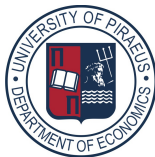


Lectures on Economic Growth

Topic: Trade

an upper intermediate course offered at the 7th semester at the

Economics Department, University of Piraeus



Previously in this course:

- We have mostly looked at countries in isolation
 - You have to produce your own capital.
 - No import, export.
 - No immigration, emigration.
- The exception: the leader-follower model of innovation.

This flies in the face of practical experience: the trend of globalization means that goods and capital are moving around the world in large amounts.

Is everything we have covered wrong? No:

- Solow works for the world as a whole.
- Surprisingly, your own saving rate matters for your own investment.

Today

Open economy (chapter 11 of D. Weil).

- Autarky versus openness, GDP versus GNP.
- Globalization.
- Openness and growth
 - Measurement
 - Theory
 - Theory and practice
- Openness and productivity
- Opposition

Autarky versus openness

Opening your economy means

- Trade: you sell some of your production abroad, import some from others.

In case of balance between imports and exports, this is where it ends. For a long time, this is where it had to end: it was illegal to lend or borrow money abroad. But after capital market and labor market liberalization:

- Capital flows: you borrow money from a foreign bank or buy foreign securities.
- Working abroad: you work in another country and send the money home.

Factor movements lead to flows of factor payments, which causes a gap to open between Gross Domestic Product and Gross National Product.

GDP versus GNP

- GDP is the total value of domestic production, regardless of who owns the factors at work.
- GNP is the total compensation for domestic-owned factors.

In autarky, the two are equal.

Country	GDP	GNP	Difference
	2004, US\$	2004, US\$	
Hong Kong	163,005	183,500	12.6%
Ireland	183,560	137,800	-24.9%
Netherlands	577,260	515,100	-10.8%
Saudi Arabia	250,557	242,200	-3.3%
Turkey	301,950	268,700	-11.0%
USA	11,667,515	12,150,900	4.1%

Source: 2005 World Development Report.

Measuring globalization

For a rough guess, you can look at trade levels:



More correct is to look at whether the law of one price holds.

Causes of globalization

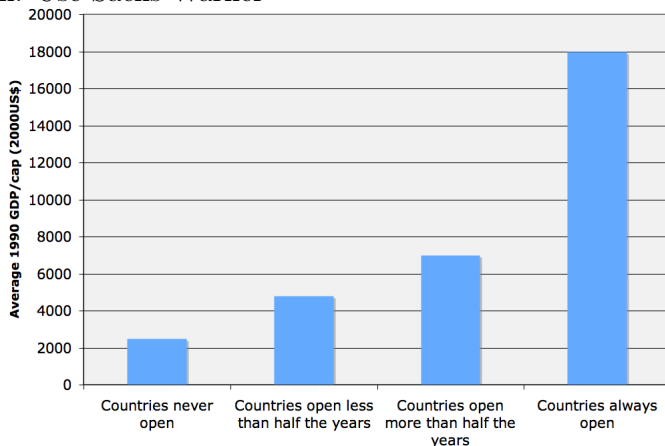
Weil points to three causes for increased trade and factor movements:

- 1 Lower transport costs: Average cost of shipping 1 ton fell from US\$95 (1920) to US\$29 (1990, both 1990 dollars, source: IMF)
- 2 Access to information aids trade and investment. Phone call New York-London: US\$300 (1930, 1996 dollars, source: The Economist) to virtually zero.
- 3 Trade Policy: GATT and WTO have aided the abolishment of many tariffs and quotas.

On the whole, economists look at this as a good thing: free trade leads to better allocation.

Measuring the effect of openness: level

There are many measurement problems due to possible reverse causation. Use Sachs-Warner



dummy:

Measuring the effect of openness: growth

One way to assess the influence of trade policy is to look at average growth rates in two groups of countries, closed and open. Look at

- 1 The average rate of growth.
- 2 The correlation between initial GDP and the subsequent rate of growth: a negative relationship indicates convergence.

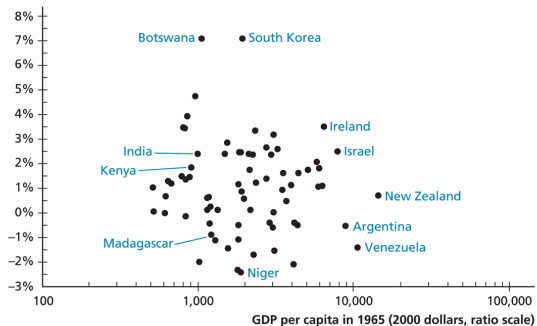
Use the Sachs-Warner dummy to make up the groups.

Measuring the effect of openness: growth

Countries closed for some or all of the available years

FIGURE 11.3
Growth in Closed Economies

Growth rate of GDP per capita, 1965–1990



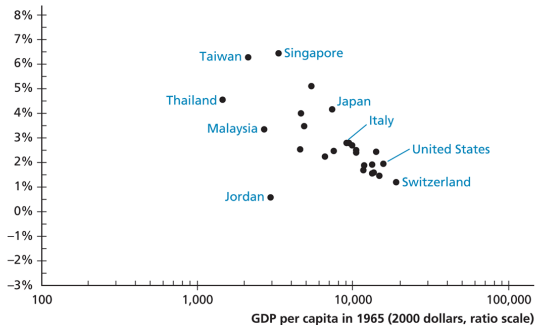
Source: Sachs and Warner (1995), Heston et al. (2002).

Measuring the effect of openness: growth

Countries open for all of the available years

FIGURE 11.4
Growth in Open Economies

Growth rate of GDP per capita, 1965–1990



Source: Sachs and Warner (1995), Heston et al. (2002).

Measuring the effect of openness: IV

In order to deal with reverse causality between growth and trade, you can also employ Instrumental Variables (Frankel and Romer).

- 1 Predict the level of trade by something not influenced by economic performance: geography (this works surprisingly well).
- 2 Correlated the predicted level of trade with economic growth.

Frankel and Romer find that for each percentage point trade/GDP, income goes up between 0.5 and 2 percent.

Open economy Solow

Two things change when we adapt the Solow model to the open economy:

- ① Capital accumulation is no longer determined by your own saving. This leads to instant convergence to (a different) steady state, and $GDP \neq GNP$.
- ② The productivity parameter (usually) changes. This happens because of specialization and competition; it has a second-order effect on capital.

We will deal with these changes in turn.

Capital accumulation

In the closed economy version, capital accumulation is usually given by

$$\Delta K = sY - \delta K$$

and therefore tied to the saving rate.

In the open economy, you can just borrow capital abroad against a rental rate r_{int} .

- If your country is small, you can do this without affecting r_{int} .

The equilibrium condition becomes

$$\text{MPK} = r_{\text{int}}$$

Note that r is the gross return to a unit of capital. The net return, $r - \delta$, is akin to the rate of interest.

Capital accumulation

What does this mean?

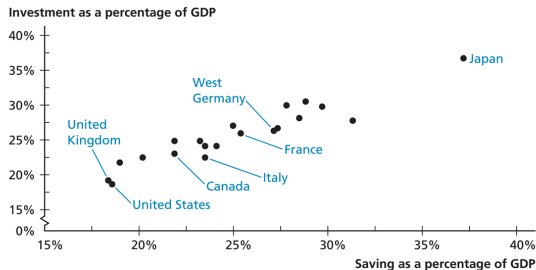
- There is no more transition: countries can jump to their steady state levels of k .
- Saving \neq Investment: your particular s will no longer influence the steady state. Rather, the world supply of savings determines it (through r_{int}).
- The steady state changes: in general, the new condition for k^* gives you a different outcome.
- GDP \neq GNP: since foreigners now own part of your capital stock, they start getting interest payments.

There are some caveats: countries can only borrow so much. And there is the small problem of home bias.

Home bias

So for countries with liberalized capital markets, saving and investment should be unrelated.

FIGURE 11.5
Saving and Investment Rates of Industrialized Countries, 1960–1974



Source: Feldstein and Horioka (1980).

The fact that they are not indicates a home bias in investment. Measured via savings retention, it is decreasing somewhat.

How economists see trade

Start from a perfect world: what would be the optimal way to organize production?

- Adam Smith: Specialization! Each person does what he/she does best, so that we maximize total production. Then you let them trade their products on a market.

Seen this way, international trade is just a side-effect of efficient production, and the decision to carve up the world in arbitrary units (countries).

Suppose you are good at making bread.

Autarky: produce 1 bread, 1 shoe.

Trade: produce 3 bread, trade one for 2 shoes.

Trade allows you to produce more using the same resources. In our model, this means A increases because of specialization through trade.

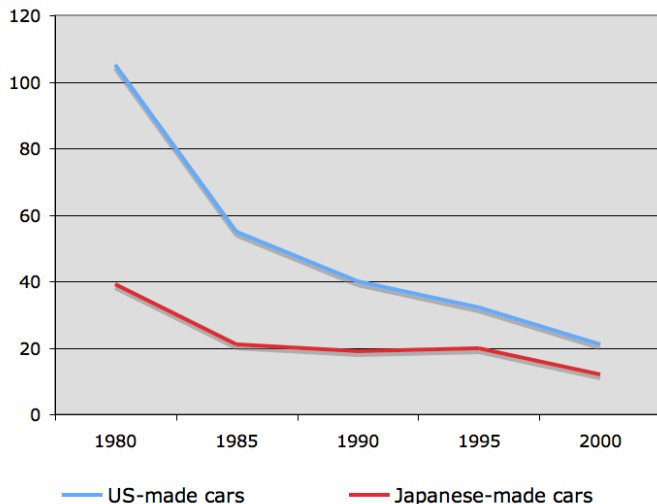
Trade, technology, efficiency

Remember we wrote $A = T \times E$. Gains from specialization are an increase in T . But trade also causes increases in E , through competition. Quintessential example: the American car industry in the '70s.



Japanese cars

With the entrance of Japanese car manufacturers, Detroit had to come to terms with its quality problem.



Openness and technology transfer

Finally, foreign direct investment and trade often lead to the transfer of technology.

By observing foreign products or production processes, locals are better able to copy and improve their own T .

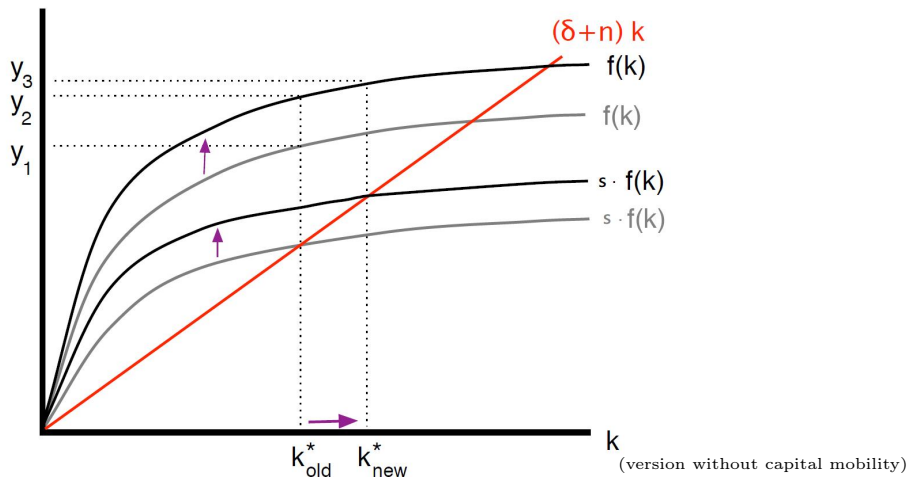
Examples

- McDonalds and the organization of restaurants.
- Schiphol's management of JFK.
- Econometric evidence (Coe and Helpman) shows: R&D done by trading partners increases TFP.

Technological catchup is a complicated game (complementarities). As it turns out, trade with an advanced country is a great way to get the whole package and learn by doing: import existing technologies from abroad.

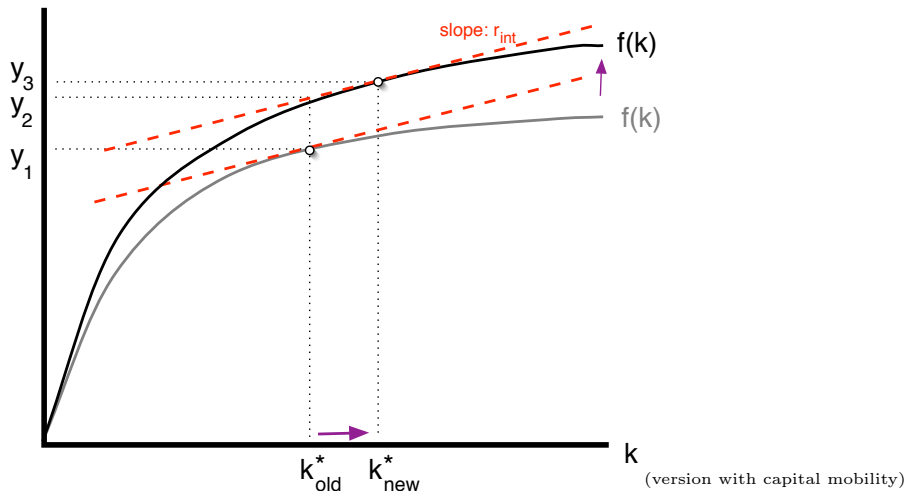
Productivity and the 2nd order effect

So trade may lead to an increase in A . This in turn affects the steady state.



Productivity and the 2nd order effect

So trade may lead to an increase in A . This in turn affects the steady state.



Opposition to trade

Trade is good for the average agent. It is initially not good for everybody due to structural adjustment.

Consider our previous example of an economy, good at making bread, bad at shoes: open up and

- Price of bread goes up, price of shoes goes down.
- Bread-sector expands, shoe-sector contracts as shoes are imported from abroad.

Even though everybody is better off (in principle), shoe-makers are unhappy initially. They may want to protest.

- Their arguments are weak, but may be effective (lobbying).
- Other arguments against opening up exist, and they are often appropriated by sectors in peril.

We look at three such arguments.

Strategic trade

Trade causes countries to specialize in what they do best. But sometimes, countries just specialize in what they happen to be doing already.

This offers a scope for choice. Which sector do you want to specialize in? That which grows fastest.

$$Y_i = A_i \cdot L_i, \quad A_i = s_i \cdot Q_i$$

Sector i produces with efficiency A_i , which depends on past production Q_i . But for different sectors, this dependence (s_i) has different values. Make sure the right sector gets ahead.

Assumptions:

- Efficiency growth is constant per sector.
- Knowledge does not cross sector borders.
- The government can identify the high-potential sector.
- Other countries do not retaliate.

Notice also our earlier empirical results.

Infant industry

To compete on the world stage, an industry needs time to develop. If you allow foreign competition now, it will be killed off. Assumptions:

- Efficiency (knowledge) comes from local production only
 - cannot be imported (through trade or other)
 - cannot come from other sectors
- Companies cannot finance these startup costs themselves.
- Eventually, the industry will pay off more than it cost to develop.

This argument flies in the face of the data and misinterprets comparative advantage (confuses exchange with competition).

Infant countries can easily compete by letting their exchange rate float to the correct level.

Hidden price of capital

Borrowing money from abroad makes you

- the subject of the whims of foreign investors: in case of a crisis, they pull out and leave you with the mess.
- liable to overindebtedness: often, corrupt governments use their people as a collateral for bad loans.

Both of these arguments turn on what happens when investments sour. The latter is usually a result of bad policy, which should be avoided in the first place. International surveillance sometimes helps (IMF).