Bubble Economy

• First Oil Shock, October 1973
  – Exerted a massive shock to the Japanese economy
    • Real GDP growth negative for the first time after WWII
    • 10% → -1%
    • Massive inflation
    • Large number of bankruptcies
Oil Shock

– Government responded with Keynesian stimulus
  • Massive deficit spending funded by bond issues
  • Government borrowing rose 5x (1974-1983)
  • Government debt/GNP
    – <10% 1953-1974
    – 41% after 1974
  • Slow growth led to low demand for funds
    – Loans as a source of funding fell
      » 47% in early 1970s
      » 38% in late 1970s
    – Bank profits fell, growth rate of profits fell
Oil Shock

- Banks had to absorb ever larger levels of public debt
  - Debt was still undervalued
  - BOJ switched to bid system on repurchase of government bonds in 1978
    - Banks weren’t repurchasing enough of them
    - Price of bonds fell
  - Banks begin to rebel
    - Bond syndicate rebelled
    - Refused to purchase some issues

- Between 1979 and 1980 government decontrolled much of the Japanese government bond market
Eurodollar Market

• In 1970s development of eurodollar market gave large Japanese firms access to foreign exchange
• Created foreign and domestic pressure to allow broader issuance of foreign currency bonds in 1980
  – Led to revision of foreign exchange control law
• Access to foreign bonds caused domestic bond cartel (Kisaikai) to collapse in early 1980s
Japanese Bond Market Issues

![Graph showing issues of Japanese bonds in billions from 1975 to 1989. The graph compares domestic and overseas market issues over the years.](image)
Financial Market Liberalization

• Major deregulations in 1980s
  – Reduced minimum purchase amounts and maturities
    • Allowed household better access
  – CDs created in 1979
    • Minimum ¥500 million (1979), ¥300 million (1984), ¥100 million (1985), and ¥50 million (1988)
    • Only instrument with an unregulated interest rate
    • But amounts were too high for most households
  – Deregulation of deposit rates
    • % of all deposits getting market rates
    • 6% in 1980, 16% in 1985, 68% in 1990, 100% in 1993
Impact on Banks

• Access to international capital undermined main bank system
  – Previously banks pooled risk across good and bad firms
  – Now best firms can raise capital thru bond and equity finance at lower cost
  – Poorer firms who could not issue bonds stayed with main banks
  – Bank debt becomes less important
    • Bank debt as percent of external finance drops
    • 90% in 1980 to 50% in 1990
Impact on Banks

• Banks have fewer and riskier borrowers
  – Main bank system begins to unravels
  – No framework available to evaluate risk
  – Absence of sufficient bank monitoring
  – Moral hazard problem

• Financial liberalization encourages asset diversification with deposit guarantees
Impact on Banks

- Banks needed new business (but new business requires more complex risk assessment)
  - Before MOF regulation of markets had made all this unnecessary
  - Banks were incapable of complex financial analysis
  - Two options
    - Lend against sure things
      - Real estate, home mortgages, etc
    - Look for countries that resembled Japan
      - South East Asia

MOF: Ministry of Finance
Financial Liberalization

• Asset prices rose dramatically in many countries in 1980s (i.e. US)
  – Removal of portfolio constraints may have contributed
  – Jūsen (housing loan companies) lent heavily to real estate
  – As banks lost traditional business, they moved into other activities
  – Main bank system begins unraveling
    • No framework available to evaluate risk
Financial Liberalization

– Absence of sufficient bank monitoring
– Moral hazard problem
  • Deposit guarantees and financial liberalization encouraging asset diversification

• Bottom line
  – Fundamentals may have justified prices until 1986
  – But afterwards it was a bubble
JūSEN

• Jūtaku kinyū senmon kaisha
• “companies specializing in housing finance”
• Capitalized by large commercial banks in the 1970s
• Jūsen affiliates could evade MOF limits on bank’s own real estate loans
• Grew dramatically in 1990
• When real estate prices collapse in 1991, seven of the eight Jūsen become insolvent
JūSEN

• Expansion of banks into real estate squeeze Jūsen out of the market
  – Share of home lending falls from 7% in 1980 to 2% in 1993

• So Jūsen moved into risky corporate lending
  – Corporate lending increased from ¥317 billion in 1980 to ¥973 billion in 1990
  – Only ¥265 billion to individuals
JŪSEN

• Where did Jūsen get money?
  – Agricultural liberalization caused loan/deposit ratios in local cooperatives to fall by 50%
  – Sale of farmland (etc) caused local cooperative assets to rise from ¥39T in 1985 to ¥61T in 1991
  – Regulation funneled this money into housing loan companies (Jūsen)
  – But Jūsen were not controlled by MOF nor restricted in their lending
  – Helped to create the bubble
BOJ Monetary Policy

• BOJ (1987-1989) expanded money supply excessively
  → Asset (but not goods) inflation
  → Low interest rates

• When BOJ raised interest rates in December 1989, the bubble burst

BOJ: Bank of Japan
BOJ Monetary Policy

• Why was BOJ policy expansionary?
  – Louvre Accord (1987)
    • G7 agreed to prevent further yen appreciation
    • BOJ was watching yen, not domestic objectives
    • One policy, two targets
  – CPI inflation was low, and asset inflation is not usually a target of central bankers
  – Financial liberalization made it difficult to judge BOJ position from monetary targets
BOJ Monetary Policy

• Money supply accelerated conspicuously in late 1980s
  – Growth in money supply
    • Share of deposits with deregulated rates in money supply (M2) was zero in 1985
    • Half of deposits were deregulated by 1990
    • So monetary increase might be explained by portfolio shifts
  – No sign of inflation
    • Yen appreciation → decline in import prices
    • WPI was negative for much of 1980s
    • BOJ felt it could safely expand MS
Asset Pricing

• What determines the price of an asset?

• Firm foundation theory
  – Assets have some intrinsic value
    • Land: earn rent and capital gain
    • Stock: earn dividends and capital gain
  – Price of an asset is the present discounted value of the future stream of earnings

\[ P = \frac{D_1}{(1 + i)} + \frac{D_2}{(1 + i)^2} + \frac{D_3}{(1 + i)^3} + \ldots + \frac{D_n}{(1 + i)^n} \]
Asset Pricing

\[ P = \frac{D_1}{(1 + i)} + \frac{D_2}{(1 + i)^2} + \frac{D_3}{(1 + i)^3} + \ldots + \frac{D_n}{(1 + i)^n} \]

P = price of asset
D = dividend
i = interest rate
n = years left in company
Asset Pricing

• Price of asset should be higher if
  – Dividends or rents are higher (present and future)
  – Lower the interest rate
  – Less risky the asset

• But it is hard to predict the future

• John Maynard Keynes criticized the firm foundation approach

• Since it is hard to predict the future, people have a much shorter view
Asset Pricing

• “Like a beauty judging contest in which you have to select the six prettiest faces out of a hundred photographs with the prize going to the person whose selection most nearly conforms to those of the group as a whole.” - Keynes

• It is not sensible to pay $25 for an investment which you think the prospective yield makes worth $30 if you also believe the market will value it at $20 three months later
Asset Pricing

- **Castle in the Air Theory**
- An asset is worth what someone else is willing to pay for it

\[ P_t = \frac{E(P_{t+1})}{1 + i} \]

- You buy if price is likely to go up
- You sell if price is likely to go down
Greater Fool Theory

• It is okay to pay 3 times what something is worth as long as you can find someone willing to pay 5 times what it is worth a little while later

• Examples
  – Tulip bulbs in Holland 1634-1638
  – South Sea Company in England 1711-1721
  – US Stock market crash October 1929
  – US Stock market crash October 1987
  – US housing 2006, 2018?
Efficient Market Hypothesis

• If all available information is contained in the price of a speculative asset
• And all new information is quickly understood by market participants and becomes immediately incorporated into market prices
• Then the ideal stock price should move like a random walk
Random Walks

Drunkard’s walk

Courtesy of George Gamow
Efficient Market Hypothesis

\[ P_t = P_{t-1} + \varepsilon_t \]

Where \( \varepsilon_t \) are distributed \( N(0, \sigma^2) \)

- Only new information affecting the asset like dividends or interest rates will change the value of the asset
- Real news is fundamentally random
- If it’s predictable, then it’s already incorporated into the asset price
Forbes Magazine

- June 1967
- 28 editors throw darts at stock market pages
- Invest $28,000 in the 28 companies
- By 1984, this portfolio is worth $131,697.61
- Beat all market indices
Fundamentals

• Expansionary monetary policy
  – Lower discount rate $\rightarrow$ lower cost of capital
    • 1986-1987

• Financial deregulation
  – Deposit rate deregulation
  – New financial instruments
    • Futures and options
  – Lower barriers among different types of financial businesses
  – Feeling Tokyo would become world financial center
    • Foreign firms help bid up land prices
Fundamentals

• “Restructuring” of Japanese economy
  – Move to information intensive and consumer oriented industries
  – Efforts to reduce trade surplus by expanding the domestic sector
• High economic growth rates of 1980s
  – 4.25% a year from 1980-1992
Land Market Fundamentals

• Very little land, and even less flat terrain
  – 1/25\textsuperscript{th} size of US
• Low property taxes
  – So no need to develop land
    • Encourages land hoarding when prices expected to rise
    – Capital gains tax (levied when sold) higher if property held short-term, so land gets “locked in”
• Inheritance tax is heavier in Japan than US
  – Gift tax is even higher
  – Bond and securities assessed at market value
  – Land is assessed ½ market value
  – So elderly hold real assets
Land Market Fundamentals

• Agricultural land in Tokyo
  – Agricultural land taxed much less than commercial or residential
  – Small agricultural plots make up 2-3% of the land in cities

• Protection of tenants
  – Landlord can not terminate a lease on an apartment unless she moves into the apartment (with no alternatives)
    • Shortage of large and high quality rental housing
    • Renters pay 2 months rent to initiate a lease
    • Redevelopment is difficult if a few residents do not want to vacate
Land Market Fundamentals

• Sunshine and cubic size restrictions
  – Height and total cubic size of buildings are regulated
  – Can not deprive neighboring house of sunlight
    • At least 3 hours a day in winter is guaranteed
Stock Market Fundamentals

• High PE Ratios
  – Until 1973, PE ratios higher in US
  – After 1973, PE ratios twice US level
    • 20 vs 10
  – After 1986, PE ratios take off
    • 65 vs 15

• Cross holding
  – 40-50% outstanding shares held by other corporations
  – Raises stock prices by 40% by late 1980s
Stock Market Fundamentals

• Rising land prices
  – Hold land at historic cost, not market value
• Rising stock prices
  – Firms have unrealized capital gains in corporate stock holdings
• Accounting methods
  – Earnings of subsidiaries often unreported
• Low interest rates
• Rapid economic growth
• Market stability → more confidence (less risk)
Asset Pricing Equation

\[ P = \frac{D}{r - g} \]

- P = price
- D = dividend
- r = interest rate
- g = growth rate of dividends
Asset Pricing Equation

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Bank Rate</td>
<td>7.5</td>
<td>7.0</td>
<td>6.1</td>
<td>5.8</td>
<td>5.8</td>
<td>6.8</td>
</tr>
<tr>
<td>GDP Growth Rate</td>
<td>4.9</td>
<td>2.6</td>
<td>4.1</td>
<td>6.2</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Implied Stock Price</td>
<td>38</td>
<td>23</td>
<td>50</td>
<td>∞</td>
<td>91</td>
<td>50</td>
</tr>
</tbody>
</table>
Problems with Fundamental Approach

- Must have very big movements in expectations about long-run interest rates and growth rates to justify the run up in prices
- Yield (rent to price ratio) on apartments fell dramatically during bubble years
  - If rent was low, people must have been holding properties because they expected the price to rise (not because they expected to collect a lot of rent)
  - Hard to believe total value of Japanese land is 3 times the value of all US land
Problems with Fundamental Approach

- Regressions of land and stock prices on fundamentals are not successful
  - They do not move together

- Fundamentals may have justified the period to 1986, but afterwards it was a bubble
Rational Bubbles

• Suppose investment of ¥x returns ¥2x with probability 99% and ¥0 with probability 1%
• What is the expected rate of return?

Expected return = 0.99(2x) + 0.01(0) = 1.98x

• Expected rate of return = 98% each period
• But if you keep investing in this security, you will lose all your money with probability = 1
Rational Bubbles

- Long run rate of return is zero
  - But short run rate of return is positive
- As long as there is enough money flowing into the market in the short run, the price of this asset may continue to rise and the high rate of return is self-fulfilling
- When people stop buying, the asset price will crash
- Loose monetary policy can facilitate the formation of bubbles by giving people investment funds
Bubble Burst
Bubble Burst

- Nikkei 225
  - 38,916 in December 1989
  - 15,910 in July 1992
  - 7,703 in November 2008
  - 21,388 in April 2018
- Land prices fall 30% (1990-1993)
- Decline in asset values lead to negative wealth effect (consumption falls)
  - Dept store sales shrink for 1st time in postwar period
Bubble Burst

• Fixed investment falls
  – Excess capacity, pessimistic prospects for future
• Balance sheets of corporations and banks deteriorate (asset deflation)
• GPD growth falls from 1.5% in 1992 to 0.1% in 1993
Why did the Bubble burst?

• BOJ raised interest rates
  – 2.5% in 1987 to 6% in 1990

• MOF introduced controls on bank lending to real estate in 1990
  – Controls not very effective because they did not include non-banks like jūsen

• MOF raised land taxes and changed treatment of land capital gains
MOF Policy Change

• Old Policy
  – Value of land was assessed at significantly less than market value for inheritance tax purposes
  – Loans were deductible at full value
  – Gave families incentives to borrow money and pass land on to offspring

• New Policy
  – MOF increased the assessment value and made land purchased within 3 years of a person’s death assessed at market value
Why did the Bubble burst?

• Basile Accord (1988)
  – Allowed Japanese banks to count only 45% of their stock as Tier II capital
  – Had to set aside more money for reserves

• Iraqi invasion of Kuwait in August 1990 worsened economic outlook
  – Japan imports a lot of oil

• Sooner or later all bubbles burst
BOJ Mistake?

• Did the BOJ make a mistake?
• Rapid monetary growth may have fueled expectations of asset inflation
  – High liquidity with very low interest rates encouraged risky investment
  – Deposit guarantees meant money kept flowing into banks despite heightened risk
• Too much easing of interest rates in 1980s
  – Especially end of 1986, early 1987
  – Rates should have been raised in 1988
    • US and Germany were raising rate
    • JP economy was growing rapidly
Bubble Aftermath

• Most of the past 25 years involved cleaning up the mess from the “bubble economy” (バブル経済)
• Japanese banks made a lot of loans which were no longer performing
• Banks with negative net worth needed to be closed or recapitalized
• None of this is fun
## Bank Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves</td>
<td>$100 Checking Deposits $400</td>
</tr>
<tr>
<td>Loans</td>
<td>$500 Savings Deposits $600</td>
</tr>
<tr>
<td>Securities</td>
<td>$500 Net Worth $100</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td><strong>$1,100 Total Liabilities $1,100</strong></td>
</tr>
</tbody>
</table>
Figure 2: Outstanding Nonperforming Loans (NPLs) and Losses on Disposal of NPLs (in billions of yen)

Note: Data are for the end of fiscal year. NPLs are “risk management loans” of all banks, whose definition is slightly different from NPLs based on the Financial Reconstruction Law. The numbers referred to in the text are based on the Financial Reconstruction Law, which became available from March 1999.

Some Financial Failures

- Toho Sogo Bank in 1991 (first in post war period)
- Kizu Credit Cooperative and Hyogo Bank in 1995
- Jūsen, seven nonbank mortgage finance companies, liquidated 1996
- Yamaichi Securities, Sanyo Securities, and Hokkaido Takushoku Bank in 1997
- Long Term Credit Bank nationalized 1998
Zombie banks

- Banks with negative net worth can continue to operate if the government provides implicit or explicit credit support.
- Japan kept banks marginally functional through explicit or implicit guarantees and piecemeal government bailouts.
- Zombie banks are unable to support economic growth.
Zombie Banks

- Do not lend
- Neither alive nor dead
- Rely on the support of the government
- Debts are bigger than assets
- Bad for the economy
- Are technically insolvent
Top World Banks 1990

In 1990 six of the top ten banks in the world are Japanese banks.

Nine of the top 20 are Japanese banks.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Bank Name</th>
<th>Country</th>
<th>Tier 1 capital ($mn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sumitomo Bank</td>
<td>Japan</td>
<td>13,357</td>
</tr>
<tr>
<td>2</td>
<td>Dai-Ichi Kangyo Bank</td>
<td>Japan</td>
<td>12,322</td>
</tr>
<tr>
<td>3</td>
<td>Fuji Bank</td>
<td>Japan</td>
<td>11,859</td>
</tr>
<tr>
<td>4</td>
<td>Crédit Agricole</td>
<td>France</td>
<td>11,802</td>
</tr>
<tr>
<td>5</td>
<td>Sanwa Bank</td>
<td>Japan</td>
<td>11,186</td>
</tr>
<tr>
<td>6</td>
<td>Mitsubishi Bank</td>
<td>Japan</td>
<td>10,900</td>
</tr>
<tr>
<td>7</td>
<td>Barclays Bank</td>
<td>UK</td>
<td>10,715</td>
</tr>
<tr>
<td>8</td>
<td>National Westminster Bank</td>
<td>UK</td>
<td>9,761</td>
</tr>
<tr>
<td>9</td>
<td>Deutsche Bank</td>
<td>Germany</td>
<td>8,462</td>
</tr>
<tr>
<td>10</td>
<td>Industrial Bank of Japan</td>
<td>Japan</td>
<td>8,384</td>
</tr>
<tr>
<td>11</td>
<td>Union Bank of Switzerland</td>
<td>Switzerland</td>
<td>8,350</td>
</tr>
<tr>
<td>12</td>
<td>Citicorp</td>
<td>US</td>
<td>7,319</td>
</tr>
<tr>
<td>13</td>
<td>Compagnie Fin de Paribas</td>
<td>France</td>
<td>6,968</td>
</tr>
<tr>
<td>14</td>
<td>Tokai Bank</td>
<td>Japan</td>
<td>6,821</td>
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<tr>
<td>15</td>
<td>Hongkong Bank</td>
<td>Hong Kong</td>
<td>6,746</td>
</tr>
<tr>
<td>16</td>
<td>Bank of China</td>
<td>China</td>
<td>6,611</td>
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<tr>
<td>17</td>
<td>Long-Term Cr, Bank of Japan</td>
<td>Japan</td>
<td>6,463</td>
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<tr>
<td>18</td>
<td>Banque Nationale de Paris</td>
<td>France</td>
<td>6,177</td>
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<tr>
<td>19</td>
<td>Swiss Bank Corp</td>
<td>Switzerland</td>
<td>6,153</td>
</tr>
<tr>
<td>20</td>
<td>Bank of Tokyo</td>
<td>Japan</td>
<td>5,928</td>
</tr>
</tbody>
</table>

Source: www.thbankerdatabase.com
City Banks 1992

2. *Sumitomo*
4. *Fuji* *(Yasuda 1948)*
5. *Mitsubishi*
6. *Sanwa*
7. Tokai
8. Tokyo *(Yokohama Specie Bank 1946)*
9. Daiwa
10. Asahi *(Kyowa Bank & Saitama Bank 1991)*
11. Hokkaido Takushoku *(failed 1997)*

* Main bank of financial keiretsu
City Bank Mergers

1. MUFG
Mitsubishi UFJ Financial Group

- Mitsubishi Tokyo Financial Group
  - Bank of Tokyo Mitsubishi
  - Mitsubishi Bank
- Mitsubishi UFJ Financial Group
  - Mitsubishi Trust
  - Nippon Trust
  - Tokyo Trust
  - Sanwa Bank
  - Tokai Bank
  - Toyo Trust

2. Mizuho
Dai Ichi Kangyo Ginko
Fuji Bank
Industrial Bank of Japan

3. Sumitomo Mitsui
Sumitomo Bank
Sakura Bank

4. Resona
Daiwa Bank
Kinki Osaka Bank
Nara Bank
Asahi Bank

Kyowa Bank
Saitama Bank
<table>
<thead>
<tr>
<th></th>
<th>Large World Banks (Assets)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Industrial and Commercial Bank of China</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>China Construction Bank Corporation</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>Agricultural Bank of China</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>Bank of China</td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td><strong>Mitsubishi UFJ Financial Group</strong></td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>JP Morgan Chase</td>
<td>16</td>
</tr>
<tr>
<td>7</td>
<td>HSBC Holding PLC</td>
<td>17</td>
</tr>
<tr>
<td>8</td>
<td>BNP Paribas</td>
<td>18</td>
</tr>
<tr>
<td>9</td>
<td>Bank of America</td>
<td>19</td>
</tr>
<tr>
<td>10</td>
<td>Wells Fargo &amp; Co</td>
<td>20</td>
</tr>
</tbody>
</table>
Note: Percentage of cross-held shares (based on market price) against the total market capitalization of a listed company. Figures up till the end of FY1989 are estimates. Research by Nomura Securities Co., Ltd.
Chart IV-2. Changes in the Ratio of Shares Held by Different Categories of Investors

Note: Results from FY2004 to FY2009 include the portion of companies listed on JASDAQ.
Number of Japanese companies to disclose improper accounting

Dates are fiscal years
* Fiscal year 2011 through Mar 2012
Source: Tokyo Shoko Research
Recent Corporate Scandals

- March 2015: Toyo Tire & Rubber admits to falsifying performance data for earthquake-resistant rubber products that were used in 55 buildings in Japan. The affected number was later expanded to 154 buildings.
- September 2015: Toshiba admits to inflating net profits by $1.3bn over a seven-year period.
- November 2015: Asahi Kasei Construction Materials reveals it falsified data on how deep foundation piles had been sunk into bedrock in 360 building projects.
- November 2015: Airbag maker Takata admits it misrepresented inflator data in response to an allegation by its biggest client Honda.
- April 2016: Mitsubishi Motors admits to overstating fuel economy data on four types of mini-cars sold in Japan by up to 15 per cent. It later admits its fuel economy testing methods were not compliant with Japanese standards since 1991.
- May 2016: South Korean authorities accuse Nissan of manipulating emissions tests for its Qashqai sport utility vehicle. Nissan denies the allegation.
- May 2016: Suzuki Motor reveals its fuel economy testing methods had not complied with domestic standards for all 16 of its models sold in Japan.
- May 2016: Toa, a construction company, admits to falsifying quake-resistant data for runway reinforcement projects at Haneda and several other airports in Japan.
The Lost 20 Years

1995-2015
Ln Real GDP per capita

Japan

US
State of the U.S. Economy

• GDP per capita: $60,445 (2017 IV)
• Unemployment rate: 4.1% (Mar 2018)
• Inflation rate: 2.26% (Mar 2018)
• 2018: American workers are more productive than they have ever been
Miracle of Compound Growth

If per capita GDP grows at 2.25% a year, the standard of living DOUBLES every 32 years.

From 1870 to 2000, per capita GDP in the US grew over 2% a year.

Americans are used to seeing the standard of living double with every generation.
<table>
<thead>
<tr>
<th>Time Period</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Real GDP Per Capita</td>
</tr>
<tr>
<td>1955-1970</td>
<td>2.32%</td>
</tr>
<tr>
<td>1970-1985</td>
<td>2.08%</td>
</tr>
<tr>
<td>1985-2000</td>
<td>2.21%</td>
</tr>
<tr>
<td>2000-2015</td>
<td>0.87%</td>
</tr>
</tbody>
</table>
Labor Force Participation

• Male labor force participation rates have fallen from 87% to 69%
• Female labor force participation rates have increased from 32% to 60% (2000)
• Since 2000, female labor force participation rates have fallen to 56.6%
• Overall labor force participation has fallen from 67.3% (2000) to 62.4% (2015)
Robert Gordon

- Pessimistic view
- Dramatic scale of inventions and innovations between 1870 and 1970 were a one-time occurrence in human history
- Productivity growth will be much slower in the future
- Aging population, stagnating education, consumer and government debt, income inequality
Brynjolfsson & McAfee

• Optimistic view
• Industrial revolutions are led by general purpose technologies which take time to be adopted economy-wide (steam engine, electricity, computer)
• We are on the cusp of seeing the productivity advances resulting from the computer
Productivity Decline

• Depressing scenario
  – Productivity slowdown is real
  – Earlier technology has been fully implemented

• Neutral scenario
  – Measurement error
  – GDP does not measure services well
    • Skype my son in NY for free

• Happy scenario
  – We are currently investing in the economy
  – Productivity will improve when new capital is fully implemented
Where Did All the Growth Go?

Long-term economic growth has fallen across the advanced economies.

Average annual per-capita G.D.P. growth over the preceding 10 years
Productivity Growth Is Slowing

Americans’ output per hour of work is growing more slowly than it has since the early 1980s.

Five-year rolling average of annual productivity growth
International Trade
Exports of goods and services (% of GDP)

World Bank national accounts data, and OECD National Accounts data files.
License: Open
Why has trade grown?

- **Improvements in transportation**
  - Cheaper shipping
    - 1956 Container ships carry 500-800 TEU
    - Today container ships carry 18,000 TEU
  - Cheaper air transport
    - Boeing 707 (1958) long distance jet

- **Advances in telecommunication**
  - Transatlantic telegraph cable 1858
  - Transatlantic telephone cable 1956
  - First ARPANET email 1971

- **More technological goods**
  - Light and easy to transport

- **Free trade policies**
  - Average tariff rates fall from 7.3% in 1960 to 1.3% in 2010
US Japan Trade

• 1950s
  – JP Trade deficits

• 1960s
  – Trade surpluses with cheap textiles
  – steel, cement, petrochemicals

• 1970s
  – Electronics, TVs, and machine tools

• 1980s
  – Automobiles, semiconductors
  – Record JP surpluses, record US deficits
  – Pressure to buy US oranges, beef, auto parts

• 1990s
  – Weak post bubble economy
  – Rice imports

• 2000s
  – Attention shifts to China

Trade Tensions

1971-73
1977-78
1985-87
1993-95
Trade Balance

\[ S_N = S + (T - G) \]
\[ S_N = (\bar{Y} - T - C) + (T - G) \]
\[ S_N = \bar{Y} - C - G \]

\[ NX = S_N - I(r) \]

Real interest rate

surplus

NX

\( r^* \)
Trade Balance

• Trade balance depends on S, I, and interest rate

• What policies influence the trade deficit?
  – Increase in G, reduced $S_N$, increases trade deficit
  – Decrease in T, decreases $S_N$, increases trade deficit

• Protectionist policies affect the level of trade, but not the trade balance

• Bilateral trade balance is irrelevant in a multilateral world
Case Study

• Voluntary Export Restraints (VER)
• Limited Japanese car exports 1981-1994
  – 1.68 million (1981-83)
  – 1.85 million (1984)
  – 2.3 million (1985-1994)
• Japanese market share fell
  – 22.6% in 1982
  – 18.3% in 1984
Voluntary Export Restraints

• U.S. auto industry employment rose
  – 699,000 in 1982
  – 876,000 in 1985

• Detroit profits rose
  – Lost $4 billion in 1980
  – Made $9 billion in 1984-85
  – $13 billion turn around
    • $5 billion due to stronger economy
    • $8 billion due to VERs
Sounds good, but no free lunch

• Shortage of Japanese cars
  – Japanese car prices rise $2,500
    • Americans paid $5 billion more for Japanese cars
  – American car prices rise $1,000
    • Americans paid $8 billion more for American cars

• American consumers paid $13 billion more to boost Detroit profits by $8 billion
Did we save any jobs?

• We saved thousands of jobs in Detroit
  – But it cost us $160,000 per job per year

• But did we save any jobs in the U.S.?
  – Protection in one industry backfires on others
    • Protection of steel, textiles, and ball bearings raise costs for the auto industry and makes them less competitive
  – Other countries are likely to retaliate
    • When US restricted textile imports from China, they restricted chemical and farm imports from the U.S.
  – Protection causes the exchange rate to appreciate
    • Hurts our exports in unprotected industries
Economists support free trade

- For countries
- For states
- For cities
- For individuals
Free Trade

• GDP should grow in all countries
• Smaller countries should benefit more
• Sectors with comparative advantage will grow
• Sectors with comparative disadvantage will decline
• Gains should exceed the losses
• Use net gains to support labor/capital shifting from declining sectors to expanding sectors
• NOTE: Free Trade ≠ Free Trade Agreement
Arguments for Restricting Trade

• National security
  – Industry is vital for national security

• Infant industry
  – New industries need temporary protection to get started

• Unfair competition
  – Other governments may subsidize their industry

• Bargaining chip
  – Threat of trade restriction can help remove other trade restrictions
Why does protectionism succeed?

• Benefits of protectionism are concentrated
  – VER benefits went to domestic auto producers and unionized auto workers

• Costs of protectionism are widely disbursed
  – VER costs were borne by US consumers and foreign auto producers and workers

• So advocates of protectionism have a greater incentive to organize and lobby Congress
Japanese Trade

- The structure of Japanese trade looks fine from the theory of comparative advantage and Heckscher-Ohlin looking at net flows
  - Net export surplus in manufactures
  - Net export deficit in fuels
- What about gross flows?
  - Gross exports and gross imports
  - There is more *intra-industry* trade in other countries
  - US and Europe import and export the same types of products
  - Differentiated products by brand name and design
  - Lexus, BMW, Jaguar, Lincoln Continental
Intra-Industry Trade

• Measure of intra-industry trade

\[ m = \frac{\sum_{i=1}^{n} [(EX_i + IM_i) - |EX_i - IM_i|]}{\sum_{i=1}^{n} (EX_i + IM_i)} \]

• If you only export or import good \( i \)

\[ (EX_i + IM_i) - |EX_i - IM_i| = 0 \]

• If \( EX_i = IM_i \) for all \( i \), \( m = 1 \)

• \( 0 < m < 1 \)
Intra-Industry Trade

• Measure of intra-industry trade
  – Australia  0.22
  – Japan  0.25
  – US  0.60
  – Germany  0.66

• Imported manufactures
  – Japan  5.8%
  – US  9.3%
Intra-Industry Trade

• Australia and Japan have unusually low imports of manufactures

• Possible conclusions, explanations
  – Japanese markets are closed
  – Distance from other markets and transportation costs may determine extent of intra-industry trade
  – Consumer preferences
    • Lager (Kirin), Malt (Suntory), Dry (Asahi), Draft (Sapporo)
  – Unique factor endowments – capital, education, labor, oil, coal, and arable land
Lost Quarter Century

• Cyclical
  – Bubble economy created overcapacity
• Non-Performing Loans and Zombie Banks
• Obsolete Economic System
  – Lifetime employment, seniority wages, keiretsu
• Changes in the Economy
  – Aging population, government debt, service economy
• End of globalization
  – No more gains from trade
• End of productivity growth
• Lack of political leadership
## Shocks to Japanese Economy

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug-71</td>
<td>Nixon suspends gold convertibility of $</td>
</tr>
<tr>
<td>Feb-72</td>
<td>Nixon’s surprise visit to China → political uncertainty</td>
</tr>
<tr>
<td>Feb-73</td>
<td>Floating exchange rates</td>
</tr>
<tr>
<td>Oct-73</td>
<td>OPEC oil embargo (doubles oil prices)</td>
</tr>
<tr>
<td>1979-80</td>
<td>Second OPEC oil shock</td>
</tr>
<tr>
<td>Sep-85</td>
<td>Plaza accord (depreciates $)</td>
</tr>
<tr>
<td>1987</td>
<td>Louvre Accord</td>
</tr>
<tr>
<td>1987</td>
<td>Asset Price Inflation</td>
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</tbody>
</table>
# Shocks to Japanese Economy

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-89</td>
<td>Stock Market Peak</td>
</tr>
<tr>
<td>1990-91</td>
<td>Asset Price Bubble Bursts</td>
</tr>
<tr>
<td>1995</td>
<td>Great Hanshin (Kobe) Earthquake</td>
</tr>
<tr>
<td>1997</td>
<td>Failure of Sanyo Securities, Hokkaido Takushoku Bank, Yamaichi Securities</td>
</tr>
<tr>
<td>1997</td>
<td>Asian Financial Crisis</td>
</tr>
<tr>
<td>1998</td>
<td>Failure of Long Term Credit Bank of Japan, Nippon Credit Bank</td>
</tr>
<tr>
<td>2008</td>
<td>Lehman Shock</td>
</tr>
<tr>
<td>2011</td>
<td>Tohoku Earthquake (Fukushima)</td>
</tr>
</tbody>
</table>
Japan 10 Year Government Bonds
Forecasting

- Forecasting is very difficult, particularly about the future.

- Demographic Pressures
  - Japan is both aging and shrinking
  - Pay as you go public pension system
  - Increasing health care spending
  - Growing nursing care for the elderly
Government Policy

• Government’s dire fiscal situation
  – Budget deficits over 5% of GDP
  – National debt over 200% of GDP
  – No room for expansionary fiscal policy

• Limitations to monetary policy
  – Interest rates at 0%
  – No room for expansionary monetary policy
Corporate Changes

• Corporate profitability is low
  – Little shareholder pressure on corporations
  – But some changes
    • Increasing foreign ownership
    • Increasing mergers and acquisitions
    • Increasing management buyouts

• Lack of entrepreneurship
  – Business failure entails enormous financial and social costs
  – Shortage of venture capital and angels
  – Entrepreneurial culture needs development
Labor Market Concerns

• Improve labor market for women
  – Still play a supporting role

• Improve labor market for elderly
  – Abolish mandatory retirement

• Improve labor market for non-regular workers
  – Increasing share of all workers (34.3% in 2010)

• Improve labor market for foreigners
  – China, Brazil, Philippines, Korea, Peru

• Decrease hours for men in large firms