

# Lecture Six

## The Benefits of Financial Globalization

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# Outline

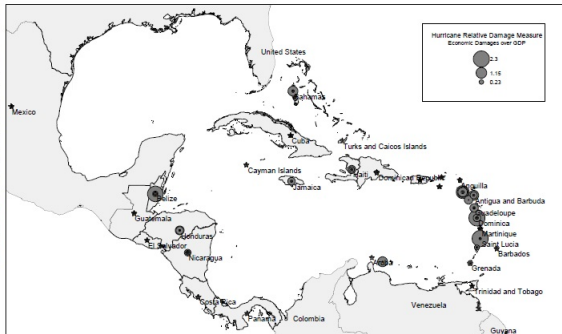
1. Macroeconomic Shocks and The Long-Run Budget Constraint
2. Gains from the Financial Globalization
3. Reconsidering the Benefits of Financial Globalization
4. Exercise

# Hurricanes as Macroeconomic Shocks



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.

HURRICANE ECONOMIC DAMAGES BY COUNTRY: 1960-2003

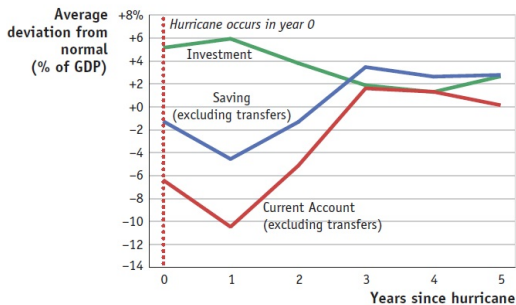


Note: The right figure is from Bluedorn(2005).

# The Macroeconomics of Hurricanes

$$CA = S - I$$

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.

*Note:* Transfers are excluded from saving and the current account, and the saving measure is calculated as  $S - NUT = I + CA - NUT$ .

*Source:* John C. Bluedorn, 2005, "Hurricanes: Intertemporal Trade and Capital Shocks," Oxford Economics Working Paper No. 2005-241.

# Derivation of LRBC

Suppose for a **Small Open Economy**, where the country cannot influence prices in world markets for goods and services, there is:

- $NUT_t = 0 \Rightarrow CA_t = TB_t + NFIA_t = TB_t + r^* W_{t-1}$ , where  $W_{t-1} = A_{t-1} - L_{t-1}$  is last period's external wealth.
- $VAL_t = 0 \Rightarrow \Delta W_t = W_t - W_{t-1} = CA_t$

Combine them together we get  $W_T = TB_T + (1 + r^*)W_{T-1}$ , and:

$$W_T = \frac{W_{T+1} - TB_{T+1}}{1 + r^*} = \frac{W_{T+2} - TB_{T+2}}{(1 + r^*)^2} - \frac{TB_{T+1}}{1 + r^*} = \dots$$

$$\begin{array}{ccc} -W_T & = & \underbrace{\sum_{s=1}^{\infty} \frac{TB_{T+s}}{(1 + r^*)^s}} \\ \text{minus initial wealth,} & & \text{present value of future trade balances} \\ \text{or initial debt} & & \end{array}$$

# Implication of LRBC

$$-W_T = \sum_{s=1}^{\infty} \frac{TB_{T+s}}{(1+r^*)^s} \Leftrightarrow W_T + \sum_{s=1}^{\infty} \frac{GDP_{T+s}}{(1+r^*)^s} = \sum_{s=1}^{\infty} \frac{GNE_{T+s}}{(1+r^*)^s}$$

The long-run budget constraint (LRBC) says that **in the long run and in present value terms**:

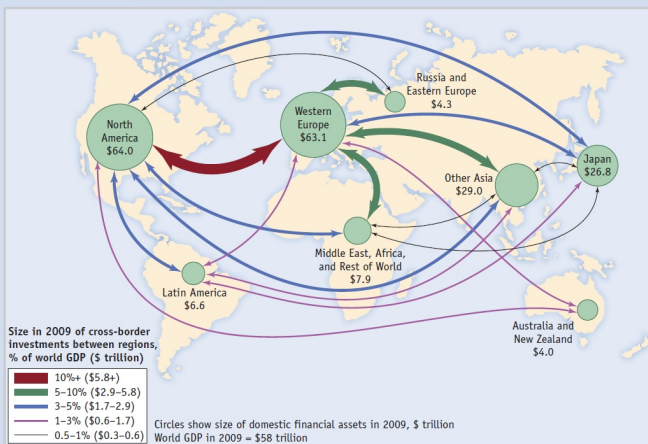
- A country's trade balance must equal its initial debts;
- A country's expenditures must equal its production plus any initial wealth.

This conclusion implies that:

- In a closed economy, a country has to balanced trade each and every year.
- In an open economy, a country is required to maintain a balance between its trade deficits and surpluses that satisfies the long-run budget constraint – they must balance only in a present value sense, rather than year by year. This is the essence of the theoretical argument that there are **gains from financial globalization**.

# Cross-Border Finance

FIGURE 6-12



**The Globalization of Cross-Border Finance** In recent years, the size of cross-border investments has grown dramatically.

Source: McKinsey Global Institute, Mapping Global Capital Markets 2011. Data from the IMF.

# Closed and Open Economy without Shocks

Suppose for a closed economy ( $TB = 0$ ):

- The initial wealth  $W_{-1} = 0$ ;
- The world's real interest rate  $r^* = 5\%$ ;
- $I = G = 0$ , the output and consumption of each period is  $C = Q = 100$ .

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

# Closed vs. Open Economy with Temporary Shocks

Suppose there is a negative shock in the zero period  $\Delta Q_0 = -21$ , and outputs recover afterwards.

- In a **closed economy**,  $TB = 0$ ,  $Q_t = C_t$ :

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

- For an open economy  $TB \neq 0$ ,  $Q_t \neq C_t$ , the country can **smooth consumption** through international borrowing and lending **according to LRBC**.

# An Open Economy with Temporary Shocks

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

$$-W_T = \sum_{s=1}^{\infty} \frac{Q_{T+s} - C_{T+s}}{(1+r^*)^s} = 0 \Rightarrow \frac{79}{1+r^*} + \frac{100}{(1+r^*)^2} + \frac{100}{(1+r^*)^3} \dots = \frac{C}{r^*}$$

$$\Rightarrow C = 100 - 21 \times 0.05/1.05 = 99$$

# An Open Economy with Permanent Shocks

If the shock is permanent, the consumption has to be adjusted according to LRBC conditions:

$$-W_T = \sum_{s=1}^{\infty} \frac{Q_{T+s} - C_{T+s}}{(1+r^*)^s} = 0$$

$$\Rightarrow \sum_{s=1}^{\infty} \frac{\Delta Q_{T+s}}{(1+r^*)^s} = \frac{\Delta C}{r^*} < 0$$

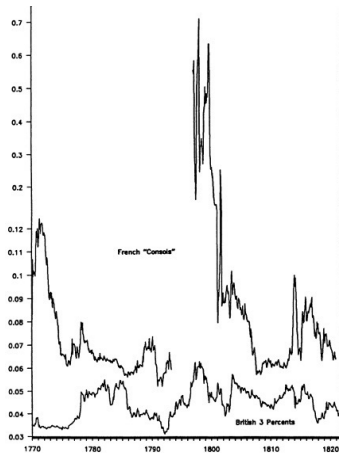
Suppose for all  $t$ ,  $\Delta Q_t = \Delta Q < 0$ , there is:

$$\Delta C = \Delta Q$$

## Case Study: Wars and the Current Account



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



Source: Bordo and White(1991), Figure 3, "Yields on British and French securities: 1770-1821".

## Summary: Save for a Rainy Day

- In a closed economy, the consumption fluctuates with the output.

$$TB = 0, \Delta C_t = \Delta Q_t$$

- For an open economy with temporary shock, the desired smooth consumption path can be achieved by running a trade deficit during bad times and a trade surplus during good times. Borrowing and lending to smooth consumption fluctuations makes a household better off. The same applies to countries.

$$TB \neq 0, \Delta Q_0 < 0, \Delta Q_t = 0 \text{ for } t > 0 \Rightarrow \Delta C = \frac{\Delta Q_0 r^*}{1 + r^*}$$

- For an open economy with permanent shock, the consumption has to be adjusted according to LRBC conditions.

$$TB \neq 0, \Delta Q_t = \Delta Q < 0 \text{ for all } t \Rightarrow \Delta C = \Delta Q$$

# Closed Economy: Thrift Savings for Investment

For a closed economy ( $TB = 0$ ):

- The initial wealth  $W_{-1} = 0$ ;
- The world's real interest rate  $r^* = 5\%$ ;
- $G = 0$ , the output of each period is  $Q = 100$ .

Suppose you find a great investment opportunity. If you have no financial dealings with the outside world, you would have to sacrifice consumption and save to finance the investment.

		Period				Present Value
		0	1	2	...	( $r^* = 0.05$ )
Output $GDP$	$Q$	100	105	105	...	2,200
Expenditure $GNE$	$C$	84	105	105	...	2,184
	$I$	16	0	0	...	16
Trade balance	$TB$	0	0	0	...	0

# Open Economy: Borrow to Invest

For an open economy, the country can complete the investment with smooth consumption.

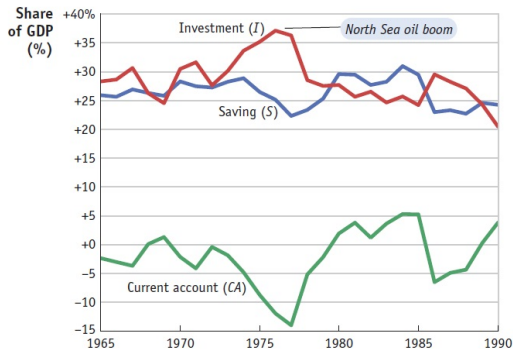
		Period				Present Value
		0	1	2	...	( $r^* = 0.05$ )
Output <i>GDP</i>	<i>Q</i>	100	105	105	...	2,200
Expenditure <i>GNE</i>	<i>C</i>	104	104	104	...	2,184
	<i>I</i>	16	0	0	...	16
Trade balance	<i>TB</i>	-20	+1	+1	...	0
Net factor income from abroad	<i>NFIA</i>	0	-1	-1	...	-
Current account	<i>CA</i>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

$$-W_T = \sum_{s=1}^{\infty} \frac{Q_{T+s} - C_{T+s} - I_{T+s}}{(1+r^*)^s} = 0 \Rightarrow \frac{100}{1+r^*} + \frac{105}{(1+r^*)^2} + \dots - \frac{16}{1+r^*} = \frac{C}{r^*}$$

$$\Rightarrow C = 105 - \frac{21 \times 0.05}{1.05} = 104$$

# Case Study: Delinking Saving from Investment

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.

Source: Alan M. Taylor, 2002, "A Century of Current Account Dynamics," *Journal of International Money and Finance*, 21(6), 725-748.

## Summary: Make Hay While the Sun Shines

- A closed economy must be self-sufficient. Any resources invested are resources not consumed. More investment implies less consumption.
- In theory, the financial openness helps countries to “make hay while the sun shines” – and, in particular, to do so without having to engage in a trade-off against the important objective of consumption smoothing.
- In reality, there are various frictions in the global financial markets, preventing perfect integration and free capital flows.

# Asymmetric Shocks and Portfolio Diversification

(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	$\mp 4$	$\mp 6$	$\mp 10$	$\pm 4$	$\pm 6$	$\pm 10$	0	0	0

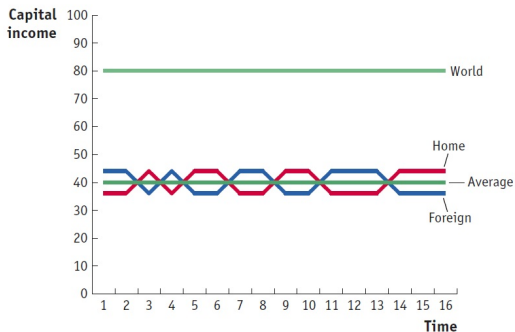
(b) When Countries Hold World Portfolios  
Each Country Owns 50% A Capital and 50% B Capital with Payoffs as in Panel (a)

	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	$\mp 6$	$\mp 6$	0	$\pm 6$	$\pm 6$	0	0	0

# Asymmetric Shocks and Portfolio Diversification

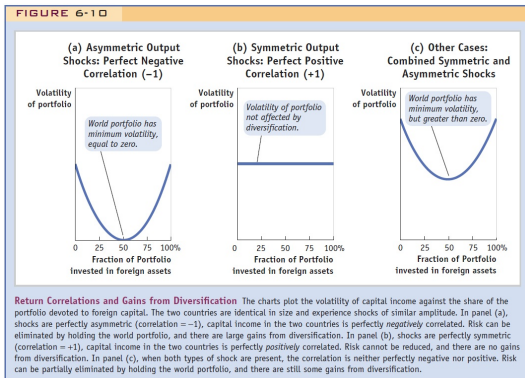
(c) When Countries Hold 100% Foreign Portfolios  
*Each Country Owns 100% of the Other Country's Capital with Payoffs as in Panel (a)*

	COUNTRY A			COUNTRY B			WORLD		
	Capital	Labor	GDP	Capital	Labor	GDP	Capital	Labor	GDP
	Income	Income	=	Income	Income	=	Income	Income	=
			GNI			GNI			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	$\pm 4$	$\mp 6$	$\mp 2$	$\mp 4$	$\pm 6$	$\pm 2$	0	0	0



# Limits to Diversified

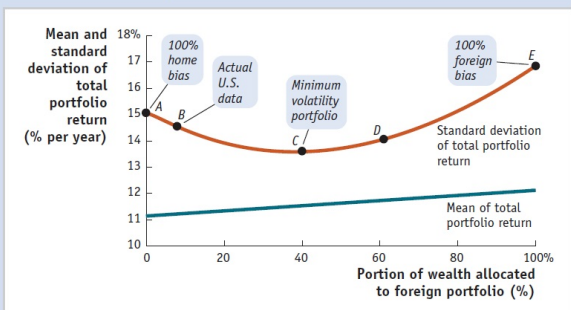
- Symmetric shocks could not be diversified.



- Labor income risk could not be diversified.

# Case Study: The Home Bias Puzzle

FIGURE 6-11



**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 to 1996. 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.

Source: Karen K. Lewis, 1999, "Trying to Explain Home Bias in Equities and Consumption," *Journal of Economic Literature*, 37(2), 571–608.

## LRBC for a Small Open Economy

For a **Small Open Economy**, who is the price taker in the international market, there is:

- $NUT_t = 0 \Rightarrow CA_t = TB_t + NFA_t = TB_t + r^* W_{t-1}$ , where  $W_{t-1} = A_{t-1} - L_{t-1}$  is last period's external wealth.
- $VAL_t = 0 \Rightarrow \Delta W_t = W_t - W_{t-1} = CA_t$

The Long-Run Budget Constraint is:

$$-W_T = \sum_{s=1}^{\infty} \frac{TB_{T+s}}{(1+r^*)^s}$$

For a **large country** who can influence the price in the international market, there is  $NIFA_t = r^* A_{t-1} - r L_{t-1}$ ,  $r^* \neq r$ , and  $VAL_t \neq 0$ . So the LRBC should be adjusted accordingly.

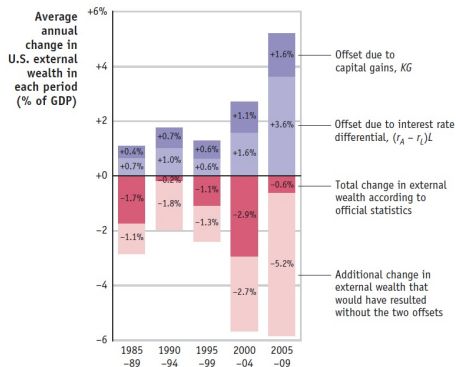
## The Favorable Situation of U.S.

Since the 1980s, the United States has been the world's largest ever net debtor with  $W < 0$ , which implies that  $NFIA = r^* W$  should be negative as well. But the reality is  $NFIA > 0$  throughout this period! **How can this be?**

- **Exorbitant Privilege:** The United States receives interest at the world real interest rate on its external assets but pays interest at a lower rate on its liabilities,  $r^* > r$ , just like a “banker to the world”.
- **Manna from Heaven:** The United States can get capital gains, or valuation effects of the external wealth,  $KG = VAL > 0$ , like a “venture capitalist to the world”.

# The Favorable Situation of U.S.

$$\begin{aligned}\Delta W_T &= CA_T + VAL_T = TB_T + r^* A_{T-1} - r L_{T-1} + K G_T \\ &= \underbrace{TB_T + r^* W_{T-1}}_{\text{Conventional effects}} + \underbrace{(r^* - r) L_{T-1} + K G_T}_{\text{Additional effects}}\end{aligned}$$



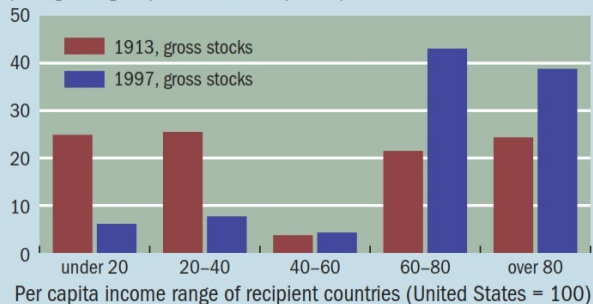
The United States has seen these offsets increase markedly in recent years, rising from 1% of GDP in the late 1980s to an average of about 4% of GDP in the 2000s.

# Capital Flows in Two Waves of Globalization

## Who benefits?

Foreign capital used to flow to poor countries, but now flows mostly to rich countries.

(average foreign capital to GDP ratio, percent)



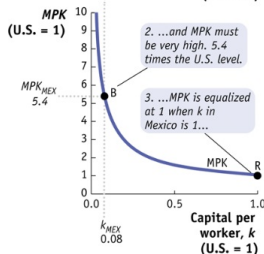
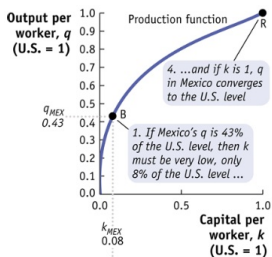
Source: Taylor(2004).

# Lucas Paradox

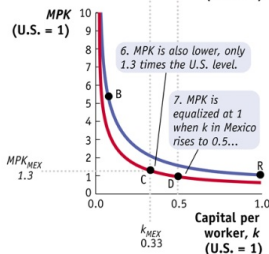
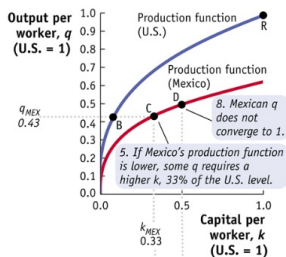
- The **Lucas paradox** was put forward in his widely cited 1990 article *Why Doesn't Capital Flow from Rich to Poor Countries?*.
- Two explanations from Wikiwand:
  - Differences in fundamentals that affect the production structure of the economy, such as technological differences, missing factors of production, government policies, and the institutional structure.
  - International capital market imperfections, mainly sovereign risk (risk of nationalization) and asymmetric information. Although the expected return on investment might be high in many developing countries, it does not flow there because of the high level of uncertainty associated with those expected returns.

# Differences in Productivity Level

(a) Identical Production Functions in Rich and Poor Countries



(b) Different Production Functions in Rich and Poor Countries



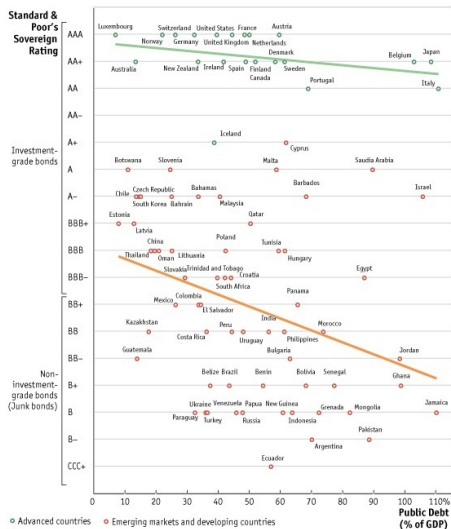
# Productivity Level and Benefits of Globalization

If the productivity differences are assumed away, the gains from financial globalization in poor countries could be large (columns 4, 5). But if they remain, the gains will be small (columns 6, 7).

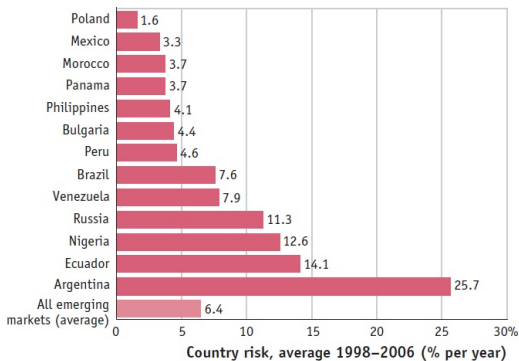
Country, Group, or Region	(a)		(b)	(c) Outcomes with Financial Globalization			
	Data		Implied Productivity (U.S. = 1)	With U.S. Productivity Level, $A_{US}$ Increase in:		With Actual Productivity, $A$ Increase in:	
	$\frac{q}{q_{US}}$	$\frac{k}{k_{US}}$		Capital $\frac{k}{k_{US}}$	Output $\frac{q}{q_{US}}$	Capital $\frac{k}{k_{US}}$	Output $\frac{q}{q_{US}}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Latin America</i>							
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
<i>Asia</i>							
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
<i>Africa</i>							
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

Note: Table 6-5 in Feenstra and Taylor(2014), from Hall and Jones(1999).

# Sovereign Ratings of Developed vs. Developing Countries



# Risk Premiums in Emerging Markets

**FIGURE 6-8**

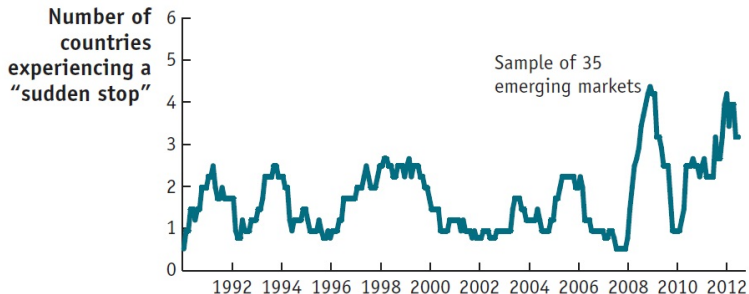
## Risk Premiums in Emerging Markets

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.

Source: EMBI indices from [cbonds.info](http://cbonds.info).

## Sudden Stops in Emerging Markets

The capital flows can suddenly stop, meaning that those who wish to borrow anew or roll over an existing loan will be unable to obtain financing. These capital market shutdowns occur frequently in emerging markets.



Note: Figure 6-4 in Feenstra and Taylor(2014), from Calvo et al.(2004).

# Exercise

Please listen to the lecture “Breaking the Wall of Global Economic Crises” of Professor Hélène Rey, and answer the following questions with group:

- ① What is the similarity of the first and second waves of financial globalization?
- ② Could you explain the policy-making difficulties for the developed and developing countries using the model of Mundellian Trilemma?
- ③ Professor Hélène Rey emphasized the importance of “the global financial cycle” in the formation of global economic crisis, and advocated “the macroprudential policy” for all countries. Do you agree with her?