Chapter 10
Work and Wealth
Chapter Overview

- Introduction
- Automation and employment
- Workplace changes
- Globalization
- The digital divide
- The “winner-take-all society”
10.1 Introduction

• Information technology and automation affecting workplace
  – Increases in productivity
  – Globalization of job market
  – Organization of companies
  – Telework
  – Workplace monitoring

• Impacts of information technology on society
  – Digital divide
  – Winner-take-all effects
10.2 Automation and Employment
Automation and Job Destruction

• Between 1979 and 2011...
  – U.S. population increased 39%
  – Manufacturing employment dropped 40%, from 19.4 million jobs to 11.7 million jobs

• Lost white-collar jobs
  – Secretarial and clerical positions
  – Accountants and bookkeepers
  – Middle managers

• Juliet Schor: Work week got longer between 1979 and 1990
General Motors Exited Bankruptcy in 2009 with 30% Fewer Employees
Layoffs May Increase Stress on Remaining White-Collar Workers
Automation and Job Creation

- Automation lowers prices
- That increases demand for the product
- It also increases real incomes, increasing demand for other products
- Increased demand $\rightarrow$ more jobs
- Number of manufacturing jobs worldwide is increasing
- Martin Carnoy: Workers today work less than workers 100 years ago
Automation Can Create Jobs, Too

Automation → Eliminates jobs

Reduces price of product → Increases demand for product → Creates jobs

Increases real incomes of consumers → Increases demand for other products
Effects of Increase in Productivity

- We have used higher productivity to achieve a higher material standard of living
- This is in contrast to medieval or ancient times (before modern capitalism)
- In medieval or ancient times
  - Low caloric intake meant pace of work was slow
  - Work was seasonal and intermittent
  - Laborers resisted working if they had enough money (i.e., they weren’t consumers)
  - When wages rose, laborers worked less
Rise of the Robots?

- Some experts suggest most jobs will be taken over by machines
- Artificial intelligence: Field of computer science focusing on intelligent behavior by machines
- Rapid increases in microprocessor speeds have led to various successes in AI
- What will happen as computers continue to increase in speed?
Notable Achievements in AI since 1995

- Computer-controlled minivan “drove” on freeways across USA in 1995
- IBM supercomputer Deep Blue defeated chess champion Gary Kasparov in 1997
- Honda’s ASIMO android can climb and descend stairs and respond to human gestures and postures
- Electrolux introduced robotic vacuum cleaner in 2001
- Five autonomous vehicles successfully completed 128-mile course in Nevada desert in 2005
- Watson trounced two most successful human Jeopardy! champions in 2011
Stanley, the Autonomous Vehicle

© Gene Blevins/Reuters/Corbis
Watson Wins *Jeopardy!* Challenge
Moral Question Related to Robotics

- Is it wrong to create machines capable of making human labor obsolete?
- Would intelligent robots demoralize humanity?
- Is it wrong to work on an intelligent machine if it can’t be guaranteed the machine will be benevolent toward humans?
- What if a malevolent human puts intelligent machines to an evil use?
- How would creative computers change our ideas about intellectual property?
10.3 Workplace Changes
Organizational Changes

• Information technology integration into firms
  – Automating back office functions (e.g., payroll)
  – Improving manufacturing
  – Improving communication among business units

• Results
  – Flattened organizational structures
  – Eliminating transactional middlemen (supply-chain automation)
Inexpensive Interactions Lead to Flexible Information Flow
Winners, Losers in the Workplace of the Future

<table>
<thead>
<tr>
<th>Higher Demand</th>
<th>Lower Demand</th>
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<tbody>
<tr>
<td>Computer engineers</td>
<td>Bank clerks</td>
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<tr>
<td>Computer support specialists</td>
<td>Procurement specialists</td>
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<tr>
<td>Systems analysts</td>
<td>Financial records processing staff</td>
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<tr>
<td>Database administrators</td>
<td>Secretaries, stenographers, and typists</td>
</tr>
<tr>
<td>Desktop publishing specialists</td>
<td>Communications equipment operators</td>
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<tr>
<td></td>
<td>Computer operators</td>
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Telework

- Employees work away from traditional place of work
- Examples
  - Home office
  - Commuting to a telecenter
  - Salespersons with no office
- About 20% of Americans do some telework
Advantages of Telework

- Increases productivity
- Reduces absenteeism
- Improves morale
- Helps recruitment and retention of top employees
- Saves overhead
- Improves company resilience
- Helps environment
- Saves employees money
Disadvantages of Telework

- Threatens managers’ control and authority
- Makes face-to-face meetings impossible
- Sensitive information less secure
- Team meetings more difficult
- Teleworkers less visible
- Teleworkers “out of the loop”
- Isolation of teleworkers
- Teleworkers 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
Monitoring

- 82% of companies monitor employees in some way
  - Purpose: Identify inappropriate use of company resources
  - Can also detect illegal activities
- Other uses of monitoring
  - Gauge productivity (10% of firms)
  - Improve productivity
  - Improve security
Computers Direct Movement of Workers in This Amazon Warehouse
Multinational Teams

- Software development teams in India since 1980s
- Advantages of multinational teams
  - Company has people on duty more hours per day
  - Cost savings
- Disadvantage of multinational teams
  - Poorer infrastructure in less developed countries
10.4 Globalization
Globalization Basics

- Globalization: Process of creating a worldwide network of businesses and markets
- Globalization causes a greater mobility of goods, services, and capital around the world
- Globalization made possible through rapidly decreasing cost of information technology
Declines in Computing & Communication Costs Spurred Globalization
Arguments for Globalization

- Increases competition
- People in poorer countries deserve jobs, too
- It is a tried-and-true route for a poor country to become prosperous
- Global jobs reduce unrest and increase stability
Arguments against Globalization

- Makes the United States subordinate to the World Trade Organization
- Forces American workers to compete with foreigners who do not get decent wages and benefits
- Accelerates exodus of manufacturing and white-collar jobs from United States
- Hurts workers in foreign countries
Dot-Com Bust Increases IT Sector Unemployment

• Dot-com: Internet-related start-up company
• Early 2000: stock prices of dot-coms fell sharply
• Hundreds of dot-coms went out of business
• Half a million high-tech jobs lost
Foreign Workers in the IT Industry

• Visas allow foreigners to work inside U.S.
• H-1B
  – Right to work up in United States to six years
  – Company must show no qualified Americans available
  – Congress still authorizes 65,000 H-1B visas per year, plus 20,000 more for foreigners with advanced degrees
  – Quota not filled in 2009 due to economic downturn
• L-1
  – Allows a company to transfer a worker from an overseas facility to the United States
  – Workers do not need to be paid the prevailing wage
  – In 2006 about 50,000 foreigners in U.S. under L-1 visa
Foreign Competition

- China is world’s number one producer of computer hardware
- IT outsourcing to India is growing rapidly
- Number of college students in China increasing rapidly
- ACM Collegiate Programming Contest provides evidence of global competition
Growth of China’s Computer-Hardware Industry
10.5 The Digital Divide
Concept of the Digital Divide

• Digital divide: Some people have access to modern information technology while others do not
• Underlying assumption: people with access to telephones, computers, Internet have opportunities denied to those without access
• Concept of digital divide became popular with emergence of World Wide Web
Evidence of the Digital Divide

• Global divide
  – Access higher in wealthy countries
  – Access higher where IT infrastructure good
  – Access higher where literacy higher
  – Access higher in English-speaking countries
  – Access higher where it is culturally valued

• Social divide
  – Access higher for young people
  – Access higher for well-educated people
Percentage of People with Internet Access, by World Region
Models of Technological Diffusion

- Technological diffusion: rate at which a new technology is assimilated
  - Group A: highest socioeconomic status
  - Group B: middle socioeconomic status
  - Group C: lowest socioeconomic status

- Normalization model
  - Group A adopts first, then Group B, finally Group C
  - Eventually A use = B use = C use

- Stratification model
  - Group A adopts first, then Group B, finally Group C
  - A use > B use > C use forever
Two Models for Technological Diffusion
Critiques of the Digital Divide

• DD talk suggests the difference between “haves” and “have nots” is simply about access
• DD talk puts everyone in two categories, but reality is a continuum
• DD implies lack of access leads to less advantaged social position, but maybe it is the other way around
• Internet is not the pinnacle of information technology
Street Scene in Ennis, Ireland
Massive Open Online Courses

- Rate of tuition increases at US universities has exceeded inflation for several decades
- Financing college education increasingly difficult for poorer families
- Free massive open online courses (MOOCs) promoted as a way to make higher education more affordable
- Study by Community College Research Center
  - Students less likely to complete and do well in MOOCs than traditional courses
  - MOOCs widen achievement gap between white and black students and between those with higher GPAs and those with lower GPAs
Net Neutrality

- Tiered service: Charging more for high-priority routing of Internet packets
- Supporters of tiered service say it is needed to support Voice-over-IP and other services
- Opponents to tiered service (e.g., Google, Yahoo!) say it would hurt small start-up companies and lower innovation
- Others think companies controlling Internet might favor some content over other content
- Net neutrality legislation would require all Internet packets be treated the same
- Opponents of proposed legislation say consumers should be able to pay more to get higher quality service
10.6 The “Winner-Take-All Society”
The Winner-Take-All Phenomenon

• Winner-take-all: a few top performers have disproportionate share of wealth

• Causes
  – IT and efficient transportation systems
  – Network economies
  – Dominance of English language
  – Changing business norms
CEO Pay v. Production Worker Pay, 1980 and 2003
Golfer Jim Furyk Earned 99 Times More Than Brian Bateman in 2009; Is He 99 Times Better?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Brian Bateman</th>
<th>Jim Furyk</th>
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<tbody>
<tr>
<td>Driving distance (yards)</td>
<td>289.1</td>
<td>278.1</td>
</tr>
<tr>
<td>Driving accuracy (%)</td>
<td>56.23</td>
<td>70.24</td>
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<td>Greens in regulation (%)</td>
<td>63.95</td>
<td>64.67</td>
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<td>Putts/round</td>
<td>29.42</td>
<td>28.17</td>
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<td>Scoring average</td>
<td>71.89</td>
<td>70.24</td>
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<tr>
<td>Tournaments entered</td>
<td>21</td>
<td>21</td>
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<tr>
<td>Winnings</td>
<td>$35,379</td>
<td>$3,514,215</td>
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</table>
Reducing Winner-Take-All Effects

- Limit number of hours that stores remain open
- Businesses form cooperative agreements to reduce positional arms races
  - Example: salary caps on pro sports teams
- More progressive tax structures
- Campaign finance reform