

SOME SIMPLE MODELS OF INTERSECTORAL GROWTH

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Part I

THE growth of the total output or total national income is usually attended by different rates of growth in the different sectors of the economy, giving rise to changing ratios of sectoral outputs. It is attempted here to construct some simple models to represent the growth of total income through unequal growths of sectoral incomes, only two sectors being taken for the sake of simplicity. The two sectors considered are the agricultural sector S_1 and the non-agricultural sector S_2 . The models can be generalized to the case of more than two sectors.

Let the output in sector S_1 at time t be denoted by O_{1t} ;

Let the output in sector S_2 at time t be denoted by O_{2t} ;

Let the investment in sector S_1 at time t be denoted by I_{1t} ;

Let the investment in sector S_2 at time t be denoted by I_{2t} ;

Let the output-capital ratio in sector S_1 at time t be denoted by β_{1t} ;

and let the output-capital ratio in sector S_2 at time t be denoted by β_{2t} .*

$$\text{Then } O_{1t} = I_{1t} \beta_{1t}$$

$$O_{2t} = I_{2t} \beta_{2t} \quad \dots (1)$$

Hence the growths of O_{1t} and O_{2t} depend on the behaviour of I_{1t} , I_{2t} and β_{1t} and β_{2t} .

Let $O_t = O_{1t} + O_{2t}$ denote the total income at time t and $I_t = I_{1t} + I_{2t}$ denote the total investment at time t .

As the basis of some of the models to be constructed, we assume that the investment-growths in the two sectors are related to the output-capital ratios by the following relation :

$$\frac{I_{2(t+1)}}{I_{2t}} \Bigg| \frac{I_{1(t+1)}}{I_{1t}} = \frac{\beta_{2t}}{\beta_{1t}} \quad \dots (1a)$$

(No limitation on the resources, assumed)

$$\text{or } \frac{I_{2(t+1)}}{I_{2t} \beta_{2t}} = \frac{I_{1(t+1)}}{I_{1t} \beta_{1t}}$$

$$\text{or } \frac{I_{2(t+1)}}{O_{2t}} = \frac{I_{1(t+1)}}{O_{1t}} \quad \dots (2)$$

* β and B are identical symbol.