

Leontief-Modell in Matrix-Schreibweise

Leontief-Modell:

$$\begin{aligned} (1 - z_{11})x_1 - z_{12}x_2 - z_{13}x_3 &= y_1 \\ -z_{21}x_1 + (1 - z_{22})x_2 - z_{23}x_3 &= y_2 \\ -z_{31}x_1 - z_{32}x_2 + (1 - z_{33})x_3 &= y_3 \end{aligned} \quad (\text{L})$$

Bezeichnungen:

$$\mathbf{y} := \begin{pmatrix} y_1 \\ y_2 \\ y_3 \end{pmatrix} \quad \dots \text{ Marktvektor / Nachfragevektor;}$$

$$\mathbf{x} := \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \quad \dots \text{ Produktionsvektor;}$$

$$\mathbf{Z} := \begin{pmatrix} z_{11} & z_{12} & z_{13} \\ z_{21} & z_{22} & z_{23} \\ z_{31} & z_{32} & z_{33} \end{pmatrix} \quad \dots \text{ Input-Output-Matrix;}$$

$$\begin{array}{c|c} \mathbf{Zx} : & \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix} \\ \hline \begin{pmatrix} z_{11} & z_{12} & z_{13} \\ z_{21} & z_{22} & z_{23} \\ z_{31} & z_{32} & z_{33} \end{pmatrix} & \begin{pmatrix} z_{11}x_1 + z_{12}x_2 + z_{13}x_3 \\ z_{21}x_1 + z_{22}x_2 + z_{23}x_3 \\ z_{31}x_1 + z_{32}x_2 + z_{33}x_3 \end{pmatrix} \end{array}$$

Also

$$\mathbf{x} - \mathbf{Zx} = \begin{pmatrix} (1 - z_{11})x_1 - z_{12}x_2 - z_{13}x_3 \\ -z_{21}x_1 + (1 - z_{22})x_2 - z_{23}x_3 \\ -z_{31}x_1 - z_{32}x_2 + (1 - z_{33})x_3 \end{pmatrix}$$

und somit $\mathbf{x} - \mathbf{Zx} = \mathbf{y} \quad \Leftrightarrow \quad (\text{L}).$