Meiji Restoration 2

Japanese Economic History
Central Banks

- Control money supply with 3 tools
  - Reserve requirement
  - Discount rate
  - Open market operations (buy and sell government bonds)

- Control of money supply is monetary policy
## Bank of Japan Balance Sheet

Trillions ¥ 2017

<table>
<thead>
<tr>
<th>Assets</th>
<th></th>
<th>Liabilities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan Gov Bonds</td>
<td>416</td>
<td>Currency</td>
<td>111</td>
</tr>
<tr>
<td>Other (Foreign Exchange)</td>
<td>103</td>
<td>Bank Reserves</td>
<td>320</td>
</tr>
<tr>
<td>Total</td>
<td>$519</td>
<td>Other</td>
<td>88</td>
</tr>
</tbody>
</table>

Total $519
# Commercial Bank Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Reserves</td>
<td>Deposits</td>
</tr>
<tr>
<td></td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Loans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$3,000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>$3,000.00</td>
<td>$3,000.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>United States</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>JP Morgan Chase</td>
<td>Mitsubishi UFJ</td>
</tr>
<tr>
<td>Bank of America</td>
<td>Sumitomo Mitsui</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>Mizuho Financial</td>
</tr>
</tbody>
</table>
Developing Financial Institutions

1. Currency Reform
2. Fiscal Policy
3. Banking System
Tokugawa Currency

The monetary system established by the Tokugawa Shogunate government consisted of three different coins of gold, silver and copper.
Currency Reform

• Tokugawa period: a variety of currency and coins in circulation
  – 1,600 different kinds of currency issued by the Shogun and daimyo

• Two Meiji Goals (create single national currency & make it convertible to gold)

• 1871 – created single national currency

• Making paper currency convertible to gold takes more time
Currency Reform

- Meiji government ran printing press for money (before acquiring nationwide taxing power)
- Nonconvertible paper notes outstanding increase from ¥88.3 million in 1873 to ¥106.9 million in 1876
- Rising need for currency (currency replaces rice as a medium of exchange) prevented significant inflation
- MV=PQ
Monetary Equation of Exchange

\[ MV = PY \]

- **M** = the amount of money in circulation (money supply)
- **V** = how many times a year a yen ¥ is spent on final goods and services
- **P** = price level (consumer price index)
- **Y** = quantity of real goods and services (real GDP)
- **PY** = nominal GDP
MV = PY

- The velocity of money V can only change so much
- Real GDP Y can only change so much
- So in the long run, the growth rate of P (inflation) will be roughly equal to the growth rate of M.
- Only way to get a hyperinflation is to increase money supply dramatically
Paper money immediately after the Meiji Restoration
Fiscal Policy

• 1871 Meiji government gets hold of taxing power
• Simplifies taxes
  – Cuts number and types of taxes from 1600 to 74
• Put major tax on land on a money basis (not rice basis)
• Tax value of land (not harvest) to stabilize revenue
• Land valued so 3% tax would yield same revenue as before
• 1877-1880, land tax is 74% of government revenue
Banking System

• British (Belgium) model – single central bank which issues currency
• US model – several ‘national banks’ authorized to issue currency
• Bank Act of 1872 (JP adopts US model)
• Bank of Japan Act of 1882 (JP adopts Belgian model)
Banking System (1872)

- Any institution meeting requirements could issue notes
- Raise capital (40% specie, 60% government nonconvertible notes)
- Turn nonconvertible notes into government for government bonds
- Banks can issue notes against the government bonds
Bond

- An instrument of indebtedness of the bond issuer to the bond holder
- Corporate bonds and government bonds
- The issuer pays the bond holder interest and/or the principal at a later date (maturity date)
- Bonds can usually be sold to another party in the secondary market
Japanese and US government bonds
Banking System

• The goal was to recall nonconvertible notes and establish a convertible currency
• The scheme did not work as planned
• Banks saw their specie disappear
• Only 4 banks founded under the 1872 act survived
Banking System

• In 1876 the Meiji government amends the Banking Act with 2 goals
  – Create more banks
  – End the drain on government resources from the feudal pension payments

• Capitalize pension obligations with ¥172.9 million bond issue (bonds divided among pensioners in place of future annual payments)

• Allow recipients to use these bonds as banking capital against which notes could be issued (at this time nonconvertible notes)
Banking System

- Did it work?
- 153 new banks sprang up
- but it fueled a samurai rebellion
Satsuma Rebellion of 1877

- 1868-1877 – Over 200 local peasant uprisings, far more than during Tokugawa period
- 1868-1877 – three samurai revolts
- Satsuma rebellion was 4th samurai revolt, and the most serious
- Takamori Saigo’s Rebellion
Satsuma Rebellion of 1877

• Reasons
  – Ban on wearing swords
  – Commutation of samurai pensions into bonds
  – Dissension over cautious foreign policy in face of provocations from Taiwan and Korea

• Rebellion put down decisively in months
  – New army of peasant conscripts could outfight old warrior class
  – But it was an expensive effort
    • Government issued ¥27 million in added paper money
    • Government borrowed ¥15 million from a bank
Takamori Saigo
1828-1877

Japanese soldier and statesman noted for his obstinate conservatism. He was an early opponent of the Tokugawa shogunate. He was exiled (1859-64) but returned to train Satsuma warriors. In 1867 his troops supported the emperor in the Meiji Restoration. In the new government he was an imperial adviser, and in 1873 he advocated war with Korea and opposed the Westernization of Japan. When his advice was rejected, he and a group of dissidents retired from the government. He spent four years training a military force, and in 1877 he led the Satsuma revolt; his samurai followers were defeated by imperial troops, drawn from the peasantry and equipped with modern arms. Saigo committed suicide. He later became a symbol of devotion to principle.
Saigo Takamori at Battle of Shiroyama
Saigo during Satsuma Rebellion
It's 1876. Captain Nathan Algren (Tom Cruise) has been sent to Japan in order to help the Imperial Japanese Army become more 'modern' and less 'traditional' and ultimately prepare them to fight the legendary Samurai. Events occur that cause Tom Cruise to be a captive of the deadly but extremely polite Katsumoto (Ken Watanabe) who is the leader of the Japanese Samurai. At this point, the viewer begins to learn why the Samurai are fighting to preserve their way of life against Western influences and Cruise's character becomes emotionally bound to them and he integrates himself into their society after working hard to earn their trust.
Domestic Inflation 1877-1881

- State issued too much paper money to put down the revolts
  - Government printed ¥27 million and borrowed ¥15 million
  - Number of government bank notes increased 55% between 1876 and 1878
- Inflation was 52% from 1878-1881
- Price of rice doubled from 1877 to 1880
- By 1881 inflation was a serious problem
Inflation: winners and losers

• Farmers benefited
  – Burden of debt and taxes in paper money remain constant, but money receipts from sales of rice and silk rise
  – Farmers bought new clothes and ornaments, and built new houses

• Landlords benefited enormously
  – Rents paid in rice, taxes paid in depreciating currency
Inflation: winners and losers

- Government revenues were falling
  - Land tax generated 70% of all revenues
  - Land value was not reassessed and inflation cut the value of the tax
  - Land tax rate was cut from 3% to 2.5% in 1877
  - But samurai bond obligations (major expenditure) diminished

- Samurai lost out big time
The first western-style coins stamped in Yen units and the 1 yen silver coin used for trading following the New Currency Act promulgated by the Meiji government in Meiji 4 (1871).
Gold Standard

• 19\textsuperscript{th} century into the 20\textsuperscript{th} century
  – $1 = 1/20 \text{ oz gold}
  – £1 = ¼ \text{ oz gold}

• Nation defines currency in terms of gold

• Convertibility of currency for gold

• Link between money and holdings of gold

• You have no independent monetary policy here
Hume Specie Flow Mechanism
Balance of payments adjustment under the gold standard

- Disequilibrium in the BOP leads to inflow or outflow of gold
- Since money supply is tied to gold, the money supply contract or expands
- Consequently the economy will expand or contract
- BOP will adjust due to income effects and relative price effects

David Hume, 1711-1776
Balance of Trade and Payments

• Inflation exacerbated near chronic trade deficits
• Domestic prices rise, so harder to export and cheaper to import
• 1868-1880 – cumulative deficit of ¥77 million (10% of GDP)
• Can’t raise tariffs beyond 5% due to “unequal treaties”
Balance of Trade and Payments

Hard to export more. Main exports are silk and tea

- Completion of US transcontinental railroad helps expand the silk market
- But by 1868 European silkworm production starts rising
- Price of Japanese silk falls as a result by 45%
Balance of Trade and Payments

Pay for imports with specie or borrow from abroad

– Japan had fair sized stock of gold and silver from Tokugawa times, but rapidly draining away
  • 1872-1881: ¥71 million drain
  • By 1884, precious metals exhausted

– Japan borrowed from abroad to help finance railroads and pension plan, but were weary of more ‘financial imperialism’
Financial Crisis 1880-1881

- Large trade deficits → balance of payments crisis
- Gold and silver stock disappearing
- Value of yen falling ($1 → 90¢)
- Only 20% of currency is made of specie or convertible notes
- National debt ¥245 million (3X annual government revenue, 31% of GNP)
Two Options

1. The government can borrow from abroad
2. The government can deflate the economy

Emperor decides not to borrow from abroad
## Comparison

<table>
<thead>
<tr>
<th>Year</th>
<th>United States</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1880</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>50.26 million</td>
<td>36.65 million</td>
</tr>
<tr>
<td>GNP</td>
<td>$7.4 billion</td>
<td>$735 million</td>
</tr>
<tr>
<td>GNP/PC</td>
<td>$170</td>
<td>$20</td>
</tr>
</tbody>
</table>
US Experience

- US had similar problems in 1866 and 1875
- Government issued nonconvertible “greenbacks” to finance civil war → inflation
- Needed to cut volume of “greenbacks” and make remainder convertible
Matsukata Masayoshi

- Born in Satsuma 1835
- Represented Japan at Paris International Exposition 1878
  - Studied how France paid off reparations from Franco-Prussian war
  - Met Leon Say (economist)
    - Received private tutorials
  - Economic hard-liner
    - Believed in tight money and balanced budgets
- Becomes Finance Minister 1881
- Eventually becomes Prime Minister
- Paul Volcker (1979) is Matsukata of our time
Matsukata Masayoshi

• Minister of Finance in October 1881
• Goals
  – Cut volume of paper money notes
  – Put remaining paper money notes on a convertible (specie backed) basis
  – Eliminate government budget deficit
  – Establish central bank and specialized financial institutions
  – Stabilize economy
Matsukata Policies

1. Fiscal Policy
2. Sale of Assets
3. Banking Reform
4. Promotion of Exports
5. Matsukata Deflation
Fiscal Policy

- Need to run budget surplus to buy up nonconvertible notes issued by the government before 1880
- Politically impossible to raise land taxes
- Can’t raise tariffs due to “unequal treaties”
- So raised excise taxes on sake (250%), tobacco (750%) and added new indirect taxes
Sale of Assets

• Sold off state-owned industries (started to help Japan modernize)
• Sold at a fraction of their cost
• Marxist view – buy off a cadre of business leaders to support government
• Alternative view – very small market for large plants operating in the red, few people had money and courage to buy
Banking Reform

Switch from the US model to the British (Belgian) model

• Government controlled central bank with sole right to issue notes

• Existing “national” banks lost right to issue notes and required to set up a sinking fund to retire notes they had already issued
Bank of Japan

- Bank of Japan is established in 1882
- Issues convertible notes (except in emergencies)
- Serves as the government’s fiscal agent and financier, controls money supply, lender of last resort to banking system
A Nishiki e (woodcut print) depicting the Bank of Japan head office on its opening day in Meiji 29 (1896).
Strategic “specialized banks”

- Commercial banks finance needs of trade and industry
- Savings banks collect savings from low income groups
- Yokohama Specie Bank for financing foreign trade
Promotion of Exports

- Main exports are silk products, tea, straw mats
- Needed to stop loss of specie to make yen convertible
- Reducing inflation would reduce trade deficit
Export quality

• Need to expand exports by improving quality
• Problem with numerous small workshops using irregular family labor far from the market
• Need to improve and standardize quality of production
Trade Associations

- After 1884, organization of self-policing guilds composed of producers and merchants
- Given legal status and tax breaks
- Maintain export quality in tea, silk, and straw mats
- Engage in joint investigation and services like inspection
Matsukata Deflation

1. Money supply contracted

<table>
<thead>
<tr>
<th>Years</th>
<th>Money Supply</th>
<th>Convertibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>¥192.8 million</td>
<td>19.1% convertible</td>
</tr>
<tr>
<td>1886</td>
<td>¥151.2 million</td>
<td>41.1% convertible</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years</th>
<th>Ratio of Money Supply to National Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1875-1880</td>
<td>35</td>
</tr>
<tr>
<td>1880-1885</td>
<td>26</td>
</tr>
<tr>
<td>1885-1890</td>
<td>23</td>
</tr>
</tbody>
</table>
Matsukata Deflation

2. Prices fell

<table>
<thead>
<tr>
<th>Year</th>
<th>WPI</th>
<th>Rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1881</td>
<td>164</td>
<td>¥10.59/koku</td>
</tr>
<tr>
<td>1886</td>
<td>132</td>
<td>¥5.99/koku</td>
</tr>
</tbody>
</table>

3. Trade deficit went away
Matsukata Deflation

• By 1889, complete redemption of government issued nonconvertible notes
• By 1904, complete redemption of notes issued by national banks
• Since prices fell, many businesses went bankrupt
  – Number of joint stock companies fell from 3336 in 1882 to 1279 in 1885
• Massive dislocations
• Many farmers had to sell their land
• Percent of land tilled by tenants increased from 35.9% in 1883 to 39.3% in 1887
Government Notes

National Bank Notes
Matsukata Deflation

• But there was no rebellion
  – Potential anti-government forces were weak
  – Economy was free, but polity were not
  – Military and police power of state increased each year
  – Meiji leaders firmly in control after Satsuma rebellion

• As prices fall, the purchasing power of government revenue increases, greater resources to carry through programs
Matsukata Deflation

Only disappointment…

Foreign exchange value of yen continued to fall. Yen is backed by silver and gold. Value of silver is falling. Most major nations are on gold standard.

<table>
<thead>
<tr>
<th>Year</th>
<th>Ratio of Silver to Gold</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1858</td>
<td>10 silver = 1 gold</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>15 silver = 1 gold</td>
<td>World</td>
</tr>
<tr>
<td>2017</td>
<td>71 silver = 1 gold</td>
<td>World</td>
</tr>
</tbody>
</table>
Meiji Reforms

• Removal of feudal restrictions and unification of Japan under a strong central government
• Freedom of movement
• Abolition of clan tariff barriers and tolls
• Free transfer of property rights in land
• Unification of monetary and banking systems
• Steady improvement in agricultural methods
• Better transportation
## Meiji Borrowing

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>ORGANIZATION</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>Navy</td>
<td>1869</td>
</tr>
<tr>
<td></td>
<td>Telegraph System</td>
<td>1869</td>
</tr>
<tr>
<td></td>
<td>Postal System</td>
<td>1872</td>
</tr>
<tr>
<td></td>
<td>Postal Savings System</td>
<td>1875</td>
</tr>
<tr>
<td></td>
<td>Commercial Banks</td>
<td>1882</td>
</tr>
<tr>
<td>France</td>
<td>Army</td>
<td>1869</td>
</tr>
<tr>
<td></td>
<td>Primary School System</td>
<td>1872</td>
</tr>
<tr>
<td></td>
<td>Police</td>
<td>1874</td>
</tr>
<tr>
<td></td>
<td>Judicial System</td>
<td>1872</td>
</tr>
<tr>
<td></td>
<td>Industrial Banks</td>
<td>1896</td>
</tr>
<tr>
<td>United States</td>
<td>Primary School System</td>
<td>1879</td>
</tr>
<tr>
<td></td>
<td>National Bank System</td>
<td>1872</td>
</tr>
<tr>
<td>Germany</td>
<td>Army</td>
<td>1878</td>
</tr>
<tr>
<td>Belgium</td>
<td>Bank of Japan</td>
<td>1882</td>
</tr>
</tbody>
</table>
Meiji Accomplishments 1868-1885

• Transition period to modern economic growth
• Obstacles to growth were removed
• Foundations for growth laid down
• Meiji goal – “rich country, strong army”
Meiji Accomplishments

BUT…

- Quantitative changes were small
- Slow expansion of internal market and rise in productivity
- General improvements in agriculture, handicraft, and internal commerce
1879 vs 1885

- Slightly higher population
- Slightly higher standard of living
- Slightly more production of industrial goods
- Slightly more extensive trade with outside world
- Some substitution of domestic production for previous imports
- Growth of factory industry and foreign trade play small role
Gerschenkron & Rostow

  – More economically backward, more rapid rates of industrial growth

• W.W. Rostow, *Stages of Economic Growth*, 1960
  – Five basic stages of growth
  – Conditions for economic take-off
# Population

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300</td>
<td>10 million</td>
</tr>
<tr>
<td>1600</td>
<td>16-18 million</td>
</tr>
<tr>
<td>1750</td>
<td>30 million</td>
</tr>
<tr>
<td>1872</td>
<td>32-34 million</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Type of Growth</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600 - 1750</td>
<td>Sustained population growth</td>
<td>½% / year</td>
</tr>
<tr>
<td>1750 - 1850</td>
<td>Slow growth</td>
<td>0.03% / year</td>
</tr>
<tr>
<td>1870</td>
<td>More rapid growth</td>
<td>1% or 1.5% / year</td>
</tr>
</tbody>
</table>
Malthusian View

- Thomas Malthus (1766-1834)
- *Essays on the Principle of Population* (1798)
- Population of the world grows faster than food supply
- Geometrically vs arithmetically
- War, famine and disease serve as natural restrictions on population increase
Malthusian View

• After Tokugawa (1600) population and output grew
• Technical and institutional limits reached in early 1700s
• Population pushed against food supply
• Little new land is brought under cultivation
• Population stopped growing
Revisionist View

• Growing economy in 1700s
  – Growth in rural trade, industry, and transport
  – Crop yields increased with intensive fertilization and improved varieties

• Little evidence of high mortality and fertility (implied by Malthus)
  – Moderate or low mortality by pre-industrial standards
Revisionist View

• Fertility declined and was low

• Average number of children declines from 5.5 in 1751 to 1.8 in 1800
  – Not due to restrictions on marriage
    • Most women married
    • Age of marriage was below European standards
  – Age specific martial fertility was distinctly lower
  – Probably not due to lack of food
    • Physical handicap should show up in higher mortality rates
  – Don’t know about breast feeding practices which prolong sterile periods
  – Don’t know about sexual taboos restricting frequency of intercourse
  – Evidence of widespread abortion and infanticide
Revisionist View

- Advantages of infanticide
  - Sex selective
  - Less dangerous to mother
  - Technically easier than abortion
  - More efficient in controlling fertility due to longer period of sterility

- New View
  - Population growth after 1750 checked by voluntary limitations on marital fertility (not rise in deaths)
  - Families adjust their size and composition to requirements of farming
Male/Female Ratio

- Male/Female ratio declines 1732-1872
  - Men less valuable after first son because of primogeniture
  - Females become more valuable over time
- Increasing difficulty of partitioning land holdings between sons because lots are too small
  - Primogeniture means all property goes to the first son
- Growth of trade and industry increases value of women
  - Mostly female employment in tea processing, textiles, paper making, eating establishments, inns, and brothels
# Female Factory Workers

<table>
<thead>
<tr>
<th>Year</th>
<th>Japan</th>
<th>US</th>
<th>Textiles in Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1880</td>
<td></td>
<td>29%</td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td></td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>1909</td>
<td>62%</td>
<td></td>
<td>83%</td>
</tr>
<tr>
<td>1920</td>
<td>53%</td>
<td>24%</td>
<td>80%</td>
</tr>
<tr>
<td>1930</td>
<td>53%</td>
<td></td>
<td>81%</td>
</tr>
</tbody>
</table>
Silk Reeling Factory
Emigration

• After Meiji Restoration, Japan is opened up
• Some Japanese laborers go to the US where wages are higher, and eventually to Brazil
• More Japanese in Brazil today than in any other country outside of Japan (1.6 million)
Liberdade, São Paulo, Brasil
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1868</td>
<td>148 laborers emigrate to Hawaii to work on sugar plantations</td>
</tr>
<tr>
<td>1885</td>
<td>Emigration legalized</td>
</tr>
<tr>
<td>1885-94</td>
<td>28,000 Japanese emigrate to Hawaii</td>
</tr>
<tr>
<td>1900</td>
<td>More than 10,000 Japanese in California working in agriculture</td>
</tr>
<tr>
<td>1907-08</td>
<td>Gentlemen’s Agreement closes door to Japanese laborers</td>
</tr>
<tr>
<td>1908</td>
<td>Japanese laborers begin emigrating to Brazil to pick coffee beans</td>
</tr>
<tr>
<td>1921</td>
<td>Ladies agreement closes door on Japanese women coming to the US</td>
</tr>
</tbody>
</table>
Agriculture

barley

rice

millet
Agriculture

barley

rice

millet
Harrod-Domar Model

• Y = C + I (identity, ignore gov & trade)
• S = sY (savings rate s)
• C = (1-s)Y

• Y = νK (production function)

• I = ΔK = \frac{ΔY}{ν}

• Y = (1-s)Y + \frac{ΔY}{ν}

• sv = \frac{ΔY}{Y} = growth rate of GDP
Harrod-Domar Model

• Assume output (GDP) is proportional to the capital stock \( v = \frac{Y}{K} = constant \)

• Then growth rate of GDP depends on
  – Savings rate \( s \)
  – Productivity of capital (level of technology \( v \))

• Improve growth by
  – 1) increasing savings rate and thus investment
  – 2) improving technology
Vicious Cycle of Poverty

- Low savings → low investment → low capital → slow growth → low savings
- Can’t expect poor to save more
- Alternative options
  - 1) borrow from commercial banks
  - 2) foreign aid (loans, grants)
  - 3) IMF – short run balance of payments crisis
    World Bank – long run structural change, development projects
  - 4) foreign direct investment from multinational corporations with technology transfer
Dual Economy

- Initial phase of modern economic growth with modern sector and traditional sector
- Dual Economy Model
  - Modern Sector
  - Traditional Sector
- Describes Japan 1885-1900 / World War I
Dual Economy

• **Modern Sector**
  – Imported Western technology and organization
  – Employed methods of relatively high capital intensity
  – Large cotton spinning factories with machines and wage workers
  – Workers earn market wages

• **Traditional Sector**
  – Indigenous technology and organization
  – Low levels of capital intensity
  – Peasant cultivating small fields with hand tools
  – Workers earn subsistence wages
Dual Economy

- Without large capital imports, development of modern economy depends on accelerated growth of traditional economy.
- Provides needed surplus for development:
  - Public revenues, private investment funds, foreign exchange, and labor force.
- Since growth potential of traditional economy is limited, initial phase of modern economic growth eventually comes to an end.
- As dependence on traditional sector diminishes, economy must rely on other sources for growth.
Agricultural Units

Units of measure

1 bushel = 32 quarts
1 koku = 4.96 bushels
1 tan = 0.245 acres

So

1 koku / tan
5 bushels / ¼ acre

4 koku / acre
10 koku / cho

1 koku of rice feeds one person for one year
Traditional View

1874-77 Cadastral Survey 1.312 koku/tan
1888-92 1.438 koku/tan
1920 1.9 koku/tan

Yield growth rate 1%/year
Annual agricultural growth 1.8 - 2.4%
Agricultural output grows twice as fast as population
Traditional View

• Improvements and diffusion of indigenous technology
  – Individual farmers and organizations
  – Government sponsored research and development
    • Improved seed selection
    • Wider and more rational use of fertilizer

• Improved incentive structure
  – Heavy harvest tax in Tokugawa period
  – Land tax in Meiji period
    • Lump sum tax, keep extra output
Traditional View

• Shift effect with veteran farmers roaming country
  – Southwest more advanced than northeast
  – Transfer of know-how and technology

• Surplus
  – Gov revenue for social overhead and other investment purposes
  – Export of tea and silk provides foreign exchange to import modern producer durables and services of foreign experts
  – Increasing productivity releases labor in agriculture to work in expanding modern sectors
Nakamura View

Serious underreporting of yields until 1918-1922

1873-77  1.5 – 1.7 koku/tan
1888-92  1.709 koku/tan
1920  1.9 koku/tan

Yield growth rate  0.44%
Average annual agricultural growth  1%
Agricultural production grows as fast as population

Nakamura View

• Land tax of 1873
  – Tax is proportion of the assessed valuation of a plot of land
  – Farmers try to minimize their taxes
    • Conceal some land from tax authorities
    • “undermeasure” some land on tax rolls (report less than actual size)
    • Understate yield on registered land
Nakamura View

• Land tax of 1873
  – Much tax evasion because
    • Taxes were heavy
    • Enforcement was weak (rely on local personnel who are often in cahoots)
  – Over time
    • Gov improved enforcement, collection, and statistical procedures
    • Inflation lowered real tax burden dramatically
Kikuchiyo in Seven Samurai

What do you think of farmers? You think they're saints? Hah! They're foxy beasts! They say, "We've got no rice, we've no wheat. We've got nothing!" But they have! They have everything! Dig under the floors! Or search the barns! You'll find plenty! Beans, salt, rice, sake! Look in the valleys, they've got hidden warehouses! They pose as saints but are full of lies!
Nakamura View

• Reasons these estimates may be better
  – Meiji gov expected national rice yield to be 1.6 koku/tan
  – Traditional view implies Japanese calorie consumption of 1663 calories/person/day
  – Nakamura estimates suggest more than 2000 calories/person/day
    • Necessary to maintain Japanese in the state of vigorous health and energy
Nakamura View

• But perhaps not
  – Rice was a luxury good
    • Poor ate mostly barley and millet
  – Size of army conscripts rose 2cm from 1883-92 to 1913-22
  – Breakdown of Tokugawa barriers
    • Peasants not bound to land
    • Free cropping
    • Free communication
Source of Savings

• Where did savings come from? Nakamura view
• Meiji era begins with relatively high level of per capita income
• Meiji land reform and removal of feudal obligations and restraints
  – Sifted income from Tokugawa gov and ruling class to Meiji landowners and gov
  – From samurai to gov and rural landowner/merchants
  • Low MPS to high MPS
Source of Savings

• Samurai see severe loss in income
  – 200 koku before 1868
  – 80 koku with pensions
  – 30 koku with bonds

• Samurai did not save, always in financial difficulty

• Meiji land tax was less heavy than Tokugawa taxes
  – From 20-30% down to 9%
Source of Savings

• Landowner savings must have risen
  – Absence of durable consumer goods
  – Habit of frugality

• Rural landlord merchants played important role in providing savings and establishing banking institutions
Traditional vs Nakamura

• Both views shed light on reality
• Actual experience probably falls between these two perspectives