
CHAPTER 9

EXCHANGE RATE POLICIES AND THE SPEED OF RECOVERIES

A Model of Exchange Rates and Recovery

The Mexican Tequila Crisis of 1994-95

The Lasting Stagnation from the 2008 Global Financial Crisis

**a crash course
on crises:**

macroeconomic

concepts for

run-ups,

collapses, and

recoveries

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NOMINAL AND REAL EXCHANGE RATES

- **Nominal exchange rate:** relative price of foreign currency in exchange for one unit of the domestic currency
 - **Real exchange rate:** relative price of its domestic goods and services in terms of their foreign counterparts
 - For a small open economy, the speed of recovery from recession (resilience) partly depends on the real exchange rate
 - If real exchange rate **falls**, the country's export become cheaper, its imports more expensive. Domestic expenditure switches from foreign to domestically produced goods
 - Trade balance moves toward to **surplus**
 - Strength of this **expenditure-switching channel** depends on **how quickly and by how much** the real exchange rate depreciates
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FLEXIBLE EXCHANGE RATE REGIMES

- Domestic goods can become cheaper as:
 1. Domestic price falls relative to foreign
 2. Nominal exchange rate depreciates
 - Most of the adjustment of the real exchange rate happens through channel 2: changes in the nominal exchange rate.
 - Why? Nominal exchange rates are financial prices that can move quickly
 - Countries have a **floating exchange rate regime (or flexible exchange rate)** if they let the nominal exchange rate move freely
 - With floating regime, the real exchange rate can swiftly depreciate, triggering a quick bounce of economic activity
 - Flexible exchange rates can make economies more resilient to shocks
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WHY FINANCIAL CRISES ARE DIFFERENT

- Financial crises **change** this logic and prescription
 - On the one hand, initial force for the exchange rate to depreciate is stronger, since it partly results from capital fleeing from the country
 - Investors sell domestic currency, nominal and real exchange rate depreciate, increase economic activity by improving trade balance
 - On the other hand, emerging economies often borrow through banks in foreign currency, creating a **mismatch in balance sheets**
 - Assets and revenues are denominated in domestic currency, while liabilities and expenses in paying the debt are denominated in foreign currency
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DEPRECIATION WITH MISMATCHED BALANCE SHEET

- When the exchange rate depreciates, the value of debts in domestic currency rises as well as the cost of servicing the debt
 - Investment can therefore **fall significantly and stay depressed** even as consumption and output start recovering
 - If the negative impact on liabilities is strong enough, banks and firms can be saddled with debt.
 - Only slowly rebuild their net worth by retaining earnings. Further slows down recovery and resilience.
 - **Extreme case:** depreciation's negative effect on investment **more than offsets** its positive effect on the trade balance, output falls
 - Exchange rate depreciation **amplifies** the downturn, instead of attenuating it
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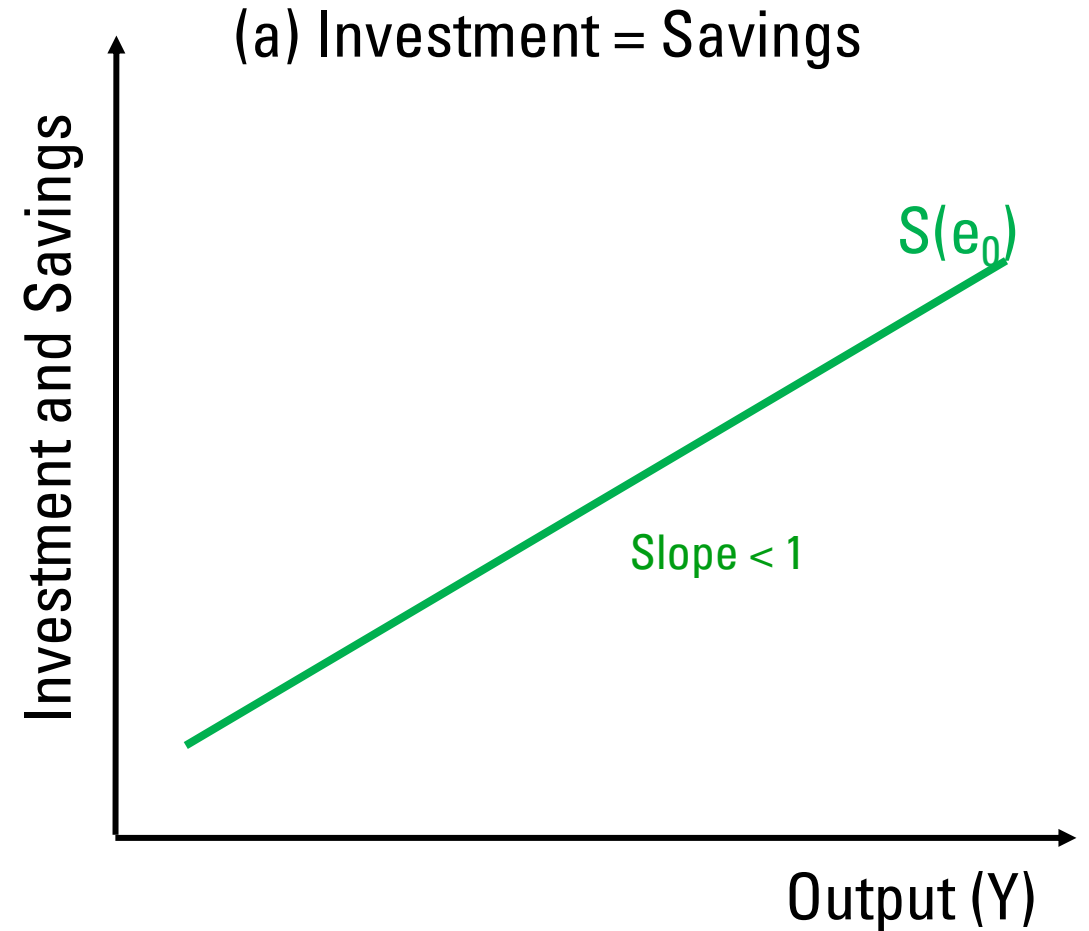
A MODEL OF EXCHANGE RATES AND RECOVERY

MODEL OF INVESTMENT AND SAVINGS

- In **equilibrium**, investment must equal **the sum of domestic and foreign savings**
 - **Domestic saving**: difference between output (Y) and the sum of private and public spending
 - **Foreign saving**: save in domestic economy when they send more of their goods in exchange for fewer domestically produced goods
 - When foreigners save in the domestic, the domestic economy is running a trade deficit
 - When income rises, for fixed spending, savings rise
 - However, increase in saving is **smaller** than increase in income (as private spending also rises)
 - Higher income comes with higher purchases of goods from abroad, which raise trade deficit
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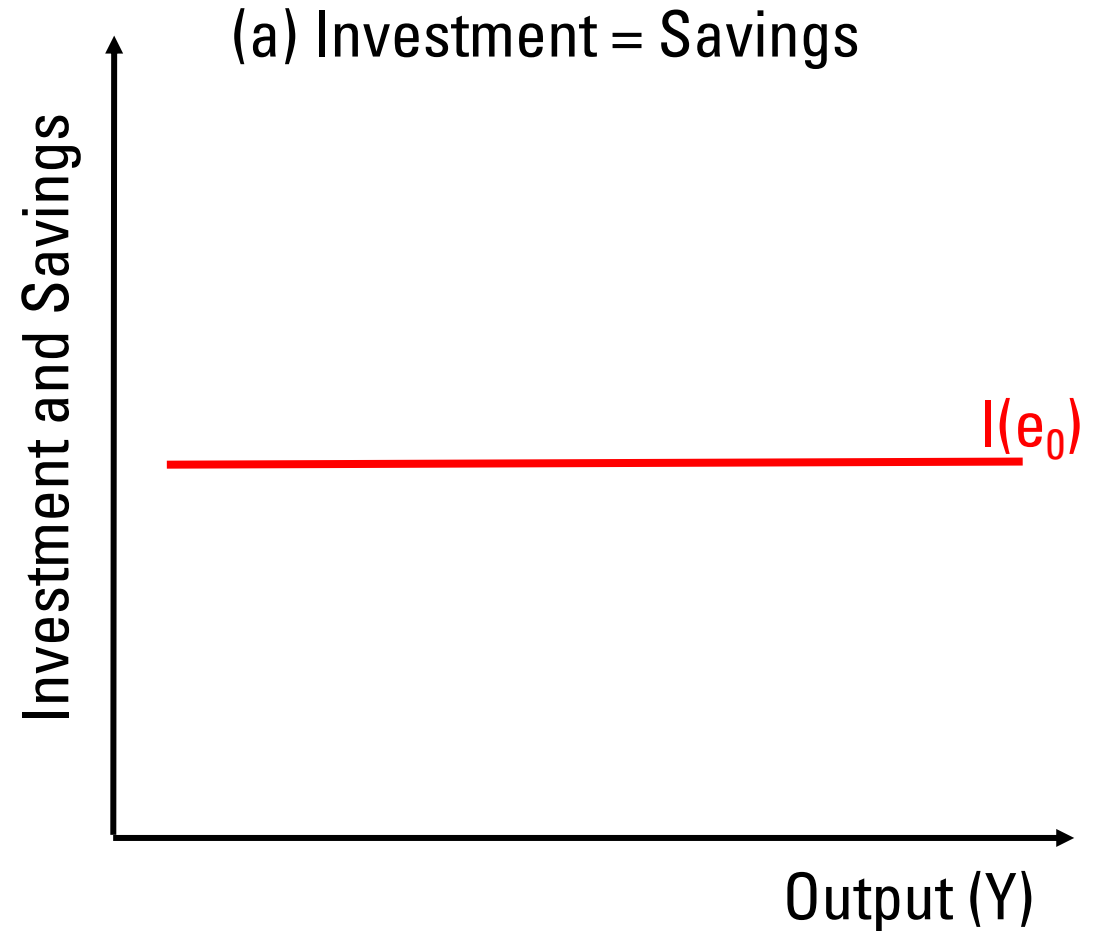
SAVINGS FUNCTION

- Depending on whether the effect of higher income on private spending domestically or abroad is higher or lower.
- Savings may rise more or less than one-to-one with income
 - Either way, saving **rises**
- The diagram shows a case in which the increase in saving is **smaller than** the increase in output



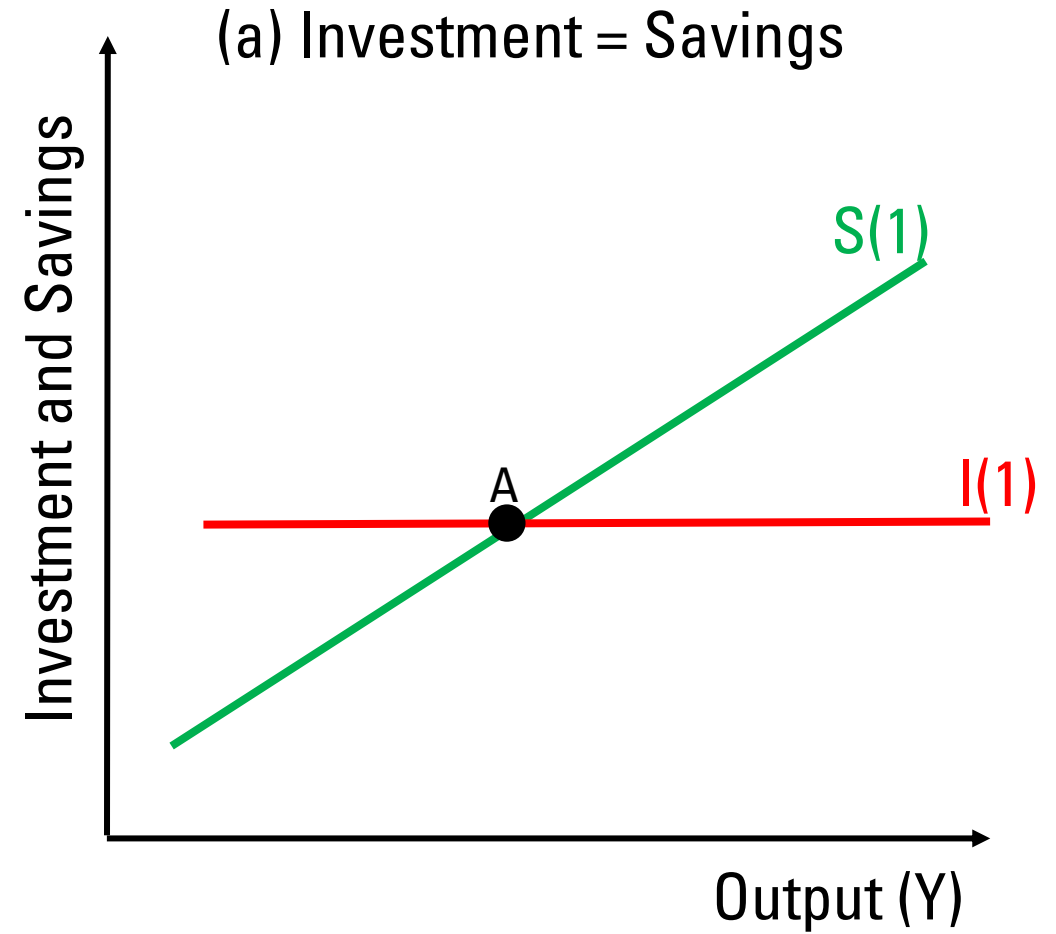
INVESTMENT FUNCTION

- Assume a **frictionless financial market**
- Investment depends only on comparing the **marginal returns** from those investments against the **marginal cost** of funds for the firms
 - Not on level of *output*
- Investment function is a horizontal line



PURCHASING POWER PARITY

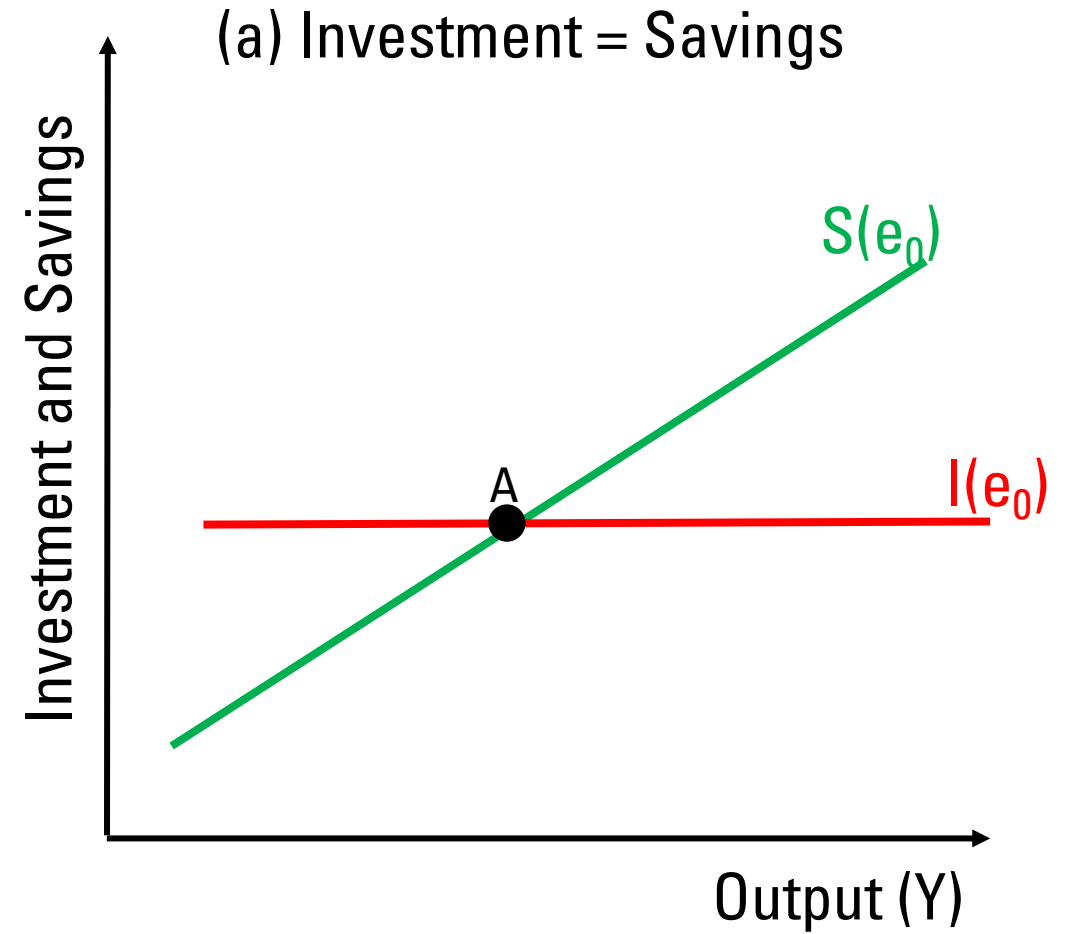
- The internal balance of investment and savings determines the level of output is at A
- Both saving and investment depends on the real exchange rate (e)
- **Purchasing Power Parity Condition:** domestic and foreign goods must ultimately sell for the same real price
- In the long-run equilibrium, $e \approx 1$



LONG-RUN EQUILIBRIUM AND REAL EXCHANGE RATE

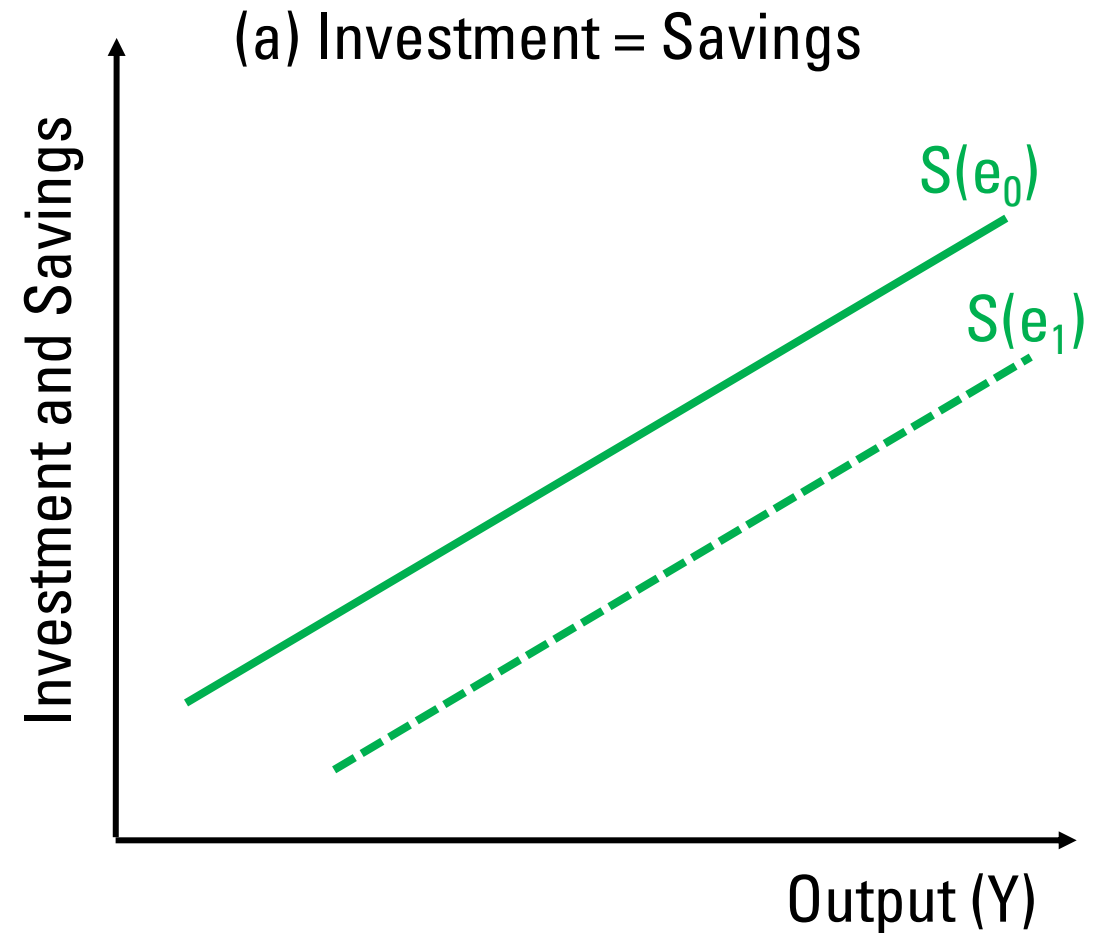
At any specific date, the economy may not be in this long-run equilibrium

- Exchange rate may be different to 1
- The value of the exchange rate at a point in time is determined by an **external balance**: trade deficit is higher with an appreciated currency, and capital flows are lower due to expected depreciation
- Where the trade deficit and capital flows are **equal** determines the equilibrium real exchange rate



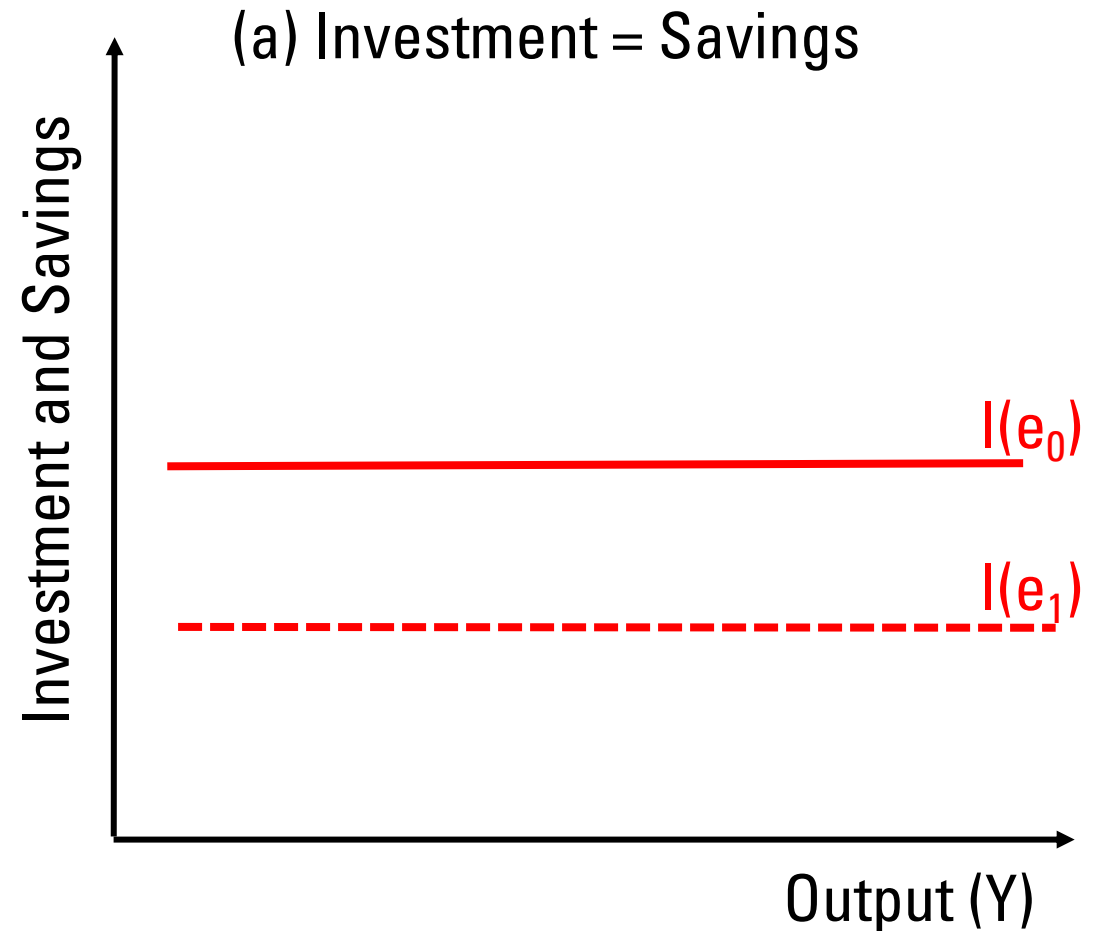
SAVING FUNCTION: APPRECIATION

- If exchange rate *appreciates*, domestic export become more expensive for foreigners to buy.
 - **Direct impact** is for trade balance to worsen
 - **Indirect impact** in the opposite direction, since less is being paid per unit imported
- **Marshall-Lerner condition**: the direct effect exceeds the indirect effect if the elasticities of exports and imports to the exchange rate are large enough
- If the condition holds, the *depreciation* would **shift saving curve down**, as foreign savings in the domestic economy have fallen



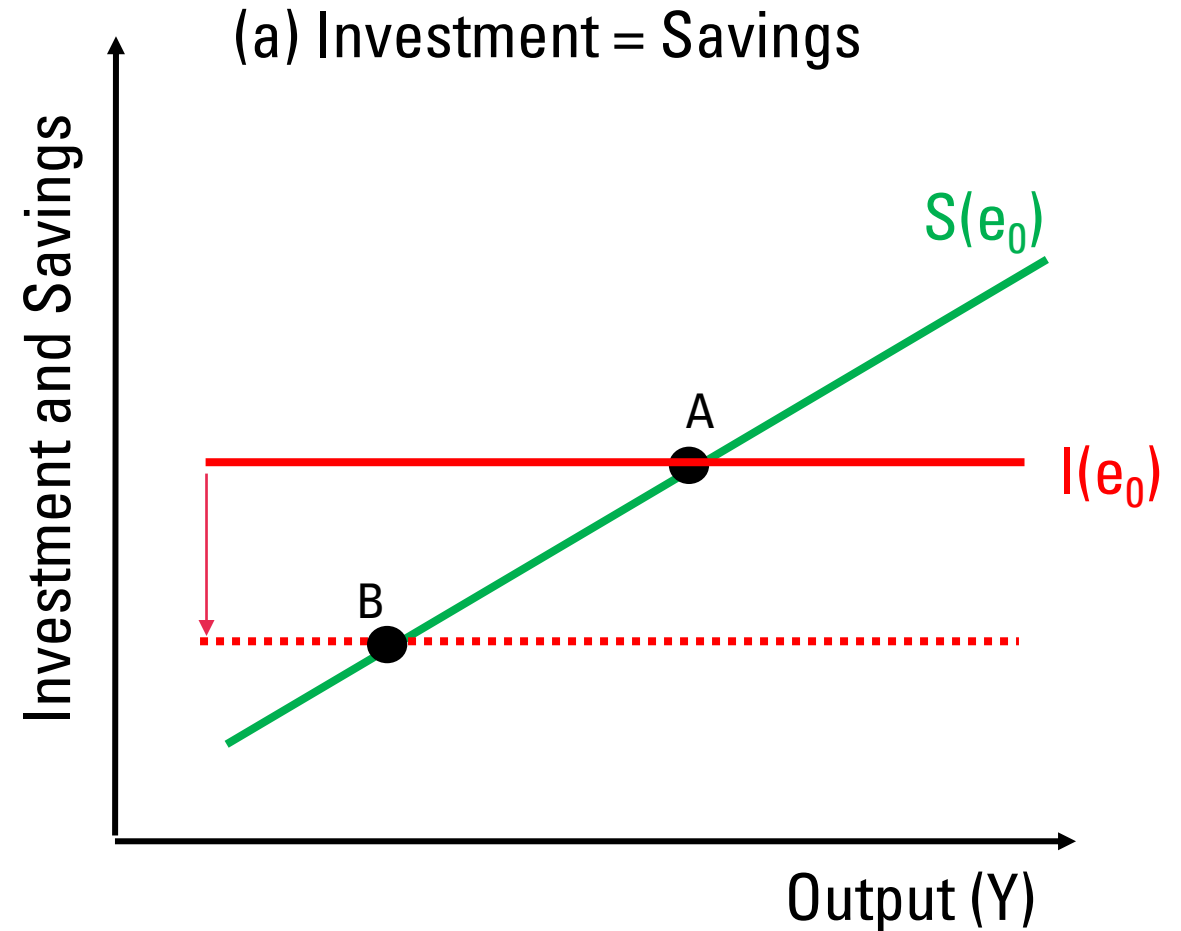
INVESTMENT FUNCTION: APPRECIATION

- Some capital flows that support investment comes from abroad, so they depend on the willingness of foreigners to lend
- If exchange rate *appreciates* relative to its long-run value, then it must be expected to depreciate
- Foreigners expect a **loss** in units of foreign currency from their lending in domestic currency. They require higher return to lend
- Lowers investment, so higher real exchange rate e **shifts investment function down**



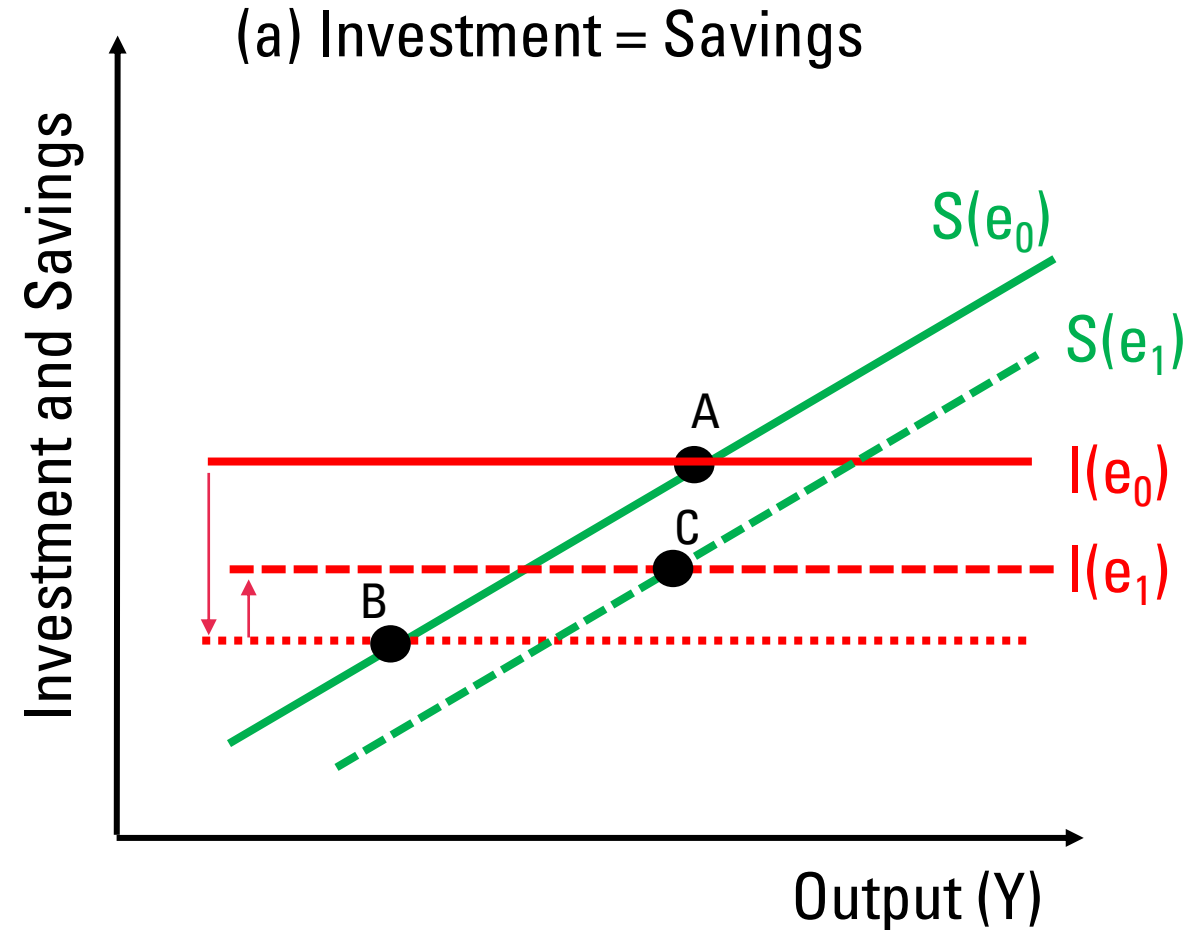
FINANCIAL CRISIS: FIRST IMPACT

- Start with **frictionless financial market**
- Initial point: A
- Suppose foreigners are driven by a fear of insolvency or by a flight to safety, become **less willing to lend** to the domestic economy
- Domestic firms are able to borrow less, investment function **shift down**
- For fixed exchange rate, the economy moves to B , output falls



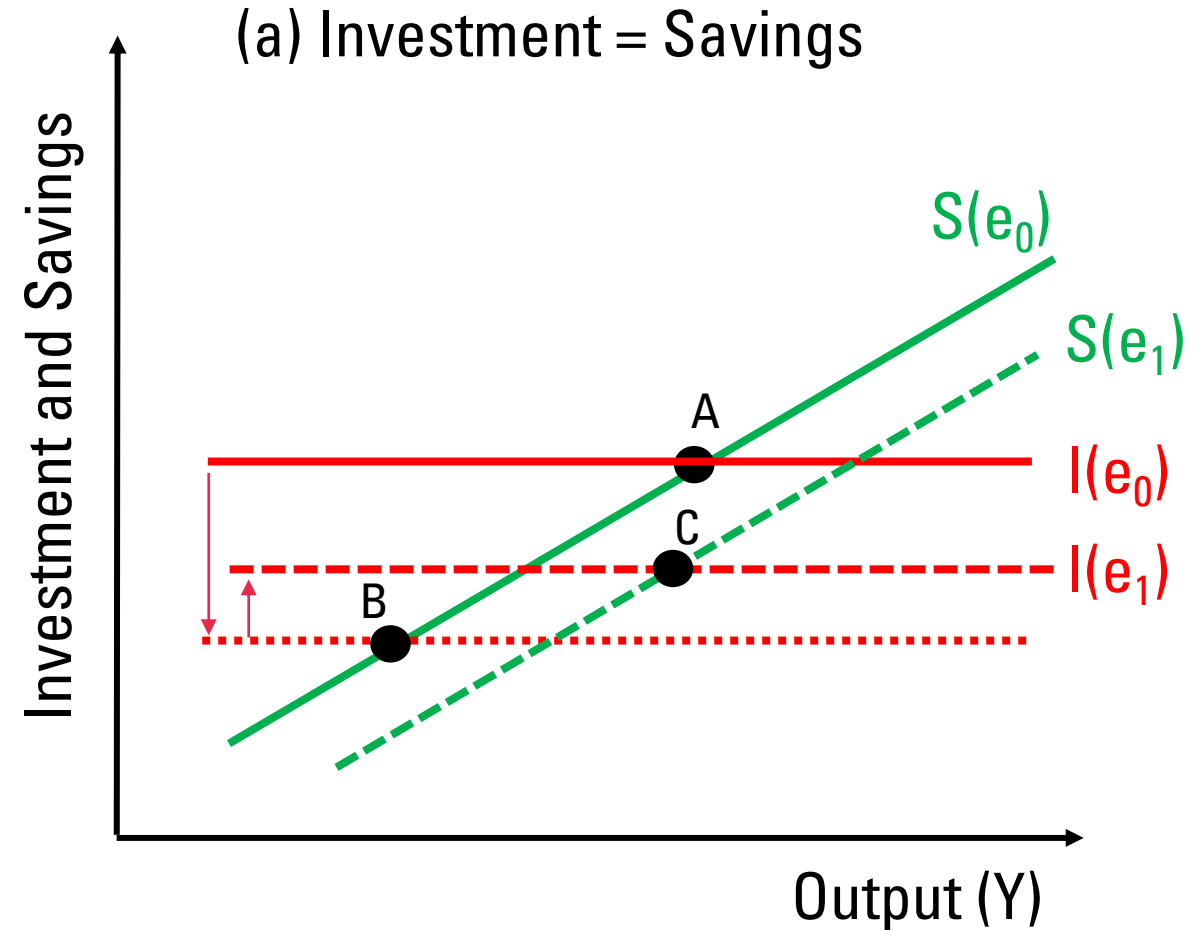
FINANCIAL CRISIS: EXCHANGE RATE

- Eventually, real exchange rate adjusts
- Since there was a trade deficit, the external imbalance leads to a depreciation of domestic currency (or fall in domestic prices relative to foreign)
- Restores external balance
- This depreciation shifts the saving function to the **right** and investment function up
- The economy moves to C



FINANCIAL CRISIS: OUTPUT AND EXCHANGE RATE

- From A to B to C , a swift recovery was made possible by the exchange rate adjustment
- Policies can speed this adjustment by **floating the currency**
- Change in nominal exchange rate can do most of the work, as opposed to change in domestic prices, which are more sluggish

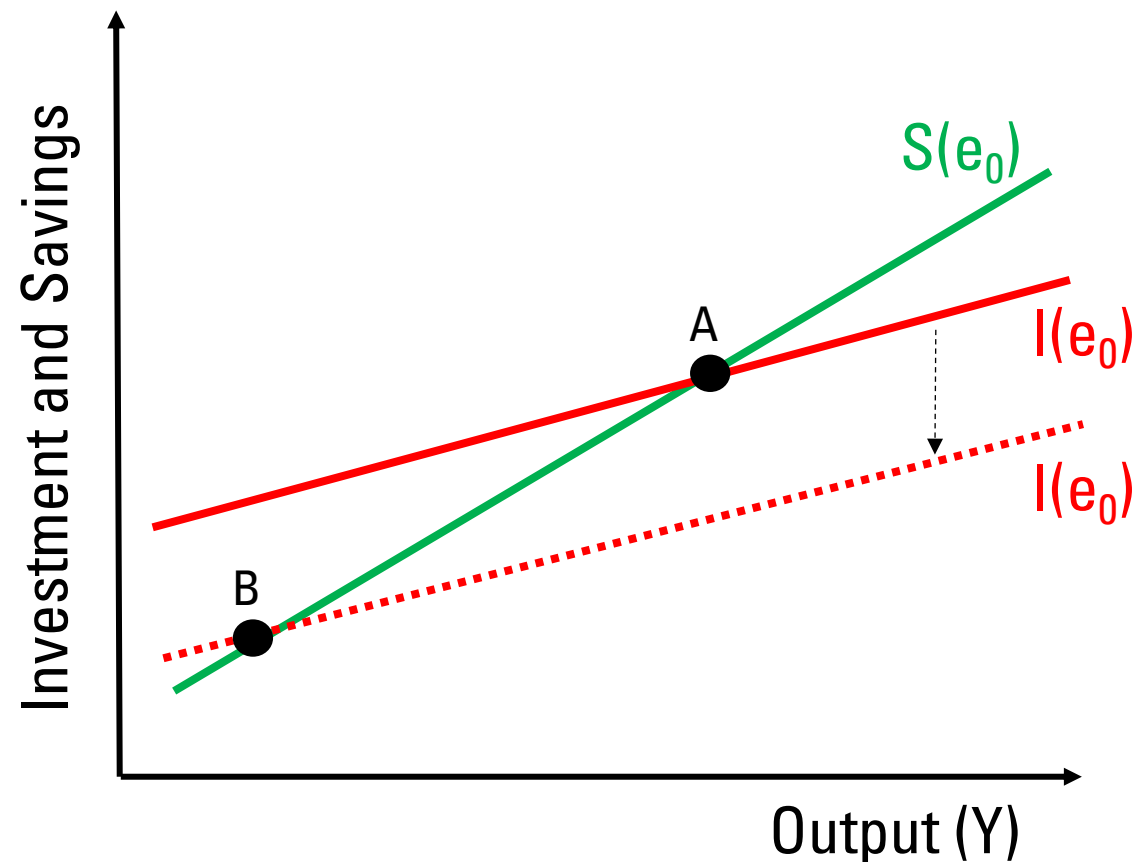


NOW, WITH FINANCIAL MARKET IMPERFECTIONS

- **Cash flow effect:**

- Investment depends not only on the costs of borrowing, but also on *sales*
- When firms make **more revenue**, they can **borrow more**, as lenders are reassured the firm is able to keep on serving the debt
- **upward sloping** investment function
- The crisis that result from initial shock will be amplified. Point *B* is further to the left

- **Financial accelerator**

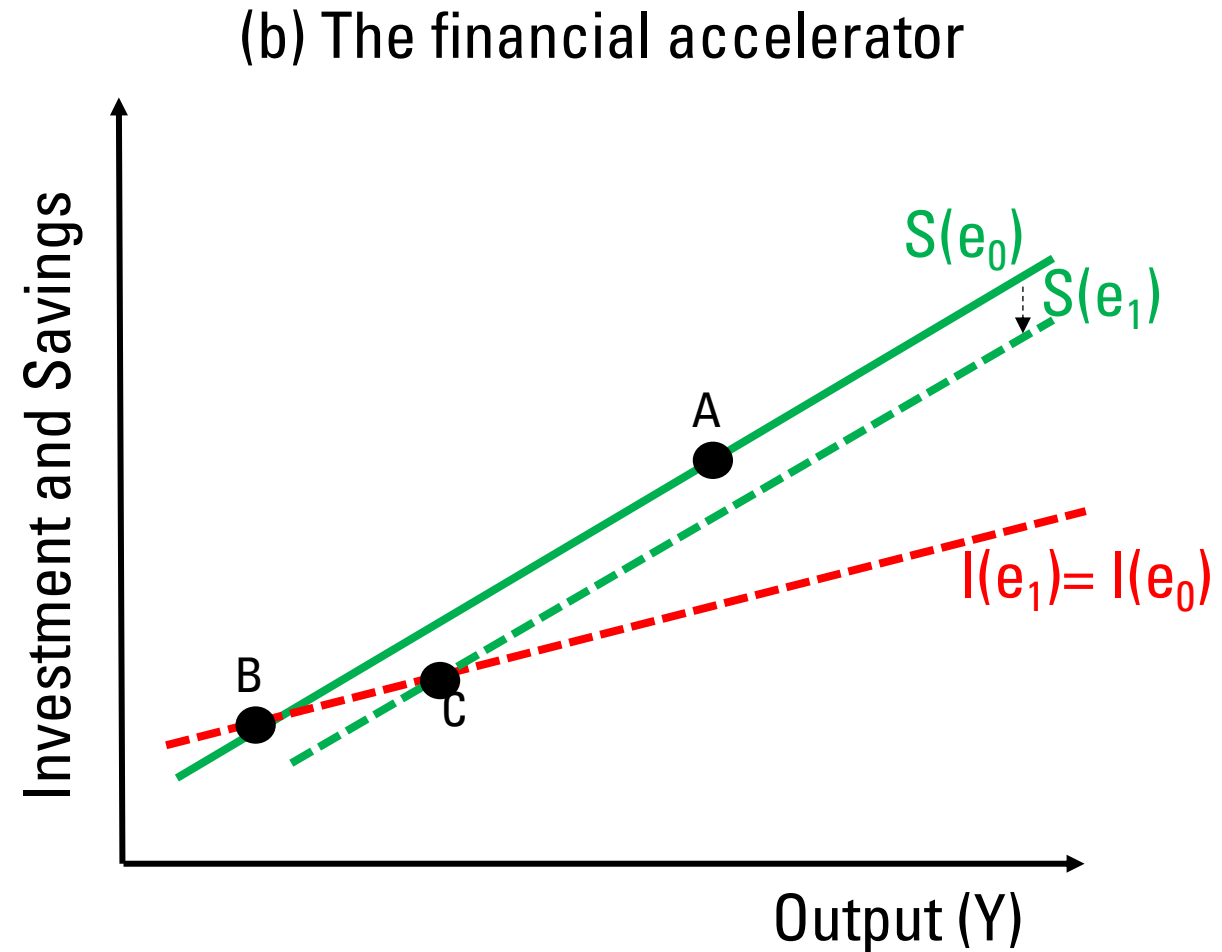


SECOND FINANCIAL CHANNEL: CURRENCY CHOICES

- Currency denomination of assets and liabilities
 - The value of domestic assets is in domestic currency. A depreciation (a fall in e) lowers **value of assets** when expressed in foreign currency. The collateral that firms offer to foreign lenders is now **worth less**
 - Domestic banks borrow abroad in foreign currency. Depreciation raises the **value of the liabilities** in domestic currency
 - Fall in net worth because of mismatch between currency of assets and liabilities: **original sin**
 - Firms that borrow in foreign currency will also want to price their goods in that currency, to match the currency of their interest expenses and sales revenues. If so, depreciation no longer makes their goods cheaper
 - Consequences
 - The investment function now has a force making it **shift down** when e falls, counter to the previous force that had the curve shifting up
 - The rightwards shift of the savings curve is smaller, as depreciation no longer pushes trade up as much
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FINANCIAL ACCELERATOR AND MILD FINANCIAL FRICTIONS

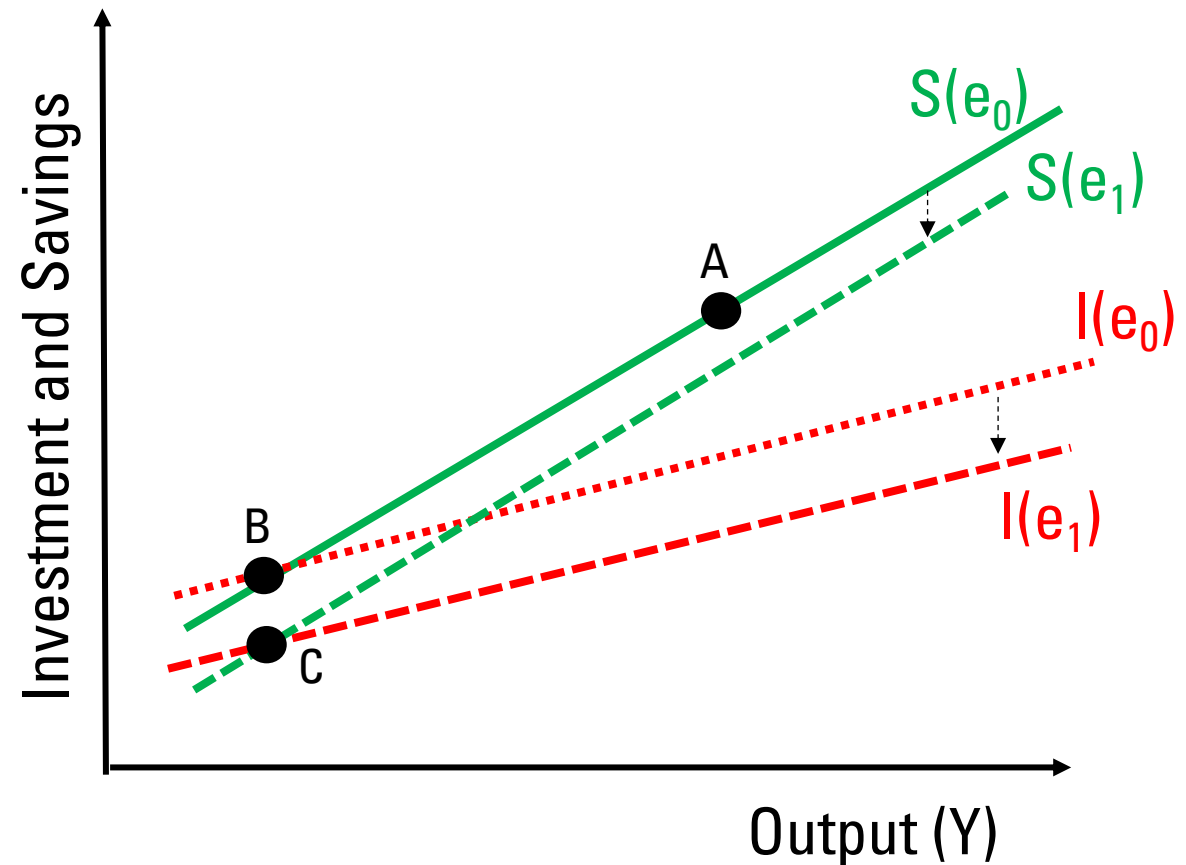
- Same shock to investment, economy at B
- Now after depreciation, the fall in e :
 - Investment curve is unchanged, if balance-sheet effect *just offsets* the impact of cheaper borrowing
 - Savings curve shifts down by less
- Economy recovers to C, with significantly lower output than before
- Recovery is driven by consumption and the trade surplus. Investment and capital flows **remain depressed**. **Phoenix recovery**



IF BALANCE-SHEET EFFECT IS STRONG

- If the depreciation harms the domestic firms' balance sheets by more, then the investment curve **shifts down** with the depreciation
- Point C is now only slightly to the right of B , so the economy barely recovers
- Different economies can be characterised by each of the three panels, depending on extent of financial frictions, state of domestic balance sheet, the extent of original sin etc.
- The effect of depreciation is **state dependent**

(c) Strong balance-sheet effects

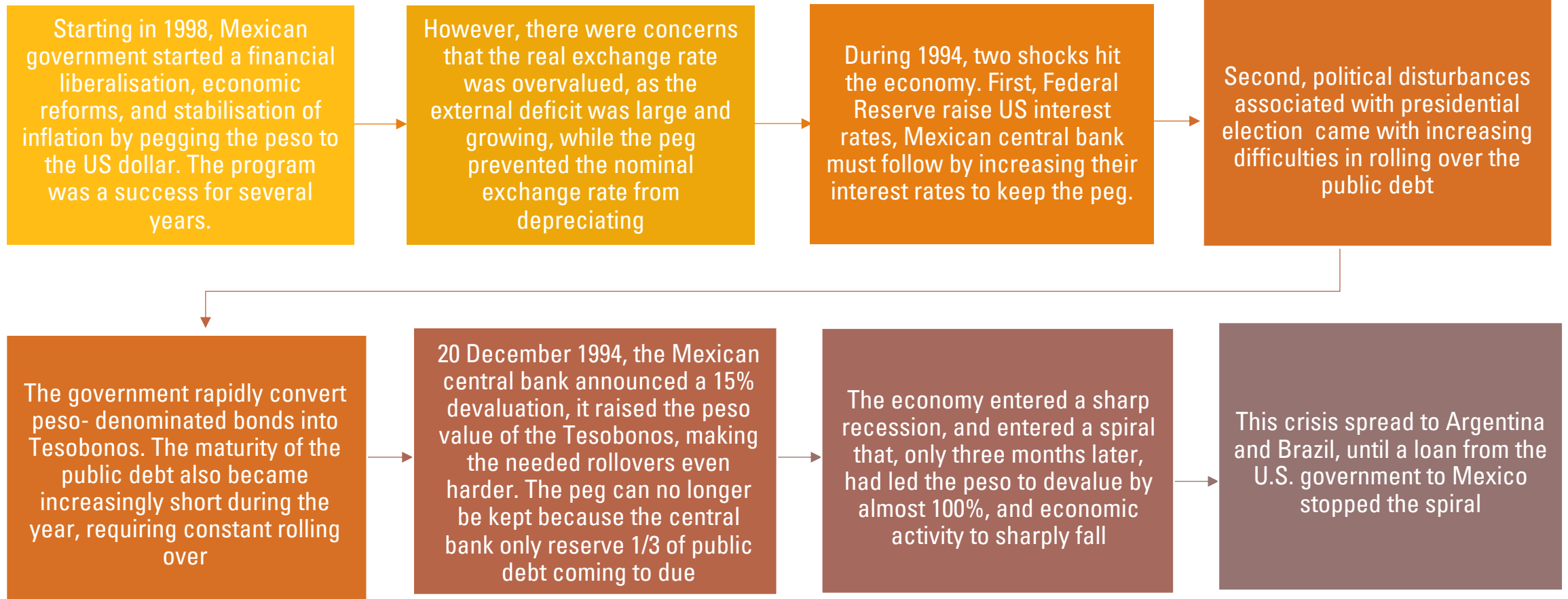


POLICIES TO SPEED THE RECOVERY

- **Capital controls** or **exchange rate intervention policies**
 - Prevent sudden depreciation, allowing net worth of firms to recover, can prevent the recession from becoming a depression
 - Takes **time**: since outside fundings was cut, firms can only recover their net worth by retaining earnings
 - Also, when banks failed from the initial shock, a loss of knowledge on the creditworthiness of borrowers takes time to rebuild
 - Even if the initial shock reverts or other policy boost the economy, the investment curve can stay **depressed** for many years
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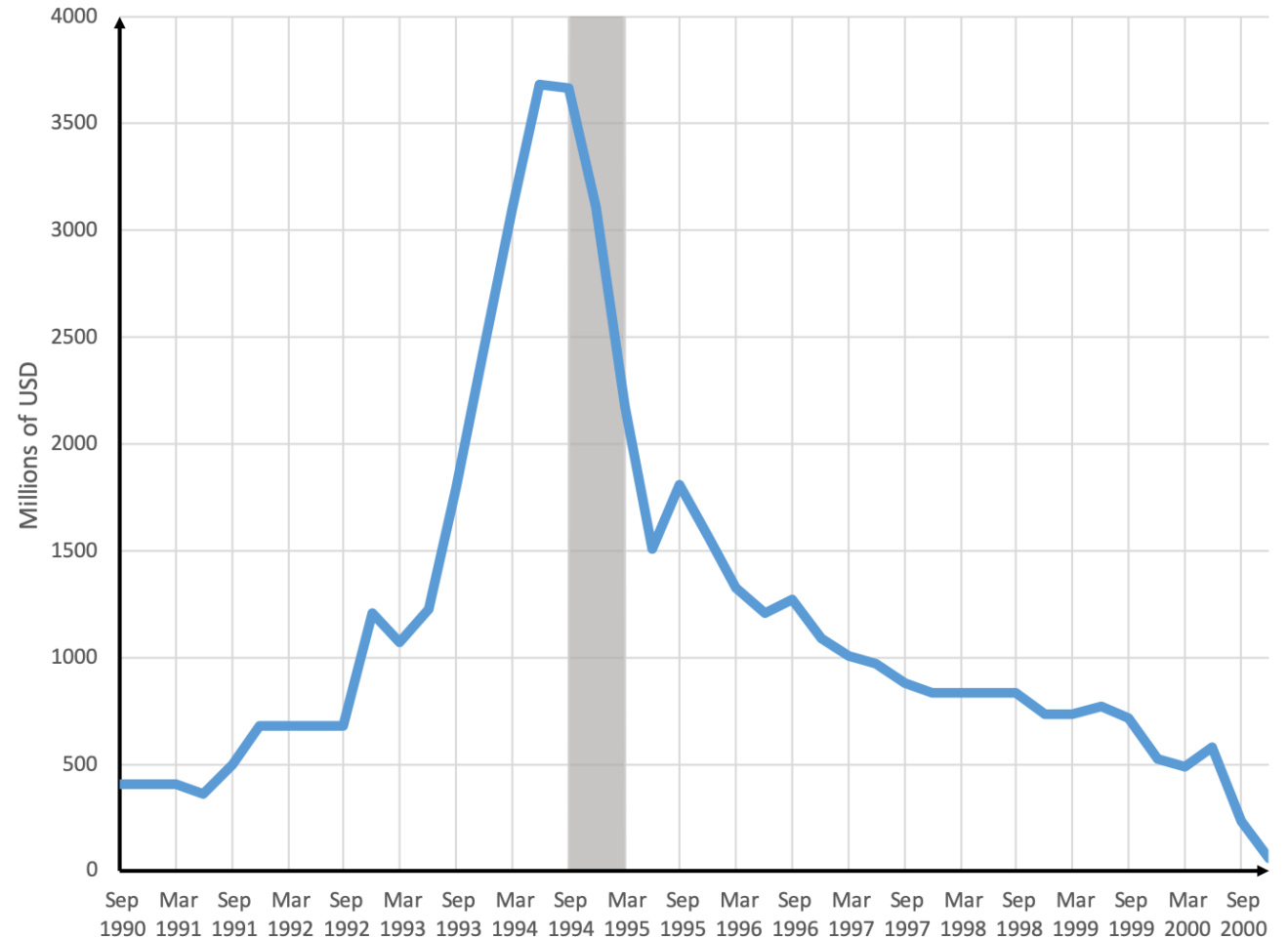
THE MEXICAN TEQUILA CRISIS OF 1994-95

THE SEQUENCE OF EVENTS



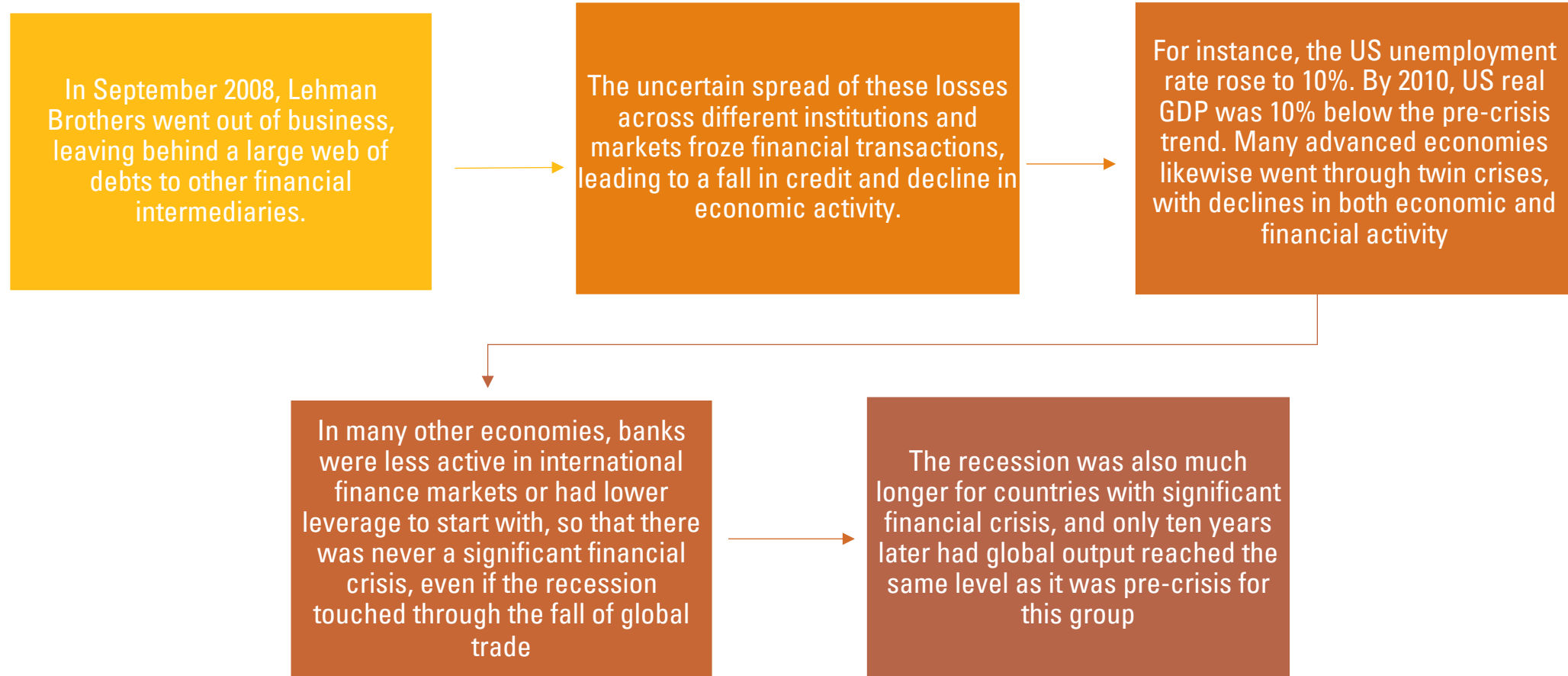
OUTSTANDING MEXICAN DEBT ISSUED IN US DOLLARS

- The diagram shows the **sharp increase** in the share of public debt that was denominated in US dollars (Tesobonos) held by foreigners: the original sin became extreme in the Mexican economy
- Tesobonos rose from 4% of privately-held public debt to 75% within one year



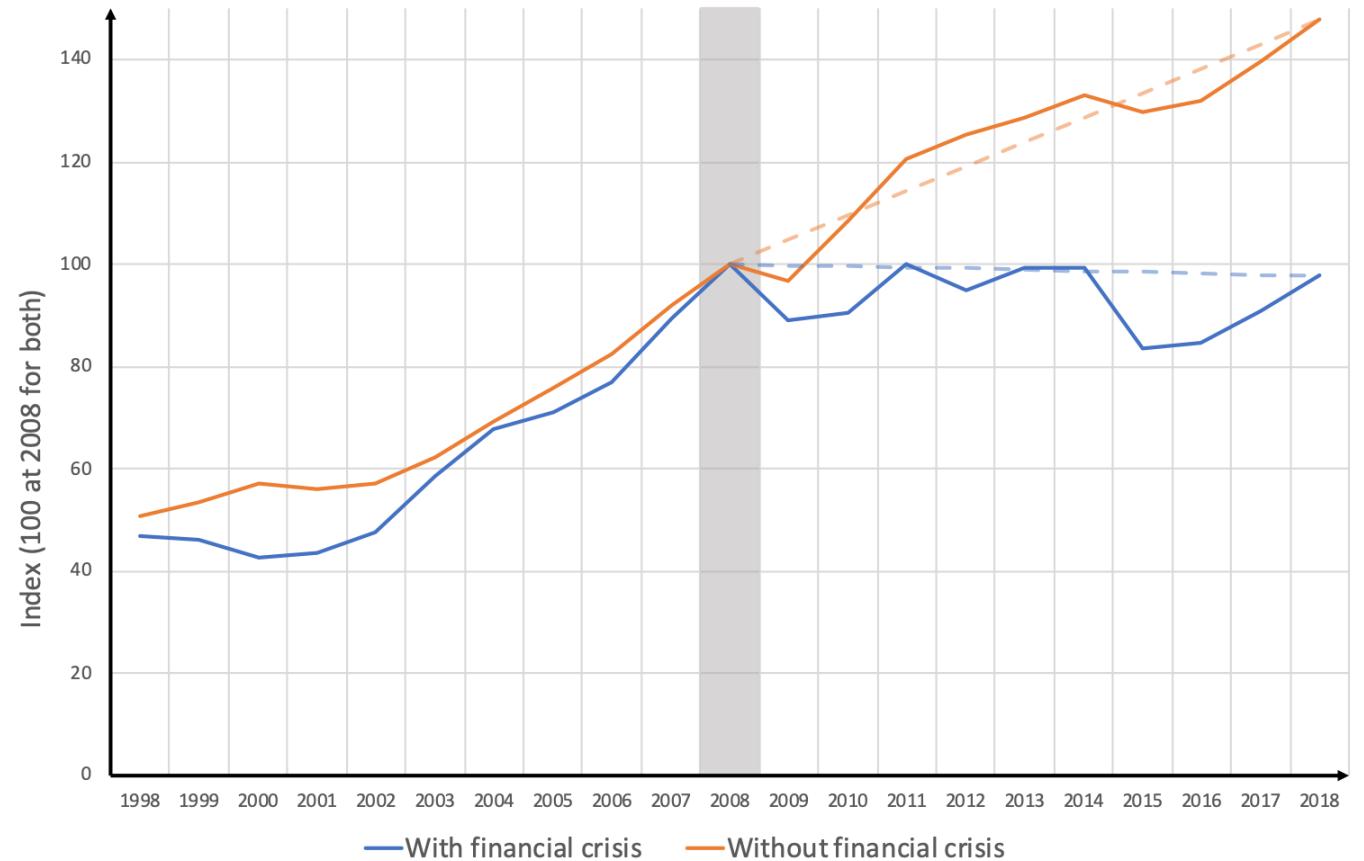
THE LASTING STAGNATION FROM THE 2008 GLOBAL FINANCIAL CRISIS

THE SEQUENCE OF EVENTS



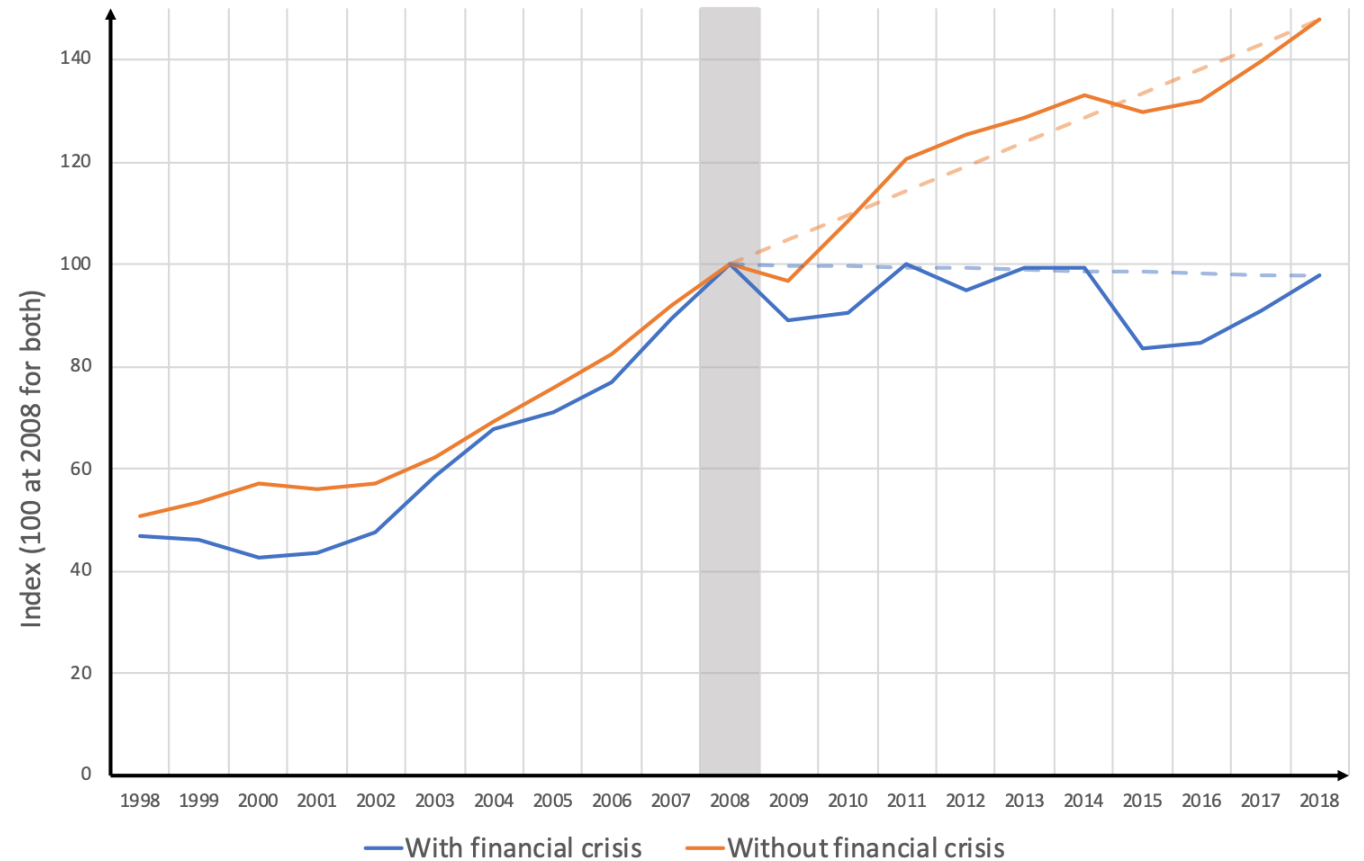
THE LASTING EFFECTS OF THE 2008 GLOBAL CRISIS

- The diagram adds up the GDP in dollars across 197 countries in the world
- Split them in two groups: those that went through a financial crisis in 2008 and those that did not.
- Index the total output of each group to be at the same level in 2008



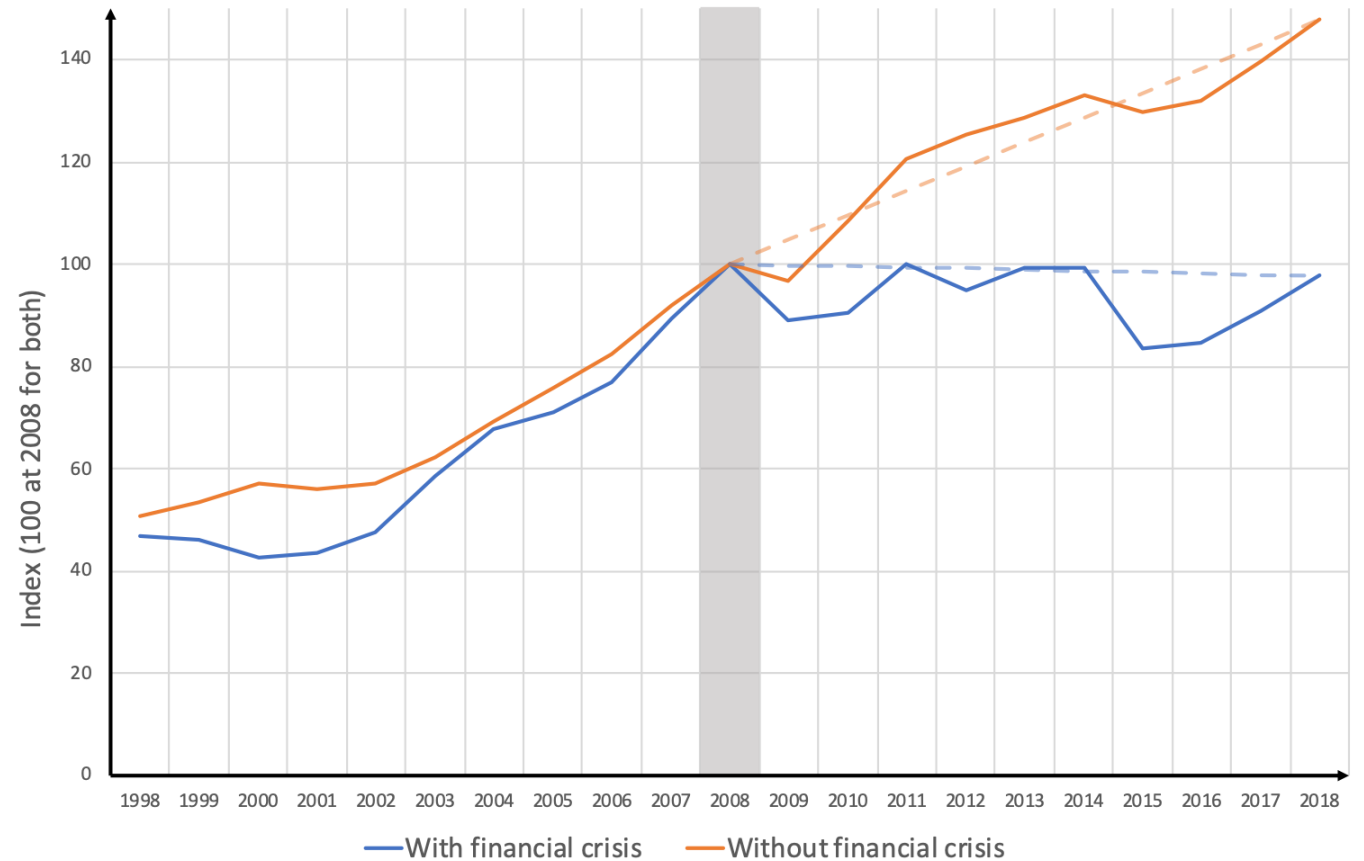
THE LASTING EFFECTS OF THE 2008 GLOBAL CRISIS

- Before the crisis, the group that later suffered a crisis had gone through a **better decade**, and their GDP had grown by 16% more than the other group
- Only **ten years later** did the global output of the group with financial crisis reach the same level as it was pre-crisis
- The group without a crisis, in contrast, was 47% richer in 2018 than it had been in 2008



THE LASTING EFFECTS OF THE 2008 GLOBAL CRISIS

- The main drag on the recovery was investment, which stayed low, as the net worth of banks and firms took a long time to return to previous levels
- Financial crises may even have a permanent effect on trend growth



SUMMARY

- For an open economy, the speed of recovery from shocks partly depends on **real exchange rate**, as depreciation could improve trade balance
- Saving function is **upward sloping** since saving rises when income rises
- Investment function is **horizontal** if it only depends on **marginal returns** and the **marginal cost** of funds; However, since borrowing depends on sales, investment function could be **upward sloping**
- The equilibrium is determined when trade deficit is **equal to** capital flows
- Depreciation could cause mismatch in value of liabilities offered to foreigners and value of assets in domestic currency: **original sin**
- It takes time for countries to recover even if the exchange rate adjusts or policy boosts economy

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