Economic growth
in the open economy

The proximate causes

- ✓ Physical capital
- ✓ Population growth
  - ✓ fertility
  - ✓ mortality
- ✓ Human capital
  - ✓ Health
  - ✓ Education
- ✓ Productivity
  - ✓ Technology
  - ✓ Efficiency
- ➢ Economic openness

The plan

I) Types of economic openness

1. Trade in goods and services
   - comparative advantage
2. Factor flows
   - Population flows
   - Capital flows
3. Technology flows
- We will consider them in turn.
- But before, let us look at:
  1. How to measure economic openness
  2. A brief world history of economic openness

II) Measuring openness

Two measures to consider:

1. Quantities of goods and services that circulate between a country and the RoW.
2. Law of one price

Measuring openness
1. Quantities of goods and services that circulate

- Exports and imports as % of GDP of a country.
- Problem: A country can be potentially quite open while still having relatively little circulation of goods and services or capital with the RoW. For instance, small countries tend to trade more than large ones relative to GDP.
- Ratio of Exports/GDP in 2000:
  - USA: 11%
  - Mexico: 30%
  - Canada: 46%
  - Belgium: 84%
- Smaller economies need to specialize more. They are not necessarily more open.

Measuring openness
2. Law of one price

- If two countries are open to trade, the price of goods and services must be the same in each country (adjusted for transport costs).

- If two countries are perfectly open to factor flows, the factors will receive the same payments (wages and capital).

- Degree of openness can be measured as differences in factor payments or prices of tradable goods.

III) Globalization: Some historical facts

Trade in goods and services:

- The present wave is the second in recent history. (See graph on next slide.)
- 1st wave: mid 19th C. to WWI.
- 1914-1950: Reduction in global integration of economy.
- According to this measure, the world economy was no more integrated in 1950 than 1875.
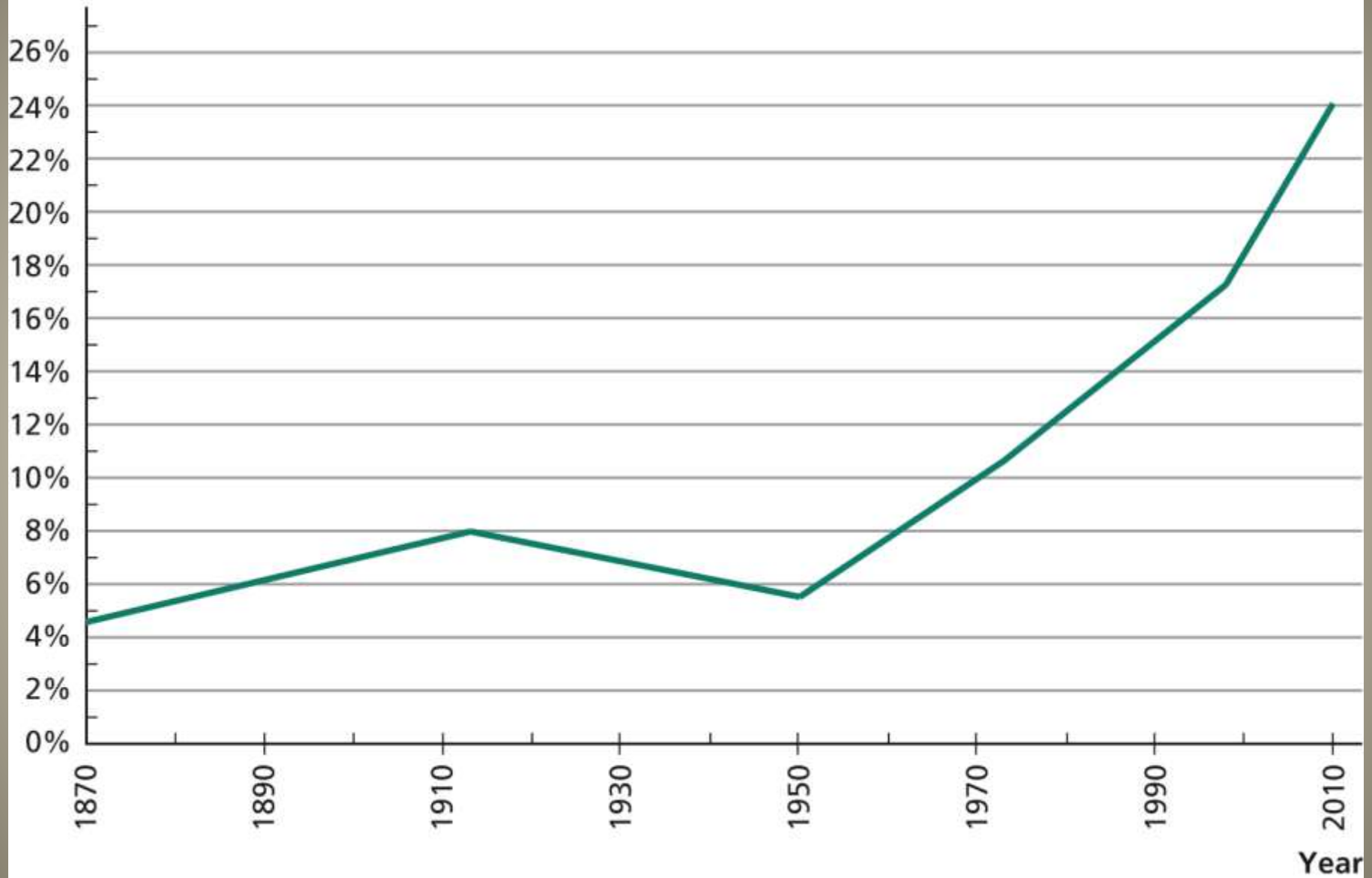
Physical Capital Flows

- Two large waves:
  - 2 decades before 1914.
  - 2 last decades

Physical capital flows:
Two decades before 1914

- The British supplied half of world investments between countries.
- 1870-1910: Foreigners financed 37% of investments in Canada.
- 1913: half of the capital in Argentina belongs to foreigners; 20% for Australia.
- Those flows have greatly diminished after WWI.

Physical capital flows: The last two decades

- 2010's world biggest exporter of capital:
  - China $305 billion
  - Japan $196 b
  - Germany $188 b
- USA is largest importer with $471 b.
- Since 1990, boom in investments into developing countries. *Annual net flows of private capital*:
  - 1997-2000: $92 b average per year
  - 2010: $659 b
- This inflow of private capital is more than compensated for by accumulation of foreign reserves by LDCs. (Net capital flow is *out* of LDCs.)

Population flows

- Peak in 1914 never matched thereafter.
- 1870-1925: 100 millions changed country (10% of 1870 world population)
  - 50 millions Europeans going to Americas and Australia.
  - Rest went from China and India to Asia, Americas and Africa.
- After WWI: End of colonies, increase in nationalism and changes in immigration policies led to lower immigrations. USA is an exception:
  - USA 1910: 14.7% of population is foreign-born
  - USA 2010: 12.4% of population is foreign-born

IV) Globalization: Some causes

1. ## Technological progress
    - Lower transport costs
    - Lower costs of communication

2. ## Trade policies
    - tariffs, quotas, etc

Lower transport costs

- Before 1800, only goods with high price-to-weight ratio could be traded:
  - Spices
  - Precious metals
- 19th century saw investments in:
  - Rail
  - Steamship
  - Suez canal (1869)
- World shipping capacity increased 29X between 1820 and 1913…

Lower transport costs

- Law of one price: Lower transport costs leads to smaller differences in prices:
  - Wheat:
    - 1870: London price = +58% Chicago price
    - 1913: London price = +16% Chicago price
  - Rice:
    - 1870: London price = +93% Rangoon price (Burma)
    - 1913: London price = +26% Rangoon price

Lower transport costs

- Average cost/ton freight:
  - 1920: 95 $1990
  - 1990: 29 $1990
- Moreover, value-per-ton of freight increased drastically:
  - Electronics
  - Software
  - Insurance
  - Movies
  - Specialized knowledge

Transmission of information

Communication is a prerequisite for trade and investment decisions

- Early 19th century: Message London-NY takes 3 weeks with sail ship
- 1860: steamship reduces trip to 10 days.
- 1866: transatlantic telegraph cable sends messages in two hours
- 1914: Messages take one minute
- 1927: UK-USA radio-transmitted telephone

Transmission of information

- Price of 3-minute call London-NY:
  - 1930: 300 $1996.
  - 1960: 50 $1996
  - 1996: less than 1 $1996
  - 8% decline per year.
- Allows now for the exchange of services through phone and internet.

Trade Policy

*Legal barriers often impede the trade
of goods and movements of factors.*

□ Tariffs: taxes on imports of goods and services

□ Quotas: limits on total quantities that can be imported.

□ Non-tariff barriers:

1. Voluntary export restraints
2. Anti-dumping tariffs:
   - Dumping: When a firm sells a good to another country below cost.
   - Practice not permitted by WTO.
   - Often abused for political gains.
3. Excessive regulation to protect local markets.
4. Bureaucratic creativity

Trade Policy

- Still today, non-tariff barriers can be significant.
- GATT (now WTO) have contributed to lower all such barriers for ICs:
  - Average of 40% at WWII.
  - Average of 6% in 2000.
- Average tariff rates in 2010
  - 2.8% in OECD
  - 8.2 in middle-income countries
  - 11% in poor countries
- In ICs, they remain particularly high in the agricultural sectors.

V) Openness and growth (evidence)

- A study has compared the degree of past openness of countries with their income per capita today.

- They grouped countries into four categories according to degree of openness:

Average GDP per capita in 2000 (2000 dollars)

Openness, 1965–2000
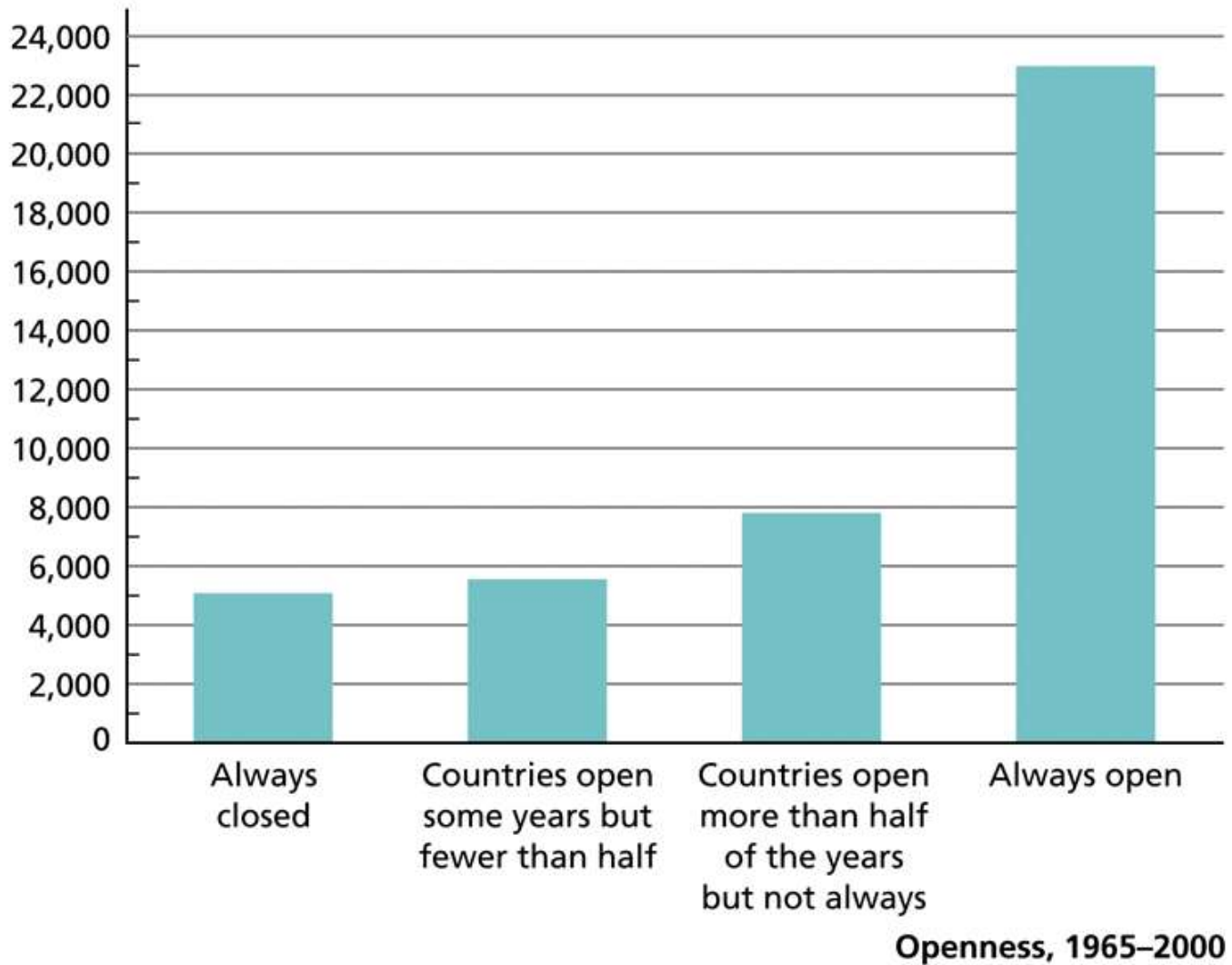
Sources: Sachs and Warner (1995), Wacziarg and Welch (2003).

Does openness make richer?

- Correlation does not imply causality.
- To address that, we look at:
  1. Growth in open versus closed economies
  2. How changes in openness affect growth
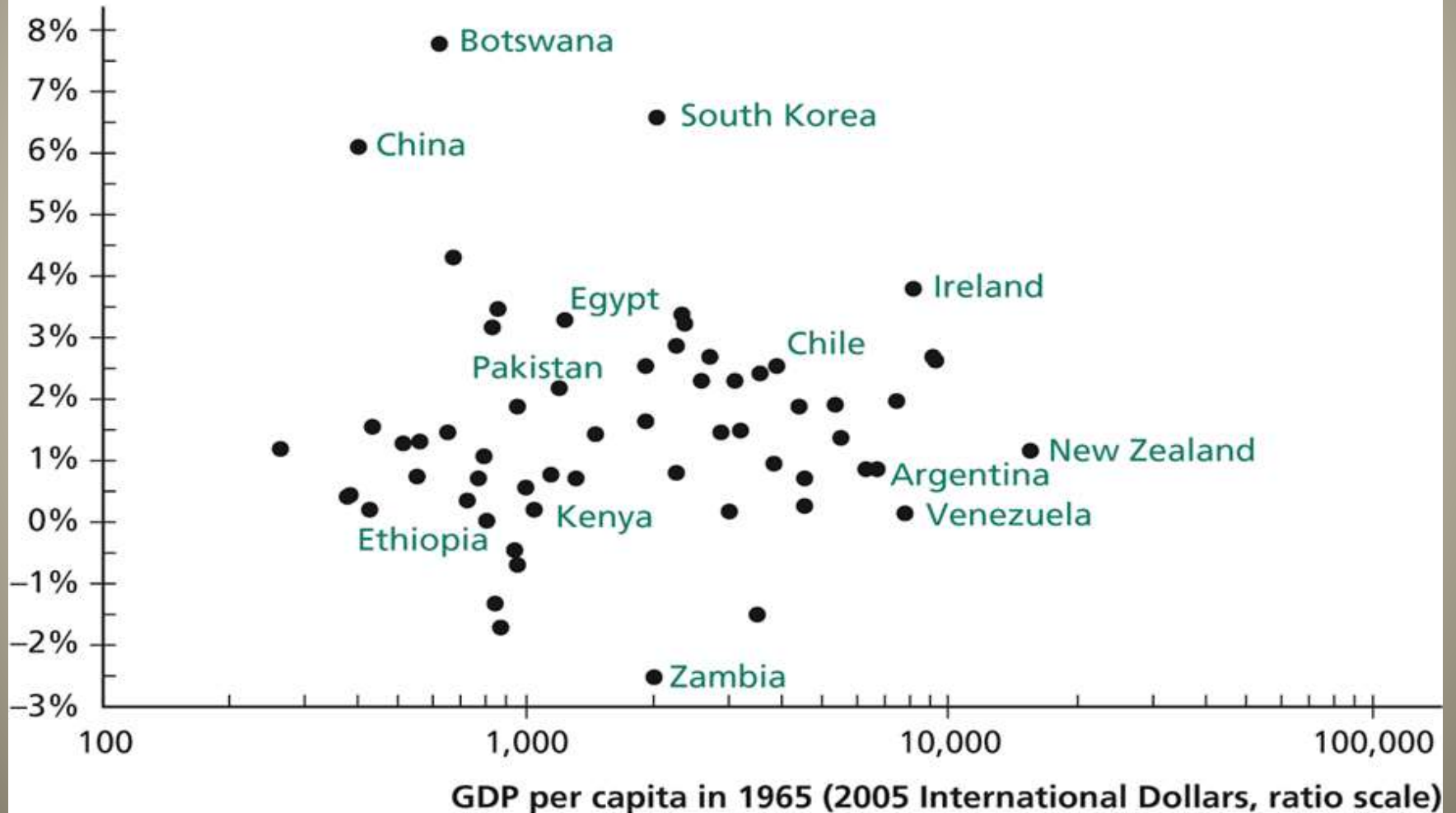 3. Effects of geographical barriers to trade

1. Growth in open versus closed economies

- Fig 11.3 presents countries considered closed for at least one year between 1965 and 1990.
- Fig. 11.4 shows countries considered open all the time.

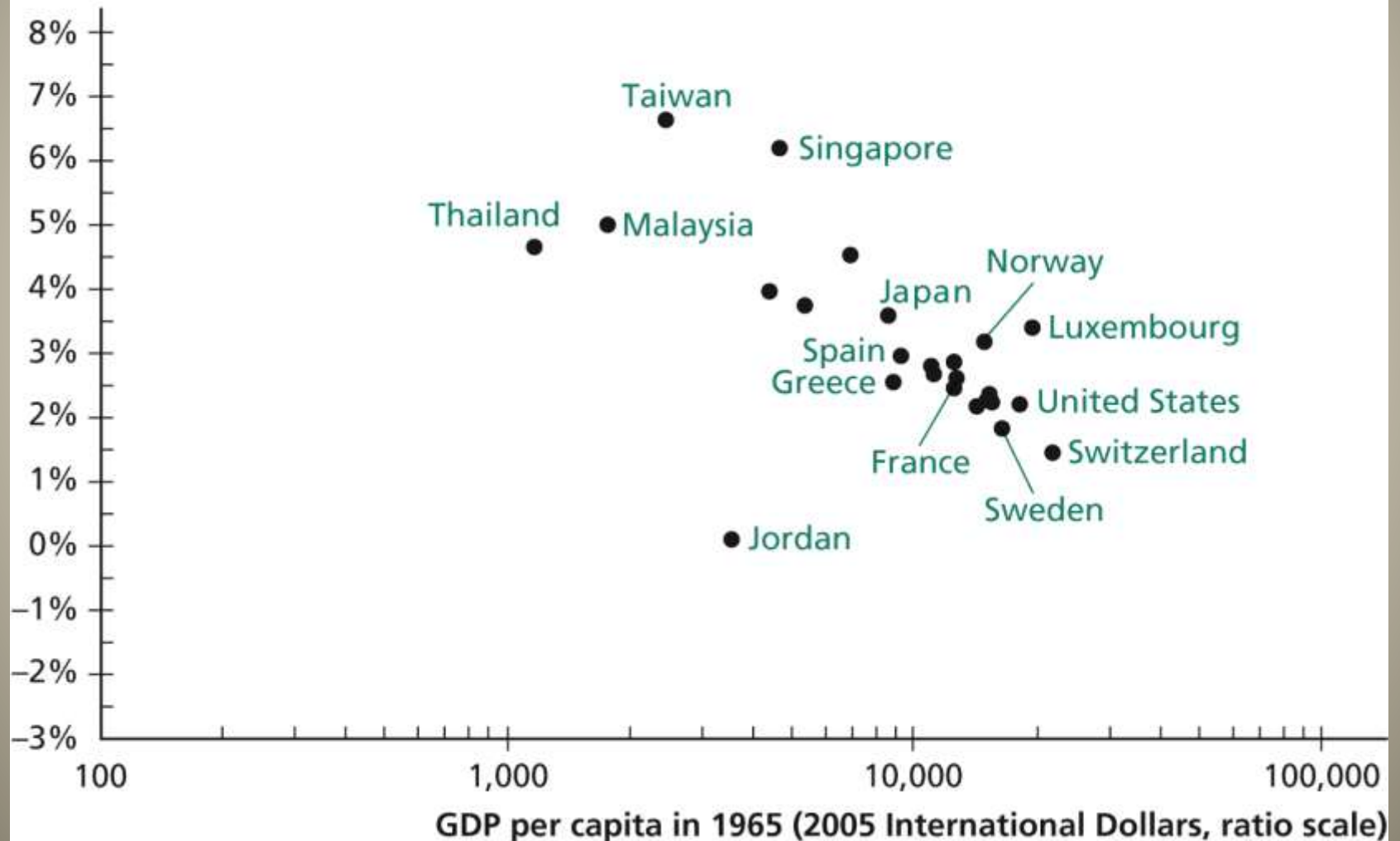# Growth in "closed" economies
Average 1.5% per year

Growth rate of GDP per capita, 1965–2000

Growth in open economies
Average 3.1% per year

Growth rate of GDP per capita, 1965–2000

GDP per capita in 1965 (2005 International Dollars, ratio scale)

Growth and openness

- Average growth rate for closed countries: 1.1%
- Average growth rate for open countries: 3.4%
- *For countries that were closed for some period, there does not seem to be any correlation between initial income and subsequent growth.*
- Convergence seems to take place only within open countries.
- This suggests that:
    1. Poor <u>and</u> open countries grow faster than rich countries. (Convergence)
    2. Poor <u>and</u> closed countries grow slower than rich countries.
- This is an important qualification to the Solow model…

2. Does openness affect growth?

- Japan 19th century:
  - The country opens to the world in 1858 after long period of economic isolation.
  - The value of trade is multiplied by 70 in 12 years.
  - Increase in per capita income is estimated to be 65% in 20 years!
  - Catch-up with RoW.

2. Does openness affect growth?

- South Korea:
  - Becomes more open in 1964-65.
  - Income doubles in 11 years.
- Vietnam and Uganda recently experienced similar high growth rates after opening up their economies to ROW.
- Many believe than depression of the 1930's was caused in good part by a wave of protectionism (higher tariffs) that swept the world, including the USA.

3. Geographical barriers to trade

1. ## Why use geography?

   - Geography is independent of politics.
   - With government-imposed trade barriers, it is difficult to say if less trade is due to trade barriers or to some other missing variable, such as less democracy.

2. ## 1st result: (Frankel and Romer 1999) Trade volume between two countries depends importantly on

   1. Distance between countries
   2. Direct access to sea
   3. Size of countries

3. ## 2nd result: How is income affected by geographical barriers to trade?

   - A 1% increase in trade/GDP ratio increases income level by 0.5 to 2%.

A remark:
Does openness really make countries richer?

- There are many, many more empirical studies trying to answer that question.
- There are instances of negative welfare effects of trade.
- Sometimes, it may be preferable to have gradual opening.
- But the real question is

    Can a country experience long-run growth in isolation from the RoW?

- I cannot think of any example.
- Openness is arguably a necessary condition for economic growth, though not sufficient.

VI) How can openness affect growth? (theory)

What are the main mechanisms through which openness can affect growth?

1. Capital flows
2. Productivity
3. Labor flows

1. Capital flows

Distinguish two types of foreign investments in physical capital:

- FDI: When a foreign firm builds or buys a facility in another country.

- Portfolio investment: When a foreign investor buys stocks or bonds.

- NB Difference is not clear-cut. Associated with the measure of control over voting and decisions within a firm.

- Trade and investment in the national accounts
  - (Take note: trade-investment-accounting.pdf)

FDI in the Solow model

- Assumptions:

    1. Law of one price: If capital is perfectly mobile, returns must be equalized between countries.

    2. Small country: The return in the RoW is taken as given.

    3. Ignore human capital.

$$y = Ak^\alpha$$

$$MPK = \alpha Ak^{\alpha-1} = r: \text{ competitive rental market}$$

$$r = r_W: \text{ law of one price}$$

$$\Rightarrow r_W = \alpha Ak^{\alpha-1}$$

$$k = \left(\frac{\alpha A}{r_W}\right)^{\frac{1}{1-\alpha}}$$

$$y = Ak^\alpha = A^{\frac{1}{1-\alpha}}\left(\frac{\alpha}{r_W}\right)^{\frac{\alpha}{1-\alpha}}$$

FDI in the Solow model

- With perfect capital mobility, capital per worker depends on r_W.
- It is disconnected from the domestic savings rate and population growth.
- Hence, output per capita does not depend on the savings rate!
- Does this imply that all countries will be equally rich?
  - With trade, one must make difference between output and income (or consumption).
  - The stock of capital also depends on the productivity parameter. Higher efficiency should lead to higher FDI.

FDI: Some implications

1. Countries with high savings rates:
   - They will be richer than those with low savings because they have a higher GNP. (GNP: Income from all factors that are owned by the residents of a country, including capital in foreign countries.)
   - Capital mobility increases their net income per capita because of the higher returns from abroad.
   - Worker salaries are lower with capital mobility.
2. Countries with low savings rates:
   - GDP is higher with mobile capital since it increases capital per worker.
   - Part of the higher output is returned to foreign owners.
   - Another part benefits domestic workers in the form of higher salaries because labor productivity increases.
3. Capital mobility increases income per capita in all countries but there may be important redistributive effects.

How truly mobile is world capital?

- Our predictions with the Solow model above rest importantly on an assumption of perfect mobility of capital.

- We would like to know up to what point capital is mobile across the world.

- Perfect mobility implies an absence of correlation between the savings rate of countries and their investment rates.

# How truly mobile is world capital?

- More generally, we measure the *savings retention coefficient*:

  What fraction of every dollar of additional saving ends up as additional domestic investment?

  - = 1 implies countries closed to capital flows.
  - = 0 implies perfect mobility.

- Measured coefficients for ICs:

  - 1960-1974: 0.89 (economies appear closed to capital flows)
  - 1990-1997: 0.60 (more open but still far from perfect mobility)

FIGURE 11.5
Saving and Investment Rates of Industrialized Countries, 1960–1974
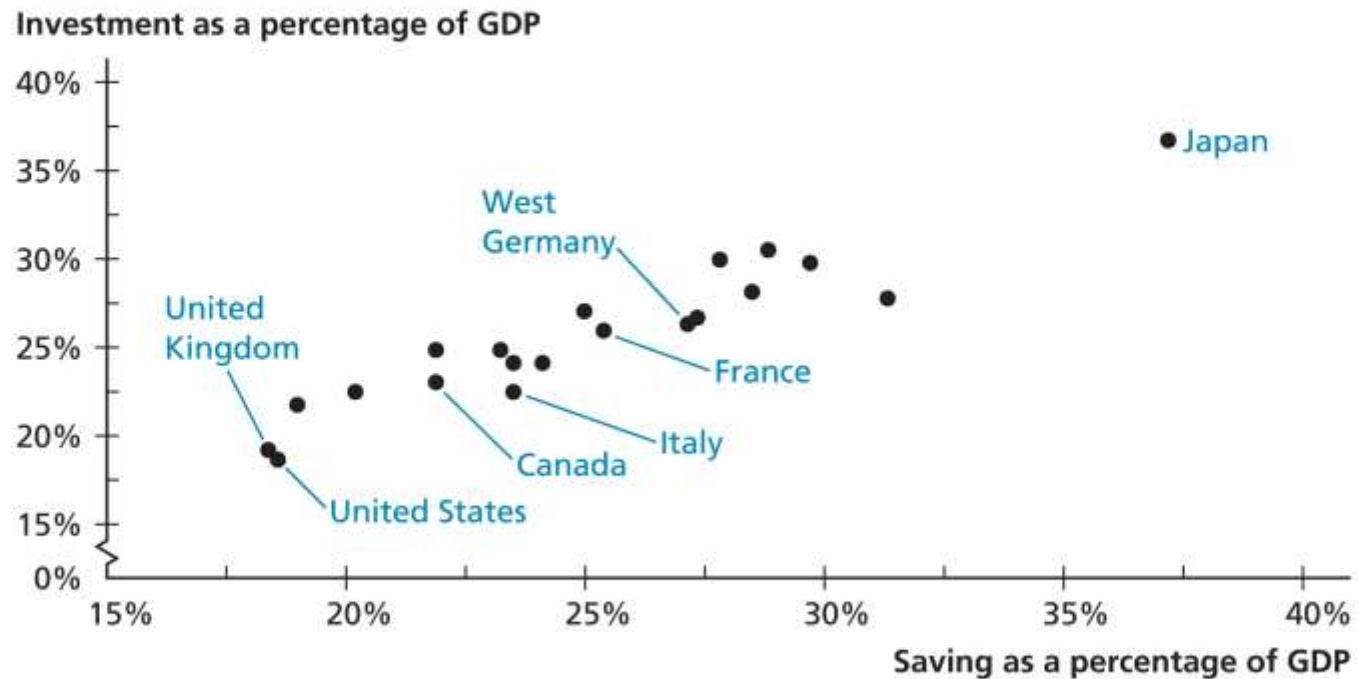
2. Openness and productivity

1. Trade in goods and services
2. Openness and technological progress
3. Openness and efficiency

A) Trade in goods and services

Allows for specialization in what countries are better at producing (comparative advantage). This results in higher productivity due to

a) natural endowments
b) factor endowments
c) learning-by-doing

B) Openness and technological progress

A country that is more open is likely to use better technology because:

1. Technology import is made easier with
   - FDI: foreign firms bring new technology
   - Some technology comes embodied in imported physical capital.
   - There can be transfers of new organizational forms.
   - NB A study has concluded that the majority of technological progress in any country comes form the RoW. In Canada, only 3% of TP comes from ideas produced in Canada…
2. Openness increases incentives to create new technology due larger profit opportunities.

C) Openness and efficiency

1. The presence of foreign firms can reduce the monopoly power of local firms.

2. Foreign markets allows for more scale economies.

3. The threat of foreign competition forces firms to adapt or die:

   - See case of US auto manufacturers in next figure.

   - A study has shown that after NAFTA, among Canadian firms, productivity increased 3X faster in previously protected manufacturers than previously unprotected ones.

FIGURE 11.6
Quality of U.S.- and Japanese-Made Automobiles

Defects per 100 automobiles

U.S.-made automobiles

Japanese-made automobiles

Year
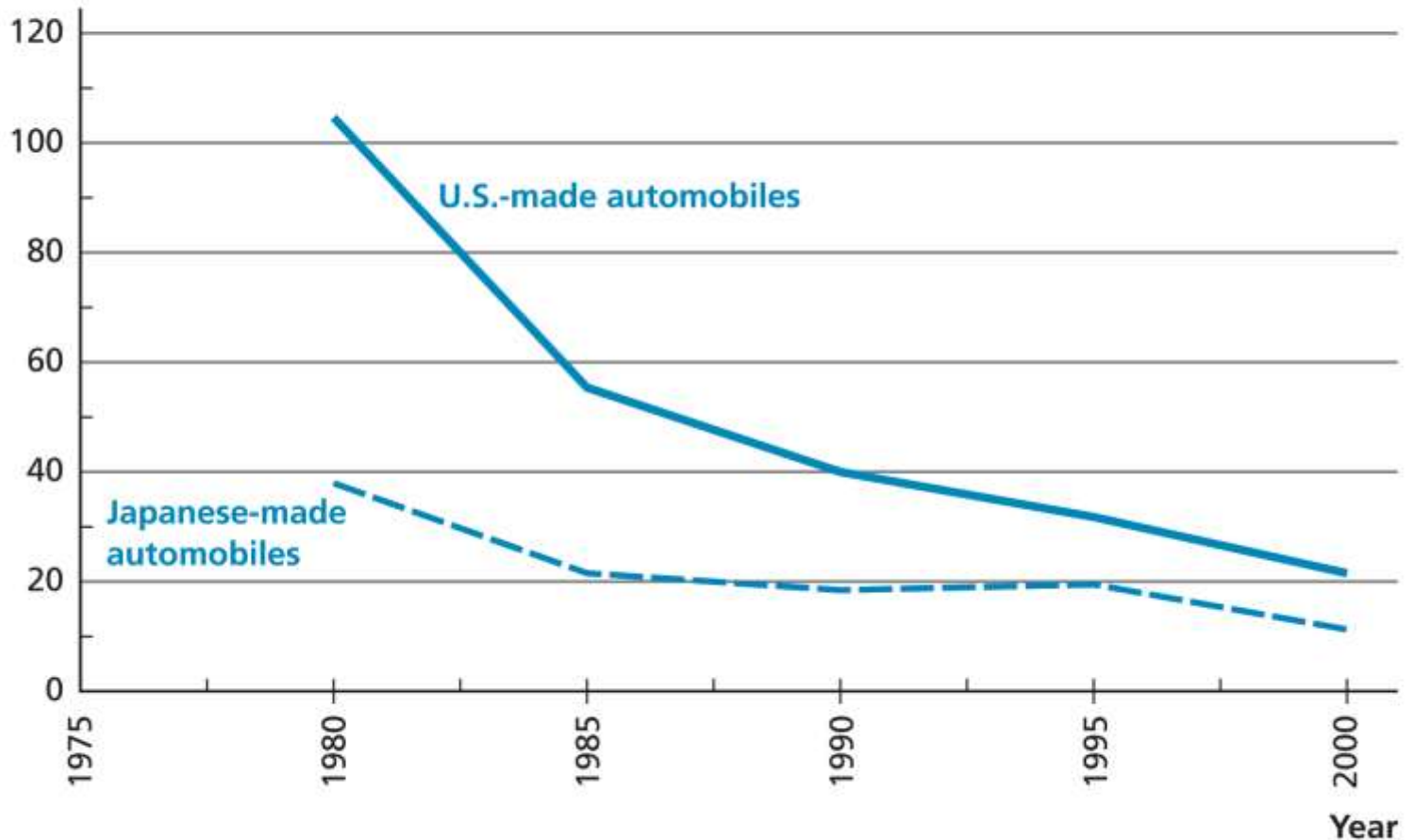
Source: "Are Today's Cars More Reliable?" *Consumer Reports* 66(4) (April 2001), p. 12.

3. Labor flows

- We have seen earlier that the free movements of workers between the regions of a country leads to efficiency gains.

- The same logic applies to movements of workers between countries. Such movement is however not free. Can you think why? (See earlier graphic analysis of movements between rural and urban sectors.)

- The fact remains that free movements of labor between countries could potentially raise world income by a large amount.

VII) Canada and foreign investments

Past and present

Canada's international investment position

- http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=3760142&pattern=&csid=
- 2017: We are *net creditors* towards RoW: $400,709 mil/36.29 mil=$11,041 per capita.
- GDP (income based) 2017: 2,144,395 M$
- (NB Be careful to distinguish figures based on market value from book value.)

(from Statscan)

Canada's international investment position	2017
	Q4
Total assets	4,760,690
Direct investment assets [Z]	1,923,491
Canadian portfolio investment	2,007,910
Official international reserves	110,126
Other Canadian investment	719,163
Total liabilities	4,359,981
Direct investment liabilities [Z]	1,416,546
Foreign portfolio investment	2,140,786
Other foreign investment	802,649
Canada's net international investment position	400,709

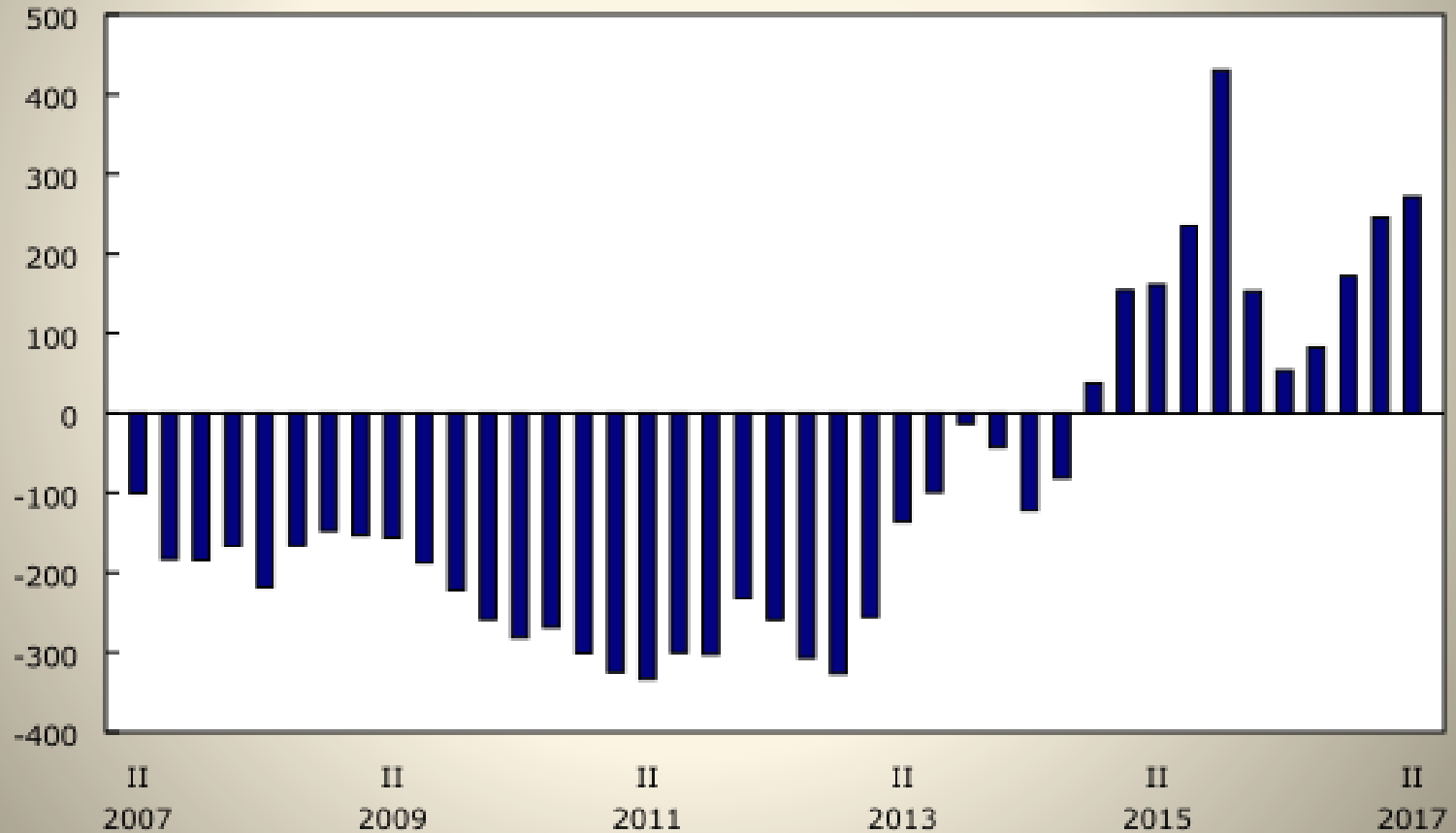# Canada's international assets and liabilities Evolution 2007-2017 (from Statscan)

Canada's net international investment position

(from Statscan)

billions of dollars

Capital flows in Canada

- Is Canada's net foreign debt too large?
- In terms of % of GDP, it does not appear to be too large.
- (Source of figure: Blanchard, Johnson and Melino, "Macroeconomics", Prentice Hall)

FIGURE 17-4

Canada's International Debts and Canada's International Assets, 1950–2004

Canada's international debts are large relative to its GDP. In the early 2000s, Canada's international debt was greater than 100% of GDP but fell back down to 92% in 2003. In 2003, Canada's foreign assets were approximately 75% of GDP, down from nearly 85% in 2002. Both assets and debts grew sharply during the 1990s as Canadians diversified and purchased foreign assets for their portfolios. Canada's net foreign debts fell sharply in the 1990s after peaking in 1993. An earlier peak in Canada's net foreign debt in 1961 was associated with large foreign investments in the Canadian economy through the 1950s.
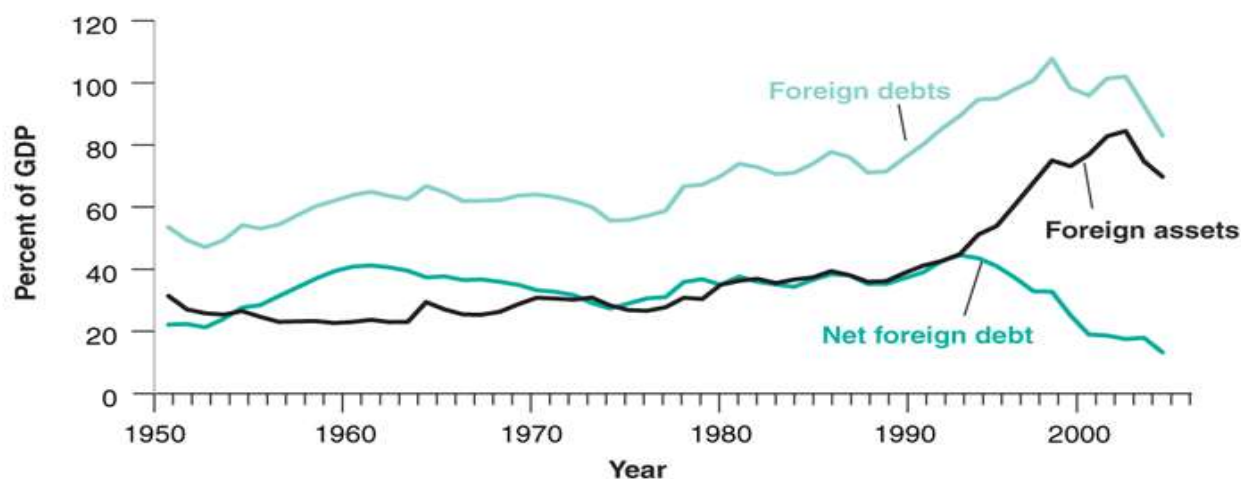
Source: Total foreign assets, using CANSIM II variable V235395; total foreign debt, using CANSIM II variable V235411; net foreign debt, using CANSIM II variable V235422; nominal GDP 1926–1960, using CANSIM II variable V500633, 1961–2001 using CANSIM II variable V646937.

Capital flows in Canada

- Note the two peaks in Canada's net foreign debt: 1960 and 1993. They conceal different stories:
  - 1960 follows large investment projects to increase productivity. No problem.
  - 1993 follows large public sector borrowing during the 1980's that did not necessarily increase capital stocks. (Doesn't seem to have been a problem either, based on the subsequent drop…)
- Also notable are the large simultaneous increases in both foreign debts and assets during the 1990's. This is a sign of diversification of asset holding by world investors. It is part of the globalization process. (Nice story in my opinion.)

Capital flows in Canada

- Another way to look at whether Canada's debt is becoming too large is through the current account balance.

$$B_{t+1}^f - B_t^f = rB_t^f + NX_t$$

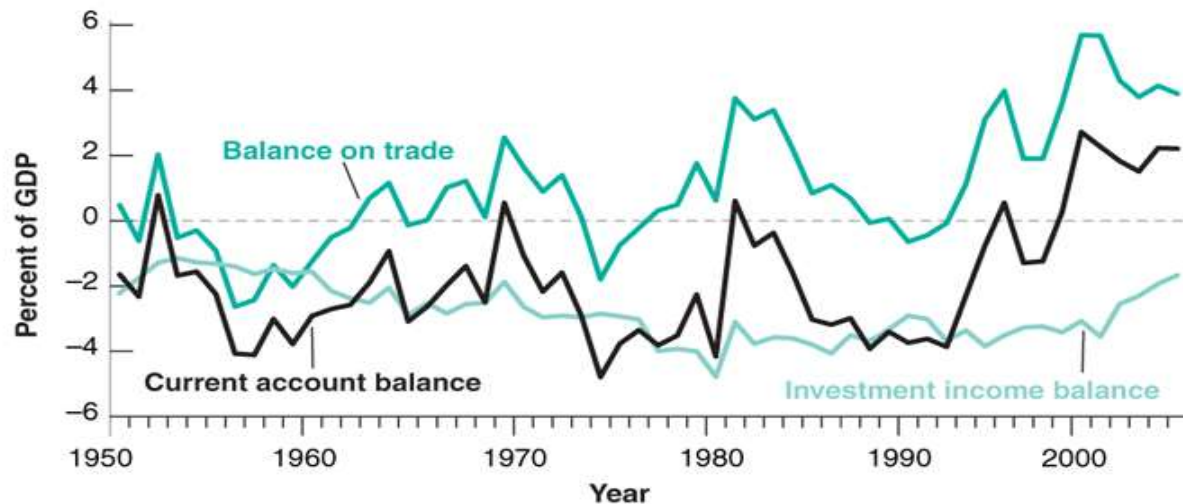- (Source of figure: Blanchard, Johnson and Melino, "Macroeconomics", Prentice Hall)

Source: Current account balance using CANSIM II variable V113713; investment income balance using CANSIM II variable V113723; balance on trade using CANSIM II variable, V113714; nominal GDP 1926–1960 using CANSIM II variable V500633, 1961–2001 using CANSIM II variable V646937.

FIGURE 17–5

Canada's Interaction with the Rest of the World

The current account balance shows the change in Canada's net foreign debt. A negative value indicates an increase in net foreign debts. For most of the period after 1950, Canadians borrowed from the rest of the world. Only from 1999 to 2004 do we observe consecutive years where the current account balance is positive. The negative investment income balance is the interest paid on Canada's foreign debts. It is the difference between GNP and GDP. Finally, the positive balance on trade shows that Canadians export goods and services to other countries to pay the interest on their foreign debts.

Capital flows in Canada

- Between 1950 and 2000, the current account balance remains negative at around 2% of GDP. This means that our net debt w.r.t. the RoW was increasing.
- So why has the net debt not increased so much in % terms?
- Because investments in Canada were productive enough to raise GDP in compensation.
- *Investment income balance* denotes the interest paid to service the debt (GNP-GDP or debt service). They were considered too large in the 1980's as they reached 4% of GDP. They are down to less than 1% of GDP, following debt repayments thanks to large positive *trade balances* (positive net exports) since 1999.
- Globally, it is safe to say that accumulation of foreign debt in order to finance physical stock accumulation in Canada was a very good thing.

Conclusion

- We have seen:
  I. Types of economic openness
  II. How to measure degree of openness
  III. Some historical facts about evolution of openness in the world
  IV. Causes of globalization
  V. Whether openness affects growth
  VI. How openness can affect growth (theories)
  VII. Canada and foreign investment