Exchange

Microeconomic analysis

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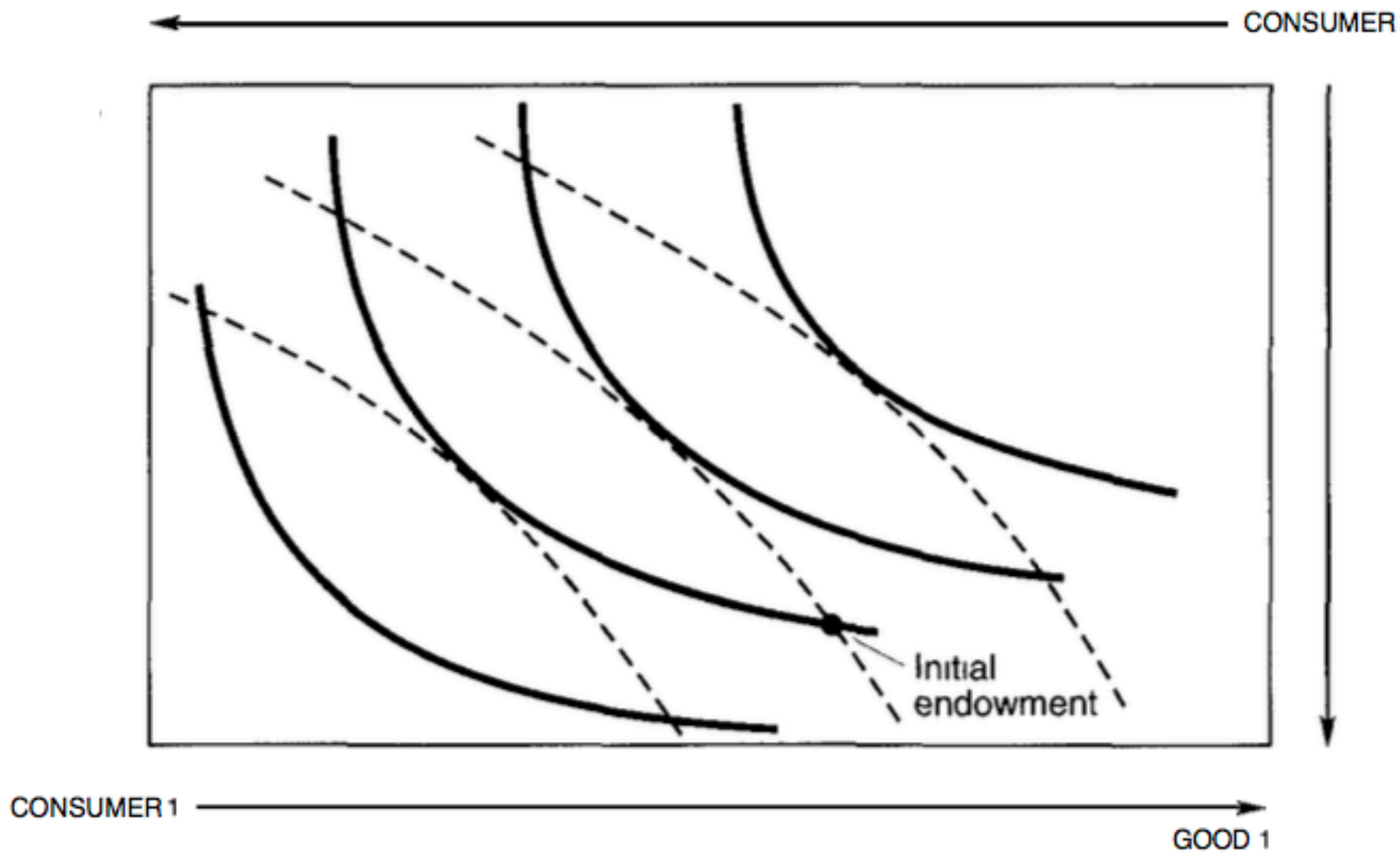
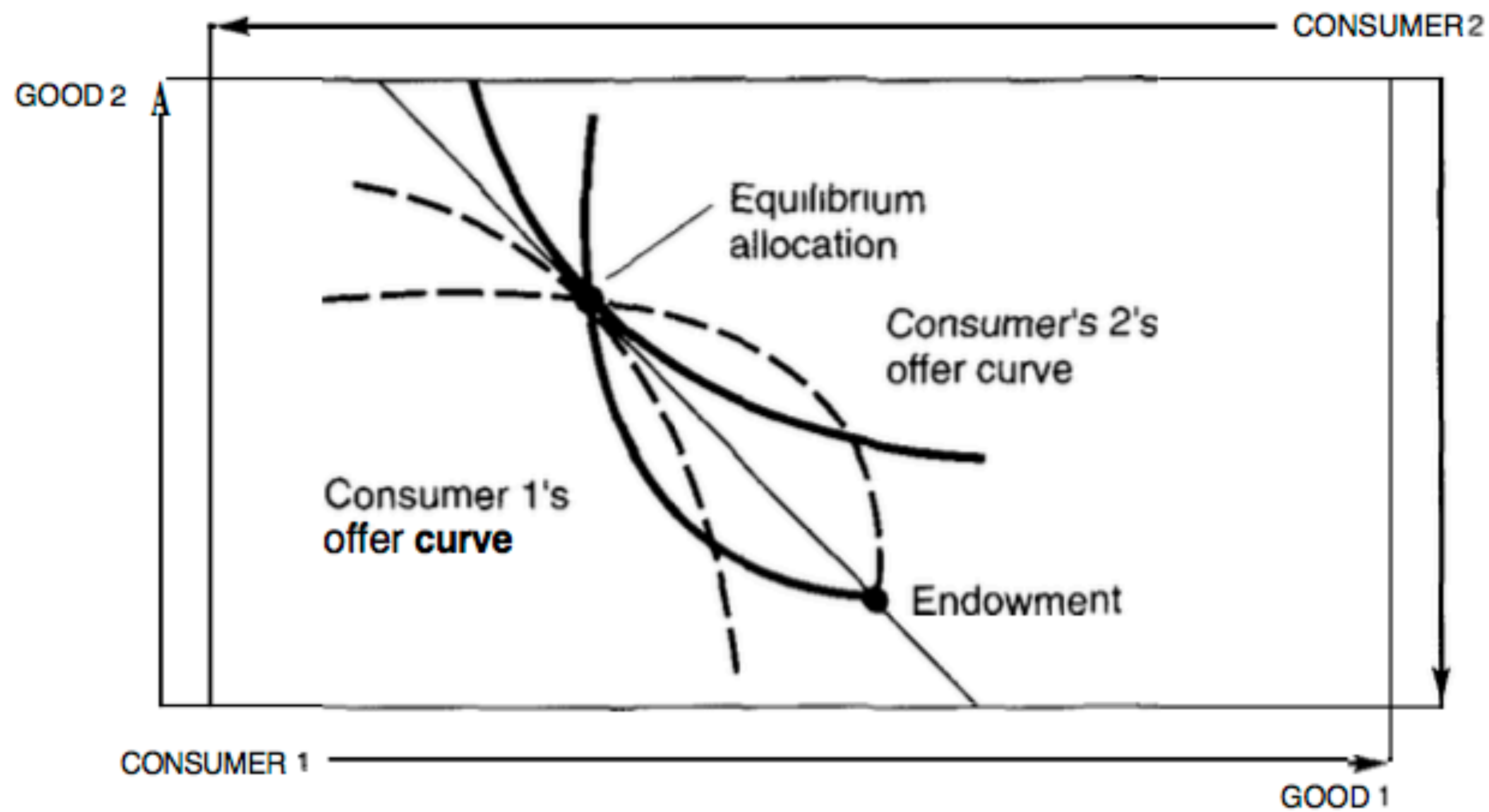


Walrasian equilibrium

$$\sum_i \mathbf{x}_i(\mathbf{p}^*, \mathbf{p}^*\boldsymbol{\omega}_i) \leq \sum_i \boldsymbol{\omega}_i.$$

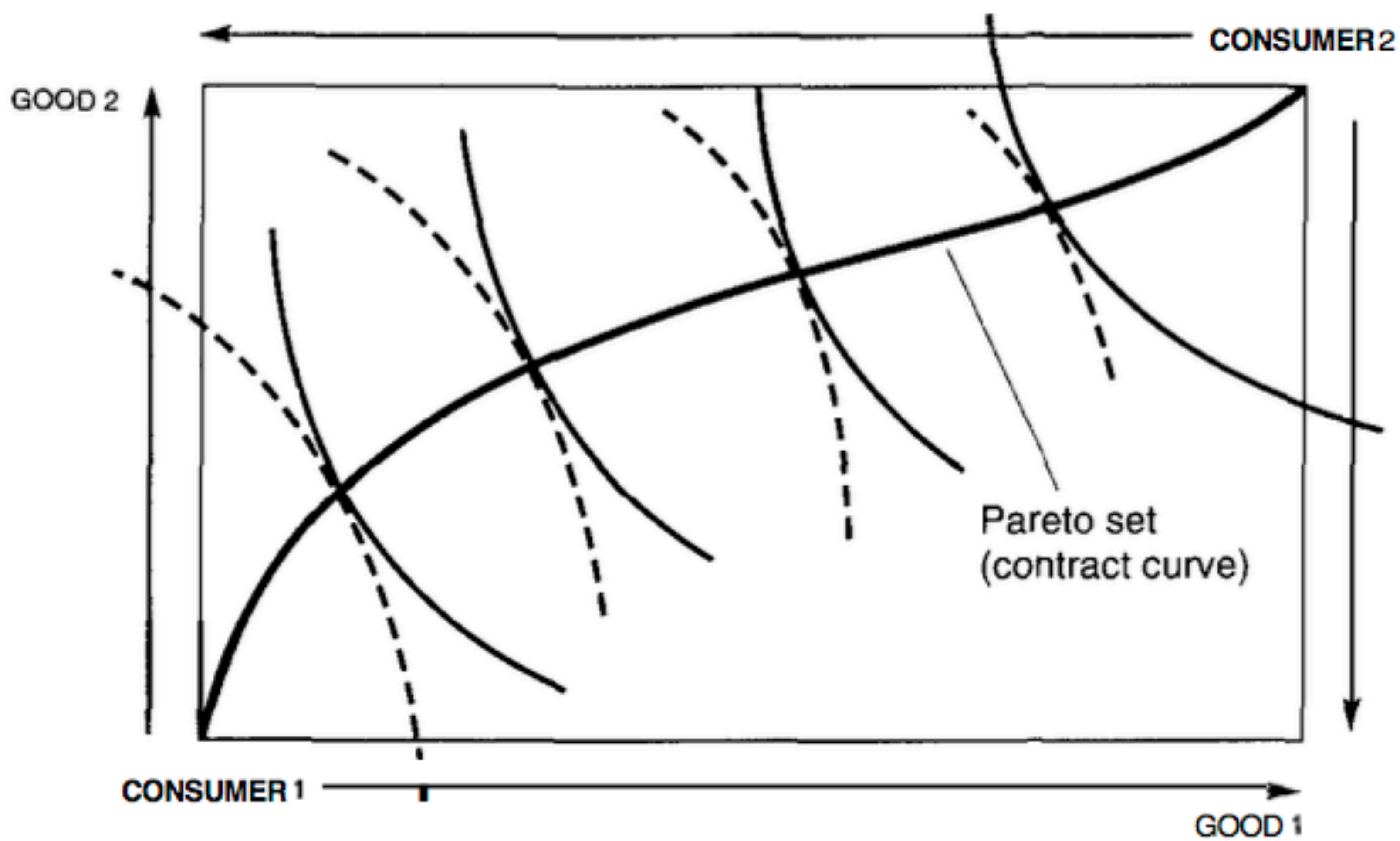
Graphical analysis



Existence of Walrasian equilibrate

$$\mathbf{z}(\mathbf{p}) = \sum_{i=1}^{n} [\mathbf{x}_i(\mathbf{p}, \mathbf{p}\boldsymbol{\omega}_i) - \boldsymbol{\omega}_i]$$

Walra’s law - For any price vector ***p***, we have ***pz(p)*** ≡ 0; i.e., the value of the excess demand is identically zero.



Pareto efficiency in the Edgeworth box. The Pareto set, or the contract curve, is the set of all Pareto efficient allocations.

(1) $\sum_{i=1}^{n} \mathbf{x}_i = \sum_{i=1}^{n} \boldsymbol{\omega}_i.$

(2) *If* $\mathbf{x}_i'$ *is preferred by agent* i *to* $\mathbf{x}_i$, *then* $\mathbf{p}\mathbf{x}_i' > \mathbf{p}\boldsymbol{\omega}_i$.

$$
\begin{aligned}
\max_{(x_i^g, x_j^g)} \quad & u_i(\mathbf{x}_i) \\
\text{such that} \quad & \sum_{h=1}^{n} x_h^g \leq \omega^g \quad g = 1, \ldots, k \\
& u_j(\mathbf{x}_j^*) \leq u_j(\mathbf{x}_j) \quad j \neq i.
\end{aligned}
$$

$$\mathcal{L} = u_i(\mathbf{x}_i) - \sum_{g=1}^{k} q^g \left[\sum_{i=1}^{n} x_i^g - \omega^g \right] - \sum_{j \neq i} a_j [u_j(\mathbf{x}_j^*) - u_j(\mathbf{x}_j)].$$