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Balance of Payments I: The Gains from Financial Globalization

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Introduction

Countries face shocks all the time, and how they are able to cope with them depends on whether they are open or closed to economic interactions with other nations.

NOAA/Satellite and Information Service

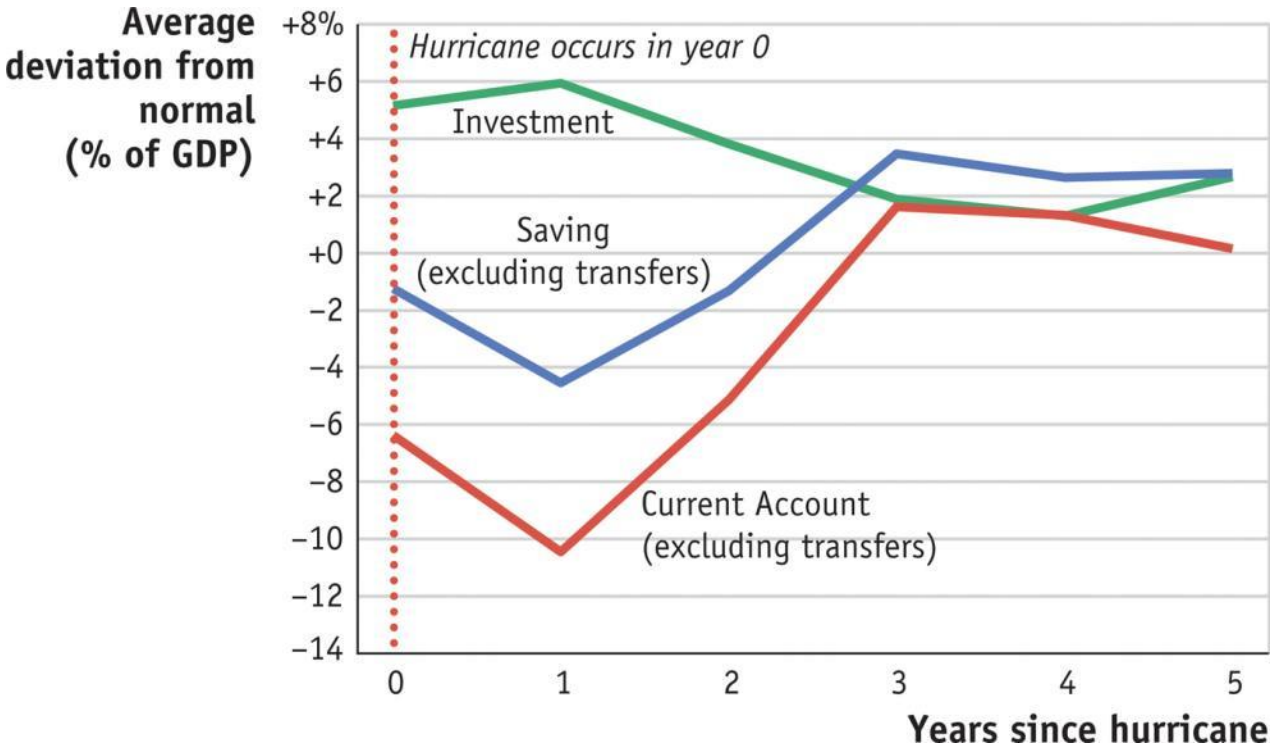
Hurricane Mitch battered Central America from October 22, 1998, to November 5, 1998. It was the deadliest hurricane in more than 200 years and the second deadliest ever recorded.

Hurricanes are tragic human events, but they provide an opportunity for research.

Countries' responses illustrate some of the important financial mechanisms that help open economies cope with all types of shocks, large and small.

Introduction

FIGURE 6-1



The Macroeconomics of Hurricanes The figure shows the average response (excluding transfers) of investment, saving, and the current account in a sample of Caribbean and Central American countries in the years during and after severe hurricane damage. The responses are as expected: investment rises (to rebuild), and saving falls (to limit the fall in consumption); hence, the current account moves sharply toward deficit.

Introduction

- In this lecture, we see how financially open economies can, in theory, reap gains from financial globalization in the long run.
- We first look at the factors that limit international borrowing and lending, then we look at how a nation's ability to use international financial markets allows it to accomplish three different goals:
  - **Consumption smoothing** (by steadying consumption when income fluctuates)
  - **Efficient investment** (by borrowing to build a productive capital stock)
  - **Diversification of risk** (by trading of stocks between countries)

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

- The ability to borrow in times of need and lend in times of prosperity has profound effects on a country's well-being.
- Using changes in an economy's external wealth, we can derive the key constraint that limits its borrowing in the long run: the **long-run budget constraint (LRBC)**.
- The LRBC tells us precisely how and why a country must, in the long run, "live within its means."

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

- When a household borrows $100,000 at 10% annually, there are two different ways it can deal with its debt each year:

  Case 1 *A debt that is serviced.* You pay the interest but you never pay any principal.

  Case 2 *A debt that is not serviced*. You pay neither interest nor principal. Your debt grows by 10% each year.

- Case 2 is not sustainable. Sometimes called a rollover scheme, a pyramid scheme, or a *Ponzi game*, this case illustrates the limits on the use of borrowing.

- In the long run, lenders will not allow the debt to grow larger. This is the essence of the long-run budget constraint.

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

How The Long-Run Budget Constraint Is Determined

Here are some assumptions we make in the model economy:

- The country is a **small open economy**: The country is a price taker and cannot influence prices in world markets for goods and services, nor can it influence the real interest rate.

- It is a **real economy**: Prices are perfectly flexible. Analysis is in terms of real variables, and we ignore monetary aspects of the economy. There is one real good and one real asset.

- The asset, real debt, carries a real interest rate r^*, the **world real interest rate**, which is constant. The country can lend or borrow an unlimited amount at this interest rate.

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

How The Long-Run Budget Constraint Is Determined

More assumptions:

- The country pays a real interest rate r^* on its start-of-period debt liabilities L and is also paid r^* on its start-of-period debt assets A. Net interest income payments equal to $r^*A - r^*L$, *or* r^*W, where W is external wealth ($A - L$).

- There are no unilateral transfers ($NUT = 0$), no capital transfers ($KA = 0$), and no capital gains on external wealth. Therefore, there are only two nonzero items in the current account: the trade balance TB and net factor income from abroad, r^*W.

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

Calculating the Change in Wealth Each Period

We can write the change in external wealth from end of year $N-1$ to end of year N as follows:

$$\Delta W_N = \underbrace{W_N - W_{N-1}}_{\text{Change in external wealth this period}} = \underbrace{TB_N}_{\text{Trade balance this Period}} + \underbrace{r^* W_{N-1}}_{\text{Interest paid/received on last period's external wealth}}$$

Calculating Future Wealth Levels

We can compute the level of wealth at any time in the future by repeated application of the formula. Rearranging the preceding equation, we can solve for wealth at the end of year N:

$$\underbrace{W_N}_{\text{External wealth at the end of this period}} = \underbrace{TB_N}_{\text{Trade balance this period}} + \underbrace{(1+r^*)\, W_{N-1}}_{\text{Last period's external wealth plus interest paid/received}}$$

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

The Budget Constraint in a Two-Period Example

At the end of year 0, $W_0 = (1 + r^*)\ W_{-1} + TB_0$

We assume that all debts owed or owing must be paid off, and the country must end that year with zero external wealth.

At the end of year 1: $W_1 = 0 = (1 + r^*)\ W_0 + TB_1$

Combining: $W_1 = 0 = (1 + r^*)^2\ W_{-1} + (1 + r^*)\ TB_0 + TB_1$

The *two-period budget constraint* is then:

$$-(1 + r^*)^2\ W_{-1} = (1 + r^*)\ TB_0 + TB_1$$

The Budget Constraint in a Two-Period Example

Present Value Form

By dividing the previous equation by $(1 + r^*)$, we find a more intuitive expression for the two-period budget constraint:

$$\underbrace{-(1+r^*)\,W_{-1}}_{\text{Minus the present value of wealth from last period}} = \underbrace{TB_0 + \frac{TB_1}{(1+r^*)}}_{\text{Present value of all present and future trade balances}}$$

The **present value** of X in period N is the amount that would have to be set aside now so that, with accumulated interest, X is available in N periods. If the interest rate is r^*, then the present value of X is $X/(1 + r^*)^N$.

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

The Budget Constraint in a Two-Period Example

Extending the Theory to the Long Run

If we similarly derive the *N*-period budget constraint, and let *N* run to infinity, we get an infinite sum and arrive at the equation of the LRBC:

$$\underbrace{-(1+r^*)\,W_{-1}}_{\text{Minus the present value of wealth from last period}} = \underbrace{TB_0 + \frac{TB_1}{(1+r^*)} + \frac{TB_2}{(1+r^*)^2} + \frac{TB_3}{(1+r^*)^3} + \frac{TB_4}{(1+r^*)^4} + \cdots}_{\text{Present value of all present and future trade balances}} \quad (6\text{-}1)$$

A debtor (creditor) country must have future trade balances that are offsetting and positive (negative) in present value terms.

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

A Long-Run Example: The Perpetual Loan

The formula below helps us compute *PV*(*X*) for any stream of constant payments starting in period 1:

$$\underbrace{\frac{X}{(1+r^*)}+\frac{X}{(1+r^*)^2}+\frac{X}{(1+r^*)^3}+\cdots}_{PV(X)}=\frac{X}{r^*} \qquad (6\text{-}2)$$

For example, the present value of such a stream of payments on a **perpetual loan**, with $X = 100$ and $r^* = 0.05$, equals:

$$\frac{100}{(1+0.05)}+\frac{100}{(1+0.05)^2}+\frac{100}{(1+0.05)^3}+\cdots=\frac{100}{0.05}=2{,}000$$

1 The Limits on How Much a Country Can Borrow: The Long-Run Budget Constraint

Note, by (6-1) and the fact that TB = GDP – GNE: *The LRBC says that, in present value terms, a country's expenditures (GNE) must equal its production (GDP) plus any initial wealth.*

The LRBC therefore shows quite precisely how an economy must live within its means in the long run.

$$\underbrace{\underbrace{(1+r^*)\,W_{-1}}_{\text{Present value of wealth from last period}} + \underbrace{GDP_0 + \frac{GDP_1}{(1+r^*)} + \frac{GDP_2}{(1+r^*)^2} + \ldots}_{\text{Present value of present and future GDP}}}_{\text{Present value of country's resources}} = \underbrace{GNE_0 + \frac{GNE_1}{(1+r^*)} + \frac{GNE_2}{(1+r^*)^2} + \ldots}_{\text{Present value of present and future GNE}} \qquad (6\text{-}3)$$

Present value of country's resources = Present value of country's spending

APPLICATION

The Favorable Situation of the United States

"Exorbitant Privilege"

The United States has been a net debtor with $W = A - L < 0$ since the 1980s. Negative external wealth leads to a deficit on net factor income from abroad with $r^*W = r^*(A - L) < 0$. Yet as we saw in the last lesson, U.S. net factor income from abroad has been positive throughout this period. How can this be?

- The only way a net debtor can earn positive net interest income is by receiving a higher rate of interest on its assets than it pays on its liabilities.
- E.g., in the 1960s French officials complained that the United States had the "exorbitant privilege" of being able to borrow cheaply while earning higher returns on its foreign investments.

APPLICATION

The Favorable Situation of the United States

"Manna from Heaven"

The United States enjoys positive capital gains, *KG*, on its external wealth. These large capital gains on external assets and the smaller capital losses on external liabilities are gains that cannot be otherwise measured, so their accuracy and meaning is controversial.

- Some skeptics call these capital gains "statistical manna from heaven."
- Others think these gains are real and may reflect the United States acting as a kind of "venture capitalist to the world."
- As with the "exorbitant privilege," this financial gain for the United States is a loss for the rest of the world.

APPLICATION

The Favorable Situation of the United States

Summary

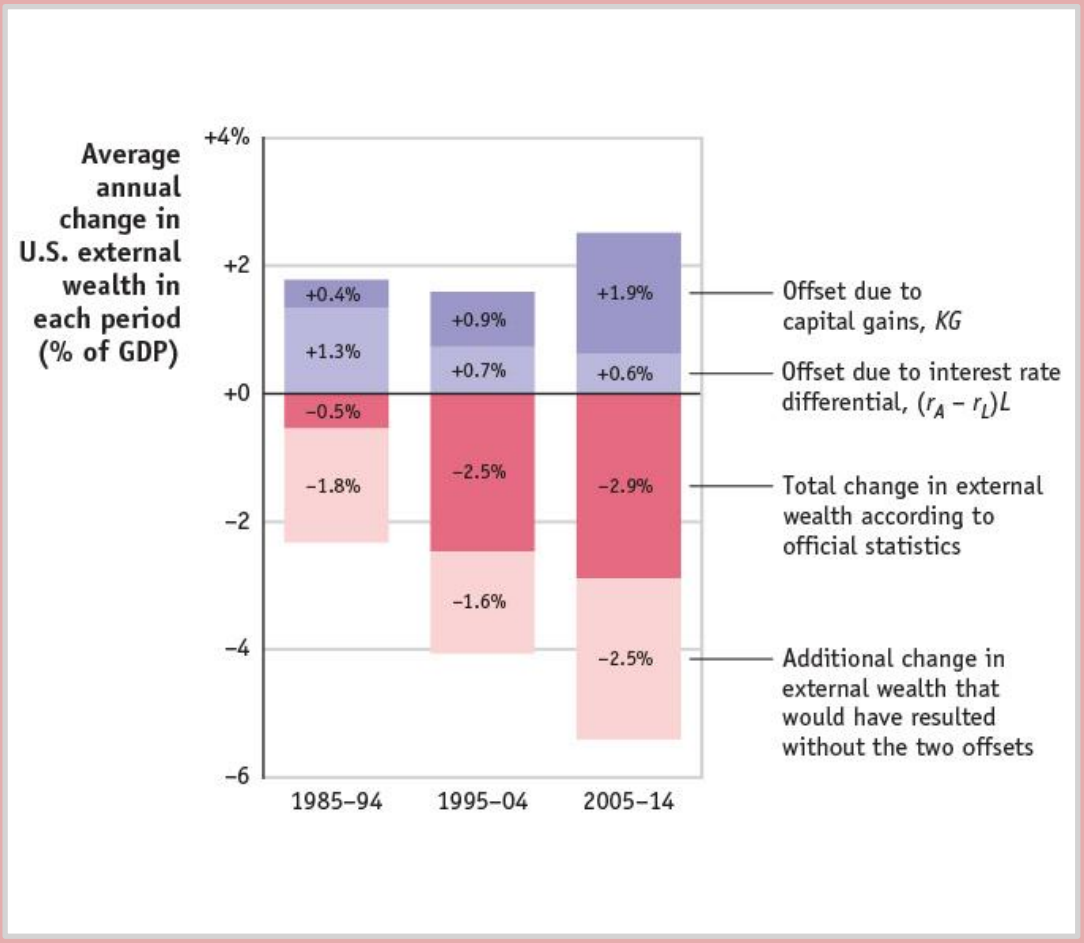
When we add the +1.5% capital gain differential to the +0.5% interest differential, we end up with a U.S. total return differential (interest plus capital gains) of about +2.0% per year since the 1980s. For comparison, in the same period, the total return differential was close to zero in every other G7 country.

We incorporate these additional effects in our model as follows:

$$\Delta W_N = \underbrace{W_N - W_{N-1}}_{\text{Change in external wealth this period}} = \underbrace{\underbrace{TB_N}_{\text{Trade balance this period}} + \underbrace{r^* W_{N-1}}_{\text{Interest paid/received on last period's external wealth}}}_{\text{Conventional effects}} + \underbrace{\underbrace{(r^* - r^0) L}_{\text{Income due to interest rate differential}} + \underbrace{KG}_{\text{Capital gains on external wealth}}}_{\text{Additional effects}}$$

APPLICATION

FIGURE 6-2



How Favorable Interest Rates and Capital Gains on External Wealth Help the United States The total average annual change in U.S. external wealth each period is shown by the dark pink columns. Negative changes were offset in part by two positive effects. One effect was due to the favorable interest rate differentials on U.S. assets (high) versus liabilities (low). The other effect was due to favorable rates of capital gains on U.S. assets (high) versus liabilities (low). Without these two offsetting effects, the declines in U.S. external wealth would have been much bigger.

APPLICATION

The Difficult Situation of the Emerging Markets

The United States borrows low and lends high. For most poorer countries, the opposite is true.

Because of country risk, investors typically demand a risk premium before they will invest in any assets issued by these countries, whether government debt, private equity, private debt, or FDI.

APPLICATION

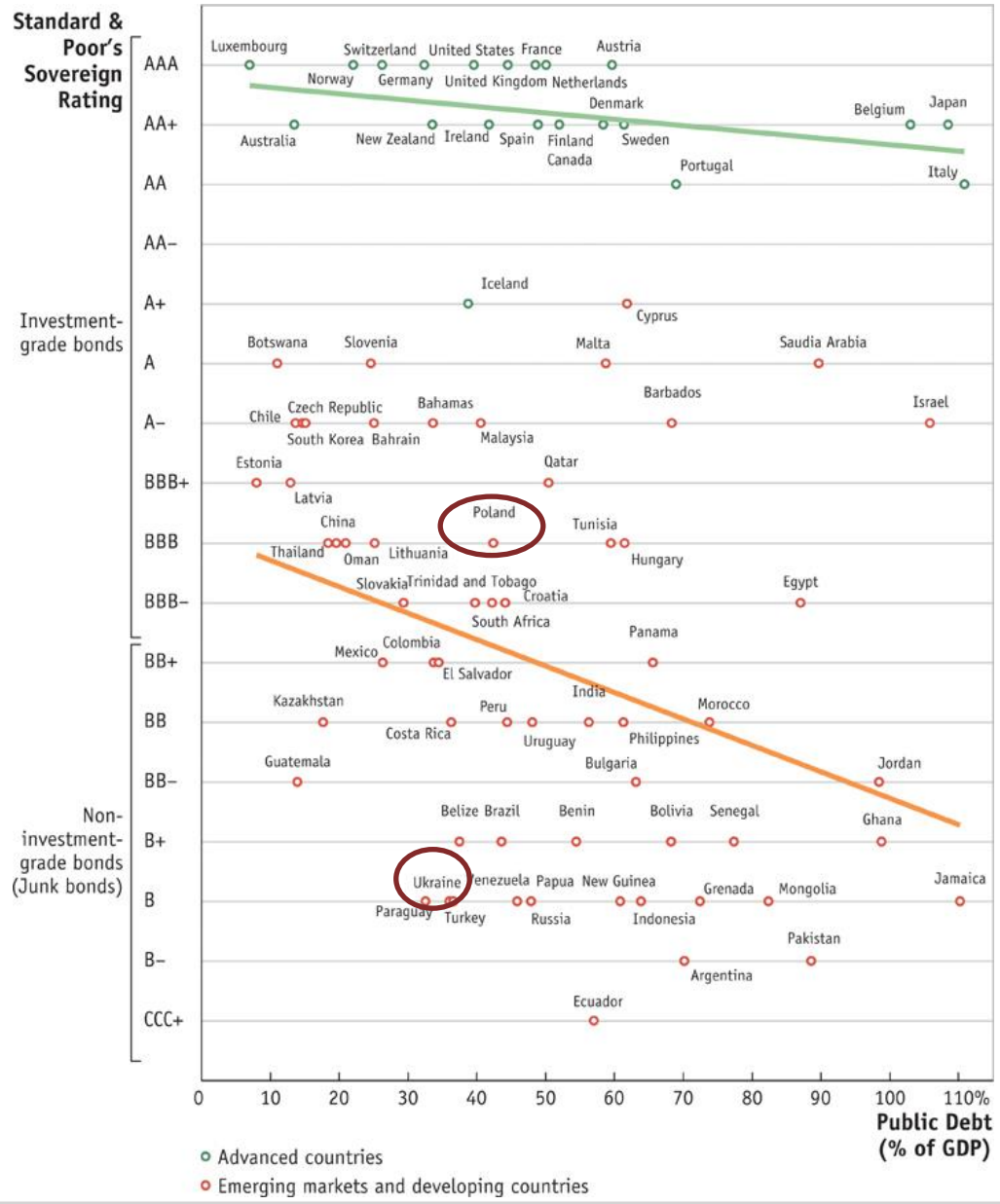


FIGURE 6-3

Sovereign Ratings and Public Debt Levels: Advanced Countries Versus Emerging Markets and Developing Countries The data shown are for the period from 1995 to 2005.

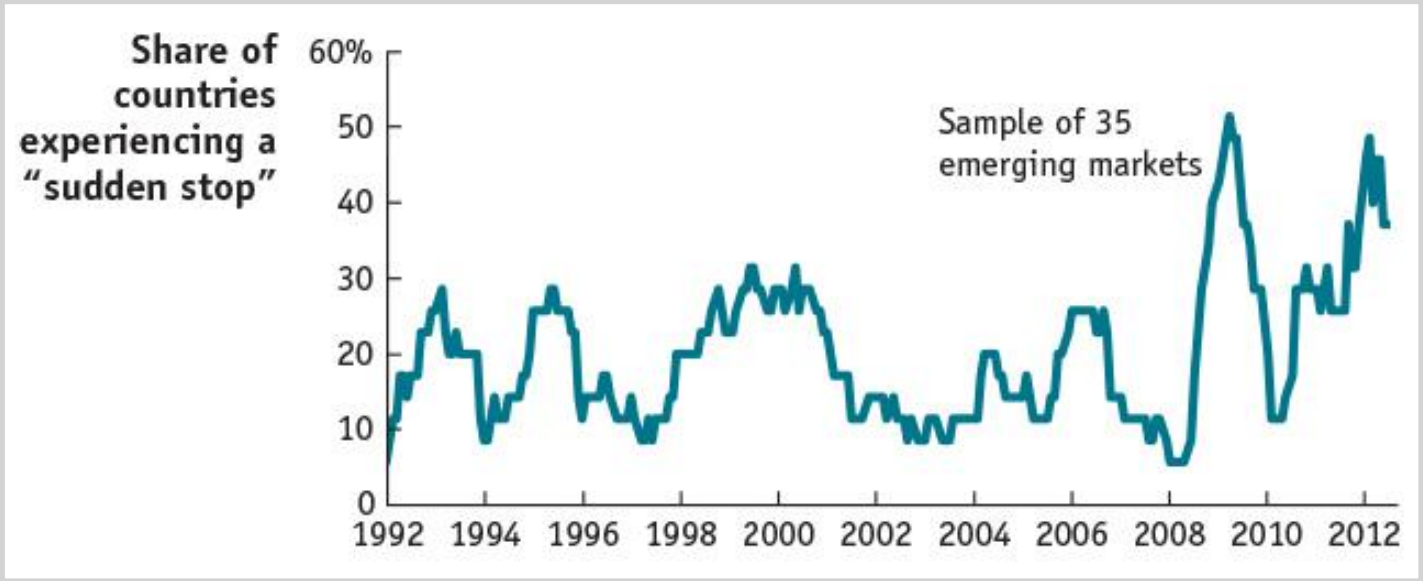
The advanced countries (green) are at the top of the chart. Their credit ratings (vertical axis) do not drop very much in response to an increase in debt levels (horizontal axis). And ratings are always high investment grade.

The emerging markets and developing countries (orange) are at the bottom of the graph. Their ratings are low or junk, and their ratings deteriorate as debt levels rise.

APPLICATION

In a **sudden stop**, a borrower country sees its financial account surplus rapidly shrink.

FIGURE 6-4



Sudden Stops in Emerging Markets On occasion, capital flows can suddenly stop, meaning that those who wish to borrow a new or roll over an existing loan will be unable to obtain financing. These capital market shutdowns occur frequently in emerging markets.

2 Gains from Consumption Smoothing

In this section, we use the long-run budget constraint and a simplified model of an economy to examine the gains from financial globalization.

We focus on the gains that result when an open economy uses external borrowing and lending to eliminate an important kind of risk, namely, undesirable fluctuations in aggregate consumption.

2 Gains from Consumption Smoothing

The Basic Model

We now examine the gains from external borrowing and lending, allowing an economy to eliminate fluctuations in aggregate consumption. We adopt some additional assumptions:

- Real output or GDP (denoted *Q*) is produced using labor as the only input. Production of GDP may be subject to shocks; depending on the shock, the same amount of labor input may yield different amounts of output.
- We use the terms "household" and "country" interchangeably. Preferences of the country/household are such that it will choose a level of consumption *C* that is constant over time. This level of smooth consumption must be consistent with the LRBC.

The Basic Model

- For now, we assume consumption is the only source of demand. Both investment *I* and government spending *G* are zero; therefore, GNE equals personal consumption expenditures *C*.
- Our analysis begins at time 0, and we assume the country begins with zero initial wealth inherited from the past, so that W_{-1} is equal to zero.
- We assume that the country is small and the rest of the world (ROW) is large, and the prevailing world real interest rate is constant at r^*. In the numerical examples that follow, we will assume $r^* = 0.05 = 5\%$ per year.

The Basic Model

These assumptions give us a special case of the LRBC that requires the present value of current and future trade balances to equal zero (because initial wealth is zero):

$$\underbrace{0}_{\text{Initial wealth is zero}} = \text{Present value of } TB = \underbrace{\text{Present value of } Q}_{\text{Present value of GDP}} - \underbrace{\text{Present value of } C}_{\text{Present value of GNE}}$$

or equivalently,

$$\underbrace{\text{Present value of } Q}_{\text{Present value of GDP}} = \underbrace{\text{Present value of } C}_{\text{Present value of GNE}} \qquad (6\text{-}4)$$

2 Gains from Consumption Smoothing

Closed Versus Open Economy: No Shocks

If this economy were open rather than closed, nothing would be different. The LRBC is satisfied because there is a zero trade balance at all times.

The country is in its preferred consumption path. There are no gains from financial globalization and it has no need to borrow or lend to achieve its preferred consumption path.

TABLE 6-1

		Period							Present Value
		0	1	2	3	4	5	...	($r^* = 0.05$)
Output *GDP*	*Q*	100	100	100	100	100	100	...	2,100
Expenditure *GNE*	*C*	100	100	100	100	100	100	...	2,100
Trade balance	*TB*	0	0	0	0	0	0	...	0

A Closed or Open Economy with No Shocks Output equals consumption. Trade balance is zero. Consumption is smooth.

2 Gains from Consumption Smoothing

Closed Versus Open Economy: Shocks

Suppose there is a temporary unanticipated output shock of –21 units in year 0. Output Q falls to 79 in year 0 and then returns to a level of 100 thereafter.

The change in the present value of output is simply the drop of 21 in year 0. The present value of output falls from 2,100 to 2,079, a drop of 1%.

TABLE 6-2

		Period							Present Value
		0	1	2	3	4	5	...	($r^* = 0.05$)
Output *GDP*	*Q*	79	100	100	100	100	100	...	2,079
Expenditure *GNE*	*C*	79	100	100	100	100	100	...	2,079
Trade balance	*TB*	0	0	0	0	0	0	...	0

A Closed Economy with Temporary Shocks Output equals consumption. Trade balance is zero. Consumption is volatile.

Closed Versus Open Economy: Shocks

The present value of output *Q* has fallen 1% (from 2,100 to 2,079), so the present value of consumption must also fall by 1%. How will this be achieved?

Consumption can be smooth, and satisfy the LRBC, if it falls 1% (from 100 to 99) in every year. The present value of *C* is then: 99 + 99/0.05 = 2,079.

TABLE 6-3

		Period							Present Value
		0	1	2	3	4	5	...	($r^* = 0.05$)
Output *GDP*	*Q*	79	100	100	100	100	100	...	2,079
Expenditure *GNE*	*C*	99	99	99	99	99	99	...	2,079
Trade balance	*TB*	−20	+1	+1	+1	+1	+1	...	0
Net factor income from abroad	*NFIA*	0	−1	−1	−1	−1	−1	...	—
Current account	*CA*	−20	0	0	0	0	0	...	—
External wealth	*W*	−20	−20	−20	−20	−20	−20	...	—

An Open Economy with Temporary Shocks A trade deficit is run when output is temporarily low. Consumption is smooth. The lesson is clear. When output fluctuates, a closed economy cannot smooth consumption, but an open one can.

Generalizing

- Suppose, more generally, that output Q and consumption C are initially stable at some value with $Q = C$ and external wealth of zero. The LRBC is satisfied.
- If output falls in year 0 by ΔQ and then returns to its prior value for all future periods, then the present value of output decreases by ΔQ.
- To meet the LRBC, a closed economy lowers its consumption by the whole ΔQ in year 0.
- An open economy can lower its consumption uniformly (every period) by a smaller amount so that $\Delta C < \Delta Q$.

2 Gains from Consumption Smoothing

- A loan of $\Delta Q - \Delta C$ in year 0 requires interest payments of $r^*(\Delta Q - \Delta C)$ in later years.
- In future years consumption cuts create trade surpluses of ΔC, and if these are to cover the interest payments, then ΔC must be chosen so that:

$$\underbrace{r^* \times \underbrace{(\Delta Q - \Delta C)}_{\text{Amount borrowed in year 0}}}_{\text{Interest due in subsequent years}} = \underbrace{\Delta C}_{\text{Trade surplus in subsequent years}}$$

- Rearranging to find ΔC:

$$\Delta C = \frac{r^*}{1 + r^*} \Delta Q$$

Smoothing Consumption When a Shock Is Permanent

With a permanent shock, output will be lower by ΔQ in all years, so the only way either a closed or open economy can satisfy the LRBC while keeping consumption smooth is to cut consumption by $\Delta C = \Delta Q$ in all years.

Comparing the results for a temporary shock and a permanent shock, we see an important point:

- Consumers can smooth out temporary shocks—they have to adjust a bit.
- But the adjustment is far smaller than the shock itself—yet they must adjust immediately and fully to permanent shocks.

Summary: Save for a Rainy Day

Financial openness allows countries to "save for a rainy day." Without financial institutions, you have to spend what you earn each period.

- Using financial transactions to smooth consumption fluctuations makes a household and/or country better off.
- In a closed economy, $Q = C$, so output fluctuations immediately generate consumption fluctuations.
- In an open economy, the desired smooth consumption path can be achieved by running a trade deficit during bad times and a trade surplus during good times.

Wars and the Current Account

It is simple to augment the model to include *G* as well as *C.* The present value of GNE (*C* + *G*) must equal the present value of GDP. A war means a temporary increase in *G*.

Borrowing internationally to finance war-related costs goes back centuries. The British were able to maintain good credit and finance high levels of military spending in the 1700s. In the nineteenth century borrowing to finance war-related costs became more commonplace.

More recently, the United States saw its current account deficit and external debt rise due in part to war-related borrowing.

National Gallery of Art, Samuel H. Kress Collection

Better at raising armies than finance, the French fought with one hand tied behind their back.

APPLICATION

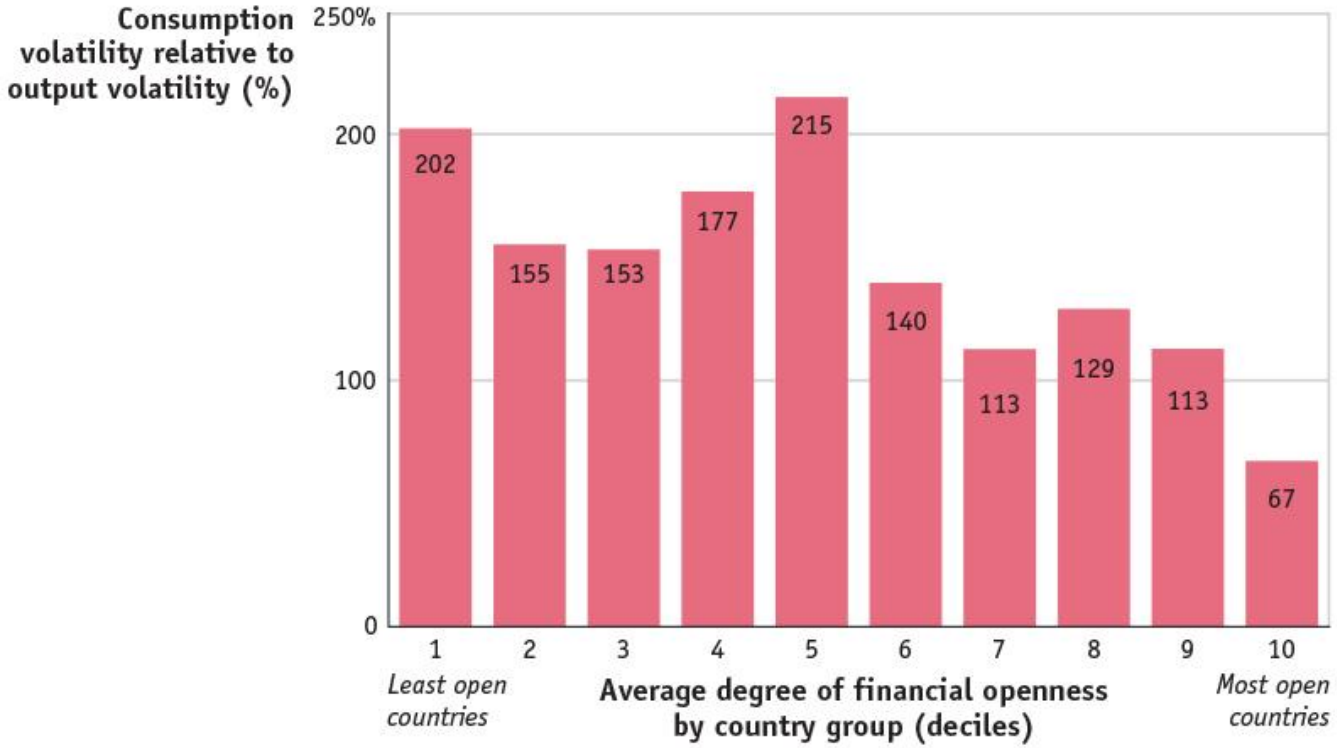
Consumption Volatility and Financial Openness

Does the evidence show that countries avoid consumption volatility by embracing financial globalization?

- The ratio of a country's consumption to the volatility of its output should fall as more consumption smoothing is achieved.
- In our model of a small, open economy that can borrow or lend without limit, this ratio should fall to zero when the gains from financial globalization are realized.
- Since not all shocks are global, countries ought to be able to achieve some reduction in consumption volatility through external finance.

APPLICATION

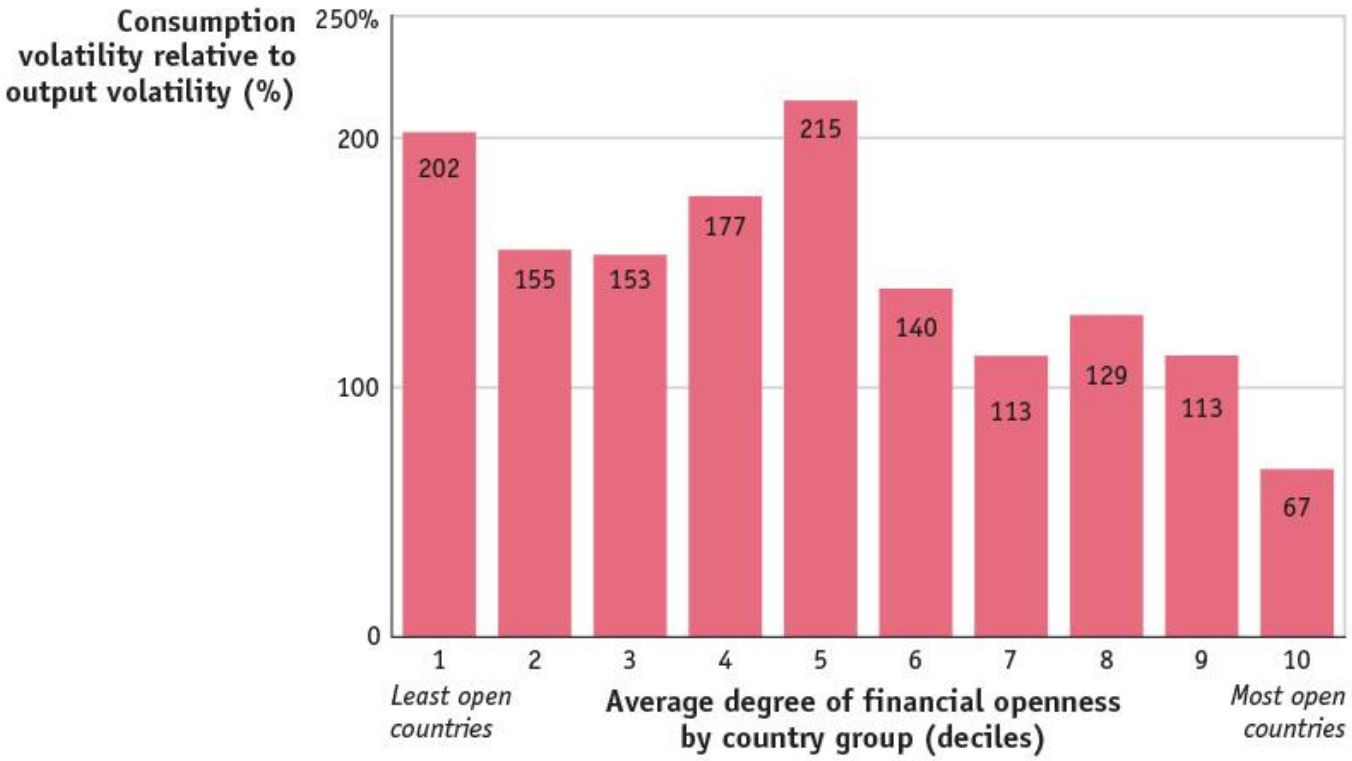
FIGURE 6-5 (1 of 2) Consumption Volatility Relative to Output Volatility



For a very large sample of 166 countries over the period 1990–2010, we compute the ratio of consumption volatility to output volatility, expressed as a percentage. A ratio less than 100% indicates that some consumption smoothing has been achieved. Countries are then grouped into 10 groups (deciles), ordered from least financially open (1) to most financially open (10).

APPLICATION

FIGURE 6-5 (2 of 2) Consumption Volatility Relative to Output Volatility (continued)



The average volatility in each group is shown. Only the most financially open countries have volatility ratios less than 100%. The high ratios in groups 1 to 8 show, perversely, that consumption is even more volatile than output in these countries.

APPLICATION

Consumption Volatility and Financial Openness

The lack of evidence suggests that some of the relatively high consumption volatility must be unrelated to financial openness.

Consumption-smoothing gains in emerging markets require improving poor governance and weak institutions, developing their financial systems, and pursuing further financial liberalization.

APPLICATION

Precautionary Saving, Reserves, and Sovereign Wealth Funds

- Countries may engage in **precautionary saving**, whereby the government acquires a buffer of external assets, a "rainy day" fund.
- Precautionary saving is on the rise and takes two forms. The first is the accumulation of **foreign reserves** by central banks, which may be used to achieve certain goals, such as maintaining a fixed exchange rate, or as reserves that can be deployed during a sudden stop.
- The second form is called **sovereign wealth funds**, whereby state-owned asset management companies invest some of the government savings.

HEADLINES

Copper-Bottomed Insurance

Many developing countries experience output volatility. Sovereign wealth funds can buffer these shocks, as in Chile.

During a three-year copper boom, Chile set aside $48.6 billion, more than 30 percent of the country's gross domestic product, resisting calls for more government spending.

At the time, the finance minister Andrés Velasco was criticized for austerity, but after the global credit freeze in 2008, Chile unveiled a $4 billion package of tax cuts and subsidies, including aid to poor families.

"People finally understood what was behind his 'stinginess' of early years," said Sebastian Edwards, a Chilean economist at the University of California, Los Angeles.

3 Gains from Efficient Investment

Openness may also deliver gains by improving a country's ability to augment its capital stock and take advantage of new production opportunities.

The Basic Model

Assume that producing output requires labor *and capital*, which is created over time by investing output.

When we make this change, the LRBC must be modified to include investment *I* as a component of GNE. We still assume that government consumption *G* is zero.

With this change, the LRBC becomes:

$$\underbrace{0}_{\text{Initial wealth is zero}} = \text{Present value of } TB$$

3 Gains from Efficient Investment

Because the *TB* is output (*Q*) minus consumption (*C*), we can rewrite this last equation as:

$$\underbrace{\text{Present value of } Q}_{\text{Present value of } GDP} = \underbrace{\text{Present value of } C + \text{Present value of } I}_{\text{Present value of } GNE} \quad (6\text{-}5)$$

Using this modified LRBC, we now study investment and consumption decisions in two cases:

- A closed economy, in which external borrowing and lending are not possible, the trade balance is zero in all periods, and the LRBC is automatically satisfied.
- An open economy, in which borrowing and lending are possible, the trade balance can be more or less than zero, and we must verify that the LRBC is satisfied.

Efficient Investment: A Numerical Example and Generalization

Baseline case, no investment:

$Q = 100$, $C = 100$, $I = 0$, $TB = 0$, and $W = 0$

- Now assume a shock in year 0 in the form of a new investment opportunity: requires an expenditure of 16 units, and will pay off in future years by increasing the country's output by 5 units in year 1 and all subsequent years (but not in year 0).
- Output would be 100 today, then 105 in every subsequent year.
- The present value of this stream of output is 100 plus 105/0.05 or 2,200, and the present value of consumption must equal 2,200 minus 16, or 2,184.

3 Gains from Efficient Investment

TABLE 6-4

		Period							Present Value
		0	1	2	3	4	5	...	($r^* = 0.05$)
Output *GDP*	*Q*	100	105	105	105	105	105	...	2,200
Expenditure *GNE*	*C*	104	104	104	104	104	104	...	2,184
	I	16	0	0	0	0	0	...	16
Trade balance	*TB*	−20	+1	+1	+1	+1	+1	...	0
Net factor income from abroad	*NFIA*	0	−1	−1	−1	−1	−1	...	—
Current account	*CA*	−20	0	0	0	0	0	...	—
External wealth	*W*	−20	−20	−20	−20	−20	−20	...	—

An Open Economy with Investment and a Permanent Shock The economy runs a trade deficit to finance investment and consumption in period 0 and runs a trade surplus when output is higher in later periods. Consumption is smooth.

Generalizing

- Suppose that a country starts with zero external wealth, constant output *Q*, consumption *C* equal to output, and investment *I* equal to zero.
- An investment opportunity appears requiring ΔK units of output in year 0. This investment will generate an additional ΔQ units of output in year 1 and all later years (but not in year 0).
- The present value of these additions to output is, using (6-2),

$$\text{Change in present value of output} = \frac{\Delta Q}{(1+r^*)} + \frac{\Delta Q}{(1+r^*)^2} + \frac{\Delta Q}{(1+r^*)^2} + \cdots = \frac{\Delta Q}{r^*}$$

- Investment will increase the present value of consumption if and only if $\Delta Q/r^* \geq \Delta K$.

3 Gains from Efficient Investment

- The change in the present value of investment $PV(I)$ is simply ΔK. Investment will increase the present value of consumption if and only if $\Delta Q / r^* \geq \Delta K$. Rearranging,

$$\underbrace{\Delta Q}_{\text{Output increase in subsequent periods}} \geq \underbrace{r^* \times \Delta K}_{\text{Interest payment due in subsequent periods to financial initial investment}}$$

- Dividing by ΔK, investment is undertaken when

$$\underbrace{\frac{\Delta Q}{\Delta K}}_{\substack{MPK \\ \text{Marginal product of capital}}} \geq \underbrace{r^*}_{\text{World real interest rate}} \qquad (6\text{-}6)$$

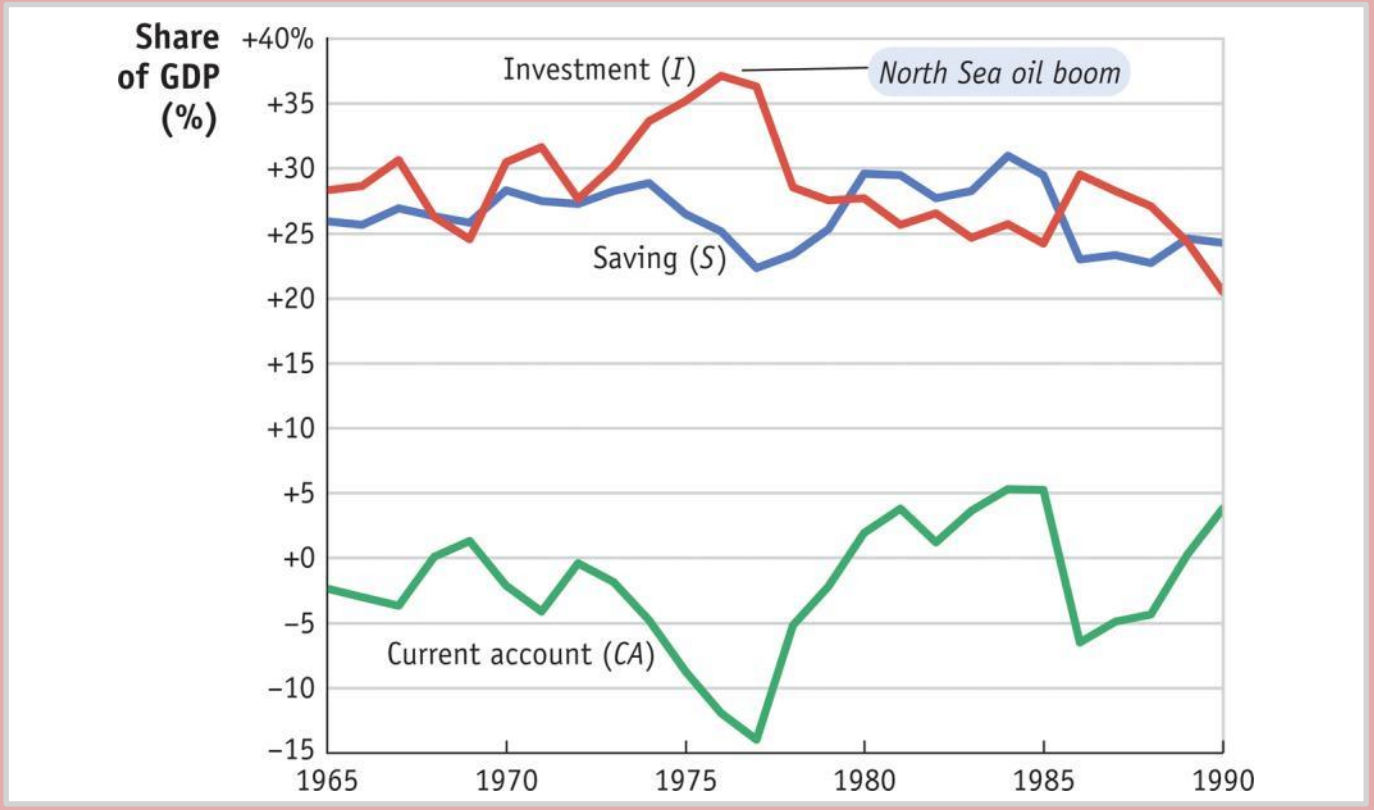
- Firms will invest in projects as long as the marginal product of capital, or MPK, is at least as great as the real interest rate.

Summary: Make Hay While the Sun Shines

- In an open economy, firms borrow and repay to undertake investment that maximizes the present value of output.
- When investing, an open economy sets its *MPK* equal to the world real rate of interest.
- In a closed economy, any resources invested are not consumed. More investment implies less consumption. This creates a trade-off.
- Financial openness helps countries to "make hay while the sun shines" without having to engage in a trade-off against the important objective of consumption smoothing.

APPLICATION

FIGURE 6-6 The Oil Boom in Norway



Following a large increase in oil prices in the early 1970s, Norway invested heavily to exploit oil fields in the North Sea. Norway took advantage of openness to finance a temporary increase in investment by running a very large current account deficit, thus increasing its indebtedness to the rest of the world. At its peak, the current account deficit was more than 10% of GDP.

Can Poor Countries Gain from Financial Globalization?

If the world real interest rate is r^* and a country has investment projects for which *MPK* exceeds r^*, then the country should borrow to finance those projects.

With this in mind, we ask: Why doesn't more capital flow to poor countries?

Production Function Approach

To look at what determines a country's marginal product of capital, economists use a version of a **production function** that maps available capital per worker, $k = K/L$, and the prevailing level of **productivity** A to the level of output per worker, $q = Q/L$, where Q is GDP.

3 Gains from Efficient Investment

A simple and widely used production function takes the form

$$\underbrace{q}_{\text{Output per worker}} = \underbrace{A}_{\text{Productivity level}} \times \underbrace{k}_{\text{Capital per worker}}{}^{\theta}$$

where ϑ is a number between 0 and 1 that measures the contribution of capital to production, or the elasticity of capital with respect to output. ϑ is estimated to be 1/3, and setting the productivity level at 1, we have:

$$q = k^{1/3}$$

MPK, the slope of the production function, is given by

$$MPK = \frac{\Delta q}{\Delta k} = \underbrace{\theta A k^{\theta-1}}_{\text{Slope of the production function}} = \theta \times \frac{q}{k}$$

A Benchmark Model: Countries Have Identical Productivity Levels

- Assuming countries have the same level of productivity, $A = 1$, our model implies that the poorer the country, the higher its MPK, due to the assumptions of diminishing marginal product and a common productivity level.
- Investment ought to be very profitable in Mexico (and India, and all poor countries).
- Investment in Mexico should continue until rates of return are equalized. This trajectory is called **convergence**.
- If the world is characterized by convergence, countries can reach the level of capital per worker and output per worker of the rich country through investment and capital accumulation.

3 Gains from Efficient Investment

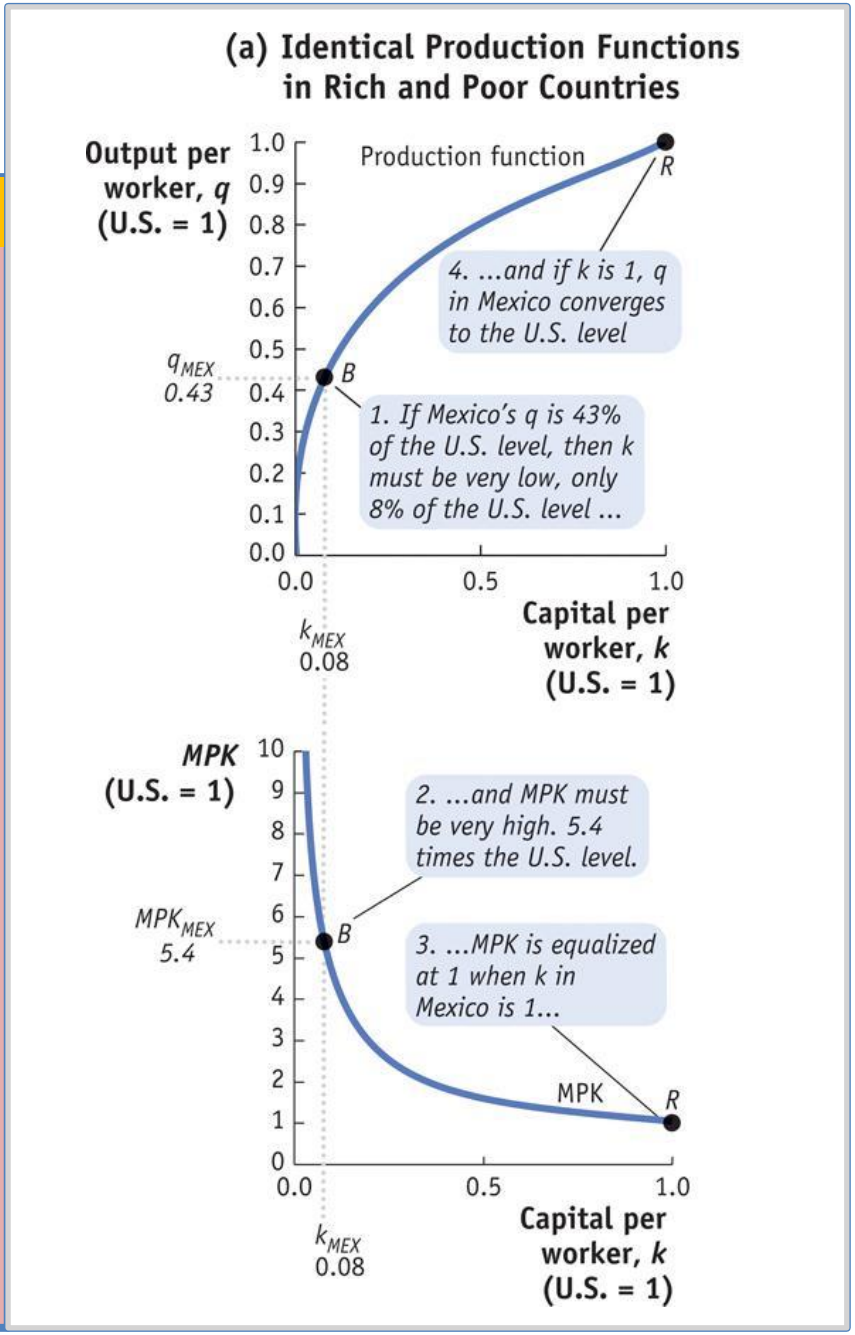
FIGURE 6-7 (1 of 2)

Why Doesn't Capital Flow to Poor Countries?

If poor and rich countries share the same level of productivity (a common production function), then MPK must be very high in poor countries, as shown in panel (a).

For example, if *B* represents Mexico and *R* the United States, we would expect to see large flows of capital to poor countries, until their capital per worker *k* and, hence, output per worker *q* rise to levels seen in the rich world (movement from point *B* to point *R*).

The result is convergence.



3 Gains from Efficient Investment

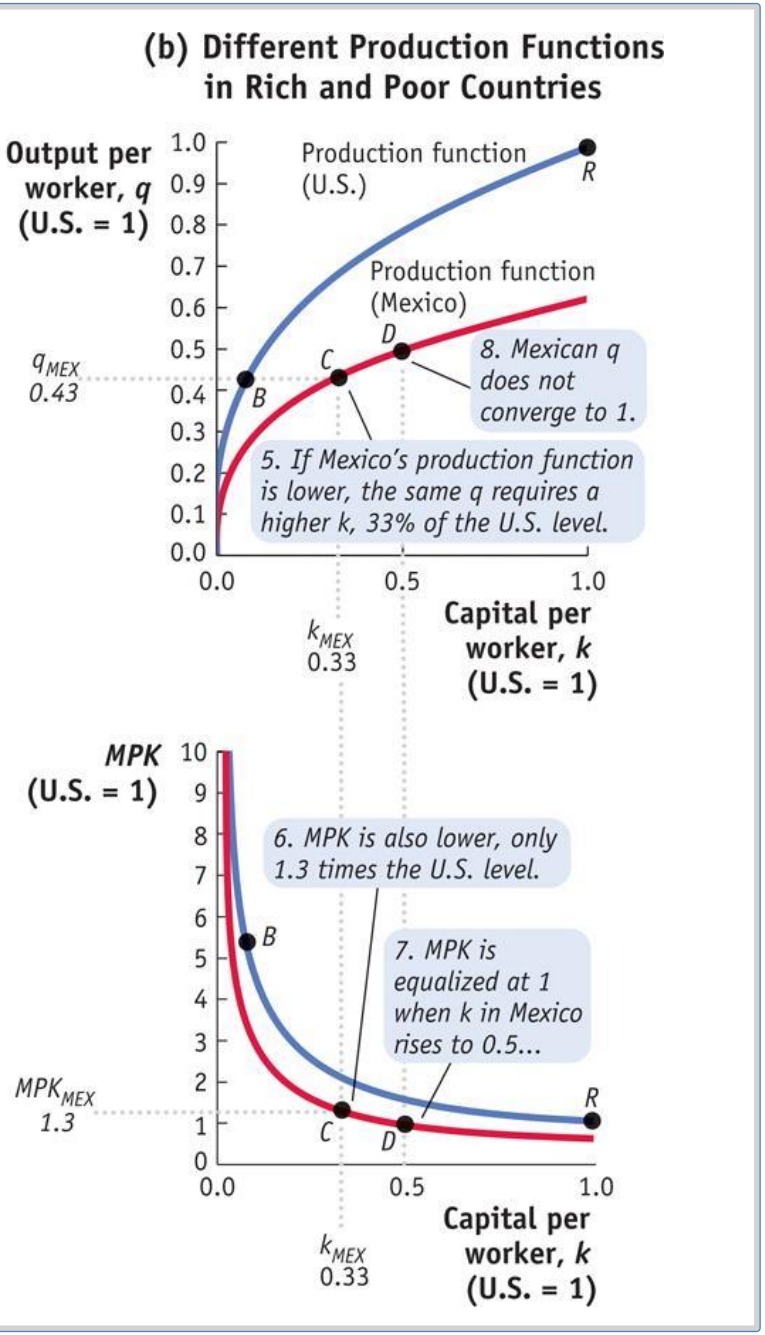
FIGURE 6-7 (2 of 2)

Why Doesn't Capital Flow to Poor Countries? (continued)

This doesn't happen in reality. Poor and rich countries have different levels of productivity (different production functions) and so MPK may not be much higher in poor countries than it is in rich countries, as shown in panel (b).

The poor country (Mexico) is now at *C* and not at *B*. Now investment occurs only until MPK falls to the rest of the world level at point D.

The result is **divergence**. Capital per worker *k* and output per worker *q* do not converge to the levels seen in the rich country.



The Lucas Paradox: Why Doesn't Capital Flow from Rich to Poor Countries?

In his widely cited article "Why Doesn't Capital Flow from Rich to Poor Countries?" Nobel laureate Robert Lucas wrote:

> If this model were anywhere close to being accurate, and if world capital markets were anywhere close to being free and complete, it is clear that, in the face of return differentials of this magnitude, investment goods would flow rapidly from the United States and other wealthy countries to India and other poor countries. Indeed, one would expect no investment to occur in the wealthy countries. . . .

An Augmented Model: Countries Have Different Productivity Levels

To see why capital does not flow to poor countries, we now suppose that *A*, the productivity level, is different in the United States and Mexico, as denoted by country subscripts. Then:

$$\underbrace{q_{US}}_{\text{Output per worker in the United States}} = \underbrace{A_{US}\, k_{US}^{\theta}}_{\text{U.S. production function}} \qquad \underbrace{q_{MEX}}_{\text{Output per worker in Mexico}} = \underbrace{A_{MEX}\, k_{MEX}^{\theta}}_{\text{Mexican production function}}$$

$$\frac{MPK_{MEX}}{MPK_{US}} = \frac{[\,\theta\, q_{MEX}/k_{MEX}\,]}{[\,\theta\, q_{US}/k_{US}\,]} = \frac{q_{MEX}/q_{US}}{k_{MEX}/k_{US}}$$

3 Gains from Efficient Investment

- The data show that Mexico's capital per worker is about one-third that of the United States.
- If the model were true, Mexico would have a level of output level per worker of $(1/3)^{1/3} = 0.69$ or 69% of the U.S. level. However, Mexico's output per worker was much less, 43% of the U.S. level.
- This gap can be explained only by lower productivity in Mexico. We infer *A* in Mexico equals 0.43/0.69 = 63% of that in the United States, meaning Mexico's production function and MPK curves are lower than those for the United States.
- The MPK gap between Mexico and the United States is much smaller, which reduces the incentive for capital to migrate to Mexico from the United States.

APPLICATION

A Versus *k*

- For many developing countries, the predicted gains due to financial globalization are large with the benchmark model, but small once we correct for productivity differences.
- Allowing for productivity differences, investment will not cause poor countries to reach the same level of capital per worker or output per worker as rich countries.
- Economists describe this outcome as one of long-run divergence between rich and poor countries.
- Unless poor countries can lift their levels of productivity, access to international financial markets is of limited use.
- There are not enough opportunities for productive investment for complete convergence to occur.

TABLE 6-5 Why Capital Doesn't Flow to Poor Countries

	(a)		(b)	(c) Outcomes with Financial Globalization			
	Data		Implied Productivity (U.S. = 1)	With U.S. Productivity Level, A_{US} Increase in:		With Actual Productivity, A Increase in:	
Country, Group, or Region	$\frac{q}{q_{US}}$ (1)	$\frac{k}{k_{US}}$ (2)	$\frac{A}{A_{US}}$ (3)	Capital k (4)	Output q (5)	Capital k (6)	Output q (7)
Latin America							
Argentina	0.42	0.38	0.58	+163%	+139%	+15%	+5%
Brazil	0.32	0.24	0.51	+311	+214	+50	+15
Chile	0.26	0.26	0.41	+289	+280	+4	+1
Mexico	0.43	0.33	0.63	+207	+131	+53	+15
Asia							
China	0.06	0.05	0.17	+2,001	+1,569	+41	+12
India	0.09	0.04	0.24	+2,213	+1,064	+180	+41
Indonesia	0.11	0.09	0.24	+980	+805	+30	+9
Pakistan	0.13	0.04	0.37	+2,202	+679	+408	+72
Africa							
Congo	0.12	0.06	0.32	+1,677	+722	+218	+47
Kenya	0.06	0.03	0.18	+3,078	+1,674	+140	+34
Nigeria	0.05	0.04	0.14	+2,259	+1,970	+22	+7
South Africa	0.25	0.23	0.41	+334	+300	+13	+4

TABLE 6-5 Why Capital Doesn't Flow to Poor Countries

	(a)		(b)	(c) Outcomes with Financial Globalization			
	Data		Implied Productivity (U.S. = 1)	With U.S. Productivity Level, A_{US} Increase in:		With Actual Productivity, A Increase in:	
Country, Group, or Region	$\frac{q}{q_{US}}$ (1)	$\frac{k}{k_{US}}$ (2)	$\frac{A}{A_{US}}$ (3)	Capital k (4)	Output q (5)	Capital k (6)	Output q (7)
	Group Average			Based on Group Average			
Per Capita Income Quintiles							
1st (Poorest 20% of countries)	0.04	0.02	0.15	+5,371%	+2,474%	+210%	+46%
2nd (2nd Poorest 20%)	0.10	0.07	0.25	+1,426	+907	+86	+23
3rd (Middle 20%)	0.21	0.18	0.38	+463	+368	+32	+10
4th (2nd Richest 20%)	0.40	0.37	0.56	+167	+148	+12	+4
5th (Richest 20%)	0.75	0.85	0.80	+17	+32	−17	−6
Major Groups							
Developing	0.15	0.11	0.31	+836	+572	+65	+18
Emerging	0.29	0.23	0.48	+329	+241	+41	+12

APPLICATION

A Versus *k*

- An older school of thought focused on *A* as reflecting a country's **technical efficiency**, construed narrowly as a function of its technology and management capabilities.

- Today, many economists believe that the level of *A* may primarily reflect a country's **social efficiency**, construed broadly to include institutions, public policies, and cultural differences.

- And indeed there is some evidence that, among poorer countries, capital tends to flow to the countries with better institutions.

APPLICATION

A Versus *k*

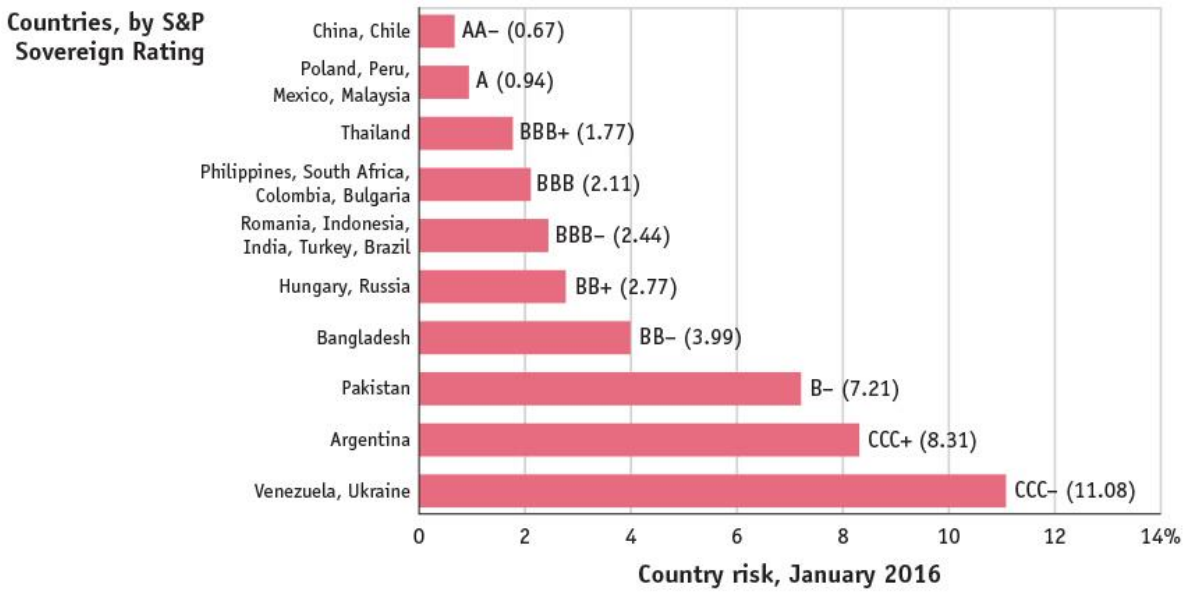
More Bad News?

Other factors are against the likelihood of convergence.

- The model makes no allowance for risk premiums to compensate for the risk of investing in an emerging market (e.g., risks of regulatory changes, tax changes, expropriation, and other political risks).
- Risk premiums can be substantial, and may be large enough to cause capital to flow "uphill" from poor to rich.

APPLICATION

FIGURE 6-8



Risk Premiums in Emerging Markets The risk premium measures the difference between the interest rate on the country's long-term government debt and the interest rate on long-term U.S. government debt.

The larger the risk premium, the more compensation investors require, given their concerns about the uncertainty of repayment.

APPLICATION

A Versus *k*

- The model assumes that investment goods can be acquired at the same relative price, but in developing countries, it often costs much more than one unit of output to purchase one unit of capital goods.

- The model assumes that the contribution of capital to production is equal across countries, but the capital's share may be much lower in many developing countries. This lowers the MPK even more.

APPLICATION

A Versus *k*

- The model suggests that **foreign aid** may do no better than foreign investors in promoting growth.
- Economists dispute whether foreign aid can make a difference to long-term development and growth.
- The argument also extends to nonmarket and preferential lending offered to poor countries by international financial institutions such as the **World Bank**.
- Proponents argue that aid can finance public goods that can provide externalities sufficient to jolt a poor country out of a bad equilibrium or "poverty trap." Aid skeptics reply that the evidence for such effects is weak.

What Does the World Bank Do?

The World Bank (worldbank.org), based in Washington, D.C., is one of the Bretton Woods "twins" established in 1944 (the other is the International Monetary Fund).

Its main arm, the International Bank for Reconstruction and Development, has 188 member countries. Its principal purpose is to provide financing and technical assistance to reduce poverty and promote sustained economic development in poor countries.

The World Bank can raise funds at low interest rates and issue AAA-rated debt as good as that of any sovereign nation. It then lends to poor borrowers at low rates.

HEADLINES

A Brief History of Foreign Aid

Foreign aid is frequently on the political agenda. But can it make any difference?

Nobody doubts that vast amounts of aid have been squandered, but there are reasons to think that we can improve on that record.

We now understand that the kind of aid you give, and the policies of the countries you give it to, makes a real difference.

There's still a lot wrong with the way that foreign aid is administered. Too little attention is paid to figuring out which programs work and which don't, and aid still takes too little advantage of market mechanisms, which are essential to making improvements last.

4 Gains from Diversification of Risk

Diversification can help smooth shocks by promoting risk sharing. With diversification, countries may be able to reduce the volatility of their incomes without *any* net lending or borrowing.

Diversification: A Numerical Example and Generalization

- We consider two countries, A and B, with outputs that fluctuate asymmetrically.
- There are two possible "states of the world," with equal probability of occurring. State 1 is a bad state for A and a good state for B; state 2 is good for A and bad for B.
- We assume that all output is consumed, and that there is no investment or government spending. Output is divided 60–40 between labor income and capital income.

Home Portfolios

- Both countries are closed, and each owns 100% of its capital. Output is the same as income.
- A numerical example is given in Table 6-6, panel (a).
- In state 1, A's output is 90, of which 54 units are payments to labor and 36 units are payments to capital; in state 2, A's output rises to 110, and factor payments rise to 66 for labor and 44 units for capital. The opposite is true in B: In state 1, B's output is higher than it is in state 2.
- The variation of GNI about its mean of 100 is plus or minus 10 in each country. Because households prefer smooth consumption, this variation is undesirable.

4 Gains from Diversification of Risk

TABLE 6-6 (1 of 3) Portfolio Diversification Choices: Diversifiable Risks

On average, GDP equals 100, but in the good state, GDP is 110, and in the bad state it is only 90. Thus, world GDP and GNI always equal 200, world labor income is always 120, and world capital income is always 80. When each country holds only its own assets as in panel (a), GNI equals GDP and is very volatile.

(a) When Countries Hold 100% Home Portfolios
Each Country Owns 100% of Its Own Capital

	COUNTRY A			COUNTRY B			WORLD		
	Capital Income	Labor Income	*GDP = GNI*	Capital Income	Labor Income	*GDP = GNI*	Capital Income	Labor Income	*GDP = GNI*
State 1	36	54	90	44	66	110	80	120	200
State 2	44	66	110	36	54	90	80	120	200
Variation about mean	∓4	∓6	∓10	±4	±6	±10	0	0	0

World Portfolios

- Two countries can achieve partial income smoothing if they diversify their portfolios of capital assets.
- For example, each country could own half of the domestic capital stock, and half of the other country's capital stock. Indeed, this is what standard portfolio theory says that investors should try to do.
- The results of this portfolio diversification are shown in Table 6-6, panel (b).
- Capital income for each country is smoothed at 40 units, the average of A and B capital income in panel (a), also illustrated in Figure 6-9.

TABLE 6-6 (2 of 3) Portfolio Diversification Choices: Diversifiable Risks (continued)

When each country holds a 50% share of the world portfolio as in panel (b), GNI volatility decreases because capital income is now smoothed.

(b) When Countries Hold World Portfolios

Each Country Owns 50% A Capital and 50% B Capital with Payoffs as in Panel (a)

	COUNTRY A			COUNTRY B			WORLD		
	Capital Income	Labor Income	*GDP = GNI*	Capital Income	Labor Income	*GDP = GNI*	Capital Income	Labor Income	*GDP = GNI*
State 1	40	54	94	40	66	106	80	120	200
State 2	40	66	106	40	54	94	80	120	200
Variation about mean	0	∓ 6	∓ 6	0	± 6	± 6	0	0	0

TABLE 6-6 (3 of 3) Portfolio Diversification Choices: Diversifiable Risks (continued)

When each country holds a portfolio made up only of the other country's capital as in panel (c), GNI volatility falls even further by making capital income vary inversely with labor income.

(c) When Countries Hold 100% Foreign Portfolios

Each Country Owns 100% of the Other Country's Capital with Payoffs as in Panel (a)

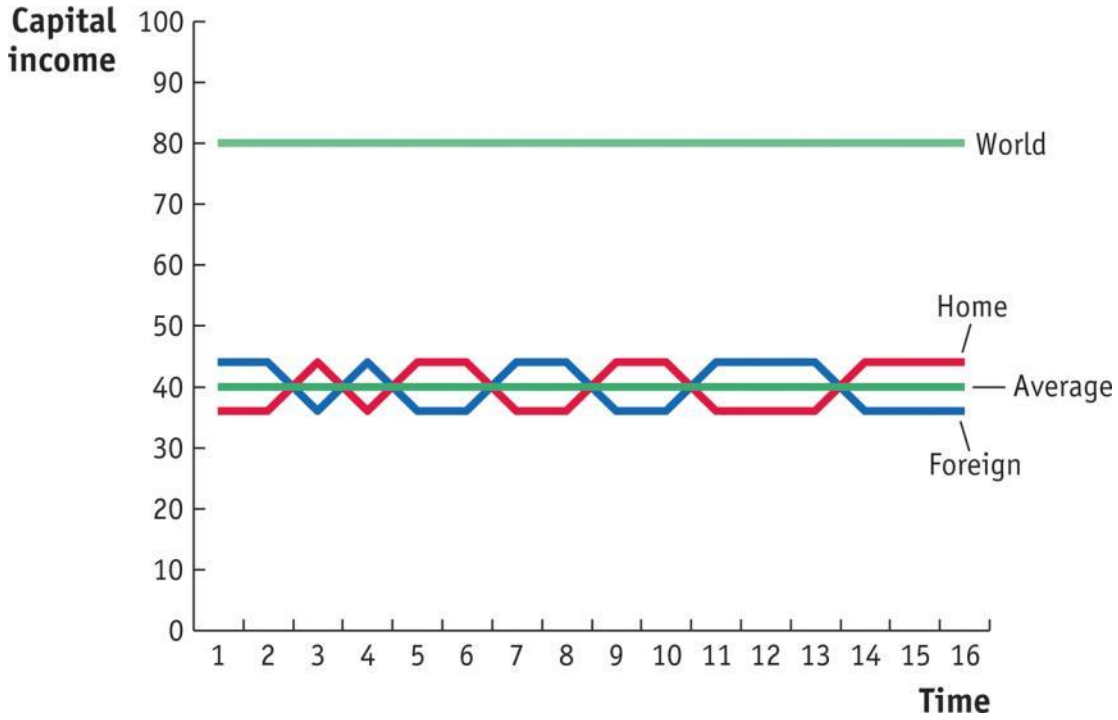
	COUNTRY A			COUNTRY B			WORLD		
	Capital Income	Labor Income	*GDP = GNI*	Capital Income	Labor Income	*GDP = GNI*	Capital Income	Labor Income	*GDP = GNI*
State 1	44	54	98	36	66	102	80	120	200
State 2	36	66	102	44	54	98	80	120	200
Variation about mean	± 4	∓ 6	∓ 2	∓ 4	± 6	± 2	0	0	0

4 Gains from Diversification of Risk

- How does the balance of payments work when countries hold the world portfolio?
- Consider country A. In state 1 (bad for A, good for B), A's income or GNI exceeds A's output. The extra income is net factor income from abroad, which is the difference between the income earned on A's external assets and the income paid on A's external liabilities.
- With that net factor income, country A runs a negative trade balance, which means that A can consume more than it produces.
- Adding the trade balance of –4 to net factor income from abroad of +4 means that the current account is 0, and there is still no need for any net borrowing or lending.

4 Gains from Diversification of Risk

FIGURE 6-9 Portfolio Diversification and Capital Income: Diversifiable Risks



The figure shows fluctuations in capital income over time for different portfolios, based on the data in Table 6-6. Countries trade claims to capital income by trading capital assets. When countries hold the world portfolio, they each earn a 50–50 split (or average) of world capital income. World capital income is constant if shocks in the two countries are asymmetrical and cancel out. All capital income risk is then fully diversifiable.

Generalizing

Let us generalize the concept of capital income smoothing through diversification.

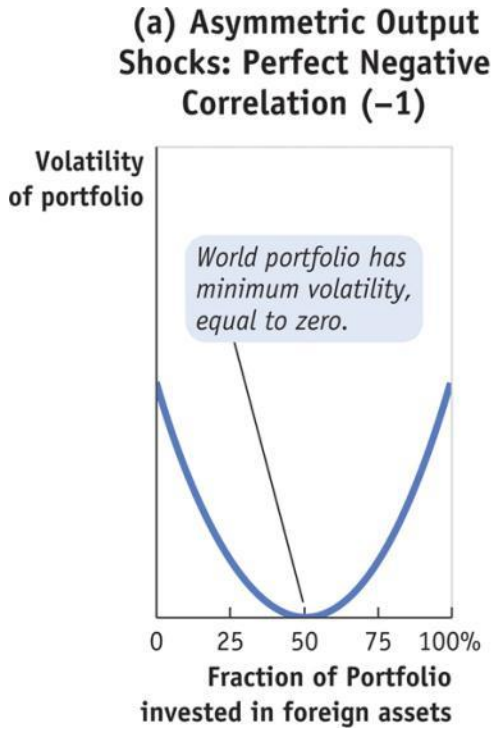
- Each country's payments to capital are volatile. A portfolio of 100% of country A's capital or 100% of country B's capital has capital income that varies by plus or minus 4 (between 36 and 44). But a 50–50 mix of the two leaves the investor with a portfolio of minimum, zero volatility (it always pays 40).

- In general, there will be some common shocks, which are identical shocks experienced by both countries. In this case, there is no way to avoid this shock by portfolio diversification.

- But as long as some shocks are asymmetric, the two countries can take advantage of gains from the diversification of risk.

4 Gains from Diversification of Risk

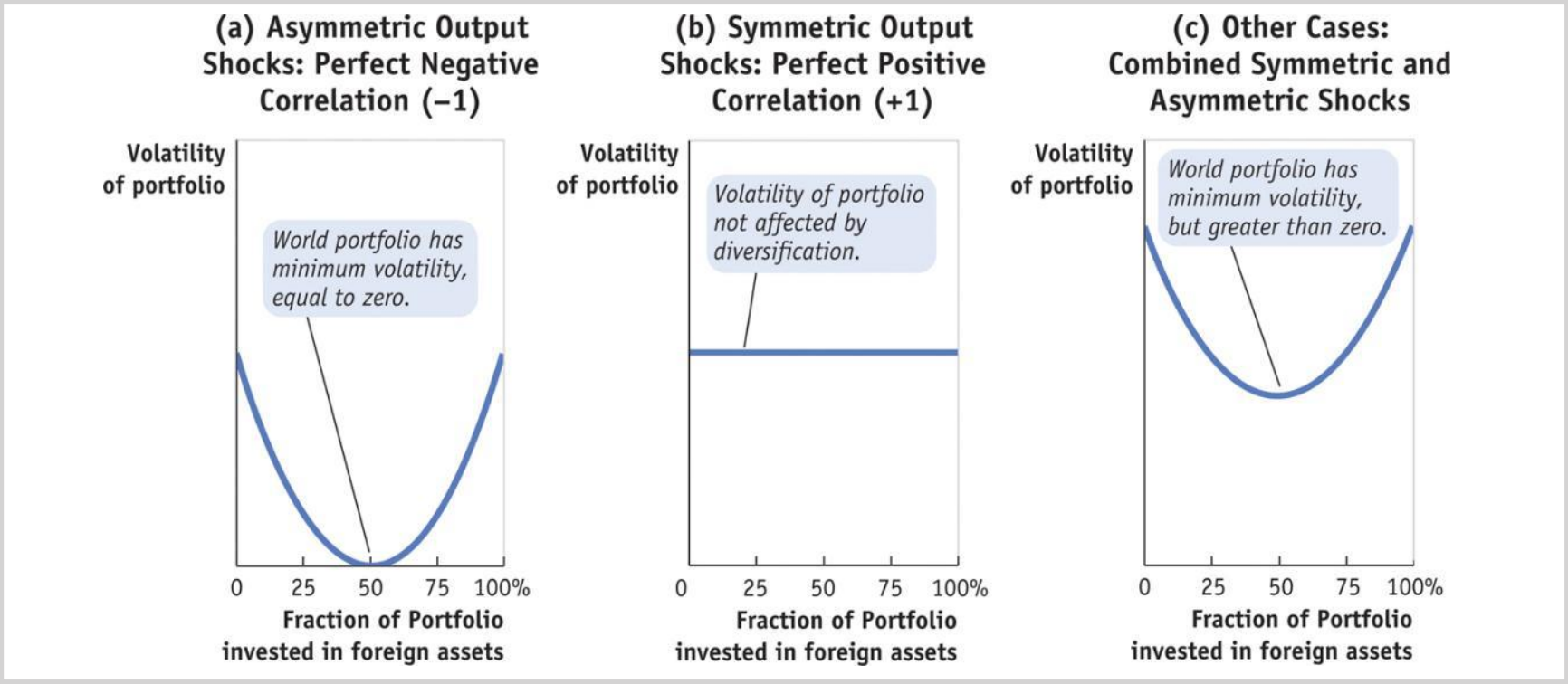
FIGURE 6-10 (1 of 2) Return Correlations and Gains from Diversification



The charts plot the volatility of capital income against the share of the portfolio devoted to foreign capital. The two countries are identical in size and experience shocks of similar amplitude. In panel (a), shocks are perfectly asymmetric (correlation = −1), capital income in the two countries is perfectly *negatively* correlated. Risk can be eliminated by holding the world portfolio, and there are large gains from diversification.

4 Gains from Diversification of Risk

FIGURE 6-10 (2 of 2) Return Correlations and Gains from Diversification (continued)



In panel (b), shocks are perfectly symmetric (correlation = +1), and capital income in the two countries is perfectly *positively* correlated. Risk cannot be reduced, and there are no gains from diversification. In panel (c), when both types of shock are present, the correlation is neither perfectly negative nor positive. Risk can be partially eliminated by holding the world portfolio, and there are still some gains from diversification.

Limits to Diversification: Capital Versus Labor Income

- Labor income risk (and hence GDP risk) may not be diversifiable through the trading of claims to labor assets or GDP.
- But capital and labor income in each country are perfectly correlated, and shocks to production tend to raise and lower incomes of capital and labor simultaneously.
- This means that, as a risk-sharing device, trading claims to capital income can substitute for trading claims to labor income.

APPLICATION

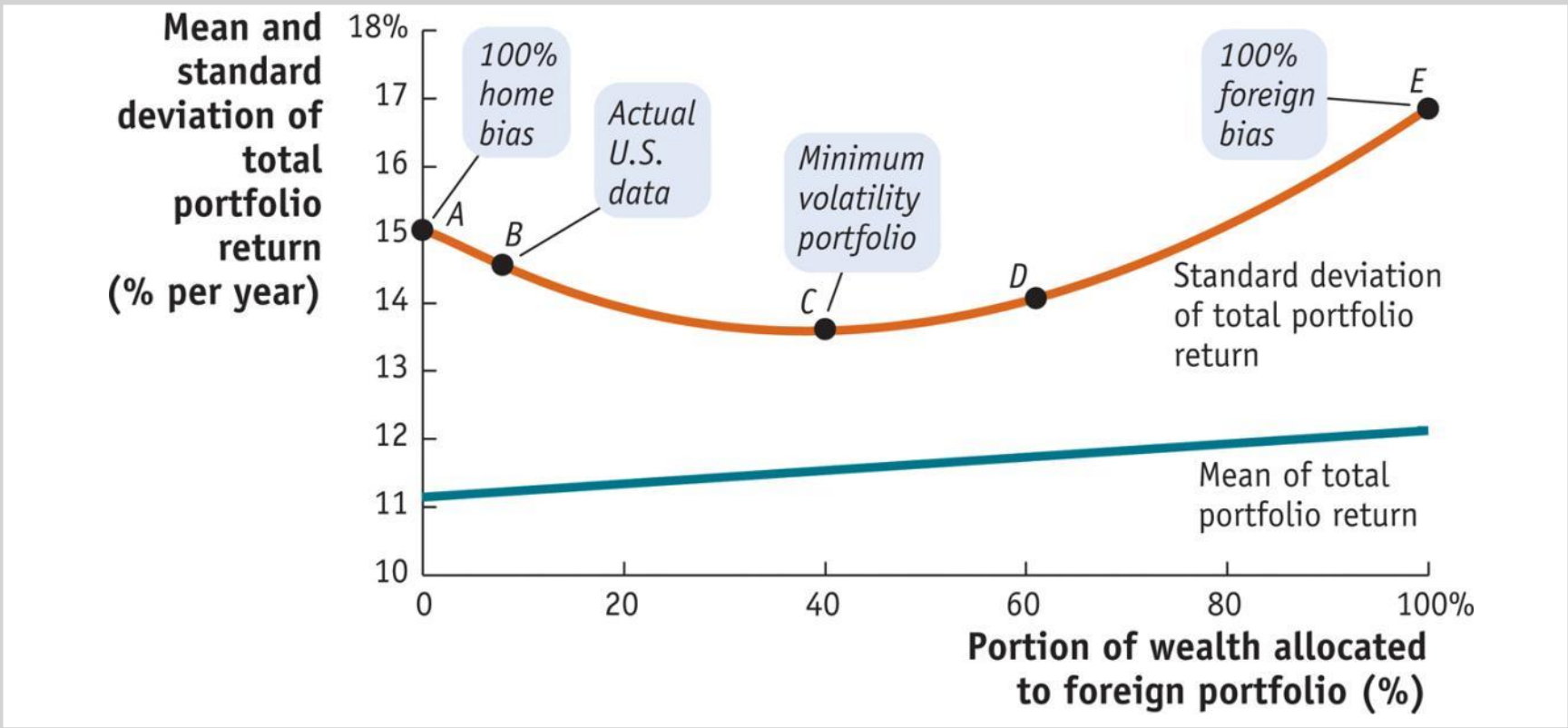
The Home Bias Puzzle

In practice, we do not observe countries owning foreign-biased portfolios or even the world portfolio.

Countries tend to own portfolios that suffer from a strong **home bias**, a tendency of investors to devote a disproportionate fraction of their wealth to assets from their own home country, when a more globally diversified portfolio might protect them better from risk.

APPLICATION

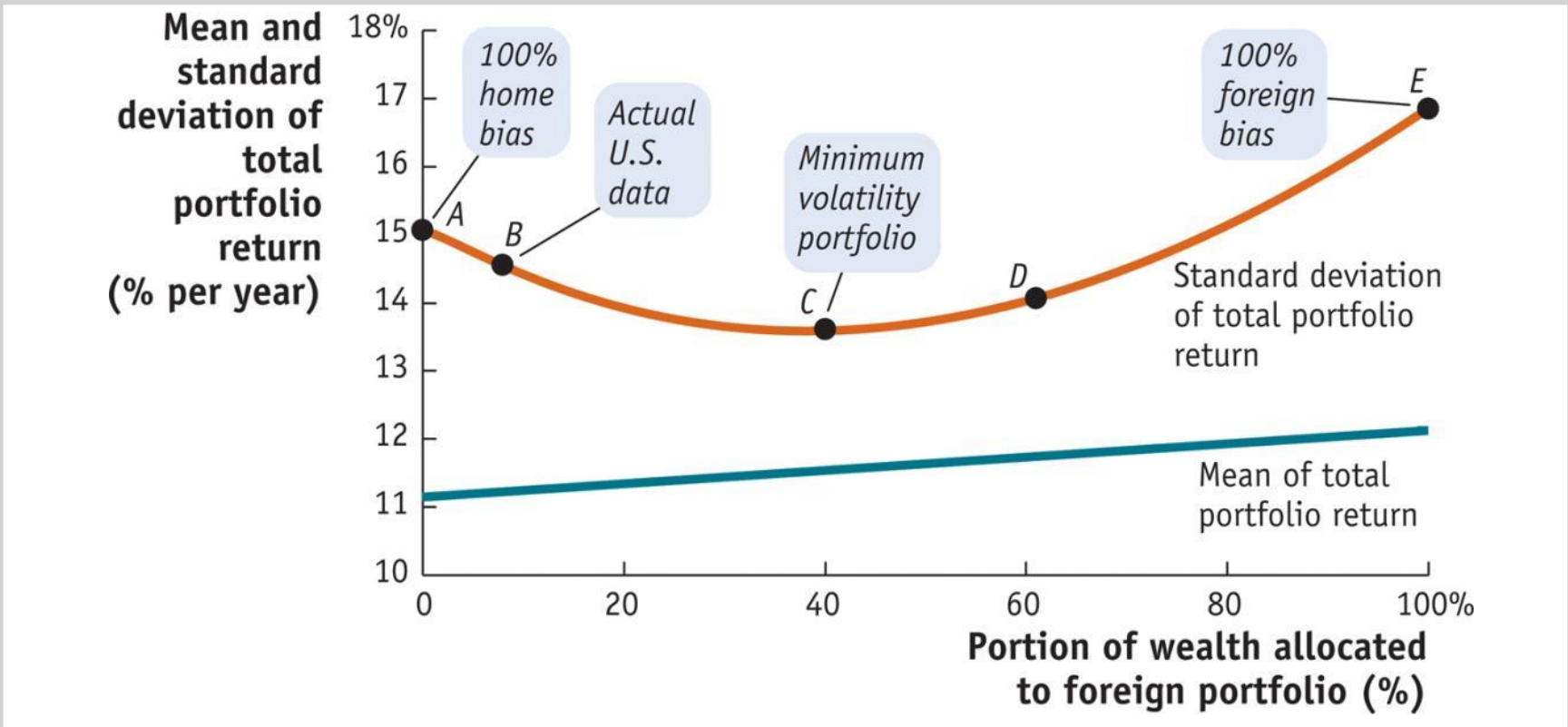
FIGURE 6-11 (1 of 2) Portfolio Diversification in the United States



The figure shows the return (mean of monthly return) and risk (standard deviation of monthly return) for a hypothetical portfolio made up from a mix of a pure home U.S. portfolio (the S&P 500) and a pure foreign portfolio (the Morgan Stanley EAFE) using data from the period 1970–1996.

APPLICATION

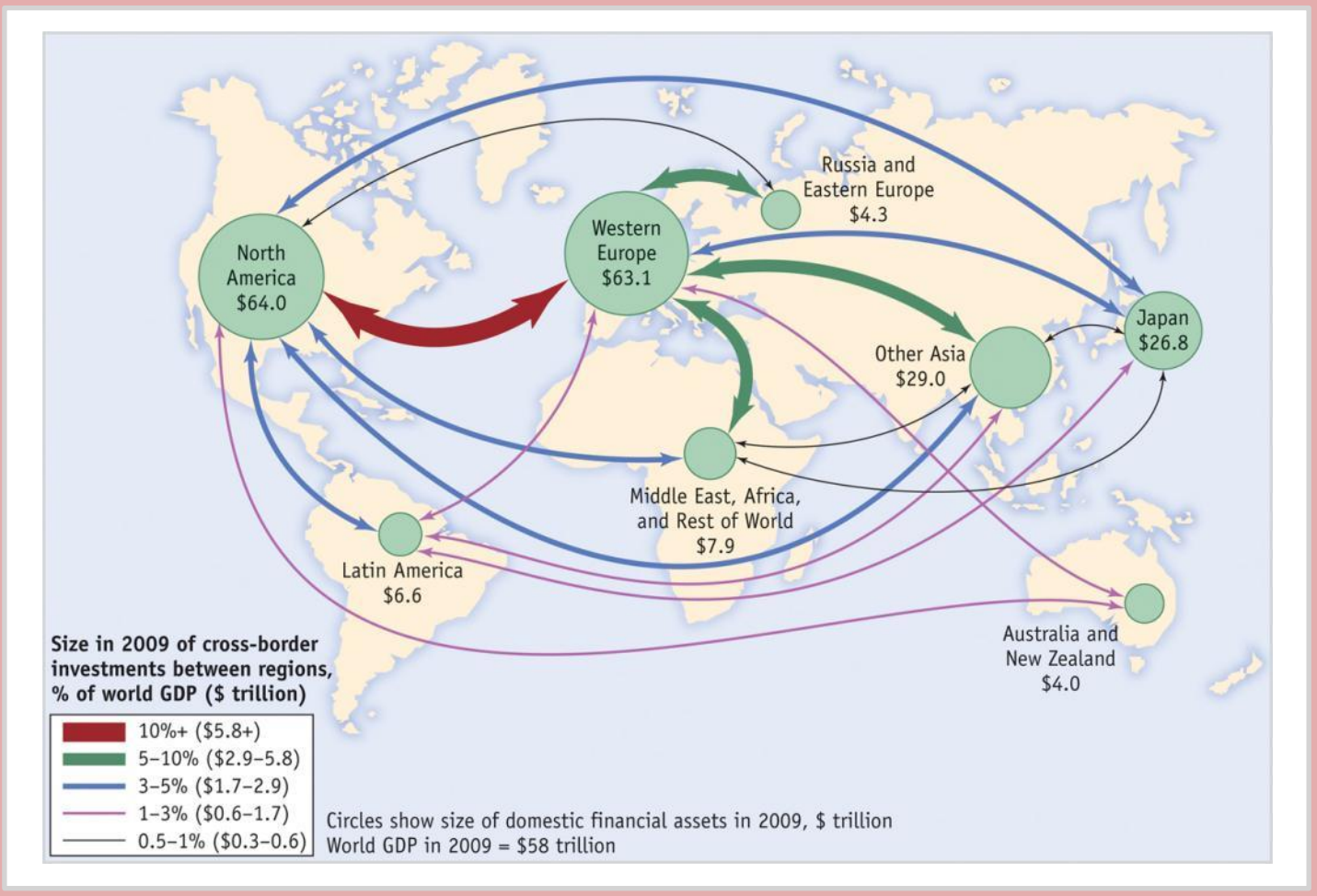
FIGURE 6-11 (2 of 2) Portfolio Diversification in the United States (continued)



U.S. investors with a 0% weight on the overseas portfolio (point *A*) could have raised that weight as high as 39% (point *C*) and still raised the return and lowered risk. Even moving to the right of *C* (toward *D*) would make sense, though how far would depend on how the investor viewed the risk-return trade-off. The actual weight seen was extremely low at just 8% (point *B*) and was considered a puzzle.

APPLICATION

FIGURE 6-12 The Globalization of Cross-Border Finance



In recent years, the size of cross-border investments has grown dramatically.

4 Gains from Diversification of Risk

If countries were able to borrow and lend without limit or restrictions, they should be able to cope quite well with the array of possible shocks, in order to smooth consumption.

- *In reality*, as the evidence shows, countries are not able to fully exploit the intertemporal borrowing mechanism.
- *In theory*, if countries were able to pool their income streams and take shares from that common pool of income, all country-specific shocks would be averaged out, and the sole undiversifiable shocks would be common global shocks.

4 Gains from Diversification of Risk

Financial openness allows countries—like households—to follow the old adage "Don't put all your eggs in one basket."

- *In practice*, however, risk sharing through asset trade is limited. The market for claims to capital income is incomplete because not all capital assets are traded (e.g., many firms are privately held and are not listed on stock markets), and trade in labor assets is legally prohibited.

- Investors have shown very little inclination to invest their wealth outside their own country, although that may be slowly changing in an environment of ongoing financial globalization.

Conclusions

- Financial markets help households smooth consumption in the face of shocks to their income.
- Financial markets allow firms to borrow in order to invest efficiently in productive projects and permit investors to diversify their portfolios across a wide range of assets.
- The same principles apply to countries, subject to the long-run budget constraint. They face income shocks, new investment opportunities, and country-specific risks.
- However, the use of global financial markets is still limited. Even in advanced countries, consumption shocks remain, investment is often financed out of domestic saving, and a home bias persists in investors' portfolios.

Conclusions

- We see no consumption smoothing gains in poorer countries, and there is little scope for development based on external finance until productivity levels are improved.
- Many emerging markets are still on the road to full financial liberalization, and large barriers remain.
- Institutional weaknesses in developing countries may hinder the efficient operation of the mechanisms we have studied. Such weaknesses may be corrected by the stimulus to competition, transparency, accountability, and stability that financial openness may provide.
- The benefits of financial globalization are likely to be much smaller for these countries, and they must also be weighed against potential offsetting costs, such as the risk of crises.

KEY POINTS

1. Countries can use their external wealth as a buffer to smooth consumption in the face of fluctuations in output or investment. However, this process is not without its limits. Each country must service its debts and must not allow debts to roll over and grow without limit at the real rate of interest.

KEY POINTS

2. The condition that guarantees that debts are serviced is the long-run budget constraint, or LRBC: The present value of future trade deficits must equal minus the present value of initial wealth.

KEY POINTS

3. The long-run budget constraint can be put another way: the present value of GDP plus the present value of initial wealth (the country's resources) must equal the present value of GNE (the country's spending).

KEY POINTS

4. In a closed economy, the country must satisfy $TB = 0$ in every period as there is no external trade in goods or assets. In an open economy, the economy has to satisfy only the long-run budget constraint, which states that TB equals minus the present value of initial wealth. The former is a tighter constraint than the latter—implying that there can be gains from financial globalization.

KEY POINTS

5. The current account may be lower than normal in any period when there is unusually high private or public consumption (such as during a war), unusually low output (such as occurs after a natural disaster), or unusually high investment (such as that following a natural resource discovery).

KEY POINTS

6. If poor countries had the same productivity as rich countries, there would be substantial gains from investing in poor countries where the marginal product of capital, or MPK, would be much higher. However, this is not the case, and there is little evidence of investment inefficiency at the global level as measured by MPK gaps between countries. What gaps there are may be due to risk premiums. Consequently, large-scale investment (and foreign aid) in poor countries may not accelerate economic growth.

KEY POINTS

7. In addition to lending and borrowing, a country can reduce its risk by the international diversification of income claims. In practice, only capital income claims (capital assets) are tradable. Labor is not a tradable asset.

KEY POINTS

8. When assets are traded internationally, two countries can eliminate the income risk arising from country-specific or idiosyncratic shocks; such risk is called diversifiable risk. However, they can do nothing to eliminate the global risk, the shock common to both countries, called undiversifiable risk.

KEY POINTS

9. In practice, the use of the current account as a buffer and the extent of diversification fall far short of theory's prediction, even in advanced countries. Consumption volatility persists, domestic investment is mostly financed from domestic saving, and portfolios display pronounced home bias.

KEY POINTS

10. In emerging markets and developing countries, financial openness has progressed more slowly and access to global capital markets is more limited and often on worse terms. The gains from financial openness appear weaker, and there is the downside risk of sudden stops and other crises. For gains to be realized, countries may require deeper institutional changes and further liberalization.

KEY TERMS

small open economy
world real interest rate
present value
long-run budget constraint (LRBC)
perpetual loan
sudden stops
precautionary saving
foreign reserves
sovereign wealth funds
marginal product of capital (MPK)
production function
productivity
convergence
divergence
technical efficiency
social efficiency
foreign aid
World Bank
diversification
home bias

Thank You for your attention!