

CS305 Topic – Other Impacts

- Productivity and jobs
- Work environment
- Globalization
- Society
- Environmental

Sources: Baase: A Gift of Fire and Quinn: Ethics for the Information Age

Impact on Productivity

Mostly positive impacts:

- *Automation*
 - A human pharmacist fills <20 prescriptions per hour; an online pharmacy uses robots to dispense 8,000 prescriptions per hour
- *Streamlining*
 - Middle layers in some organizations become unnecessary (e.g., creating and processing purchase orders)

Productivity (cont.)

Productivity in the U.S. doubled between 1948 and 1990.

Implications:

- We could have maintained our 1948 standard of living and gone to a four-hour work day!

...but, instead:

- People in 1990 worked harder than those in 1948 – They owned and consumed twice as much as in 1948.



Impact on Jobs

Job Elimination –

Automation reduces or eliminates demands in certain job categories:

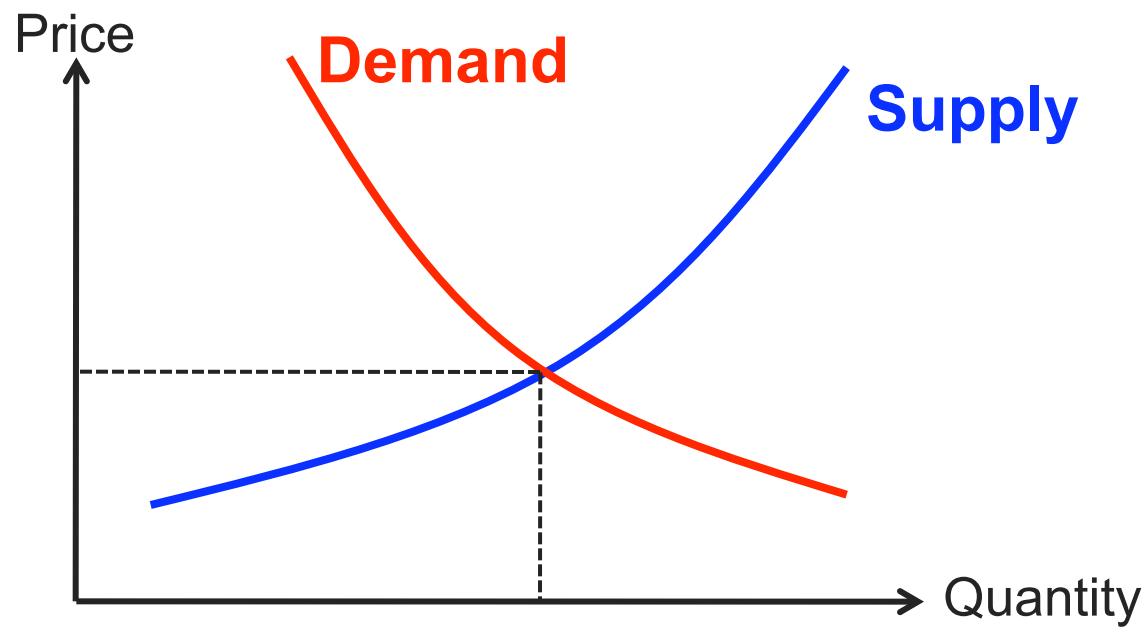
- Telephone operators
- Utility meter readers
- Records processing staff
- Secretaries and clerks
- ...

Jobs (cont.)

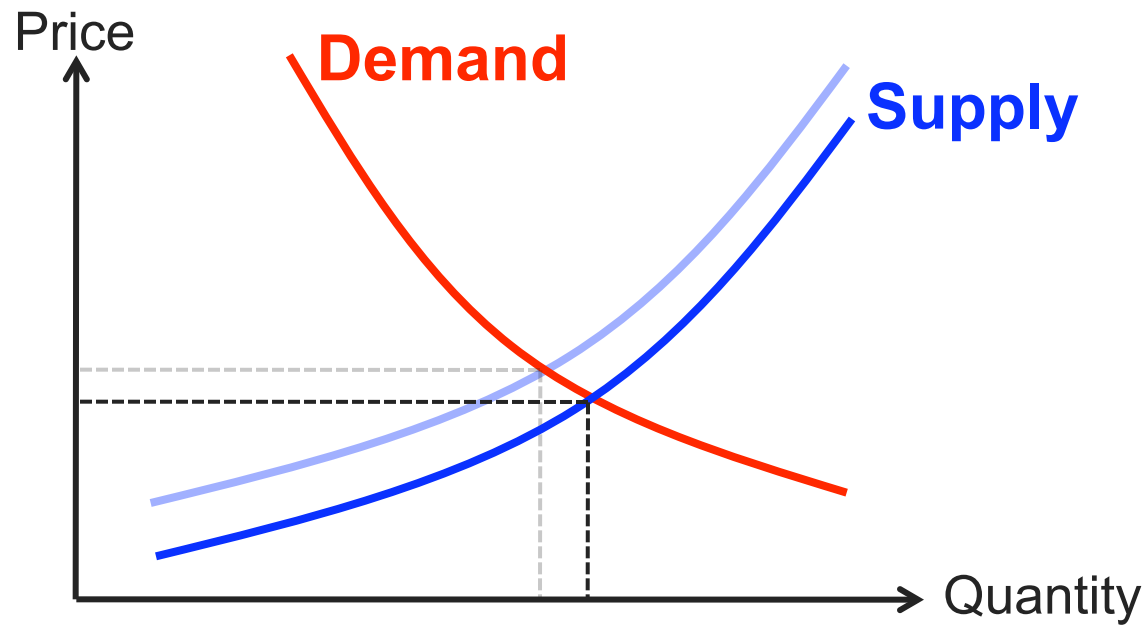
Job Creation –

- New products and new industries create new jobs:
 - DVDs, iPods, ...
 - Cellphone industry
- Higher productivity lowers product prices; lower prices increase demand, which in turn create more jobs

Supply & Demand



Supply & Demand



Jobs (cont.)

What is the overall impact?

- “The empirical evidence suggests overall that computers have not replaced workers or destroyed jobs; if anything, they have created jobs” [Larry Hirschhorn]
- “There will be plenty of jobs in the future, and most of them will be high-paying jobs” [Martin Carnoy]



Impact on Work Environment

- Business organizational changes
- Telecommuting
- Temporary work
- Employee monitoring

Organizational Changes

- Increase in smaller businesses and independent consultants
 - Information entrepreneurs
 - “Mom and pop” shops on the Web
- IT integration into firms
 - Automating back office functions (e.g., payroll)
 - Improving communication among business units

Results:

- Flattened organizational structures
- Eliminating transactional middlemen

Telecommuting

- Work away from traditional place of work:
 - Home office
 - Customer sites
 - Mobile office (e.g. salesmen)
- About 20% of Americans do some telecommuting

Telecommuting (cont.)

Benefits:

- Reduces overhead for employers
- Reduces need for large offices
- Employees are more productive and satisfied
- Reduces traffic congestion, pollution, and stress
- Reduces expenses for commuting and work clothes
- Allows work to continue after blizzards, hurricanes, etc.

Telecommuting (cont.)

Problems:

- Threatens managers' control and authority
- Makes face-to-face meetings (e.g. with clients) impossible
- Team meetings more difficult (e.g. different schedules)
- Sensitive information less secure
- Tele-workers less visible, and “out of the loop”
- Tele-workers work longer hours for same pay

Temporary Work

- Companies less committed to employees
- Lay-offs not taboo as they once were
- Companies hiring more temporary employees
 - Saves money on benefits
 - Makes it easier to downsize
- Long-term employment for one firm less common

Employee Monitoring

82% of companies monitor employees in some way.

Main purpose:

- Identify inappropriate use of company resources

Other uses:

- Detect illegal activities
- Gauge and improve productivity
- Improve security

Employee Crimes

- *Embezzlement* – fraudulent appropriation of company property
 - Trusted employees have stolen millions of dollars
- *Logic bomb* – software that destroys critical files (payroll and inventory records) after employee leaves
 - Angry fired employees sabotage company systems

Monitoring Approaches

- *Old “Blue-Collar” Approaches:*
 - Time-clocks and logs
 - Output counts at the end of the day
 - Bosses patrolled the aisles watching workers
 - Camera surveillance in workplace
- *Location Monitoring:*
 - Electronic badge tracking
 - GPS tracking (e.g. in hospitals, long-haul trucks)

Monitoring Approaches (cont.)

- *E-Mail, Voice Mail, and Web-Use Monitoring:*
 - Roughly half of major companies in the U.S. monitor or search employee e-mail, voice mail, or computer files
 - Some companies block specific web sites
 - Many employers have privacy policies regarding e-mail and voice mail

Law and Court Cases

- Electronic Communications Privacy Act (ECPA) prohibits interception of e-mail and reading stored e-mail without a court order, but makes an exception for business systems
- Courts put heavy weight on the fact that computers, mail, and phone systems are owned by the employer who provides them for business purposes
- However, courts have ruled against monitoring done to snoop on personal and union activities or to track down whistle blowers
- The National Labor Relation Board (NLRB) sets rules and decides cases about worker-employer relations

Globalization

Refer to the process of creating a worldwide network of businesses and markets.

- *Reduce Trade Barriers:*
 - WTO and NAFTA
- *Global Workforce:*
 - Outsourcing
 - Offshoring
 - Foreign IT workers
 - Working for foreign companies (Insourcing?)

Globalization (cont.)

Arguments For:

- Increases competition; produces better products
- Increases everyone's standard of living
- Global jobs reduce unrest and increase stability

Arguments Against:

- Forces American workers to compete with foreigners who do not get decent wages and benefits
- Accelerates exporting of manufacturing and white-collar jobs from United States
- Hurts workers in foreign countries

Impact on Society

The Digital Divide – Some people have access to modern IT while others do not.

- *Global digital divide:*
 - Access higher in wealthy countries
 - Access higher where IT infrastructure good
 - Access higher in English-speaking countries
- *Social digital divide:*
 - Access higher for young people
 - Access higher for well-educated people

Critiques of the Digital Divide

- DD talk suggests the difference between “haves” and “have nots” is simply about access; It implies lack of access leads to less advantaged social position

Counter:

- Social and culture change are more important
- Internet is not the pinnacle of IT
- DD talk puts everyone in two categories, but reality is a continuum

Environmental Impacts

- Resource Consumption
 - Power and materials
 - Both in production and in operation
- E-Waste

EPA Statistics (2006-2007):

	Generated (mil of units)	Disposed (mil of units)	Recycled (mil of units)	Recycle Rate (by weight)
Televisions	26.9	20.6	6.3	18%
Computers	205.5	157.3	48.2	18%
Cell Phones	140.3	126.3	14.0	10%

Green(er) Computers?

The XO by One Laptop per Child (OLPC):



Claims to be the most eco-green laptop.

Discussion Questions

- What jobs that were once considered high-skill jobs are now low-skill due to technology?
- Would you want to telecommute? Why or why not?
- How much privacy is reasonable for an employee to expect in the workplace?
- Under what circumstances is it appropriate for an employer to read an employee's e-mail?