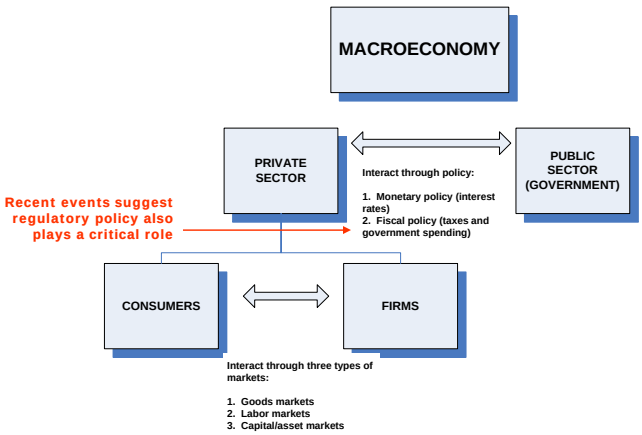
INTERMEDIATE MACROECONOMIC ANALYSIS (ECON 325): OVERVIEW

AUGUST 31, 2011

BUILDING BLOCKS OF AN ECONOMY



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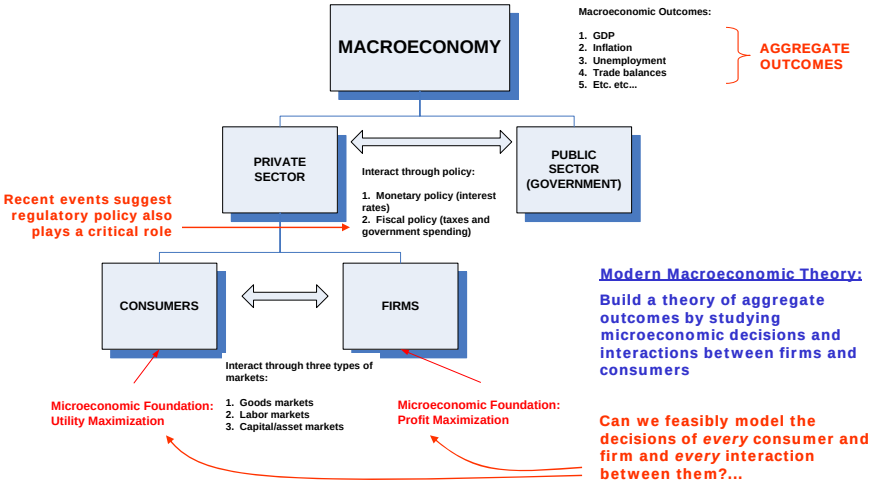

Modern Macroeconomic Theory:

Build a theory of aggregate outcomes by studying microeconomic decisions and interactions between firms and consumers

Can we feasibly model the decisions of *every* consumer and firm and *every* interaction between them?...

REPRESENTATIVE-AGENT MACROECONOMICS

- Consumer A: Consumed $50 in Year X
- Consumer B: Consumed $75 in Year X
- Consumer C: Consumed $100 in Year X
- Consumer D: Consumed $125 in Year X
- Consumer E: Consumed $150 in Year X

No other consumers in the economy

THE REPRESENTATIVE CONSUMER

- Aggregate (i.e., economy-wide) consumption = $500
- Average consumption = $100

- Macroeconomics often most concerned with aggregate outcomes

- If we want to take a micro-based approach to explaining aggregate outcomes...
- ...model Consumer C's behavior/decision-making

- A simplistic approach – turns out to yield surprisingly rich results, insights, and predictions

REVIEW OF CONSUMER THEORY

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UTILITY FUNCTIONS

- Describe how much "happiness" or "satisfaction" an individual experiences from "consuming" goods – the benefit of consumption
- **Marginal Utility**
  - The extra total utility resulting from consumption of a small/incremental extra unit of a good
  - Mathematically, the (partial) slope of utility with respect to that good

    Alternative notation: du/dc OR $u'(c)$ OR $u_c(c)$ OR $u_1(c)$
- **One-good case:** $u(c)$, with $du/dc > 0$ and $d^2u/dc^2 < 0$
  - Recall interpretation: strictly increasing at a strictly decreasing rate
  - Diminishing marginal utility

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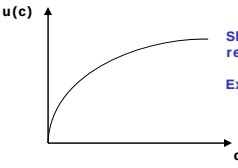
- One-good case: $u(c)$, with $du/dc > 0$ and $d^2u/dc^2 < 0$
  - Recall interpretation: strictly increasing at a strictly decreasing rate
  - Diminishing marginal utility
- Two-good case: $u(c_1, c_2)$, with $u_i(c_1, c_2) > 0$ and $u_{ii}(c_1, c_2) < 0$ for each of $i = 1,2$
  - Utility strictly increasing in each good individually (partial)
  - Diminishing marginal utility in each good individually
- Easily extends to N-good case: $u(c_1, c_2, c_3, c_4, \ldots, c_N)$

UTILITY FUNCTIONS

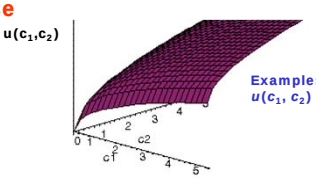
- One-good case



Slope (marginal utility) asymptotes to (but never reaches…) zero

Example: $u(c) = \ln c$ or $u(c) = \text{sqrt}(c)$

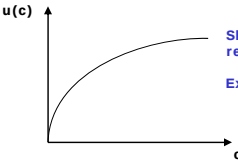
- Two-good case



Example: $u(c_1, c_2) = \ln c_1 + \ln c_2$ or $u(c_1, c_2) = \text{sqrt}(c_1) + \text{sqrt}(c_2)$

UTILITY FUNCTIONS

- **One-good case**



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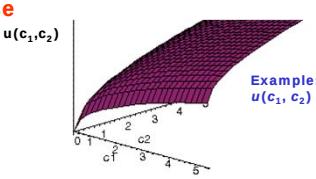
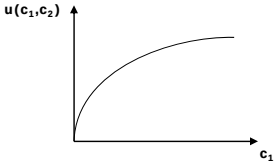
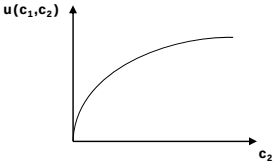


Example: $u(c_1, c_2) = \ln c_1 + \ln c_2$ or $u(c_1, c_2) = \text{sqrt}(c_1) + \text{sqrt}(c_2)$

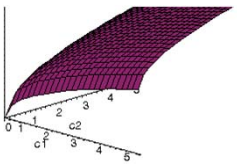
Viewed in good-by-good space



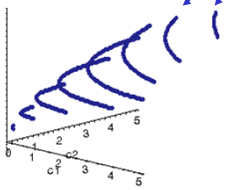


UTILITY FUNCTIONS

Alternative views

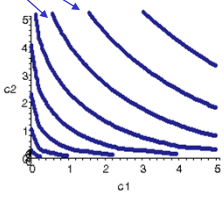


Emphasizing the contours



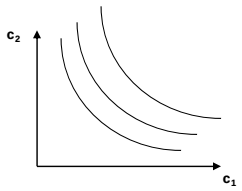
Indifference Curve: the set of all consumption bundles that deliver a particular level of utility / happiness

Viewing only the contours



UTILITY FUNCTIONS

- **Marginal Rate of Substitution (MRS)**
  - **Maximum** quantity of one good consumer is **willing** to give up to obtain **one** extra unit of the other good
  - Graphically, the (negative of the) slope of an indifference curve
  - MRS is itself a **function** of c_1 and c_2 (i.e., $MRS(c_1, c_2)$)



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  - MRS is itself a **function** of c_1 and c_2 (i.e., $MRS(c_1, c_2)$)
  - **MRS equals ratio of marginal utilities**
    - $$MRS(c_1, c_2) = \frac{u_1(c_1, c_2)}{u_2(c_1, c_2)}$$
      - Using Implicit Function Theorem (see Practice Problem Set 1)
- **Summary: whether graphically- or mathematically-formulated, utility functions describe the benefit side of consumer optimization**