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Society's living requires:

- "Resources" are processed to create goods to be consumed
- "Labor" is used to process goods and services
- "Capital" intermediates value between goods and services

Society organizes in groups of households:

- natural households
- juristic corporations
- governmental institutions

Households cooperate through exchange (trade) of goods and services between "Demand" and "Supply" using monetary valuation:

- Goods Market Production, Inventory, Trade → "Price" for value of production
- Labor Market Employment, Demographic Structure, Work Capabilities → "Wage" for value of labor
- Capital Market Savings, Investments, Exchange → "Interest" for value of capital

acronyms see [?@sec-acroeconom](#)

Supply is provided by the income  $Y$ :

$$Y = L + Y_H + Y_A + T_A + Y_G - Z_G \quad (1)$$

$$Y = C + S + T + M - X \quad (2)$$

Demand is satisfied by the production  $V_I$ :

$$V_I = C + I + G + X - M \quad (3)$$

Equilibrium:

$$\begin{aligned} Y &= V_I \\ L - C &= S = I \\ C + S &= L \\ C + I &= R \end{aligned} \quad (4)$$

Domestic Production & International Trade:

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$$V_S = Y + T - G_A + D_A \quad (5)$$

$$V_N = V_S - D_A \quad (6)$$

$$V_I = V_S - R_M + R_X \quad (7)$$

Monetary Value of Production:

$$P \cdot V_I = Q \cdot N \quad (8)$$

Macro Productivity:

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}} = \frac{V_I}{Y} \quad (9)$$

We track production at microeconomic level through (acronyms see [?@sec-acroeconom](#)):

$A$  = Assets represent “Property Capital” which consist of “Current Capital” and “Structural Capital”. Those investments are required for the production processes.

$B$  = Liabilities represent “Financial Capital” which consist of “Exogen Funds” and “Endogen Funds”. Later includes “Equity Capital” and “Retained Gains”. Those funds do finance Assets.

$W$  = Expenses represent “Work Efforts” to “Supply Production” with use of Assets.

$Y$  = Income represents “Received Earnings” achieved with production to “Satisfy Demand”. Parts of the gains will be retained to finance Assets.

$R$  = Gain, Profit or Loss from executed work (resultant value from input efforts) is represented by  $R = Y - W$

The “transfer of energy” between all subsystems is mapped in balancing out theirs capital (usage of capital for production though possessed assets):  $A = B + R$

Micro Productivity:

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}} = \frac{Y}{W} \quad (10)$$