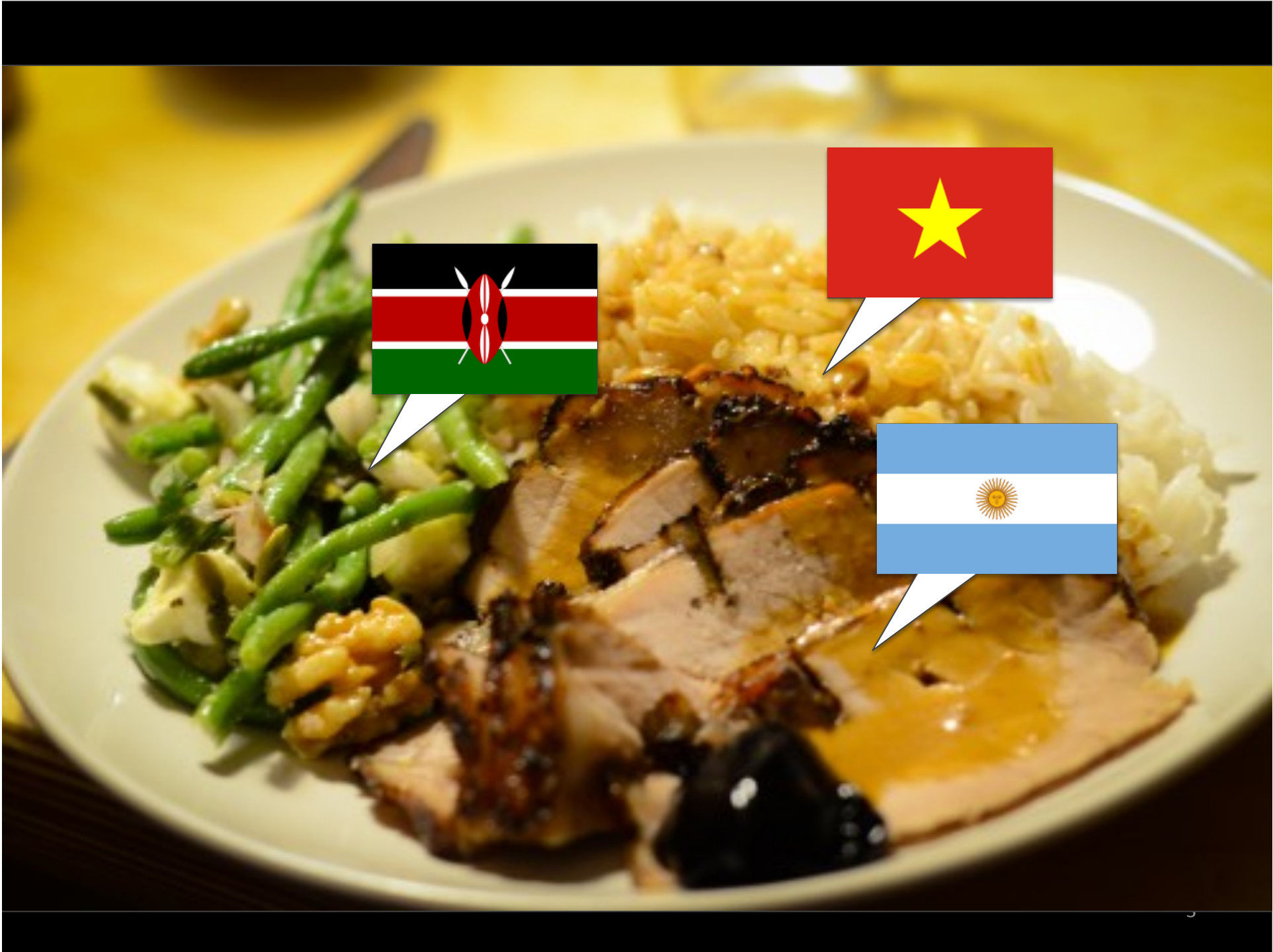School of Business,
Economics and Law
GÖTEBORG UNIVERSITY

Why Markets?

Lecture Notes

Johan Stennek

How where all those people aligned to produce this meal?
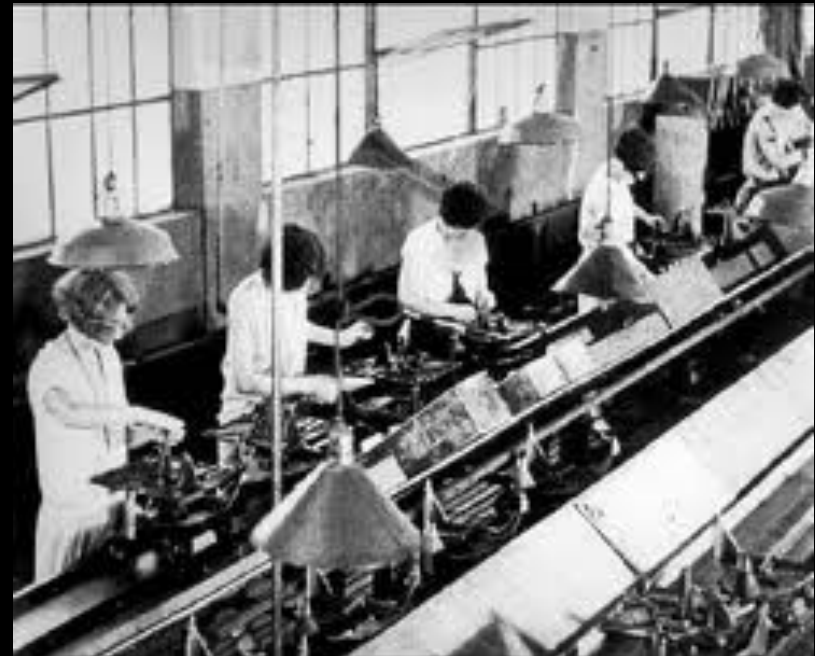
But, lets start from the beginning….

….why don't we simply eat what we produce

Love of variety
we want a little of this
and a little of that

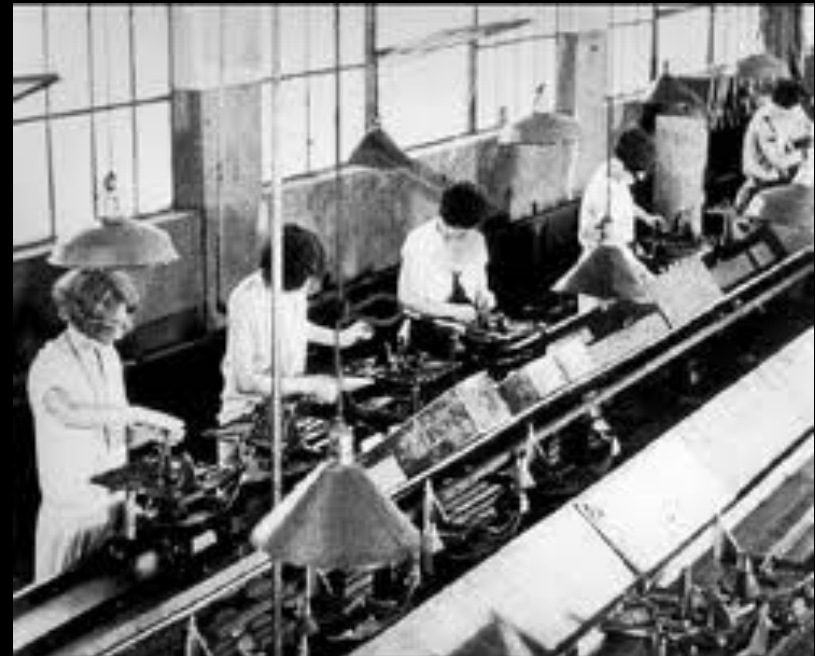In 1913, Henry Fords invented the **moving assembly line**
- Building of T-Ford divided into 84 steps
- Production time dropped from 12 hours to 1.5
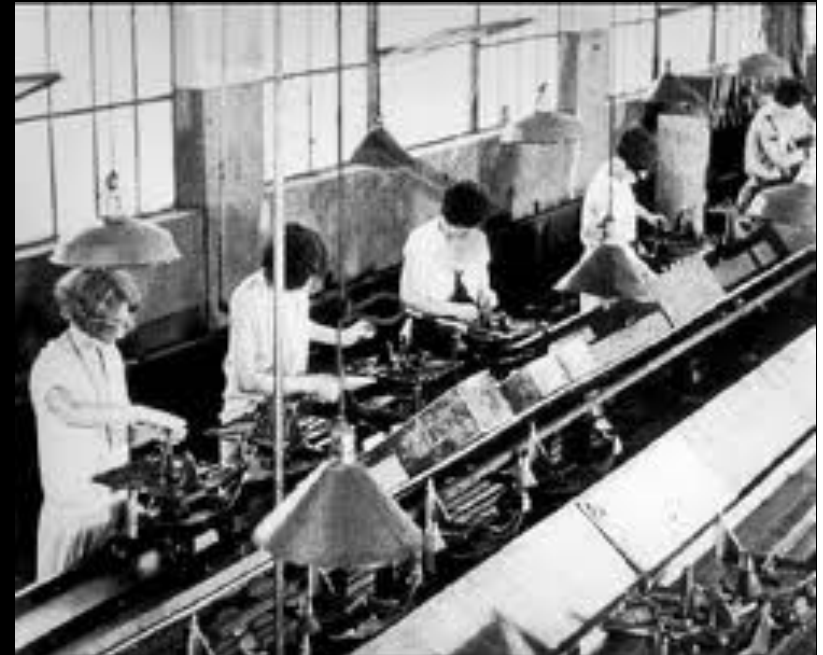
Returns to specialization
Do what we are good at
and learn

Love of variety

Returns to specialization
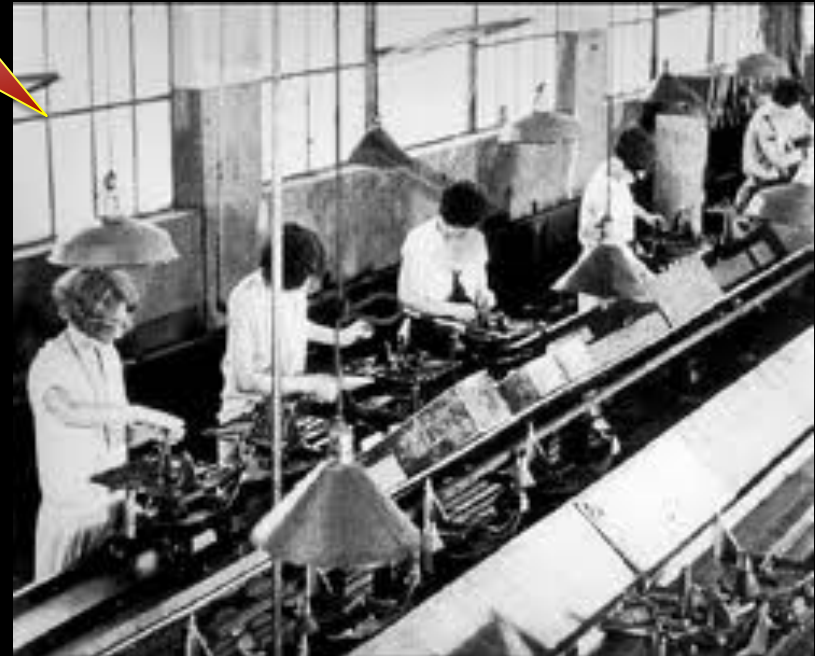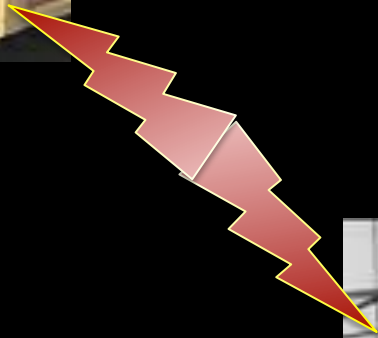
Fundamental Economic Problem:

1. Exchange - Under what conditions do we gain?

2. Coordination - How do we know that
   - somebody else produces what we wish to eat
   - somebody else wishes to eat what we produce
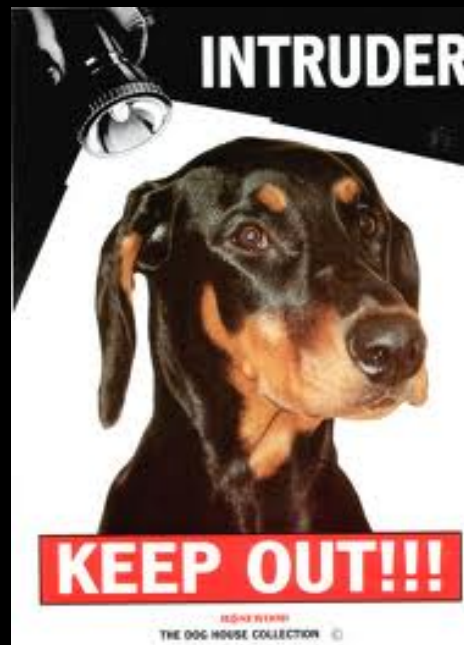
Why Markets?
- Why Exchange?

Why Markets?

- Purpose: understand why
  1. Love of variety
  2. Returns to specialization   → Exchange
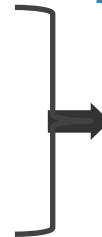
- How?
  – Build a model
  – Model = an "imaginary economy"
  – Do imaginary experiments

Model 1

Why Markets?

- Simplifying assumptions
  - Two people: Anderson & Peterson
  - Two goods: Apples & Pears

  - Resource constraint
    - Work 1500 hours per year
    - No disutility of working

Why Markets?

- Love of variety
  - People derive utility from consuming fruit
  - But only in *pairs* (= fruit salad)
    - 1 apple + 2 pears is as good as 1 apple + 1 pear
    - To enjoy a 2nd pear, I need a 2nd apple

Why Markets?

- Perfect complements ≠ Love of variety
  - Extreme caricature
  - Makes model *easy to analyze* without a lot of math
  - Qualitative conclusions do not hinge on this simplification

Why Markets?

- Returns to specialization
    - Maximum production per hour:

	Apples	Pears
Anderson	2	1
Peterson	1	2

    - Absolute advantage
        - Anderson – apples
        - Peterson – pears

Why Markets?

- ## Question 1

  - How many apples and pears would Anderson and Peterson produce and eat, if they could not exchange fruit with one another? (3 minutes)

  - ### Recall

    - 1500 hours per year

    - Eat fruit in pairs

    - Anderson produces 2 apples or 1 pear per hour

    - Peterson   1   2

Why Markets?

- Answer 1
  - Anderson always produces the same number of apples and pears in order to consume even pairs

  - He has to work 1.5 hours to produce one pair

  - Since he works 1500 hours, he will produce and eat 1000 apples and 1000 pears

  - Also Peterson will produce and eat the same number of apples and pears.

Why Markets?

- Question 2: Someone suggests Anderson should give an apple to Peterson for some amount of pears
  - How many pears would Anderson at least require from Peterson in exchange for one apple?
  - How many pears would Peterson at most be prepared to give Anderson in return for one apple?
  - (5 minutes)

Why Markets?

- Anderson
  - Producing one more apple takes ½ hour
  - Must produce ½ pear less
  - Anderson requires at least ½ pear in exchange for an apple

Why Markets?

- Peterson
  - Producing one apple less frees 1 hour
  - Can produce 2 pear more
  - Peterson is willing to give 2 pears in exchange for an apple

Why Markets?

- ## Answer 2

  - Anderson demands ½ pear in return for 1 apple

  - Peterson willing to give 2 pears in return for 1 apple

Why Markets?

- ## Question 3
  - Anderson and Peterson agree (for some unexplained reason) to trade the fruit one for one.

  - How many apples and pears will Anderson and Peterson produce and eat?

  - How many fruits will they trade?

  - (3 minutes)

Why Markets?

- Answer 3
  - Let Anderson and Peterson specialize completely
  - Anderson spends all time producing apples;
    In total 3000 apples
  - Peterson spends all time producing pears;
    In total 3000 pears
  - Exchanging 1500 apples and pears, both people
    will be able to eat 1500 fruit-pairs

Why Markets?

- Question 4
  - Compare the two outcomes.

Why Markets?

- Answer 4
  - Without exchange: Each eat 1000 fruit pairs
  - With exchange: Each eat 1500 fruit pairs

GDP increased by 50%

Why Markets?

GDP increased by 50%

- Causes of Growth?
  - Technical progress?
    - No!
  - Investments?
    - No!
  - Economic organization?
    - Yes!

Model 1b

The coordination problems

Why Markets?

- Question 5
  - What happens if Anderson specializes in apples, but Peterson produces both apples and pears?

Why Markets?

- Answer 5 (Exchange after production)

		Peterson		
		Produce 1500 Apples	Produce 1000 Apples and Pears	Produce 3000 Pears
Anderson				
	Produce 1000 Apples and Pears	1000, 0	1000, 1000	1000, 0

Why Markets?

- ## Answer 5 (Exchange after production)

		Peterson		
		Produce 1500 Apples	Produce 1000 Apples and Pears	Produce 3000 Pears
Anderson	Produce 3000 Apples	0, 0	0, 1000	1500, 1500

Why Markets?

- Answer 5 (Exchange after production)

	Peterson		
	Produce 1500 Apples	Produce 1000 Apples and Pears	Produce 3000 Pears
Anderson			
Produce 1500 Pears	750, 750	0, 1000	0, 0

Why Markets?

- ## Answer 5

Specializing in the wrong activity is a dominated strategy!

		Peters		
		Produce 1500 Apples	Produce 100 Apples and Pears	Pears
Anderson	Produce 3000 Apples	0, 0	0, 1000	1500, 1500
	Produce 1000 Apples and Pears	1000, 0	1000, 1000	1000, 0
	Produce 1500 Pears	750, 750	0, 1000	0, 0

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Why Markets?

- Answer 5

Both specializing according to advantage => Pareto-dominating outcome.

		Peterson	
		Produce 1000 Apples and Pears	Produce 3000 Pears
Anderson	Produce 3000 Apples	0, 1000	1500, 1500
	Produce 1000 Apples and Pears	1000, 1000	1000, 0

Why Markets?

- Answer 5

BUT: Specializing according to advantage is risky – Requires *coordination*

		Peterson	
		Produce 1000 Apples and Pears	Produce 3000 Pears
Anderson	Produce 3000 Apples	0, 1000	1500, 1500
	Produce 1000 Apples and Pears	1000, 1000	1000, 0

Why Markets?

- Question for the break: What would you do?

		Peterson	
		Produce 1000 Apples and Pears	Produce 3000 Pears
Anderson	Produce 3000 Apples	0, 1000	1500, 1500
	Produce 1000 Apples and Pears	1000, 1000	1000, 0

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Why Markets?

- There is no right answer

- In fact, Keynes argued:
  - Sometimes….
    - people confident they will be able to sell what they produce
    - when everyone confident, expectations confirmed
    - Boom

  - Other times…
    - people lack confidence and thus don't take risks
    - when everyone lacks confidence, expectations confirmed
    - Recession

Animal Spirits

- John Maynard Keynes: An essential ingredients of economic prosperity is confidence.
- Animal spirit is a particular sort of confidence, "naive optimism"
- For entrepreneurs in particular, "the thought of ultimate loss which often overtakes pioneers, as experience undoubtedly tells us and them, is put aside as a healthy man puts aside the expectation of death".
- John Maynard Keynes used the term to describe the gloom and despondence that led to the Great Depression and the changing psychology that accompanied recovery.

Why Prices?

Why Prices?

- Coordination problem 1
  - Specialization vs Self-sufficiency

- Coordination problem 2
  - If I wish to specialize, how do I know what to produce, *given that I don't know other people's productivities and preferences*

- Answer 2
  - Prices

Why Prices?

- Assume
  - Price of apple = price of pear = € 1
  - All people believe they can sell and buy as much as they wish at these prices
- Analysis
  1. Maximize income by choosing what to produce
  2. Maximize utility by choosing what to eat

Why Prices?

- Maximize Anderson's income
  - Producing apples => €2/per hour
  - Producing pears => €1/per hour
  - Thus specialize in apples => produce 3000 =>
  - Income = €3000

- Maximize Peterson's income
  - Specialize in pears => produce 3000 =>
  - Income = €3000

Why Prices?

- ## Maximize Anderson's utility
  - Income = €3000
  - Buy 1500 pears and 1500 apples

- ## Maximize Peterson's utility
  - Income = €3000
  - Buy 1500 pears and 1500 apples

Total production = total consumption

Everyone can realize their plans at the same time!

Why Prices?

- Prices => Coordination
  - Same outcome as with agreement
  - But, need not know other people's productivities and preferences

- Conditions
  1. Prices correctly set, for some reason
  2. People believe they can buy and sell as much as they wish at these prices

Example when it didn't work

Johnny Carson
American TV-host ("The Tonight Show") & comedian

Example when it didn't work

December of 1973

Example when it didn't work

December of 1973

Toilet paper….

Example when it didn't work

December of 1973

There's an acute shortage of toilet paper in the United States!

Example when it didn't work

Americans went out and bought up all toilet paper they could find

Example when it didn't work

Supermarkets tried to ration it, but without success.

By noon the next day, all the nation's supermarkets were sold out.

Example when it didn't work

After several days of toilet paper shortages due to this hysteria,

Sorry – it was a joke

Example when it didn't work

But shelves were almost always empty   =>

=>   whenever some would come in, people would buy it all and hoard it

This toilet paper shortage lasted three weeks.

Example when it didn't work

- Expressed differently

  If people expect shortage or price increases, demand today increases

  ... a form of speculation demand ...

  ... which may create shortage and price increases increasing demand even further ....

  ... creating a vicious circle

Example when it didn't work

- Conclusion:

  - If people don't <u>trust</u> that prices are in equilibrium
    (i.e. believe they can buy as much as they wish)

Example when it didn't work

– http://youtu.be/UZLjUEBuUQY

Example when it didn't work

- Related (more common?) phenomena

  – Price regulation => small excess demand => people start to hoard => big excess demand (common in Soviet Union)

  – Bubbles in asset markets (with flexible prices)
    - People expect a price to increase
    - Increase their demand (speculation)
    - Causes price to increase, confirming beliefs
    - May cause expectations for further price increases …

Why Markets?
Model 2

Why Markets?

- Returns to specialization
    - Suddenly Anderson becomes 4 times more productive than before
    - Maximum production per hour:

	Apples	Pears
Anderson	8	4
Peterson	1	2

    - Anderson has absolute advantage in both fruits

Why Markets?

- ## Question
  - Does Anderson have any reason to trade with Peterson?

- ## Answer
  - Lets do the same analysis as last time

Why Markets?

- Question 1
  - How many apples and pears would Anderson and Peterson produce and eat, if they could not exchange fruit with one another? (2 min)
  - Recall
    - 1500 hours per year
    - Eat fruit in pairs
    - Anderson produces 8 apples or 4 pear per hour
    - Peterson   1   2

Why Markets?

- Answer 1
  - Anderson has to work 1.5 hours to produce 4 fruit pairs

  - Since he works 1500 hours, he will produce and eat 4000 apples and 4000 pears

  - Peterson will produce and eat 1000 apples and pears

Why Markets?

- Question 2
  - How many pears would Peterson at most be prepared to give Anderson in return for one apple?

  - How many pears would Anderson at least require from Peterson in exchange for one apple?

  - (4 min)

Why Markets?

- Anderson
  - Producing one more apple takes 1/8 hour
  - Must produce ½ = (1/8 * 4) pears less
  - Anderson requires at least ½ pear in exchange for an apple

Why Markets?

- Peterson
  - Producing one apple less frees 1 hour
  - Can produce 2 pear more
  - Peterson is willing to give 2 pears in exchange for an apple

Why Markets?

- Answer 2
  - Anderson demands ½ pear in return for 1 apple
  - Peterson willing to give 2 pears in return for 1 apple

Why Markets?

- Question 2 – follow up
  - What is the cost of producing a pear
    - for Anderson?
    - for Peterson?

Why Markets?

- Answer 2 – follow up

Productivity	Apples	Pears
Anderson	8	4
Peterson	1	2

Cost of producing a pear	Time spent	
Anderson	15 minutes	= 1/4 hour
Peterson	30 minutes	= 1/2 hour

Why Markets?

- Answer 2 – follow up

Q: More costly for Peterson to produce pears?

Productivity	Apple	
Anderson	8	
Peterson	1	2

Cost of producing a pear	Time spent	
Anderson	15 minutes	= 1/4 hour
Peterson	30 minutes	= 1/2 hour

Why Markets?

- Answer 2 – follow up

Productivity	Apples	Pears
Anderson	8	4
Peterson	1	2

Cost of producing a pear	Time spent	Apples foregone
Anderson	15 minutes	2
Peterson	30 minutes	1/2

Why Markets?

- Answer 2 – follow up

Cost of producing a pear	Time spent	Apples foregone
Anderson	15 minutes	2
Peterson	30 minutes	1/2

- – Anderson is more productive in producing pears
- – His cost in terms of resources (time) is lower

- – Anderson's cost in terms of apples is larger
- – His **opportunity cost** is larger

Why Markets?

- Definition: *Opportunity Cost*
    - The cost of an activity (here: pears) in terms of the value of the best alternative that is not chosen (here: apples, rather than time).

Why Markets?

- Question 3
  - Anderson and Peterson agree (for some unexplained reason) to trade the fruit one for one.

  - How many fruits will they trade?

  - Expressed differently, how many apples and pears will Anderson and Peterson produce and eat?

Why Markets?

- Answer 3
  - Peterson can consume 1500 fruit pairs

  - Anderson can consume 4500 fruit pairs

  - DO CALCULATIONS!!!

Why Markets?

- Result: "Law of Comparative Advantage"
  - Two individuals (or firms, countries) will both gain from exchange
  - if they have different *relative* productivities (i.e. resource costs) for producing the same goods
  - even if one individual is more productive in the production of all goods (absolute advantage)
  - assuming both wish to consume a variety of goods

Why Markets?

- Applications
  - Firms - specialize in "core competencies"
  - Countries - specialize in producing goods requiring inputs that they have in abundance
  - Household members…
  - Football players…

Why Markets?

- How is this outcome achieved by prices?

Productivity	Apples	Pears
Anderson	8	4
Peterson	1	2

Wages adjust to reflect workers' maximum productivities

$w_{Anderson} = 8;$ $w_{Peterson} = 2$

Cost of producing a pear	Time spent	€
Anderson	15 minutes	$\frac{1}{4} \cdot 8 = 2$
Peterson	30 minutes	$\frac{1}{2} \cdot 2 = 1$

Why Money?

Why Money?

- **Problem with barter**
  - Presumes **double coincidence of wants**
    - You have   what   I want
    - You want   what   I have
  - But this is rare

Why Money?

- ## Solution
  - Commodity money
    - Ex: gold
    - Everyone likes, transportable, storable,
  - Fiat money
    - Ex: paper - no intrinsic value
    - Requires trust
      - I am willing to give people goods in exchange for paper,
      - trusting that others give me what I want in exchange for paper

Why Money?

— Read in lecture notes