Beginning of Financial Repression

• Temporary Funds Adjustment Law divides firms into three categories
  – Firms in war related industries which received almost automatic approval of loans
  – Firms that sometimes got approval
  – Firms that would not usually get approval

• Total National Mobilization Law of 1938 gives government control over major aspects of the economy
  – Labor, materials, facilities, prices, credit…
  – IBJ became central agent in allocation of credit
Financial Repression Continues

• Corporate Profits Distribution and Fund Raising Order passed in 1939
  – Allowed the government to direct IBJ in making specific loans
  – Limited stock returns
    • Tied dividend payouts to par value of shares, not performance
    • Reduced dividends and made stocks more like bonds
    • Initial policy motivated by sense that stock dividends stole funds from firms
      • Japanese share prices fell by 30%
  – But what do you do when “unpatriotic capitalists” respond to your “good” policies by causing a market crash
More Repression

• Bank Funds Application Order of 1940
  – Government now controlled both short term and long-term lending
  – Government argued that the firm must “be set free from the control of stockholders who just pursue profits”
  – Firms were to execute government plans and not pursue profits

• Zaibatsu and business people were opposed, but could not block everything
  – Eventually control by Honsha over zaibatsu was reduced
  – Control of Sumitomo Honsha replaced by Sumitomo Wartime Council
  – Power of zaibatsu began to be reduced
December 1941

Pearl Harbor
Still More Financial Repression

• National Financial Control Association created 1942
  – Objective was to help banks make loans in consortia under the direction of the BOJ
  – Loan consortia reduced lending risk
  – Banks were told to perform monitoring function of stock holders
  – Certain banks were designated to monitor firms
  – Banks could not reject loans from munitions companies

• Most munitions companies were located in urban areas and so regional firms suffered capital shortages
  – Regional banks had trouble lending to non-essential firms and often had to merge with urban banks

• Government sought to have no more than one bank per prefecture
  – By 1946, 34 of 46 prefectures only had one bank
1943

• Almost completely removed shareholders from control of companies
  – Can no longer monitor managers or get them sufficient capital

• Designated Financial Institution System created
  – Role of the financial institution as a supplier of funds skyrocketed
  – Many companies established ties with banks during this period
Bond and Equity Issues As a Share of External Finance

(Ueda)
## Funding Sources of Japanese Firms

<table>
<thead>
<tr>
<th></th>
<th>Retained Earnings</th>
<th>Stocks</th>
<th>Bonds</th>
<th>Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931-35</td>
<td>67</td>
<td>40</td>
<td>1</td>
<td>-9</td>
</tr>
<tr>
<td>1941-45</td>
<td>29</td>
<td>20</td>
<td>9</td>
<td>42</td>
</tr>
<tr>
<td>1951-55</td>
<td>43</td>
<td>8</td>
<td>2</td>
<td>41</td>
</tr>
</tbody>
</table>

## Corporate Governance

Shareholder directors as % of all Directors

<table>
<thead>
<tr>
<th></th>
<th>1935</th>
<th>1942</th>
<th>1960</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.5</td>
<td>10.6</td>
<td>0.3</td>
</tr>
</tbody>
</table>
August 1945

Hiroshima, August 6, 1945

Nagasaki, August 9, 1945
Japanese Long Term Growth
• Demographic Transition
  • Turning Point
• Economic Growth
  • Convergence
• Growth Accounting
Natural increase = birth rate – death rate
Demographic Transition

• Classical version (3 stages)
  – Stage 1
    • High birth rates, high death rates
    • Stable or slowly growing population
    • Malthusian equilibrium
  – Stage 2
    • Modernization: higher incomes, better diets, public health measures, disease control
    • Increased life expectancy: under 40 years → over 60 years
    • Falling death rates, higher birth rates → sharp increase in population growth rates
Demographic Transition

• Classical version (cont)
  – Stage 3
    • Modernization (urbanization, industrialization)
    • Couples decrease birth rate
    • Low fertility, low mortality → slow population growth
Demographic Transition

1. Death rates decline as income rises after Meiji Restoration

2. Birth rates begin to gradually decline after 1900
   a. Children less economically valuable due to compulsory education
      - 4 yrs 1886 (required, but probably not available in rural areas)
      - 6 yrs 1907
      - 9 yrs 1947
   b. Increasing job opportunities for women
Demographic Transition

3. Rural urban shift has little impact on fertility
   - 1920  18% urban  CBR  39 vs 32
   - 1960  63% urban  CBR  17.5 vs 17.2

4. 1948 National Eugenics Law
   a. legalized abortions for health and economic reasons
      - 1949  9.1 abortions/100 births
      - 1957  71.8 abortions/100 births
   b. promoted use of condoms
The Turning Point

• The Labor Surplus Perspective
  – Traditional agrarian sector
    • Too much labor relative to land
    • MP of labor is low or even zero
    • Subsistence wage \( w > MP \) and constant
    • Surplus of workers
  – Modern industrial sector
    • Operates with neoclassical conditions of profit maximization
    • Wages = MP of labor
Turning Point

[Graph showing the relationship between MP and W in Agriculture and Industry]
Labor Surplus Perspective

• Industry hires workers at agricultural wage
• Hires as many workers as it needs without decline in agricultural output
• Since MP of labor is higher in industry, total output rises
• Turning Point – when labor surplus phase comes to an end
  – All surplus workers are absorbed by industry
  – MP = wage in agriculture
  – Then neoclassical model applies to the entire economy
Fei and Ranis

Turning point occurred after end of WWI

1. Real wages for industrial workers shows big spurt at that time

2. Capital/labor ratio in manufacturing (non-primary industries) decreased until 1916-1919, then began to rise (indicates excess capital until then)
Ohkawa and Minami

Turning point passed after WWII (1950)

1. rates of real wages growth are much higher
2. real wages rise steadily independent of the business cycle
3. wage differential (agriculture/industry) moved with business cycle until 1950, not afterwards
Neoclassical Perspective

• Jorgenson, Kelley and Williamson
• Never any surplus labor
• Wage = MP of labor in both sectors
Marxist Perspective

Industrial reserve army of the unemployed is continuously being expanded.
Reject possibility of passing the turning point.
Turning Point

- By 1960, labor shortage economy
  - Demand for unskilled workers > supply
  - Real wages for unskilled rose
  - Wage differential declined
Japanese Economic Growth

Japanese economic growth has been rapid

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meiji Restoration - 1930</td>
<td>Over 3% per year</td>
</tr>
<tr>
<td>1950-1973</td>
<td>10% per year</td>
</tr>
<tr>
<td>1973-1995</td>
<td>4% per year</td>
</tr>
<tr>
<td>1995-2017</td>
<td>1% per year</td>
</tr>
</tbody>
</table>

(Until the last two decades)
Figure 3.1
Japan's GNP. —— log of GNP (billion yen, 1980 prices); —— trend of prewar GNP extrapolated to postwar years; —— peak level of prewar GNP.
Japan Real GDP

1% growth rate
Why do we care about growth?

- Impacts on living standards
  - Demand for products
  - Salaries of employees
- Impacts on health of companies
  - Financials and non-financials
- Sustained per capita income growth is the single most important determinant of standard of living
“Winners” and “Losers”

• Japanese growth rates have tended to be high
  – Japan grew fast during postwar period, but also grew faster than most countries in the prewar period
  – Tokugawa legacy of peace and stability (though it missed scientific revolution)
  • Level of Japan by 1880 was above many LDCs in 1950s, but below that of most industrial countries
  • In 1870 Japanese labor productivity was \( \frac{1}{8} \)th of US level. In 1979 it was \( \frac{1}{2} \) US level
  • Grew faster until 1990’s
Why did Japan grow so fast?

- US wealth in 19th century depended heavily on natural resources
  - Japan could not compete with this
  - In late 19th and early 20th centuries mineral and oil discoveries in Middle East, Latin America, Australia reduced importance of US holdings
  - Absence of wars at home helped US, but Japan grew more
Why did Japan grow so fast?

• Implications for the role of Institutions
  – Growth seems independent of all but the most radical shifts in institutions
  – Permanent employment, bonuses, and quality control were not important in pre-war Japan, but Japan still grew faster
What Explains Growth Rates?

- Absorption of foreign technology
- Development of new technology
  - R&D, learning by doing, subcontracting system, culture, etc.
- Training of workers
- Investment
- Government policy
  - Industrial policy (including openness)
  - Fiscal policy
  - Monetary policy
- Random shocks
  - Wars
  - Natural resource price changes
  - Foreign recessions
Convergence Hypothesis

• Why do countries grow at different rates?
  – Followers learn from leaders and therefore grow faster
  – Followers grow less quickly as they catch up
  – Generates what is called the latecomer advantage
  – Alexander Gerschenkron “economic backwardness”
Robert Solow

Nobel Prize
1987
Solow Model

• Assume a country’s GDP depends on
  – Labor force
  – Capital stock
  – Level of technology

• Assume we have a constant returns to scale production function
  – If you double the inputs, you will double the outputs
Solow Model

• Assume we have competitive markets
  – Wage = marginal product of labor
  – Price of capital = marginal product of capital

• Assume that all markets clear
  – Supply equals demand
  – All resources are being fully utilized
Solow Model

• We begin with a production function
  \[ Y = F(K, L \cdot E) \]

• \( Y = \text{output} \)
• \( K = \text{capital} \)
• \( E = \text{efficiency of labor} \)
• \( L \cdot E = \text{ labor measured in efficiency units} \)
Solow Model

• If we assume constant returns to scale, we can write this as follows:
  \[ y = f(k) \]
  – Where \( y = \frac{Y}{L \cdot E} \) and \( k = \frac{K}{L \cdot E} \)

• Let us assume
  – Savings rate = \( s \)
  – Depreciation = \( \delta k \)
  – Population growth rate = \( n \)
  – Labor augmenting technical progress grows at rate \( g \) (growth rate of \( E \))
Solow Model

- Since investment = savings
  \[ i = sy = s \cdot f(k) \]
- Net investment is
  \[ \Delta k = i - \delta k - nk - gk \]
  \[ \Delta k = s \cdot f(k) - \delta k - nk - gk \]
Solow Model

• In a steady state

\[ \Delta k = 0 \]

• So

\[ sf(k) = (\delta + n + g)k \]

• Eventually the economy will converge on this point
Solow Model

**Figure 2.3** The Solow Diagram and the Production Function

Note: $g = 0$ here, and $d = \delta$
Solow Model
The Golden Rule

• The golden rule level of capital is where we maximize consumption per capita
• We have consumption per capita

\[ c = y - sy \]

\[ c = f(k) - sf(k) \]
Solow Model

• In the steady state
  \[ c = f(k) - (\delta + n + g)k \]

• To maximize \( c \)
  \[ \frac{\delta c}{\delta k} = f'(k) - (\delta + n + g) = 0 \]

• So our golden rule is
  \[ MP_k = \delta + n + g \]

• Or
  \[ MP_k - \delta = n + g \]
Solow Model

• Explains sustained increases in standards of living (output per worker)

\[ Y \text{ grows at rate } n + g \]

\[ \frac{Y}{L} \text{ grows at rate } g \]

\[ y = \frac{Y}{L \cdot E} \text{ constant} \]

\[ k = \frac{K}{L \cdot E} \text{ constant} \]
Solow Model

• GDP will grow at the rate of population growth plus the rate of technological change \((n+g)\)

• Per capita GDP will grow at the rate of technological change \((g)\)

• Level of per capita GDP will depend on the savings rate, population growth rate, depreciation rate, and rate of technological change
Convergence Hypothesis

• For countries with
  – Access to similar technologies
  – Similar population growth rates
  – Similar depreciation rates
  – Similar savings rate

• Per capita income should be the same in the long run regardless of initial capital stock

• During adjustment to steady state, poorer countries grow more quickly

• If countries are open, convergence is faster
Convergence

**Figure 3.4** Growth Rate versus Initial Per Capita GDP, 1885-1994
Do Government Policies Matter?

• Market orientation
  – Openness to trade (political and geographic factors)
  – Exchange rate convertibility
  – Absence of state trading / monopolies
  – Protection of private property rights
  – Low tax rates / small government
  – Absence of corruption
## Openness and Growth

<table>
<thead>
<tr>
<th>Country</th>
<th>Trade Policy</th>
<th>Average per capita Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Open</td>
<td>Closed</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1956-78</td>
<td>1979-85</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1952-61</td>
<td>1962-86</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1950-82</td>
<td>1983-91</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1950-61</td>
<td>1962-89</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1950-61</td>
<td>1962-88</td>
</tr>
<tr>
<td>Honduras</td>
<td>1950-61</td>
<td>1962-91</td>
</tr>
<tr>
<td>Jamaica</td>
<td>1962-73</td>
<td>1974-88</td>
</tr>
<tr>
<td>Kenya</td>
<td>1963-67</td>
<td>1968-92</td>
</tr>
<tr>
<td>Morocco</td>
<td>1956-64</td>
<td>1965-84</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1950-60</td>
<td>1961-91</td>
</tr>
<tr>
<td>Peru</td>
<td>1948-67</td>
<td>1968-91</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1950-56</td>
<td>1957-77</td>
</tr>
<tr>
<td>Syria</td>
<td>1951-65</td>
<td>1966-92</td>
</tr>
<tr>
<td>Turkey</td>
<td>1950-53</td>
<td>1954-89</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1950-59</td>
<td>1960-89</td>
</tr>
</tbody>
</table>
Economic Growth Accounting

- Growth in inputs
  - Capital
    - Plant and equipment
    - Residential structures
    - Inventories
  - Labor
    - Skill level
    - Education
    - Population
  - Land
    - Natural resources
- Improvements in technology
  - Research and development
  - Inventions and innovation
  - Learning by doing

- Output grows because you have more inputs and/or you use your inputs more wisely

- Output $= F(\text{capital, labor, land, raw materials, technology, etc.})$
- $Q=A \cdot F(K,L)$
Industrial Revolution

• Most growth before industrial revolution was “extensive growth”
  – Linear replication
  – Increasing scale of the economy

• Since industrial revolution, most growth is due to “intensive growth”
  – Technological change
  – Improvements in efficiency or productivity of economy through
    • Innovation
    • Economies of scale
Economic Growth Accounting

A. We begin by making some simplifying assumptions.
   1) Aggregate Production Function with constant returns to scale

   \[ Y_t = A_t \cdot F(K_t, L_t) \]

   where \( Y_t \) = GDP in year \( t \)
   \( A_t \) = level of technology in year \( t \)
   \( K_t \) = capital stock in year \( t \)
   \( L_t \) = labor force in year \( t \)

   2) Factors of production are priced competitively
      wage rate = \( w = MP_L \) = marginal product of labor
      profit rate = \( r = MP_K \) = marginal product of capital

   3) Full Employment
Growth Accounting

B. Take the derivative of the production function with respect to time.

\[
\frac{dY}{dt} = \frac{dA}{dt} F(K, L) + A \frac{\partial F}{\partial K} \frac{dK}{dt} + A \frac{\partial F}{\partial L} \frac{dL}{dt}
\]

By assumption 2 we know

\[
w = MP_L = A \frac{\partial F}{\partial L}
\]

and

\[
r = MP_K = A \frac{\partial F}{\partial K}
\]
Growth Accounting

So

\[
\frac{dY}{dt} = \frac{dA}{dt} F(K, L) + r \frac{dK}{dt} + w \frac{dL}{dt}
\]

Dividing by \( Y = A \cdot F(K, L) \),

\[
\frac{dY/dt}{Y} = \frac{dA/dt}{A} + \frac{rK}{Y} \frac{dK/dt}{K} + \frac{wL}{Y} \frac{dL/dt}{L}
\]

Denoting \( g_x \) as the growth rate of \( x \),

\[
g_y = g_A + \frac{rK}{Y} g_K + \frac{wL}{Y} g_L
\]
Growth Accounting

we have derived the following:

\[
\text{growth of output} = \left( \text{growth of technology} \right) + \left( \text{share of capital} \times \text{growth of capital} \right) + \left( \text{share of labor} \times \text{growth of labor} \right)
\]

Using the logic of the national production function, we can identify the factors that contribute to economic growth

\[
\text{GDP growth} = \text{contribution of new technology} + \text{contribution of new capital investment} + \text{contribution of growth in labor force}
\]
Growth Accounting

Japan had a higher (absolute) contribution to its growth from all three (labor, capital, and technical progress)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Labor</th>
<th>Capital</th>
<th>Tech</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Japan</strong></td>
<td>8.81%</td>
<td>1.85%</td>
<td>2.1%</td>
<td>4.86%</td>
</tr>
<tr>
<td>(1953-71)</td>
<td>(21%)</td>
<td>(23.8%)</td>
<td>(55.2%)</td>
<td></td>
</tr>
<tr>
<td><strong>US</strong></td>
<td>4.00%</td>
<td>1.3%</td>
<td>0.79%</td>
<td>1.91%</td>
</tr>
<tr>
<td>(1948-69)</td>
<td>(32.5%)</td>
<td>(19.8%)</td>
<td>(47.8%)</td>
<td></td>
</tr>
</tbody>
</table>

Labor is marginally more important

Capital is much more important

Technical progress explains most of Japanese growth

- technology transfers from Western countries
- scale economics from enlarged domestic and foreign markets
Modern Economic Growth

• Fundamental changes in structure of society
• Rising per capita incomes for all
• Shift from agriculture to manufacturing
• Shift from household production to factory production
• Increased urbanization
• Demographic transition
Modern Economic Growth

- Does history matter?
- Does politics matter?
- Does economics matter?
- Does culture matter?
History Matters

• Japan, China
  – Thousands of years of self governing experience
  – Think of themselves as a single unified people
  – Confucian ethic values education
  – High levels of urbanization and commerce (by pre-modern standards)
  – Thus they could compete with Americans and Europeans
History Matters

- Indonesia, Nigeria, Pakistan
  - Arbitrary creations of British and Dutch colonialism
  - Amalgamation of ethnically distinct tribes and regions
  - Little desire to maintain common border with independence
  - Little experience with commerce
  - Almost universal illiteracy
  - Under colonial rule, large scale commerce and foreign trade was run by Europeans
History Matters

• Latin American experience
  – Indigenous populations mostly decimated
    • Except Peru and Bolivia
  – Independence was of colonizers from mother country of Spain and Portugal
Politics Matters

Two Prerequisites for economic growth

1. Government must be stable, and maintain a stable environment for modern economic growth
   - Coup attempts, civil wars, invasions, etc make development difficult
   - Has hurt Bolivia, Pakistan, Ghana, Vietnam, and China
2. Government must seek and promote development
   
a. colonial governments were stable, but did not support development

b. some governments are unable or unwilling to pursue development because diverse political interests make it impossible
Politics Matters

- Peru (1968) and Ghana (1971) appropriately devalued their currency.
  - This hurt the urban well-to-do, military and the civil service elite.
  - The government was overthrown.
- Governments are forced to overstaff public enterprises with politically powerful
Politics Matters

c. Some governments seek other goals (military or social)

- Sukarno (Indonesia, 1945-67) was devoted to military confrontation with Singapore and Malaysia, and international leadership of the Third World
- Cuba, China, Sri Lanka were focused on social goals like redistribution of income, elimination of class distinctions, and basic health needs
Economics Matters

At least 2 perspectives on the International Economic System

A. Imperialism of the industrial world and dependency of the developing world
   - industrial world seeks to secure resources and support declining rates of profit
   - local elites collude with foreign capitalists
   - need to sever ties with international capitalist system
Economics Matters

B. Need to sufficiently integrate with the international economic system
   - take advantage of gains from trade
   - specialize in areas of comparative advantage
   - take advantage of learning from the first world

Taiwan, South Korea, Singapore and Hong Kong have achieved rapid growth and falling income inequality by integrating more fully
Culture Matters

• Society must create a sufficient number of entrepreneurs
• Entrepreneurs take new technical discovery or method of management and makes practical use of them in factories and business
• Entrepreneurs are often minorities in the Third World
Culture Matters

• Entrepreneurs
  – Lebanese in West Africa
  – Indians, Pakistanis in East Africa
  – Chinese in South East Asia
  – Parsees in India

• Only way to achieve social status and power

• Comparative advantage coming from more commercially developed country

• Connections to homeland
Culture

• Culture is important
  – Policies which work in Japan may not work in the US, and visa versa
  – Need to design economic policies which are appropriate for the society

• Culture is not everything
  – In the long run, culture changes
  – In the short run, economic policies are much more important