	80	100	120	140	160	180	200	220	240	260
Weekly family consumption expenditure Y , \$	55 60 65 70 75 - -	65 70 74 80 85 88 -	79 84 90 94 98 - -	80 93 95 103 108 113 115	102 107 110 116 118 125 -	110 115 120 130 135 140 -	120 136 140 144 145 - -	135 137 140 152 157 160 162	137 145 155 165 175 189 -	150 152 175 178 180 185 191
Total	325	462	445	707	678	750	685	1043	966	1211
Conditional means of Y , $E(Y X)$	65	77	89	101	113	125	137	149	161	173

TABLE 2.4
A RANDOM SAMPLE FROM THE
POPULATION OF TABLE 2.1

Y	X
70	80
65	100
90	120
95	140
110	160
115	180
120	200
140	220
155	240
150	260

TABLE 2.5
ANOTHER RANDOM SAMPLE FROM
THE POPULATION OF TABLE 2.1

Y	X
55	80
88	100
90	120
80	140
118	160
120	180
145	200
135	220
145	240
175	260

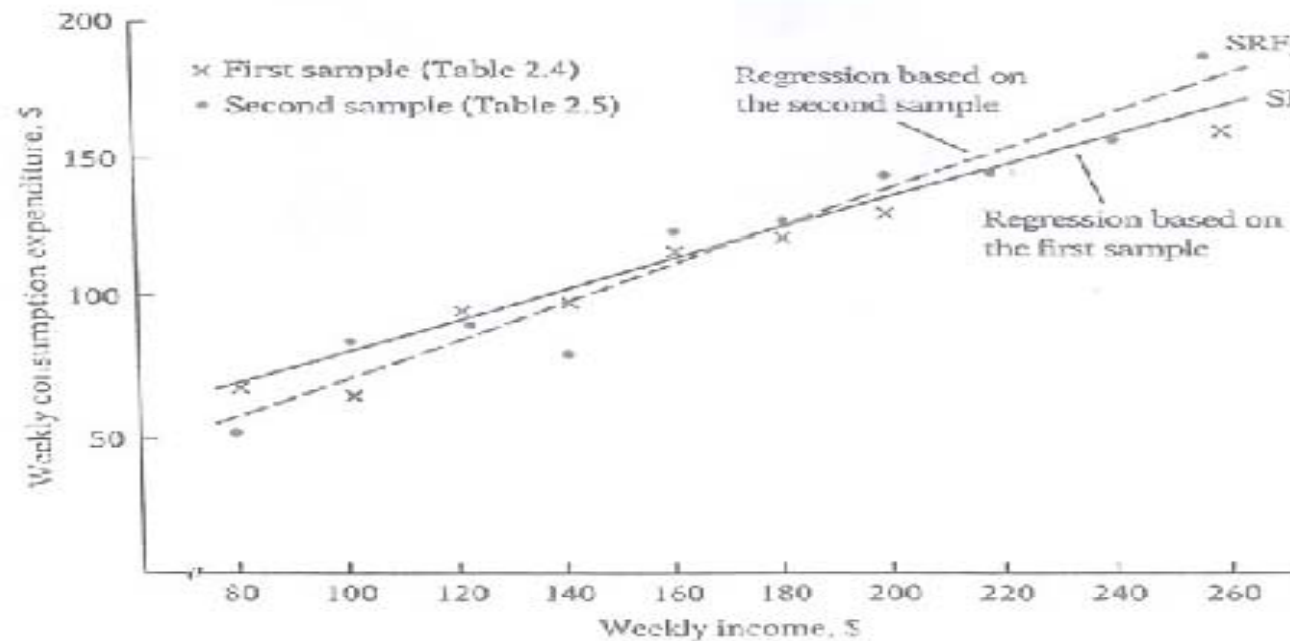
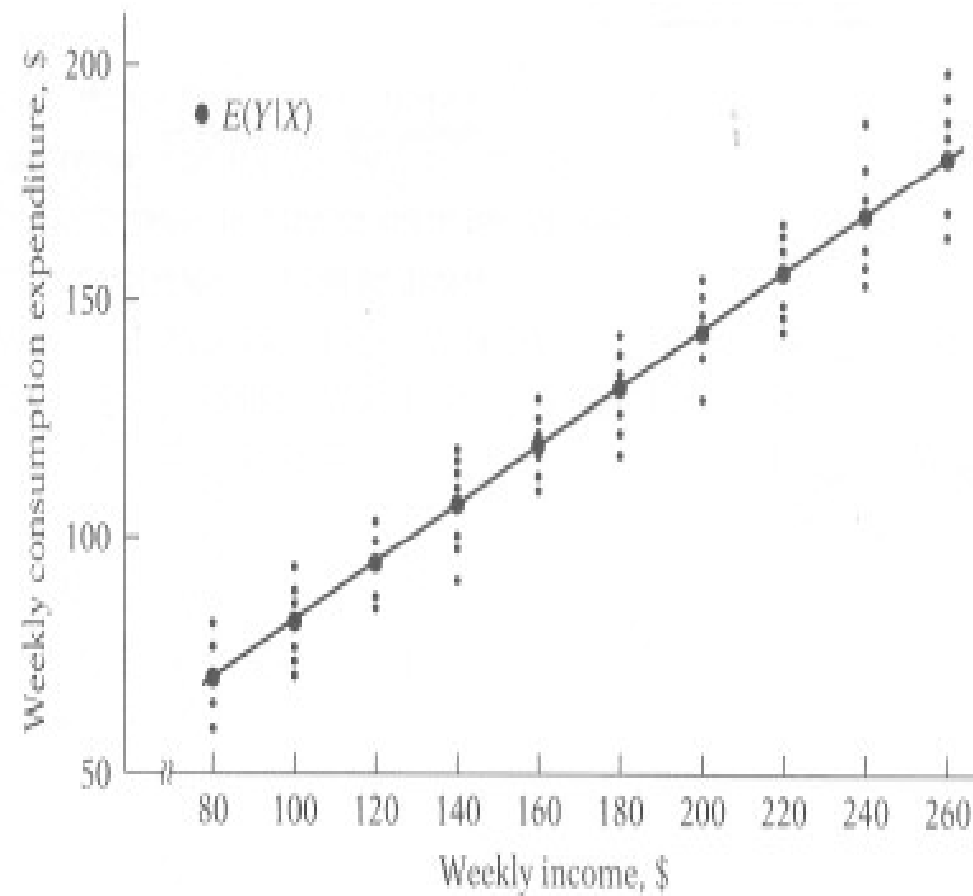


FIGURE 2.4 Regression lines based on two different samples.

FIGURE 2.1

Conditional
distribution of
expenditure for various
levels of income
(data of Table 2.1).



³As shown in **Appendix A**, in general the conditional and unconditional mean values are different.

y	x
Dependent variable	Explanatory variable
↕	↕
Explained variable	Independent variable
↕	↕
Predictand	Predictor
↕	↕
Regressand	Regressor
↕	↕
Response	Stimulus
↕	↕
Endogenous	Exogenous
↕	↕
Outcome	Covariate
↕	↕
Controlled variable	Control variable