Good Afternoon, Colleagues

Are there any questions?
Logistics

• Thursday’s reading:
  – Use of General Equilibrium in an agent
Logistics

• Thursday’s reading:
  – Use of General Equilibrium in an agent

• See resources page
Logistics

- Thursday’s reading:
  - Use of General Equilibrium in an agent
- See resources page
- Topics becoming stable
Logistics

- Thursday’s reading:
  - Use of General Equilibrium in an agent
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- Topics becoming stable
- Need discussion leaders (David will start assigning)
Logistics

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  - Use of General Equilibrium in an agent
- See resources page
- Topics becoming stable
- Need discussion leaders (David will start assigning)
- CAT answers
Readings Overview

1. The theory of General Equilibrium

2. Its use in market-oriented programming
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2. Its use in market-oriented programming
   - What’s the point? Why do we care?
Readings Overview

1. The theory of General Equilibrium

2. Its use in market-oriented programming
   - What’s the point? Why do we care?
   - Use it for distributed optimization (e.g. resource allocation)
   - Use it to predict future prices (even if assumptions don’t hold)
General Equilibrium

Consumers: utilities, endowments
Producers: production possibility sets
Variables: prices on goods
General Equilibrium

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**Variables:** prices on goods

**Equilibrium:** allocation (prices) such that consumers maximize preferences, producers maximize profits
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- Assumption: agent doesn’t affect prices
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- **Assumption:** no externalities
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• Assumption: no externalities
  – Utilities or production sets don’t depend on others’
  – Braess’ paradox
Braess’ paradox

- Adding resources reduces utility of equilibrium solution
Braess’ paradox

- Adding resources reduces utility of equilibrium solution
- Equilibrium vs. global optimum (distributed vs. central)
Non-convexity of preferences

- Why are drugs and web surfing examples?
Tatonement

● Example
Tatonement

- Example

- Class question: How does each agent know when to stop?
Tatonement

• Example

• Class question: How does each agent know when to stop?

• What if there are many or no solutions?
Quantity-based solutions

- Related to Ausubel auction
Quantity-based solutions

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- “Interruptible anytime algorithm”
General Equilibrium vs. game theory

- What is the relationship between Nash Eq. and Gen. Eq.?
- Which is “preferable”? 