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# International Economics

## X. Currency Regimes

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3. Maintaining a Currency Peg
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# 1. Currency Regimes: Fixed vs. Floating

## The Alternative Regimes

- Freely fluctuating, or floating, exchange rates
- Rigidly fixed exchange rates
- The popular intermediate position: managed or dirty float

## Basic Characteristics

- Floating regime: the government leaves the exchange rate to the market
- Fixed exchange rates: the government targets a specific exchange rate
- Managed float: the exchange rate can move within general bounds set by government



## Market-set Exchange Rates

- With fiat currency, floating exchange rates is the default outcome
- Friedman (1953) is the apostle of floating exchange rates
- Floating exchange rates are arguably the most efficient regime
  - The interplay of supply and demand sets the exchange rate
  - The long run rate will be driven to the level determined by PPP

## Monetary Policy

- Floating exchange rates allow a country to pursue independent monetary policies



## Definitions

- The exchange rate of between one currency and another is fixed
  - Government fixes to the anchor currency
  - This is also called a *currency peg*
- The main anchor currencies are the dollar and the euro. SDRs and currency baskets could also theoretically be used
- Usually the country targets a specific exchange rate and allows small variations above and below the peg

## Example

- The Danish krone is pegged to the euro at DKK 7.46/€. It is allowed to fluctuate within a band of  $\pm 2.25\%$ .
  - A country may choose to regularly change the peg. This is called a *crawling peg*
-



# Overview of Exchange Rate Regimes

| <b>flexible</b>             | <b>limited flexibility</b>   | <b>fix</b>  |
|-----------------------------|--|---|
| Free Float<br>Managed Float |  |   |
|                             | Crawling Band<br>Crawling Peg<br>Pegged Exchange Rate within<br>Horizontal Bands |   |
|                             |  | Currency Board<br>Dollar-/Euroization<br>Monetary Union |



## 2. Why Fix the Exchange Rate?

- A fixed exchange rate may enhance international trade (McKinnon and Schnabl 2004)

### Exchange Rate Stability

- Leads to expansion of international trade and international division of labour
- Favours the creation of an international capital market
- The reduction in uncertainty make investors more willing to invest in e.g. emerging market economies
- However, the monetary policy of the anchor country is imported



## Importing Monetary Policy

- The monetary policy of the anchor country must be mirrored
- If this policy is very inflationary, you're forced to “import” inflation
- A peg can also leave a country open to speculative capital flows
  - These speculators only reveal the incompatibility between the peg and monetary policy in the country

## Other Objectives Behind a Currency Peg

- A government wants to accumulate international reserves
- Support for export industries





## 3. Maintaining a Currency Peg

### Four Ways

1. Intervene in the foreign exchange market by buying and selling foreign currency in exchange for domestic currency to maintain the exchange rate
2. Impose some form of exchange control to maintain the exchange rate by reducing demand and supply in the market
3. Alter domestic interest rates to influence short-term capital flows
4. Adjust the whole economy to make it “fit” the chosen exchange rate

In the following, we will mainly focus on the first way



## The Possible Challenges

- Depreciation
- Appreciation
- Temporary disequilibrium
- Permanent disequilibrium

## Official Reserve Assets Are Key

- Especially so in cases of defense against depreciation and temporary disequilibria



# Official Reserve Assets in \$, 1970-2016

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|                             | <b>1970</b> | <b>1980</b> | <b>1990</b> | <b>2000</b> | <b>2010</b> | <b>2016</b> |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Foreign exchange assets     | 45          | 381         | 806         | 1,935       | 8,088       | 10,711      |
| Special drawing rights      | 3           | 15          | 28          | 24          | 314         | 275         |
| Reserve position in the IMF | 8           | 22          | 32          | 62          | 75          | 106         |
| Gold                        | 40          | 573         | 345         | 261         | 1,394       | 1,227       |
| (millions of ounces)        | (1,057)     | (953)       | (940)       | (952)       | (992)       | (1,070)     |
| Total reserve assets        | 96          | 991         | 1,211       | 2,282       | 9,871       | 12,319      |

Source: International Monetary Fund, *Annual Report*, various years.



## Causes of Depreciation

- The pressure from non-official supply and demand in the market (i.e., private traders, speculators) threaten to drive the exchange rate *above* its allowable band

## Defense

- The government uses its own international reserves to sell the anchor currency and buy domestic currency

## Reserves

- Holdings of foreign-exchange assets denominated in the major currencies of the world
  - The country's reserve position with the IMF
  - The country's holdings of SDRs
  - The country's holdings of gold
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## Government Intervention

- The government mobilizes funds to maintain the peg
  - Government funds are clearly not inexhaustible
- The government buys domestic currency on the foreign exchange market

## Sterilization

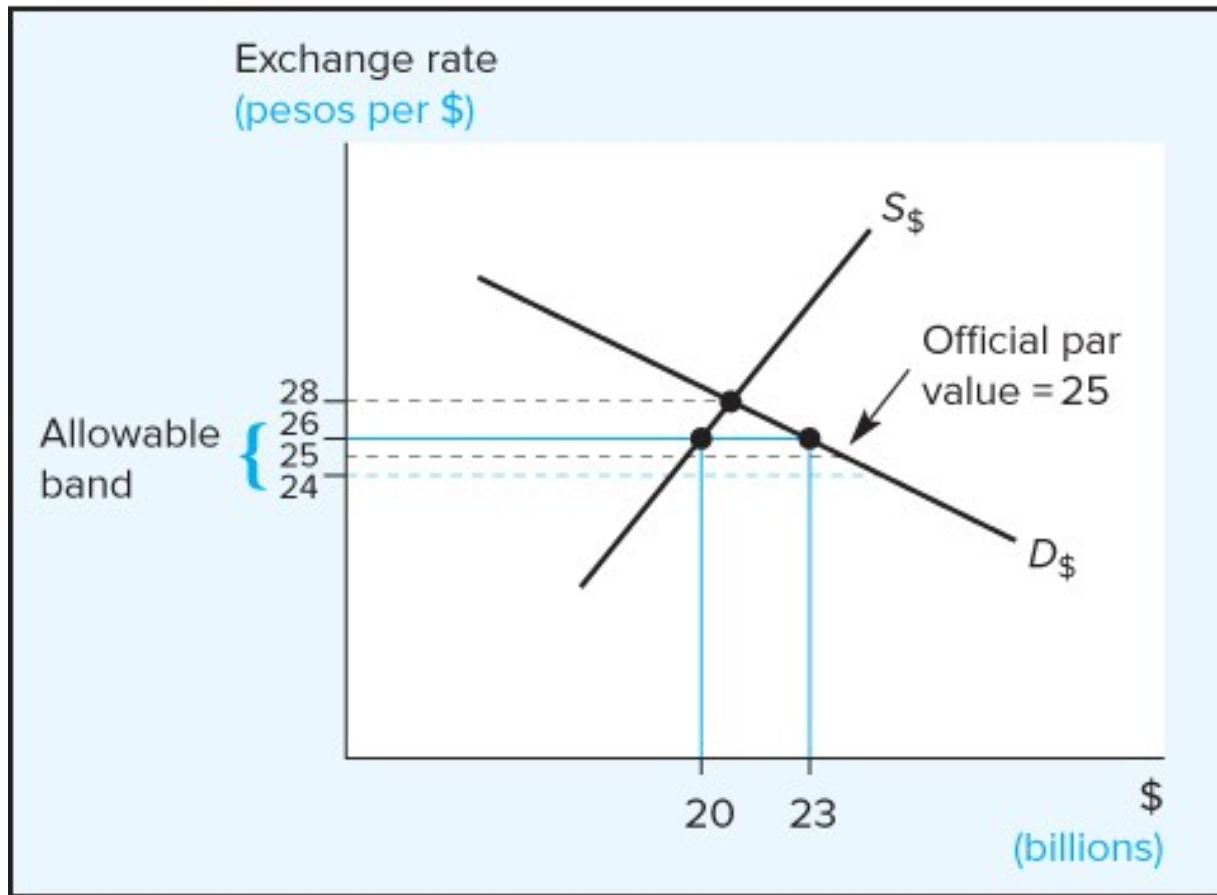
- Government reduces the money supply – this is often considered unacceptable
  - The government will try to *sterilize* its foreign exchange intervention
  - It will re-inject the amount of money it bought on the foreign-exchange market into the domestic economy
- *Sterilization* clearly renders the foreign exchange intervention null and void
  - If the government wants to avoid depreciation, it has to increase the value of its currency to match the pegged exchange rate
  - The only way to do this in the short term is by reducing the money supply

A *sterilized intervention* is often just a way of giving away reserve assets to foreign exchange speculators. It's expensive and it doesn't work



# Example: Defending the Peso's Dollar Peg

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# Example: Defending the Peso's Dollar Peg

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## The Setup

- A Latin American country has pegged its currency, the peso, to the dollar
  - Peso pegged at rate of peso 25/\$
  - Within a band of +/- 4 percent (24-26/\$)
- Non-official supply and demand are attempting to push the rate to 28/\$

## Intervention

- In order to prevent this, the government sells \$3 billion at a rate of 26/\$
    - It is thus also buying 78 billion pesos in the foreign exchange market
  - Note: the intervention is *financing the official settlements balance deficit* of the country
    - In the absence of intervention, depreciation would have eliminated this deficit
    - Now the government is financing imports and capital inflows out of reserves
-



## Limits to Intervention

- How long can the country defend a currency peg against depreciation?
- This depends on its reserves and ability to borrow abroad
  - It can sell dollar-denominated assets for dollars
  - It can mobilize reserves with the IMF
  - It can borrow the needed dollars

## Problems of Sterilization

- If the government sterilizes the intervention, it will prove unsuccessful
  - Only by raising the value of its currency can it maintain the peg
- If the government realizes this, intervention does not have to be primarily in the foreign exchange market: shrinking the domestic money supply is enough
  - Such policies are however very unpopular and disruptive.





## Causes of Appreciation

- Pressure from non-official supply and demand in the market (i.e., private traders, speculators) threaten to drive the exchange rate *below* its allowable band

## Defense

- The government sells its domestic currency and buys the anchor currency
- Since the government is free to create as much of its domestic currency as it wants, it is not constrained by the availability of reserves

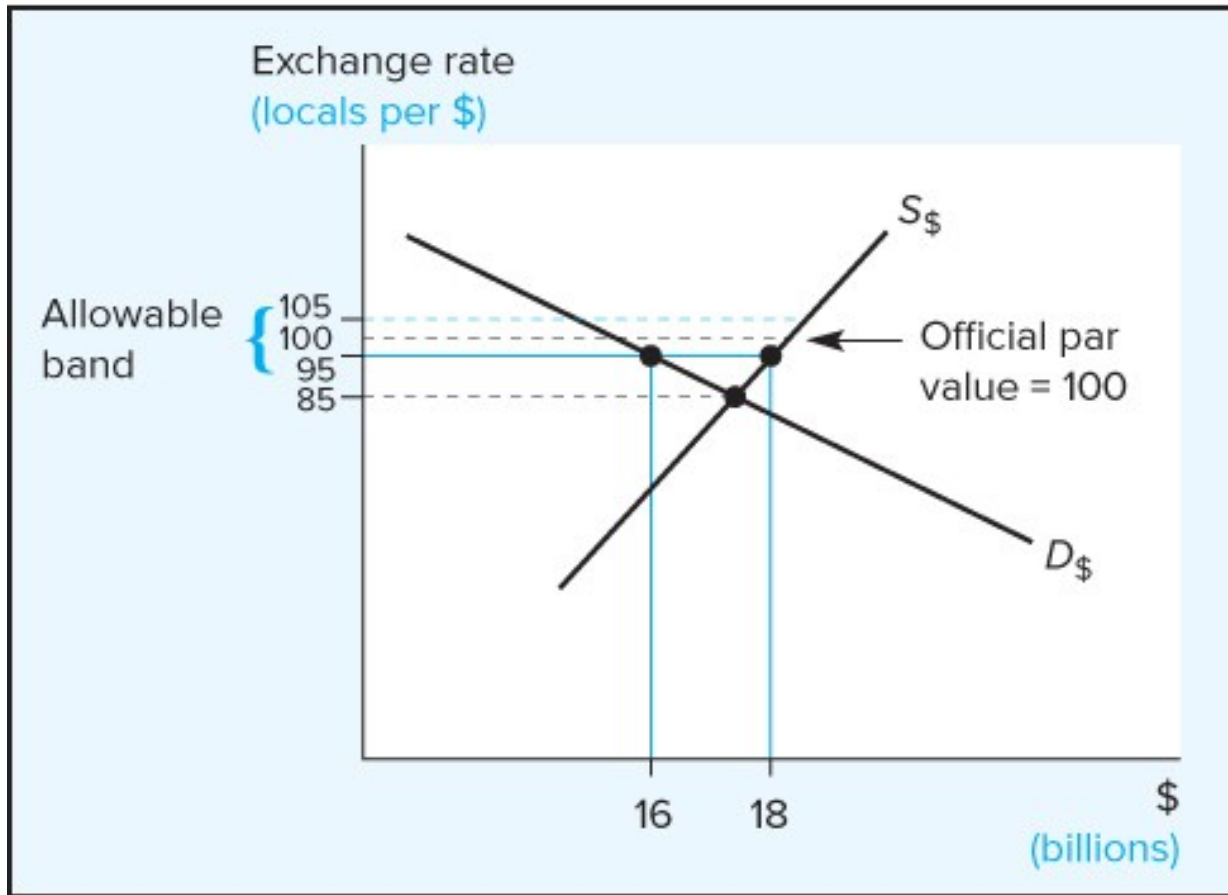
## Consequences

- When a government intervenes to prevent appreciation, it is *offsetting the official settlements balance surplus*
  - Directly or indirectly, the government is now financing exports and capital outflows to the benefit of foreigners
  - Appreciation would otherwise have eliminated the surplus
- As a result of intervention, the country accumulates official reserve assets



# Example: Defending the Local's Dollar Peg

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# Example: Defending the Local's Dollar Peg

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## Setup

- An Asian country is attempting to maintain a fixed rate between its own currency, the local, and the American dollar
  - The peg is 100/\$
  - With a band of 5 percent (+/- 5 locals)
- Pressure from unofficial supply and demand of foreign currency is set to drive the local below the lower band

## Intervention

- The government has to buy 2 billion dollars at the rate of 95 locals per dollar, selling 190 billions locals into the foreign exchange market
- If these locals are not sterilized, the government will succeed; if it chooses to sterilize the intervention, the local is still undervalued at 100/\$



- Since the government is in full control of its money supply, it can always intervene against appreciation
- The only limit to its intervention is political will
- Domestic exporters will benefit from intervention: they can sell their foreign exchange to the government at above market exchange rates
- But these higher earnings will not reflect higher imports, a higher standard of living
- So long as the currency is pegged below its market rate of exchange, a settlements balance surplus will persist
  - Goods and services and financial assets sold abroad will be balanced against the change in official reserve assets



- If the intervention is sterilized, then the pressure toward appreciation is not removed
  - The government will then continue to accumulate reserves:
    - First, creating the currency needed to defend the peg and buy foreign exchange
    - Then, spending the foreign exchange on reserve assets
    - Finally, sterilizing the inflow of new money in some way
    - A new round of intervention → reserve acquisition → sterilization can then begin
  - If the pressure toward appreciation comes from increased productivity, then the pressure will continue, even if the intervention is not sterilized
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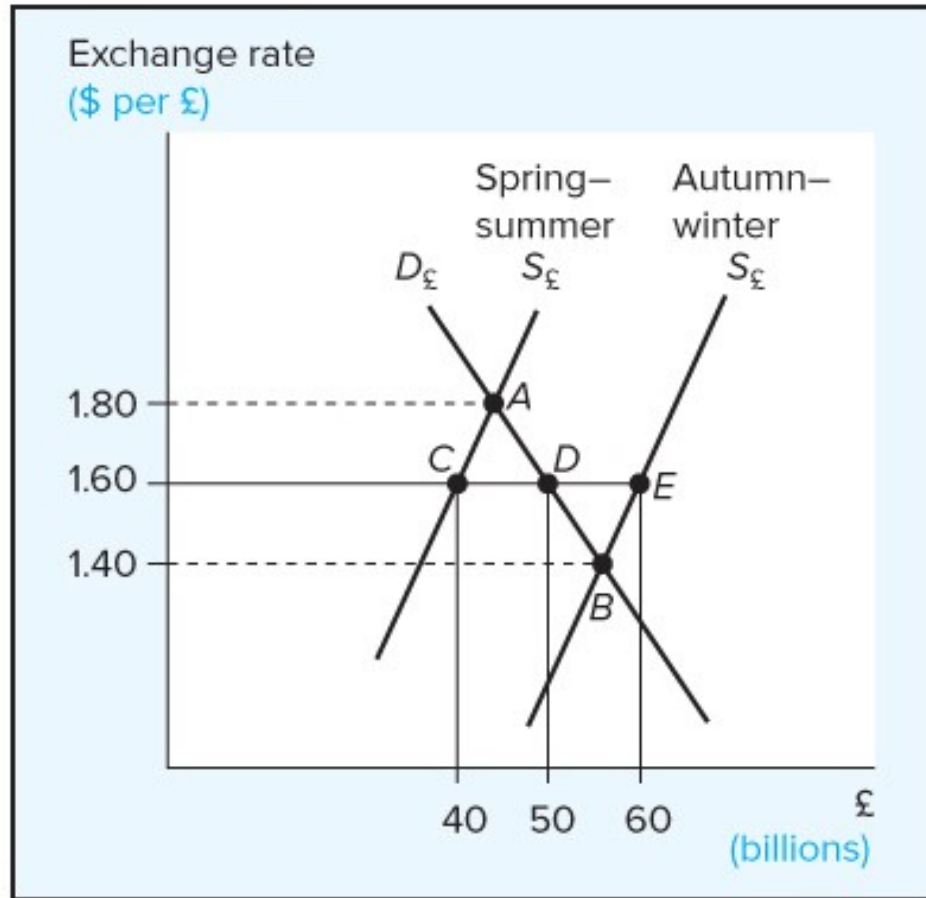


- If there are temporary imbalances, then it is possible to manage a fixed exchange rate
- For instance, a country whose production is very seasonal may export a lot during a few months and will then be a net importer for most of the year
  - Exchange rates will reflect this
  - Demand for its currency will spike during export season
- If government officials can predict this, then they can maintain a stable exchange rate throughout the year
- However, if government officials can predict it, why couldn't currency traders?



# Example: Financing Temporary Disequilibria

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## Setup

- Canada maintains a fixed exchange rate against the currency of its major trading partner, Great Britain
- Its exports are very seasonal, concentrated in the autumn/winter harvest season
- If the exchange rate were free to fluctuate, it would drop to  $\$1.40/\pounds$  in export season and rise to  $\$1.80/\pounds$  in import season

## Intervention

- If the Canadian government stabilizes at  $\$1.60/\pounds$ , it will earn just enough pounds in one season to offset demand in the next (the distance between C and D is equal to that between D and E)
- The gain can be measured as the sum of areas ACD and BDE





## Government or Market

- Speculators in the foreign exchange market can also smooth out fluctuations
- If government officials can see the seasonal pattern, speculators can too
- It will be profitable to buy pounds cheap, at \$1.40/£, and sell them high, at \$1.80/£
- This will smooth out the disequilibria, driving the exchange rate toward its long-term equilibrium price – which may or may not be \$1.60/£

## Other Factors also Important

- We cannot simply look at harvest patterns in isolation
- It's unreasonable to assume government officials will correctly calculate all the factors influencing the rate
- It is more realistic and efficient to leave exchange rate determination to the market
- This doesn't mean markets are perfect or that speculators have perfect information
  - They will each individually contribute their own judgment to the formation of exchange rates – and lose their position if they get it wrong



- In the case of permanent disequilibrium, clever management is not enough
- In the case of a depreciation pressure, the country will eventually run out of reserves and be forced to depreciate
- In the case of appreciation, the government can continue to intervene leading to larger and larger reserves
  - So long as there is political will to do this
  - This is in reality a tax on domestic consumers and a subsidy to foreigners and domestic exporters
- The optimal policy would be to abstain and let the foreign exchange market determine exchange rates
  - Equilibrium exchange rates would quickly emerge



## 4. Exchange Controls

### Nature of Controls

- They are analogous to import and export quotas, only for currencies
- When a government imposes exchange controls, it maintains a currency peg and controls distribution of foreign exchange
  - It rations the allocation of foreign exchange to those who need it
  - Earners of foreign exchange are forced to sell it to the government at the official rate
- In 2016 58 countries, all developing countries, had extensive exchange control policies
- Capital controls are a subset of exchange controls, limiting capital flows. 28 other countries had extensive capital controls



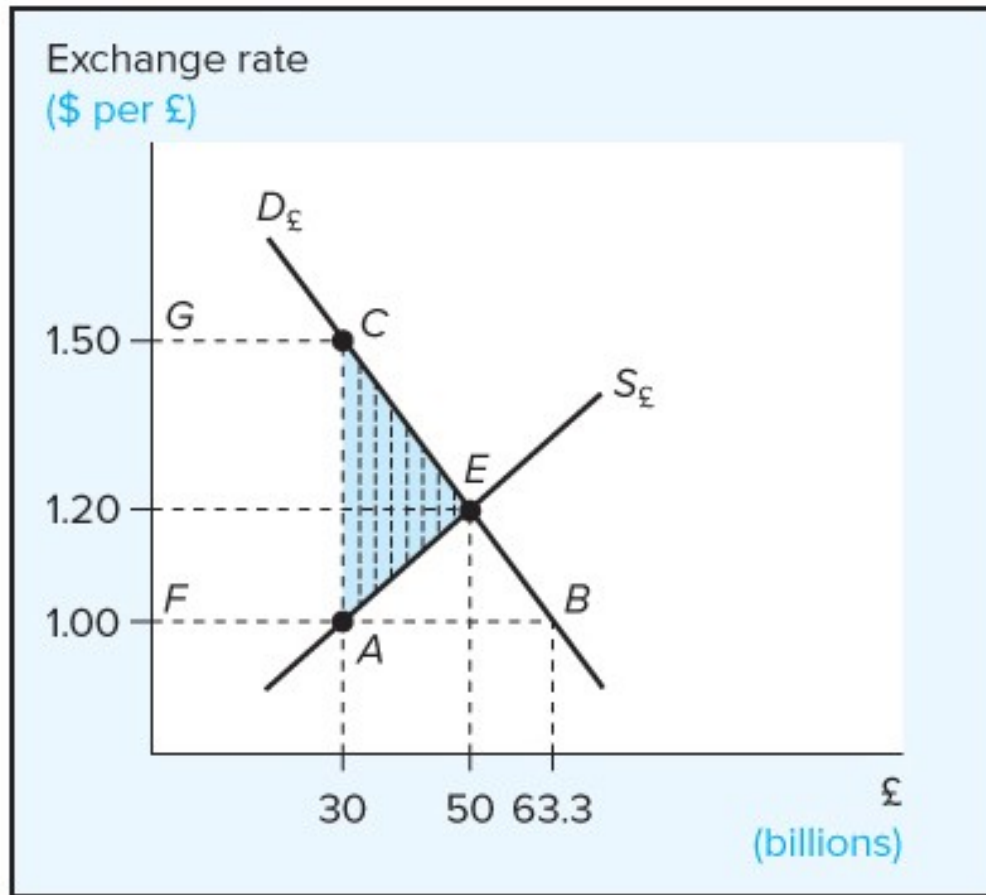
## Problems

- Exchange controls lead to high administrative costs and large private resource costs
- Black markets in foreign exchange are quickly formed
  - Here the real market rate of exchange rules
- Corruption in the form of bribes also likely
- Exchange controls limit trade
  - They don't cure the underlying imbalances that make them necessary at the fixed exchange rate
- Fundamental government control over foreign trade the result



# Exchange Controls

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## Example

- The Canadian government grows tired of the currency peg mechanism and erects exchange controls
  - Exporters are forced to sell pounds at  $\$1/\pounds$
  - Tourists and importers must buy pounds at a price of  $\$1.50/\pounds$
- The government nets a handsome profit of \$15 billion minus administrative costs, shown by area GCAF
  - This is simply taken from importers and given to someone else

## Losses

- Deadweight loss in the form of area CEA
- Exports are sharply limited, they are too expensive at the overvalued rate
- ~~Imports are similarly limited due to the lack of foreign exchange~~



## 5. “Deficit Without Tears” and Permanent Imbalances

### Bretton Woods and Imbalances

- From 1945, dollar-denominated assets are the main reserve assets (Bretton Woods)
- The US did not (does not) have to worry about financing a deficit on its settlements balance
  - It simply exports dollars and dollar-denominated assets to the rest of the world

### The French Critique

- The system was an “exorbitant privilege”
- It allowed the US to run a “deficit without tears”
- Jacques Rueff (1972) even called it “an unprecedented system of spoliation”



## Floating Currencies

- Most currencies are floating, but rarely totally without government intervention
- Some countries are dollarized: they use a different currency than their own, usually the US dollar, but also the euro
- Some countries have a currency board: the board buys and sells foreign exchange against domestic currency at a pegged rate, shrinking and expanding its reserves and the domestic money supply according to market pressures
- Some have hard or adjustable pegs

**The US dollar is still de facto central to the system**





# Contemporary Currency Regimes

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| Currency Pegged To   |                                  |                        |                          |                              |                    |                 |                    |                     |              |                |
|--|----------------------------------|------------------------|--------------------------|------------------------------|--------------------|-----------------|--------------------|---------------------|--------------|----------------|
| (1)  | (2)                              | (3)                    | (4)                      | (5)                          | (6)                | (7)             | (8)                | (9)                 |              |                |
| Use Foreign Currency (no separate local currency) <sup>2</sup> | Euro Area (use euro as currency) | Euro                   | U.S. Dollar              | Other Currency               | Currency Basket    | Crawling Peg    | Managed Float      | Free Float          |              |                |
| Andorra  | Austria                          | <i>ERM II:</i>         | Angola                   | Malawi                       | Bhutan             | Belarus         | Algeria            | Afghanistan         | Madagascar   | Australia      |
| Ecuador  | Belgium                          | Denmark                | Antigua & Barbuda        | Maldives                     | (Indian rupee)     | Fiji            | Botswana           | Albania             | Malaysia     | Canada         |
| El Salvador  | Cyprus                           | <i>CFA Franc Zone:</i> | Nigeria                  | Burundi                      | Brunei             | Kuwait          | Burundi            | Argentina           | Mauritius    | Chile          |
| Kiribati   | Estonia                          | Benin                  | Aruba                    | Oman                         | Darussalam         | Libya           | China <sup>3</sup> | Armenia             | Moldova      | Japan          |
| Kosovo   | Finland                          | Burkina Faso           | Bahamas                  | Pakistan                     | (Singapore dollar) | Morocco         | Costa Rica         | Azerbaijan          | Mongolia     | Mexico         |
| Liechtenstein  | France                           | Cameroon               | Bahrain                  | Papua New Guinea             | (Singapore dollar) | Samoa           | Dominican Republic | Brazil              | Mozambique   | Norway         |
| Marshall Islands   | Germany                          | Central African Rep.   | Bangladesh               | Lesotho                      | Guinea             | Solomon Islands | Colombia           | Myanmar             | Poland       | Poland         |
| Micronesia   | Greece                           | Chad                   | Barbados                 | Qatar                        | (S. African rand)  | Islands         | Ethiopia           | Congo, Dem. Rep. of | New Zealand  | Russia         |
| Monaco   | Ireland                          | Congo, Rep. of         | Belize                   | St. Kitts & Nevis            | Macau              | Singapore       | Haiti              | Paraguay            | Peru         | Somalia        |
| Montenegro   | Italy                            | Cote d'Ivoire          | Bolivia                  | St. Lucia                    | (Hong Kong Dollar) | Syria           | Honduras           | Egypt               | Sweden       | Sweden         |
| Nauru  | Latvia                           | Equatorial Guinea      | Cambodia                 | St. Vincent & the Grenadines | Nambria            | Tonga           | Iran               | Georgia             | Philippines  | United Kingdom |
| Palau  | Lithuania                        | Gabon                  | Curaçao and Sint Maarten | Saudi Arabia                 | (S. African rand)  | Vanuatu         | Jamaica            | Ghana               | Romania      | United States  |
| Panama   | Luxembourg                       | Guinea-Bissau          | Djibouti                 | Sudan                        | Nepal              | Mauritania      | Mauritania         | Guatemala           | Seychelles   | United States  |
| San Marino   | Malta                            | Mali                   | Dominica                 | Suriname                     | (Indian rupee)     | Nicaragua       | Nicaragua          | Hungary             | Sierra Leone |                |
| Timor-Leste  | Netherlands                      | Niger                  | Eritrea                  | Tajikistan                   | Swaziland          | Rwanda          | Rwanda             | Iceland             | South Africa | Euro           |
| Tuvalu   | Portugal                         | Senegal                | Gambia                   | Tanzania                     | (S. African rand)  | Sri Lanka       | Sri Lanka          | India               | South Sudan  |                |
| Zimbabwe   | Slovak Republic                  | Togo                   | Grenada                  | Trinidad & Tobago            |                    | Uzbekistan      | Uzbekistan         | Indonesia           | Switzerland  |                |
|  | Slovenia                         | <i>Other:</i>          | Guinea                   | Turkmenistan                 |                    |                 |                    | Israel              | Thailand     |                |
|  | Spain                            | Bosnia and Herzegovina | Guyana                   | United Arab Emirates         |                    |                 |                    | Kazakhstan          | Tunisia      |                |
|  |                                  | Bulgaria               | Hong Kong                | Venezuela                    |                    |                 |                    | Korea, South        | Turkey       |                |
|  |                                  | Cape Verde             | Iraq                     | Vietnam                      |                    |                 |                    | Kyrgyz Republic     | Uganda       |                |
|  |                                  | Comoros                | Jordan                   | Yemen                        |                    |                 |                    | Ukraine             | Uruguay      |                |
|  |                                  | Croatia                | Kenya                    |                              |                    |                 |                    | Zambia              |              |                |
|  |                                  | Czech Republic         | Lao PDR                  |                              |                    |                 |                    |                     |              |                |
|  |                                  | Macedonia              | Lebanon                  |                              |                    |                 |                    |                     |              |                |
|  |                                  | São Tomé & Príncipe    | Liberia                  |                              |                    |                 |                    |                     |              |                |
|  |                                  | Serbia                 |                          |                              |                    |                 |                    |                     |              |                |

<sup>1</sup>Classification of each country is based on the country's actual (de facto) policy, as determined by the International Monetary Fund. For some countries the classification differs from the country's official (de jure) stated policy.

<sup>2</sup>These countries are often called "dollarized." All but Andorra, Kosovo, Monaco, Montenegro, and San Marino (euro); Kiribati, Nauru, and Tuvalu (Australian dollar); and Liechtenstein (Swiss franc) use the U.S. dollar as their currency.

<sup>3</sup>The IMF categorizes China as "stabilized arrangement, de facto exchange rate anchor to a composite."

Source: International Monetary Fund, *Annual Report*, 2017.



## Post-Bretton Woods System (1971-present)

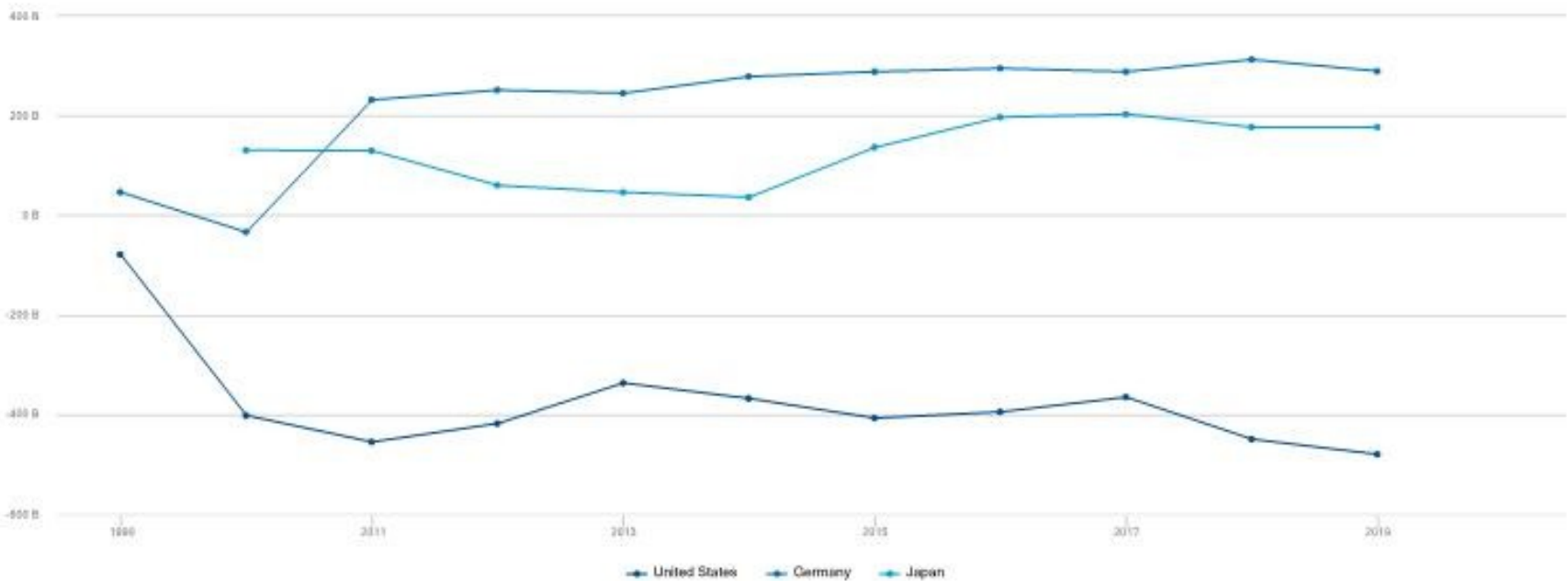
- The main problem of the Bretton Woods System is still with us
  - The export of American inflation
  - The balance of payments imbalance
- The elimination of redemption in gold has exacerbated the problem

## Specific Issues

- The US has a permanent balance of payment (settlements balance) deficit
    - Financed by the export of dollars and dollar-denominated assets held in reserve by other countries
    - Capital flows into the US, financing government and the broader economy
  - Other countries have permanent surpluses
    - Always down to currency regimes
    - They are not letting their currency appreciate to reflect their more productive economies
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# US, German and Japanese CA Imbalances



Series : Current account balance (BoP, current US\$)

Source: World Development Indicators

Created on: 06/21/2021



## The Accusation

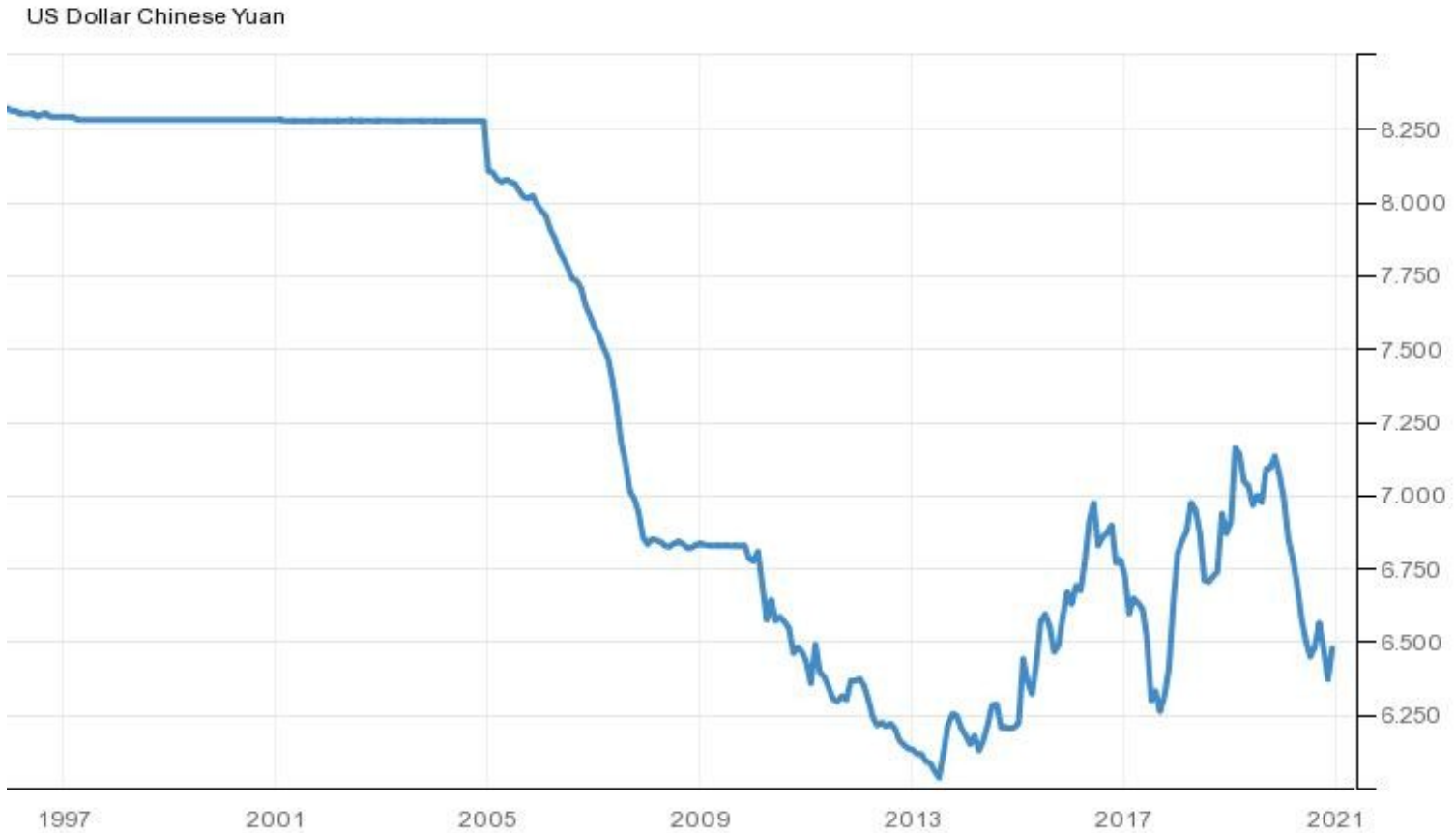
- The Chinese are often accused of “manipulating” their currency
- The Chinese maintain an adjustable peg: they have mainly defended against appreciation since the mid-90s
- Chinese currency “manipulation” has been a boon to Chinese exporters and American importers
  - The Chinese have, if anything, subsidized American consumption!

## The Reality

- Robert Lucas (1990) asked, why capital does not flow from rich to poor countries, as we should expect from economic theory
  - The answer is the dollar’s role in the modern system and currency regimes like the Chinese
    - Capital flows into the US and out of the rest of the world are artificially stimulated
-



# Yuan/Dollar Exchange Rate 1996-2021



SOURCE: TRADINGECONOMICS.COM



## 6. Conclusion

1. Freely-floating currencies would, in a world of fiat currencies, be the optimal system
2. Most countries prefer some kind of currency policy, either a managed float or a fixed exchange rate.
3. Governments can intervene in the currency markets to defend their preferred currency peg
4. It is impossible to defend against depreciation if this reflects a fundamental overvaluation of the currency. Defending against appreciation means subsidizing foreigners
5. Exchange controls and capital controls are very inefficient and damaging currency policies
6. The current “non-system” of international currencies is a boon to the issuer of the main reserve assets (the US) but not to the rest of the world



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