



Digital Enterprise Research Institute www.deri.org

## Business Information Systems

### Unit 2

### Economics for Computer Science Students

Dr. Martin Hepp

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## Logistics

- **Classes**
  - Oct 3: Unit 1
  - Oct 10: Unit 2
  - Oct 17: *needs to be rescheduled* (no classes)
  - Oct 24: *needs to be rescheduled* (no classes)
  - Oct 31: Unit 3 (13.00-15.00)
  - Nov 7: *needs to be rescheduled* (no classes)
  - Nov 14: Unit 4
  - Nov 21: Unit 5
  - Nov 28: Unit 6
  - Dec 5: Unit 7
  - Dec 12: *needs to be rescheduled* (no classes)
  - Dec 19: **Unit 8 + 9 (13.00-17.00 make-up#1 and #2)**
  - Jan 9: Unit 10
  - Jan 16: Unit 11
  - Jan 23: Unit 12
  - Jan 30: **Exam during class time (13.00-15.00)**
- **Classroom:** HS 11
- **Office Hours:**
  - By appointment only
  - please contact me by e-mail, martin.hepp@deri.org

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## Additional Resource

- **Robert Schenk: CyberEconomics**
  - <http://ingrimayne.saintjoe.edu/econ/mainmenu.htm>
  - Great text!

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## What is Economics?

- **Economics**
  - The discipline that analyzes how humans deal with limited resources attempting to satisfy their unlimited wants.
  - A core aspect is the exchange of good, e.g. what do people offer to other people, which quantities of goods they buy from others,...
- **Two major branches**
  - **Macroeconomics:** Economics from the perspective of a whole economy (e.g. nation)
  - **Microeconomics:** Economics from the perspective of an individual actor or regarding individual goods

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## Economics is Everywhere

- A big part of our daily interactions is about the exchange of goods
- We go to work and sell our workforce (labor market)
- We go to the grocery and buy food (goods market)
- We give money to the bank and earn interest (capital market)

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## Scarcity

- Scarcity means that there are limited resources and unlimited wants.
- **Example: Time**
  - We want to do so many things on a given day, but only have 24 hours available per day.
- **Example: Wheat**
  - We want cake and bread but only have 1 kg of wheat
- **Example: National Amount of Labor**
  - Austrian labor force: 3.45 million (2004 est.) \* 8 hours: What should they do? How many should drive a taxi, how many should repair houses?

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## Choice and Cost

- Scarcity requires choice
  - If you go climbing on Sunday, you cannot go skiing on the same day
  - If you put all wheat in the cake, you cannot make bread anymore
- Choice introduces costs: If you decide for one option, you give up another
  - E.g. for each additional pound of cake you give up a pound of bread
  - So the cost for 500 g of additional cake is a pound of bread

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## Problem of the Allocation of Goods

- How much of which resource should who have available?
  - e.g. bread, cars, books, coal, oil,...
- Which resources and in which quantities should actors use in order to produce new goods?
  - e.g. how much wheat should the bakery use in order to produce bread, how much for baking cakes,...

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## Two fundamental mechanisms for allocation

- **Hierarchy:** „Somebody“ (e.g. the government) decides upon the allocation of resources.
- **Market:** We allow people to trade resources on markets based on their own preferences.
  - E.g.
    - you work for two hours as a waiter in order to afford one hour of ski instruction
    - you give away 500 g of wheat in order to get two eggs

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## Choice

- Scarcity means that there are limited resources and unlimited wants.
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## Utility

- An utopia for measuring an individual's well-being, based on the contribution of the consumption of goods
  - E.g.
  - $U_{\text{netter}} = 2 * \text{Quantity of Chocolate} + 3 * \text{Number of Cappucino}$
  - Usually not linear (If you already have a lot of chocolate, additional chocolate is less attractive)

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## Economic Models

- All models aim at **simplifying** a phenomenon, so that we can better understand the most important relationships and determinants.
- Models are a core part of Economics research.
- They abstract from the peculiarities of the individual case.
- It is thus very natural that one can find individual counterexamples for principles found in economic models.
- However, this is no valid criticism, since this a feature and not a bug of models.
- Models are always defined for a limited purpose; their fitness can only be evaluated against this purpose.
- Valid criticism of models can only claim that a model does not properly reflect the core aspects of the original phenomenon.

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## Economic Models (2)

Examples:

- Standard economic models assume that if prices drop, producers would offer lower quantities of goods.
- Also, they assume that the cheaper a good is, the more we consume. However, there are luxury goods for which part of their attractiveness comes from the fact that not everybody can afford them.

13

## Markets are not perfect, but quite efficient

- If you go to a supermarket, almost everything is available in the quantities you want them (what you buy is mainly limited by your budget)
- People can specialize on what they are better at than others and thus improve their wealth
  - E.g. we do not have to produce everything on our own
  - Learning effects
  - Productivity gains (Economies of Scale)

14

## Supply and Demand

15

## Supply: Why is Supply Increasing With Price?

Sell Side

More producers are willing to sell  
Producers are willing to sell more

16

## Demand: Why is Demand Decreasing with Price?

Buy Side

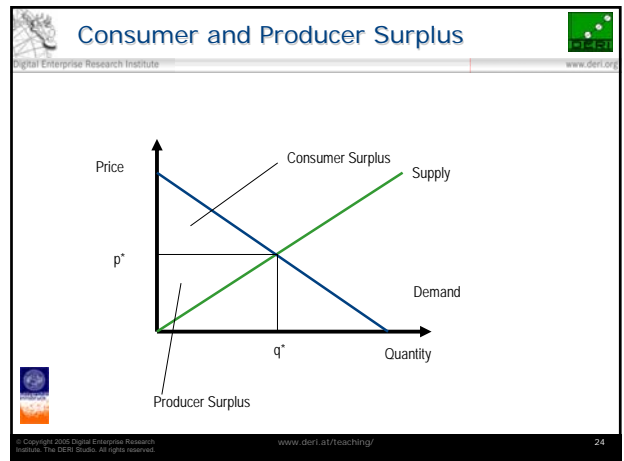
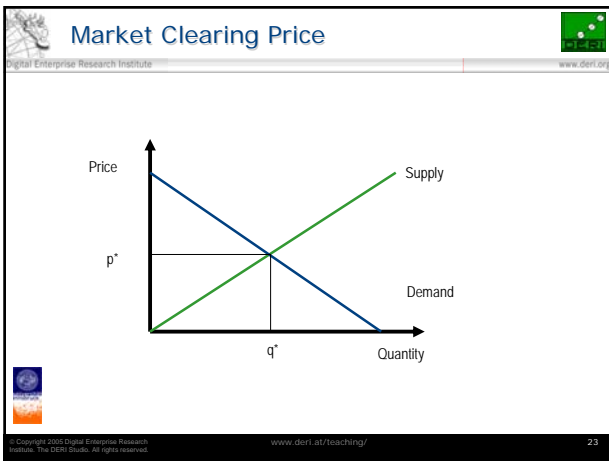
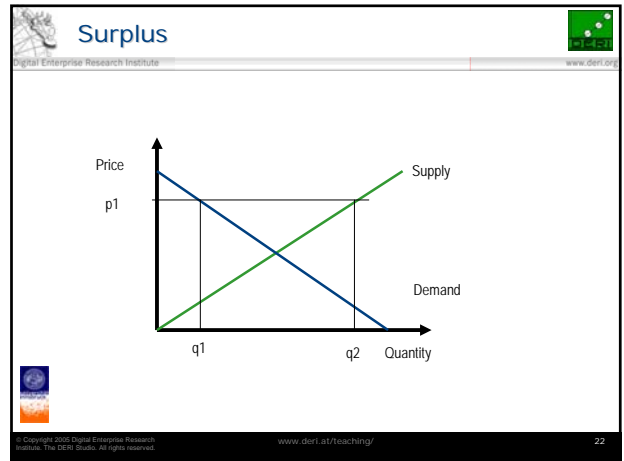
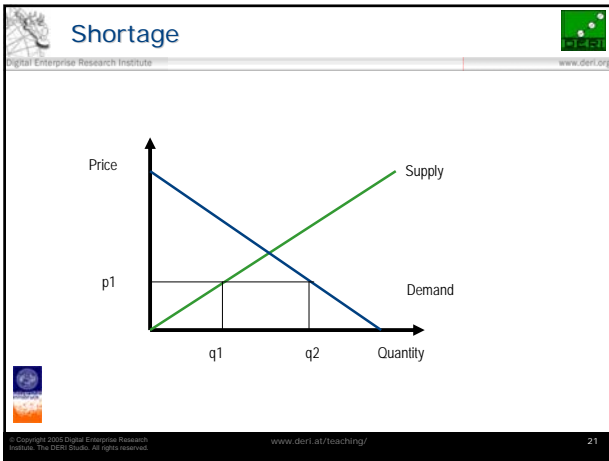
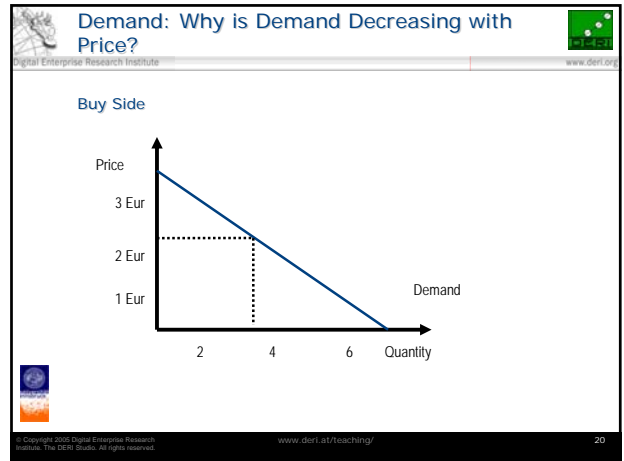
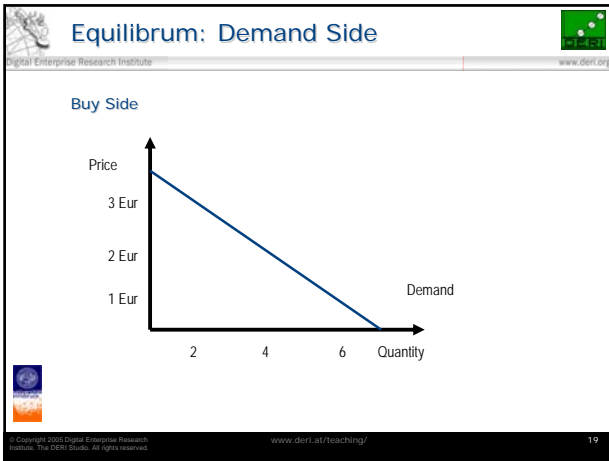
More individuals are willing to buy  
Individuals are willing to buy more

17

## Equilibrium: Buy Side

For every quantity, there is an equilibrium price  
For every price, there is an equilibrium quantity

18



**Goods: Substitutes and Complements**

- Substitutes: Such goods that can be substituted by each other
- Complements: Such goods that can only be consumed together

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**Core Macroeconomic Questions**

- Measuring Inflation
- Measuring Unemployment
- Comparing policy options
- Monetary policy

„Economists: Medical Doctors of Market Economies“  
(Peter Bofinger)

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**Incomplete Markets**

- Transport costs
- Incomplete information
- Information costs
- Regulations
- Taxation
- Resources have no costs (e.g. Environment)

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**The Theory of the Firm**

- Transaction cost theory
- Hierarchy vs. Market
- Impact of IT

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**Thank you!**

The slides will be available on the internet at  
<http://www.heppnetz.de/teaching/bis>

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