The Role of Other-Regarding Preferences in Competitive Markets

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Introduction

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  Models with other-regarding preferences

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- Under which circumstances is it justified to ignore other-regarding preferences in the positive and normative analysis of large anonymous markets?

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  Arrow-Debreu GE economy framework

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- not interested in impact of the number of players in strategic situations (like "competition" in ultimatum games, Roth et al 1991)

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- $Y = \prod_{j=1}^{J} Y_j$ set of all feasible production profiles

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  $u_i(x_i, x_{-i}, b)$ is $i's$ utility from profile of consumption bundles (x_i, x_{-i}) and from choice set profile b.

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- u_i strictly convex over and strictly monotone in own consumption

Multi-good Economy with Other-Regarding Preferences

Price taking behavior assumption in the context of other-reagarding preferences

- Consumers:

  - Own decisions have no impact on the prices
  - Nobody rationed at the going prices $\Longrightarrow$

  actual consumption and consumption possibilities taken as given

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- Profit maximizing firms: justified by single ownership

Separability

- problem of price-taking consumer i

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$\implies$ demand function $d_i(x_{-i}, b_i, b_{-i})$

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- **Definition 2**: The preferences of consumer i are separable if for all $x, x' \in \mathbb{R}_+^{L \times I}$, and for all $b, b' \in B$:

$$u_i(x_i, x_{-i}, b) \geq u_i(x_i', x_{-i}, b) \text{ iff } u_i(x_i, x_{-i}', b') \geq u_i(x_i', x_{-i}', b').$$

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- Separability trivially fulfilled for one-good models with monotonicity in own wealth.

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- separable preferences are the most general class of preferences which generates as if classical behavior

- separable preferences are non-generic

Equilibrium Equivalence

Definition 3: A Walrasian equilibrium is given by (p^*, x^*, y^*, b^*) such that for all $i = 1, \ldots, I$, $j = 1, \ldots, J$,

$$\begin{aligned} p^* y_j^* &\geq p^* y_j' \text{ for all } y_j' \in Y_j \\ x_i^* &= \arg\max_{x_i \in B_i^*} U_i(x, b^*) \\ b_i^* &= \{x_i : p^* x_i \leq p_i^* \varepsilon_i + \sum_{j \in J} \theta_{ij} p^* y_j^*\} \end{aligned}$$

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In equilibrium each firm maximizes its profits for given price p^*, each consumer i chooses her utility maximizing consumption bundle x_i^* for given profile of choice sets B^*, and the profile of choice sets B^* is the profile of budget sets resulting from p^* and y^*.

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(i) $L_S = L$, $I_S = I$, $J_S = J$;
(ii) $Y_{jS} = Y_j$ for all $j_S = j \in J$;
(iii) For all $i_S = i \in I$ and all $j_S = j \in J$ it holds that $\varepsilon_{iS} = \varepsilon_i$ and $\theta_{iSj} = \theta_{ij}$;
(iv) The preferences of each consumer $i_S \in I_S$, $\succeq_{iS}$, are defined over $\mathbb{R}^L_+$.
(v) For all $i_S = i \in I$, for all $x_{iS} = x_i \in X_i$, for all $x'_{iS} = x'_i \in X_i$, for all $x_{-i} \in \mathbb{R}_+^{L\times(I-1)}$, and for all $b \in B$ it holds:

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- Note: Definition requires separability

Equilibrium Equivalence

- **Theorem 2**: If all agents have separable preferences that are strictly monotone in own consumption, the set of Walrasian equilibria of an economy with other-regarding preferences $\mathcal{E}$ coincides with the set of Walrasian equilibria of its selfish counterpart economy.

  Proof: Immediate consequence of Theorem 1

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- Remark: If separability does not hold, we can define a selfish counterpart economy for any given equilibrium, and show that this equilibrium is also an equilibrum of the selfish counterpart economy.

  Problem: Multiplicity of equilibria of the original as well as of the counterpart economy.

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- If all agents have separable, locally nonsatiated preferences, any allocation efficient with respect to the internal preferences is a Walrasian equilibrium for an appropriate choice of the initial endowment. (Second Welfare Theorem)

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- Social Monotonicity (SM): For any allocation x and any $z \in \mathbb{R}^L_+$, $z \neq 0$ there is a $(z_1, ...z_I) \geq 0$ with $\sum_I z_i = z$ such that:

$$V_i(m_1(x_1 + z_1), ...m_I(x_I + z_I)) > V_i(m_1(x_1), ...m_I(x_I))$$

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- **Theorem 3**: If SM holds, then every Parto-efficient allocation can be achieved as a Walrasian equilbrium by a suitable lump sum transfer.
- But: Even with SM, the Walrasian equilibria of a particluar economy might be inefficient.

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- Assume all choice sets that are budget sets, i.e. for all b_i there exists a price vector $p(b_i)$ and a wealth level $w(b_i)$ inducing b_i.
- **Definition 5:** $(x, y, b) \in \mathbb{R}^{L \times I} \times Y \times B$ is feasible for a price p, iff for all $i \in I$, $j \in J$, and $l \in L$ it holds:

$$\begin{array}{rrcl} \text{i)} & y_j & \in & Y_j \\ \text{ii)} & \sum_{i \in I} x_{il} & \leq & \sum_{i \in I} \varepsilon_{il} + \sum_{j \in J} y_{jl} \\ \text{iii)} & x_i & \in & b_i \\ \text{iv)} & p(b_i) & = & p \text{ for all } i = 1, \ldots I \\ \text{v)} & \sum_{i \in I} w(b_i) & = & \sum_{i \in I} p\varepsilon_i + \sum_{j \in J} py_j \end{array}$$

Efficiency

Definition 6: In an economy $\mathcal{E}$ with distributional concerns a triple (x, y, b) is efficient with respect to a price vector p iff

i) (x, y, b) is feasible for p.

ii) there does not exist another triple (x', y', b') which is feasible for p, and for which it holds:

$$\begin{aligned} u_i(x_i, b) &\leq u_i(x_i', b') \text{ for all } i \in I, \text{ and} \\ u_i(x_i, b) &< u_i(x_i', b') \text{ for at least one } i \in I \end{aligned}$$

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Note: Weak form of efficiency - no changes of prices allowed

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- **Theorem 4:** Under RLP, any equilibrium outcome (x^*, y^*, w^*) is efficient with respect to the equilibrium price vector p^*.

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When is RLP fulfilled?

- Example: i evaluates budget set b_k by $i's$ internal utility from $i's$ optimal consumption bundle in b_k.

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- Example: i evaluates budget set b_k by $i's$ internal utility from $i's$ optimal consumption bundle in b_k.
- Denote by $m_i(d_i(b_i))$ the indirect internal utility function of i, which is money proportional.

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Theorem 5: RLP is fulfilled, whenever

- i) I is large enough, r is envious or altruistic, and exhibits a utility function of the form

$$u_r(x_r, b) = m_r(x_r) + \frac{\beta}{I-1} \sum_{i \neq r} m_r(d_r(b_i))$$

with $\beta > -1$.

Efficiency

- ii) r exhibits preferences represented by

$$u_r(x_r, b) = m_r(x_r) + \beta \left| m_r(d_r(b_r)) - \frac{\sum_{i \in I} m_r(d_r(b_i))}{I} \right|$$

with $-1 < \beta < 0$.

Efficiency

- iii) I is large enough, and r exhibits a utility function of the form

$$\begin{aligned} u_m(x_r, b) &= m_r(x_r) - \frac{\alpha}{I-1}\sum_i \max\{m_r(d_r(b_i)) - m_r(x_r), 0\} \\ &\quad - \frac{\beta}{I-1}\sum_k \max\{m_r(x_r) - m_r(d_r(b_i), 0\} \end{aligned}$$

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  with $\alpha \geq \beta \geq 0$, $\beta < 1$.

- RLP also filfilled for the original one-good versions of these models
- Same result for indirect utility functions, which are not money proportional, but with marginals bounded from above and away from zero.

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- Under separability, negligence of other regarding preferences is justified for positive analysis.
- For normative analysis, results are mixed - stronger restrictions are required to justify non-inclusion of other regarding preferences.
- To be sure to have positive and normative impacts, distributional concerns require market imperfections, i.e. non-price taking behaviour.