The Global Economy

Fixed Exchange Rates

NYU STERN

The idea

- In a fixed exchange rate system, the central bank buys and sells foreign currency as needed to maintain the exchange rate
- Can fail spectacularly if the central bank runs out of foreign currency

The idea

- Stan Fischer, First Deputy Managing Director, IMF
  - Each of the major crises since 1994 – Mexico in 1994, Thailand, Indonesia and Korea in 1997, Russia and Brazil in 1998, and Argentina and Turkey in 2000 – has involved a fixed or pegged exchange rate. And countries that did not have pegged rates – among them South Africa, Israel in 1998, Mexico in 1998, and Turkey in 1998 – avoided crises of this type.
- What is he saying? Does it make sense to you?

Roadmap

- Is China's currency "undervalued"?
- Exchange rate systems
- Fixed exchange rates
- The trilemma

Is China's currency "undervalued"?

The renminbi

- Terminology
  - Currency: renminbi (RMB)
  - Units: yuan
- Is the RMB "undervalued"?
- How would we decide?

The renminbi

- New York Senator Charles Schumer
  - It's time to put some muscle into our trade relationship with China. For too long, the Chinese government has been playing games with the value of its currency in order to get a competitive edge.
- What is he saying? Do you agree?

The renminbi

- Paul Krugman
  - Here's how it works: Unlike the dollar, the euro or the yen, whose values fluctuate freely, China's currency is pegged to the dollar by official policy. At this exchange rate, Chinese manufacturing has a large cost advantage over its rivals. [As a byproduct], China's government buys up dollars, adding to a $2 trillion-plus hoard of foreign exchange reserves.
- What is he saying? Do you agree?

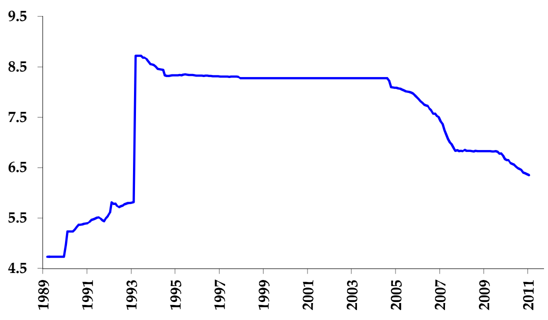
The renminbi

- EIU, Country Finance Report, China, 2011
  - Although the government maintains relatively strict exchange controls, the general trend over the past decade has been towards gradual liberalisation of China's foreign-exchange market. The country reached its most significant milestone in December 1996 when it officially made the renminbi convertible on the current account. Convertibility on the capital account is not expected in the near future.
- What are they saying? Do you agree?

The renminbi

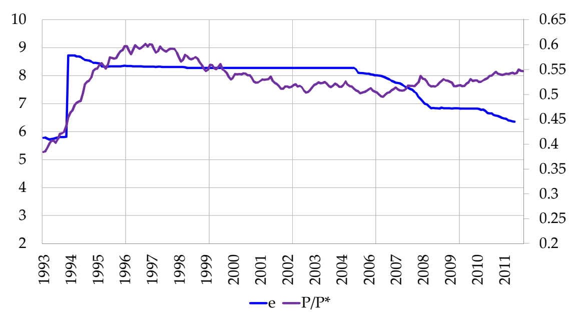
- IMF, Article IV Consultation, 2011
  - IMF staff: Reforms should seek to secure a more modern framework for monetary management … and open the capital account. In all of this, a stronger renminbi will be an important complement.
  - [Chinese] authorities disagreed with the staff. They underlined the progress that has been made in continuing to improve the mechanism for setting the exchange rate. And relative prices were indeed adjusting in China, including through rising labor costs
- What are they saying? Do you agree?

Yuan per dollar



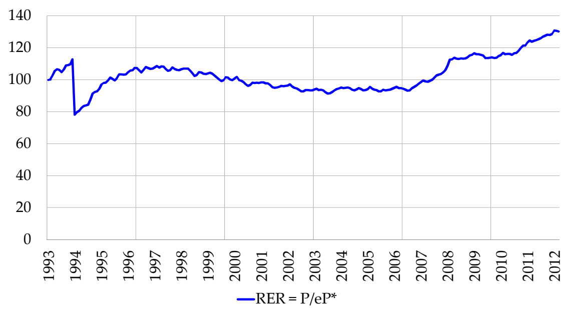
Source: Fed via FRED.

Yuan per dollar

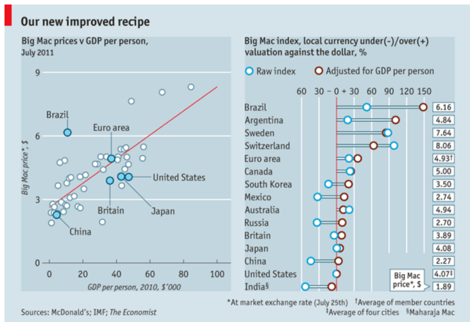


Source: Fed via FRED.

Real exchange rate (Chinese/US prices)



Big Mac prices



The renminbi

- Is it undervalued? Why or why not?
- My summary
  - Chinese goods cheap, but not especially so [remember: PPP doesn't work that well – for anyone]
  - Not mentioned: Chinese price indexes of poor quality, makes PPP calculations noisy
  - **Fixed exchange rate and massive accumulation of dollar reserves is unusual, attracts attention**
  - Something to think about: latent demand for dollars limited by capital controls

Exchange rate systems

Exchange rate systems

- Convertibility
  - A currency is **convertible** if you can trade it freely for foreign currency -- and vice versa
- Exchange controls
  - Limits on convertibility for some purposes
- Fixed and flexible exchange rate systems
  - An exchange rate is **flexible** [floating] if the market price is determined with little or no direct government participation
  - An exchange rate is **fixed** [pegged] if the central bank supports an official rate by buying and selling foreign currency

Exchange rate systems

- China, EIU, Country Finance Report
  - Although the government maintains relatively strict exchange controls, the trend has been towards gradual liberalisation of the foreign-exchange (forex) market. In December 1996 China officially made the renminbi convertible on the current account. Convertibility on the capital account is not expected in the near future.
  - The State Administration of Foreign Exchange (SAFE) administers the complex set of regulations that China uses to keep its currency open on current account (for trade purposes) but closed on the capital account (for most types of investment).

Exchange rate systems

- Mexico, EIU, Country Finance Report
  - No restrictions apply to export proceeds and import payments. Export revenues may be held indefinitely in Mexican pesos or in foreign currency.
  - No restrictions apply to Mexican individuals or companies borrowing from abroad, nor are restrictions imposed on nonresident companies and individuals borrowing domestically.

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Exchange rate systems

- China, EIU, Country Finance Report
  - In 2010 China announced that the renminbi's fixed peg to the US dollar would be replaced by a more flexible currency regime. China's decision to abandon the renminbi's peg spurred the development of a new range of foreign-exchange-related services, even though the exchange rate is still tightly controlled by Chinese authorities.

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Exchange rate systems

- Mexico, EIU, Country Finance Report
  - The value of the peso is determined by market forces through a floating exchange-rate regime that has been in place since the December 1994 peso devaluation. Under this framework, the Banco de Mexico (the central bank) makes no commitment to the level of the peso exchange rate, but does intervene in foreign-exchange markets to ensure currency stability.

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Exchange rate systems

Increasing flexibility ↓

Common currency	(Euro Zone, Panama)
Currency board	(HK, Argentina < 00)
Fixed exchange rate	(US < 71)
Crawling peg	(Mexico < 95, China > 05)
Managed exchange rate	(Brazil? Canada?)
Floating exchange rate	(US?)

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Fixed exchange rates

Fixed exchange rates

- How does the central bank "fix" the rate?
  [Ask yourself: how would you set any price?]
- Foreign exchange reserves
  - Foreign-denominated assets on the central bank's balance sheet

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Reminder: money supply mechanics

Central bank

Assets		Liabilities	
Bonds	20	Money	20

Households and firms

Assets		Liabilities
Money	20	
Bonds	180	

- How does central bank increase money supply?

Fixed exchange rate mechanics

Central bank

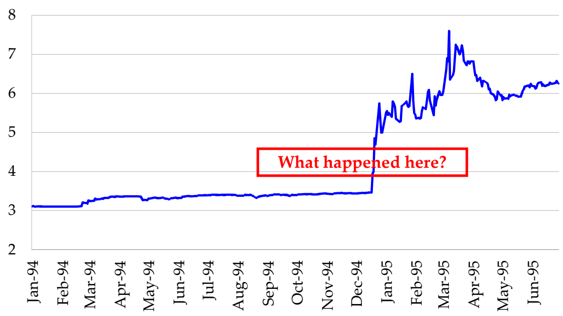
Assets		Liabilities	
Bonds	10	Money	20
FX reserves	10		

Households and firms

Assets		Liabilities
Money	20	
FX	50	
Bonds	190	

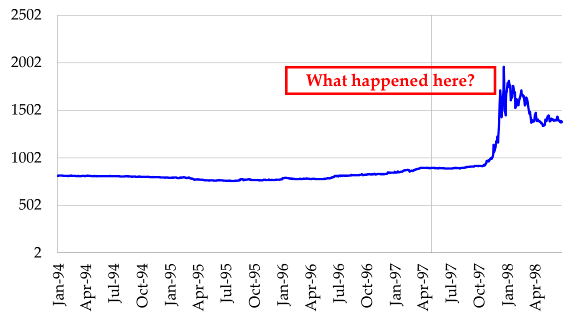
- What are foreign-exchange reserves?
- How does bank maintain fixed exchange rate? (“intervention”)
- What happens if people want to sell FX? Buy?

Pesos per dollar



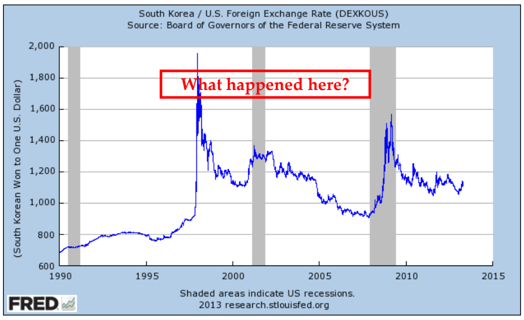
Source: Fed via FRED.

Won per dollar



Source: Fed via FRED.

Won per dollar



Source: Fed via FRED.

Fixed exchange rate mechanics

Central bank

Assets		Liabilities	
Bonds	10	Money	20
FX reserves	10		

Households and firms

Assets		Liabilities
Money	20	
FX	50	
Bonds	190	

- What happened in Mexico in Dec 1994?

Fixed exchange rate mechanics

Central bank

Assets		Liabilities	
Bonds	10	Money	20
FX reserves	10		

Households and firms

Assets		Liabilities
Money	20	
FX	50	
Bonds	190	

- How did China get trillions of reserves?
- How does it offset the impact on the money supply? ("sterilization")
- Could China run out of reserves?

Fixed exchange rates: currency boards

- The idea
  - If reserves > local currency, you can never run out
  - [think about this…]
- Has worked well in Hong Kong
- Failed in 2001 in Argentina – why?
  - Banks had dollar liabilities, not matched with dollar assets
  - If people switched to dollars and peso collapsed, they'd be out of business

Fixed exchange rates: summary

- Fixed rate maintained through central bank sales and purchases of foreign currency ("intervention")
- Sales limited by quantity of reserves
- Typically changes the money supply, but you can offset that with conventional monetary policy (trade money for bonds)
- China finances its purchases of foreign exchange by issuing bonds ("sterilization")

The trilemma

The trilemma

- What's a trilemma?
  - Three choices, but you only get two
- The politician's trilemma
  - Honest, smart, electable
- MBA student's trilemma
  - Job, school, social life

The trilemma

- The trilemma of international finance
  - Fixed exchange rate
  - Free flow of capital (no "controls")
  - Independent monetary policy

The trilemma

- What are the US's trilemma choices?
  - Fixed exchange rate
  - Free flow of capital
  - Independent monetary policy

The trilemma

- What are China's trilemma choices?
  - Fixed exchange rate
  - Free flow of capital
  - Independent monetary policy

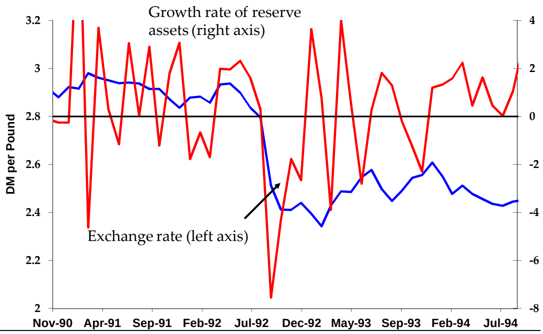
The trilemma: UK, 1992

- Quasi-fixed rate with European currencies (DM)
  - Trading band of 2.25%
- Free flow of capital
- High interest rates in Germany forced UK to follow
  - Why?
- Weak UK economy made lower interest rate attractive
- What are your choices?

The trilemma: UK, 1992

- George Soros wonders which one will go first
  - Fixed exchange rate?
  - Free flow of capital?
  - Independent monetary policy?
- Bets the farm on the first one, makes ~$1b
- Bank of England lets pound float

Deutschemark-Pound exchange rates



The trilemma: UK, 1992

- Who lost?
- UK Treasury estimates
  - £800m in trading trading losses (buying into a down market)
  - £2.4b in capital gains it would have made if it kept reserves
- Search for "Black Wednesday"
  - September 16, 1992

What have we learned?

- Fixed exchange rates require government support
  - Buy and sell FX at official rate
  - Or restrict convertibility
- Common transactions
  - Intervention: sales and purchases of foreign currency
  - Sterilization: undo impact on money supply
- Trilemma: you only get two of
  - Fixed exchange rate
  - Free (international) flow of capital
  - Independent monetary policy

The Global Economy

Macroeconomic Crises

The idea

- Macroeconomic crises: stuff happens, fact of life
- Sometimes source of opportunities

Roadmap

- Final exam
- What's happening?
- Crises
- **Signs of trouble [aka "the checklist"]**
- Crisis responses
- Examples: Mexico, Korea, Europe

Final exam

- Material since midterm only
- Bring calculator (logs and exponents not needed)
- Also one page with anything on it you wish
- Practice exams posted
- Also answers to problem sets and practice problems
- Exam lasts 2 hours, followed by Malt House (my treat)
- Special office hours: Friday and Monday, 3-5

What's happening?

- Joshua Fellman, "Yuan debate," *Bloomberg*, May 2013, via Zeeshan Haider:
  - The debate over the yuan's exchange rate should focus on the mechanism by which the currency's level is set, not its actual valuation, China's official Xinhua News Agency wrote yesterday. The goal should be on "perfecting" the exchange-rate mechanism, not on the numerical value of the currency, Xinhua writes. Lawmakers and economists find it "hard to determine" whether the yuan is over- or undervalued, given that the exchange rate has many influences, Xinhua said.
- What's going on? Do you agree?

What's happening?

- Sarah Jones, "Central banks buy equity," *Bloomberg*, April 25, 2013, via Steve Avary:
  - Central banks, guardians of the world's $11 trillion in foreign-exchange reserves, are buying stocks in record amounts as falling bond yields push even risk- averse investors toward equities. In a survey of 60 central bankers this month, 23 percent said they own shares or plan to buy them.
- What's going on? Do you agree?

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What's happening?

- Peter Eavis, "Euro bonds paying off," NYT, September 2012:
  - When fear gripped the European markets in April, the money manager Robert Tipp decided to buy more Portuguese government bonds. He figured that European officials wouldn't let the country turn into another Greece. … Such contrarian bets are looking pretty smart right now.
- What's going on? Do you agree?

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What's happening?

- Edward Hugh, Fistful of Euros blog, May 2013:
  - Spain's economic problems now form part of such a complex web of cause and effect, action and reaction, that it is getting increasingly difficult for laymen, journalists and politicians alike to get to the core of what is actually happening.
  - The euro bares an uncanny resemblance to Dr Strangelove's doomsday machine, designed so that one day it would almost inevitably blow up the global financial system, but constructed so that any attempt to dismantle it would also produce the same outcome.
- What's going on? Do you agree?

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Crises

Crises

- Crises =
  - Unusually large recessions
  - Typically different in type as well as magnitude
- A regular feature of the world throughout history
- Significant business risk, also opportunity

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Crises

- Australia, 1891-1893 ("Barings crisis")
  - GDP fell 18%
- United States, 1907-1908
  - GDP fell 10%
- Mexico, 1994-1995
  - GDP fell 9%, peso fell almost 50%
- Korea, 1997-98
  - GDP fell 9%, won fell 30%
- Argentina, 1999-2002
  - GDP fell 20%, peso fell 65%

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Crisis triggers

- The classic crisis triggers
  - Sovereign debt ("debt crisis")
  - Financial system weakness ("financial crisis")
  - Fixed exchange rates ("exchange rate crisis")

Signs of trouble

Signs of trouble

- Can we see them coming?
- What would we look at?

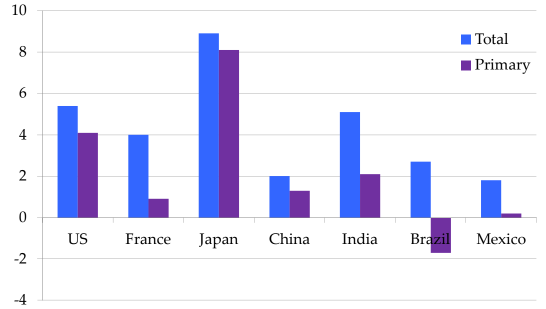
Signs of trouble

- Crisis checklist
  - Government debt and deficits
  - Financial system
  - Exchange rate and reserves
  - Politics and institutions

Signs of trouble

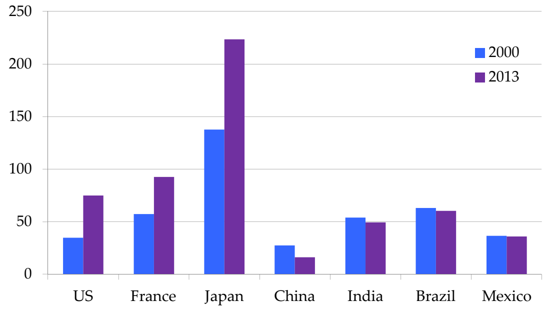
- Sovereign debt indicators
  - Lots of debt (ratio of public debt to GDP)
  - Large and continuing deficits
  - Underlying long-term problems: pensions, banks, guarantees…
- Secondary indicators
  - Signs of investor concern (CDS spreads)
  - Political instability, hints that default might be attractive
  - Debt short term
  - Debt denominated in foreign currency

Government deficits (% of GDP, 2013)



Source: EIU CountryData.

Government debt (% of GDP)



Source: EIU CountryData.

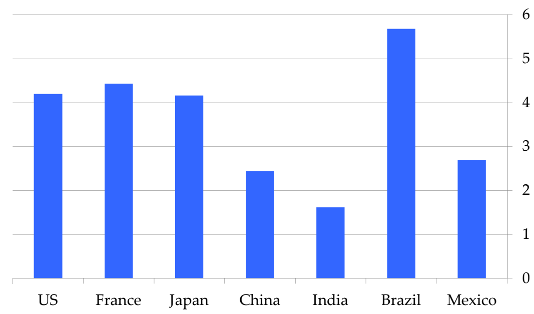
Signs of trouble

- Financial system indicators
  - [for completeness, not part of this course]
  - Low capital ratios at banks and related institutions
  - Increasing loan losses, nonperforming loans
- Secondary indicators
  - Rapid growth in real estate prices
  - Currency mismatches, borrowing in foreign currency
  - Rapid growth of "near banks"

Signs of trouble

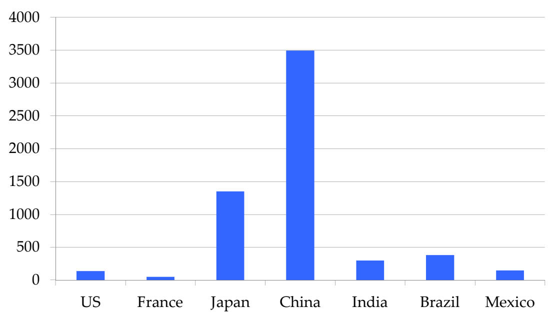
- Exchange rate indicators
  - Fixed or "managed" exchange rate system
  - Overvaluation either by PPP or relative to last five years
  - Low foreign exchange reserves
- Secondary indicators
  - Nature of any "fix," esp covertibility
  - Governance of monetary authority

Big Mac prices (USD)



Source: The Economist.

Foreign exchange reserves (USD billions)



Source: The Economist.

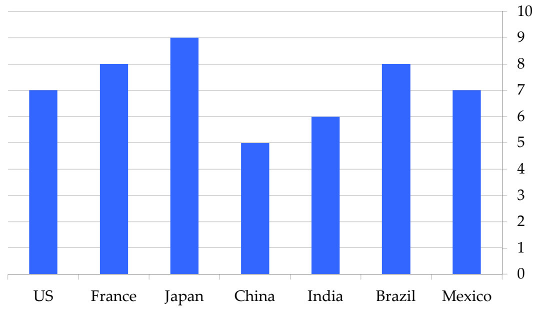
Signs of trouble

- Walter Wriston, CEO of Citibank, 1980 or so
  - Countries don't go out of business. The infrastructure doesn't go away, the productivity of the people doesn't go away, the natural resources don't go away. Generally their assets exceed their liabilities, which is the technical reason for private bankruptcy. Which makes this very different from a company.
- What is he saying? Do you agree?

Signs of trouble

- Indicators of politics and institutions
  - Weak institutions overall
  - Political uncertainty – elections, for example
- Remember Wriston
  - Governments choose to default

Political stability rank (percentile) (??)



Source: EIU, Market Indicators.

Crisis responses

Crisis responses

- Response to government budget problems
  - Reduce spending, raise taxes (duh!)
  - IMF loans can smooth transition, come with "conditionality"
  - If default happens, resolve it quickly

Crisis responses

- Response to financial sector problems
  - If system is sound but illiquid, lend aggressively against normally good collateral
    [classic role of central bank: lender of last resort]
  - If system is insolvent, get through bankruptcy and recapitalize as quickly as possible
    [this is fiscal policy: costs money, at least up front]

Crisis responses

- Response to exchange rate problems
  - Let the currency float
  - More controversial: impose capital controls

Crisis responses

- Response to political problems
  - Hmmmm….

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Mexico

Mexico, 1994-1995

- High growth in early 1990s
- Economic liberalization, NAFTA
- Modest government debt [27%] and deficit [1%]
- Exchange rate "managed"
- Higher inflation than US led to "real appreciation"
- Political turmoil during 1994 presidential election [Chiapas, Colosio, …]
- What went wrong? What was the trigger?

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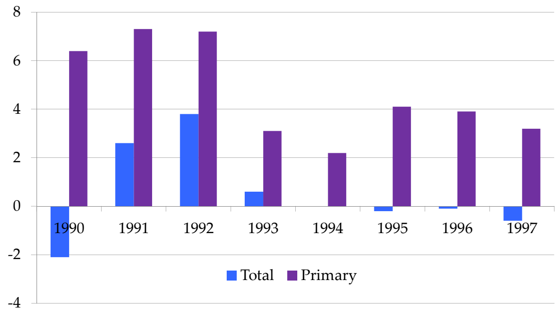
Mexico: government surpluses (% of GDP)



Source: EIU, CountryData

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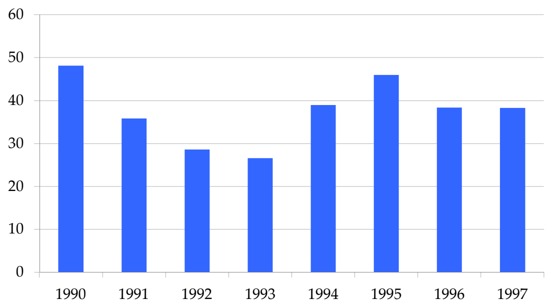
Mexico: government debt (% of GDP)



Source: EIU, CountryData

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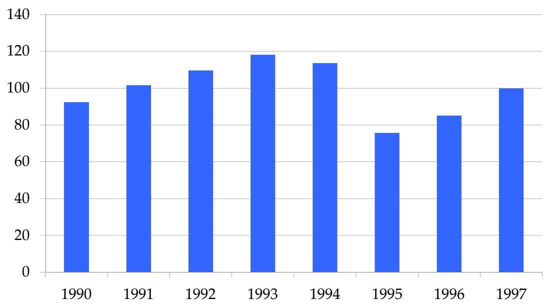
Mexico: real exchange rate



Source: EIU, CountryData

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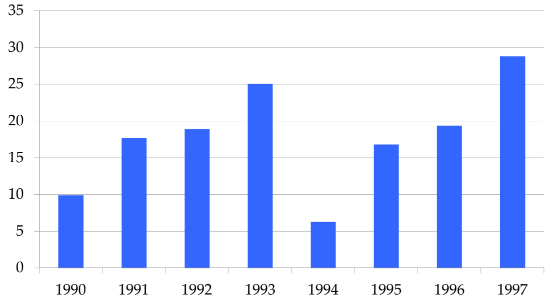
Mexico: foreign exchange reserves



Source: EIU, CountryData

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Mexico: what went wrong?

- Debt modest, surpluses
- But …
  - High degree of political uncertainty
  - Borrowing both short-term and (partly) in dollars
  - Low reserves, managed exchange rate not defensible
- Mid-December 1994: investors refused to roll over government debt – boom!

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Mexico: what was the response?

- January 31, 1995:
  - Mexico borrows $20b from US collateralized by oil
  - Other governments and agencies arrange $30b lines of credit
- Mexico cuts spending, raises taxes in 1995, budget balanced throughout crisis
- The result
  - GDP falls sharply in 1995, rebounds in 1996
  - Loans repaid in full in 1997

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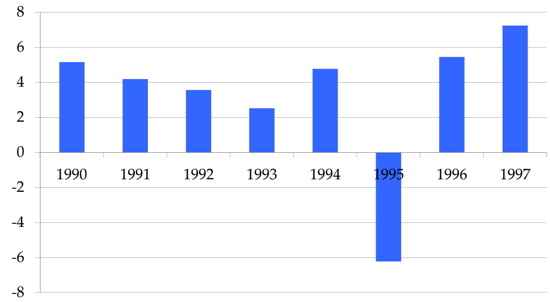
Mexico: GDP growth



Source: EIU, CountryData

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Mexico: crisis checklist

- Where did we go wrong?
  - Government debt and deficits
  - Financial system
  - Exchange rate and reserves
  - Politics and institutions

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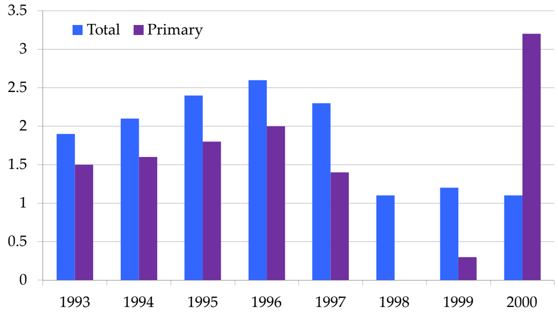
Korea

Korea

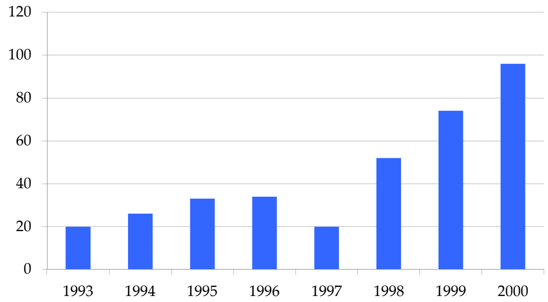
- Great success story from mid-1950s on
- Continued rapid growth 1990-96
- Currency pegged
- What went wrong? What was the trigger?

Korea: government surpluses (% of GDP)



Source: EIU, CountryData

Korea: foreign exchange reserves



Source: EIU, CountryData

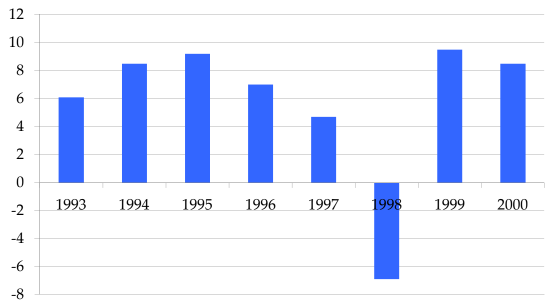
Korea: what went wrong?

- Strong growth
- Government surpluses
- But …
  - Banks lent aggressively to corporates (Chaebols)
  - Much of it financed by short-term foreign borrowing
  - Kia Motors collapsed in July
  - US interest rates rose, dollar appreciated
  - Reserves fell
- December 1997: currency collapsed – boom!

Korea: what was the response?

- The response
  - IMF contributes 21b to 58.4b bailout (USD)
  - Government shuts down insolvent banks
  - Bankrupt firms sold or merged
  - FX reserves increased
- The result
  - Wages fell sharply
  - GDP rebounded in 1999

Korea: GDP growth



Source: EIU, CountryData

Korea: crisis checklist

- Where did we go wrong?
  - Government debt and deficits
  - Financial system
  - Exchange rate and reserves
  - Politics and institutions

Europe

Europe

- What's going on over there?
- Our goal: make this as simple as possible
- What's the trigger?
- My take
  - Sovereign debt problems
  - Made worse by global downturn
  - "Enabled" by Euro Zone
  - Exacerbated by common currency

Europe

- European Union emerged from wreckage of WW II
  - Closer economic ties to connect countries, maintain peace
- Short history
  - Paris Treaty (1951): coal and steel community
  - Treaty of Rome (1957): more extensive free trade zone
  - Continued integration and expansion
  - Maastricht Treaty (1993) set up single currency and ECB

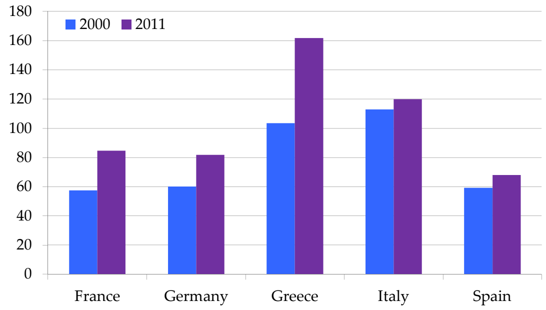
Two currency unions

Common?	**US**	**EU**
Currency	Yes	Yes
Deposit insurance	Yes	No
Bank regulation	Yes	No
Fiscal policy	Yes	No
Political authority	Yes	No
Language	Yes	No
Olympic team	Yes	No
Army	Yes	No

Europe

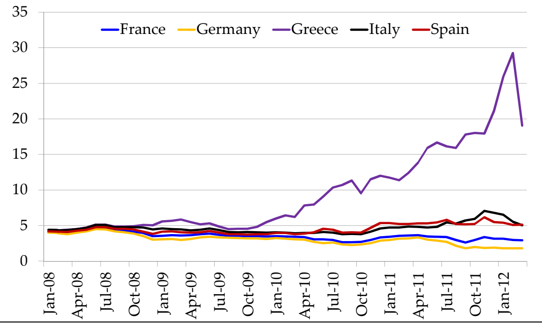
- Monetary Union came with conditions
  - Limits on debt and deficits
  - A "no-bailout" clause
- Why?
  - Attempt to reconcile centralized monetary policy and decentralized fiscal policy
- No exit plan

Government debt (% of GDP)



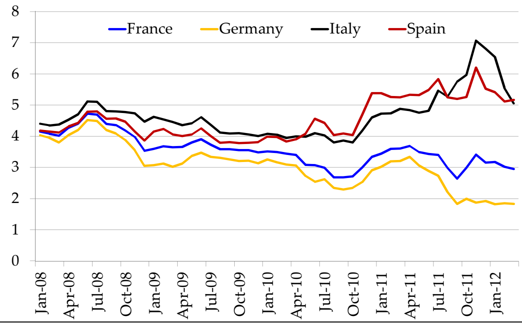
Source: EIU, CountryData.

Long-term government interest rates



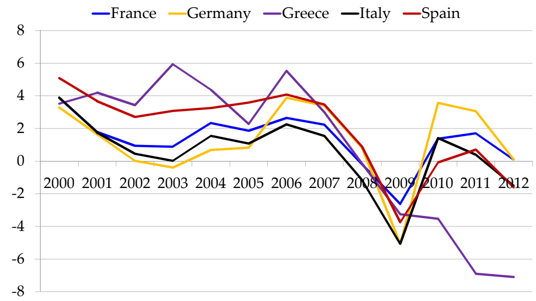
Source: ECB, statistical data warehouse.

Long-term government interest rates



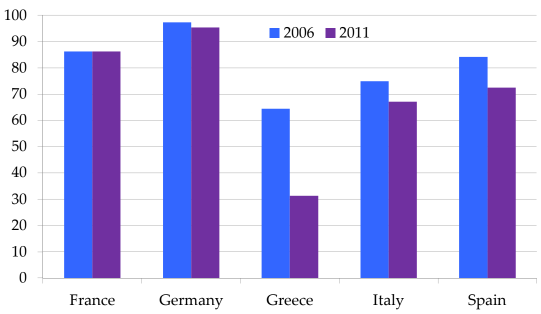
Source: ECB, statistical data warehouse.

GDP growth



Source: ECB, statistical data warehouse.

World Economic Forum rank (percentile)

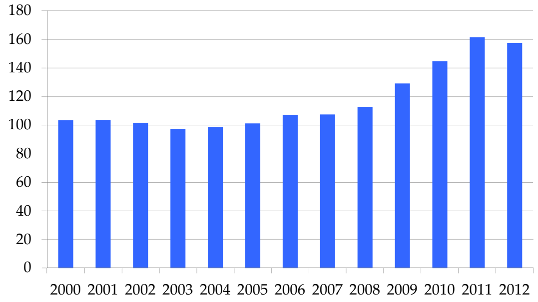


Source: World Economic Forum.

Greece

- What's happening in Greece?

Greece: government debt (% of GDP)



Source: EIU, CountryData

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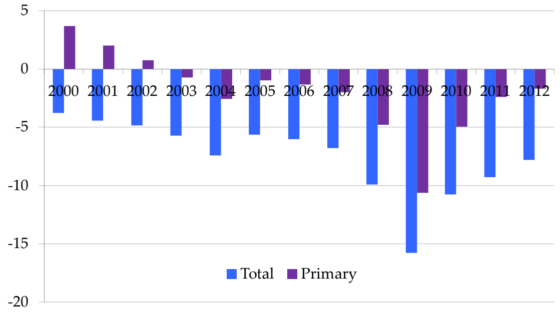
Greece: government surpluses (% of GDP)



Source: EIU, CountryData

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Greece

- What's happening in Greece?
  - Large government debt, suspect financial statements
  - Continuing deficits (high spending, poor tax collection)
  - Sharp rise in rates makes debt unsupportable
- Questions
  - Why were they able to sell debt at such low rates?
  - Why continued deficits in 2009-2012?
  - Are endless negotiations worse than Mexico's cold turkey?
  - Would devaluation have helped?

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Spain

- What's happening in Spain?

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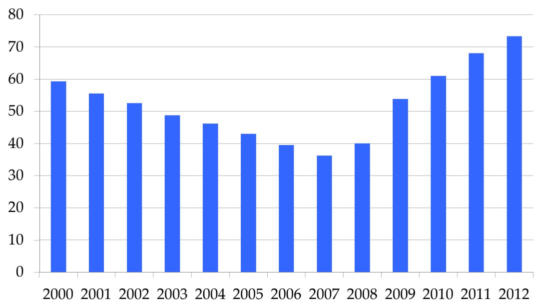
Spain: government debt (% of GDP)



Source: EIU, CountryData

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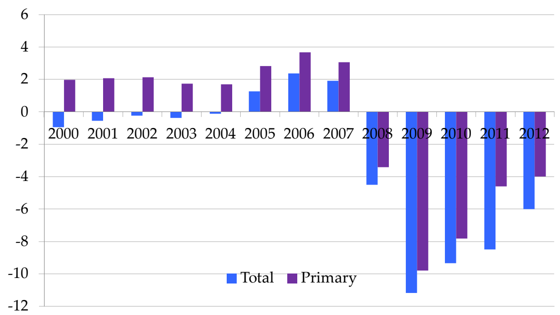
Spain: government surpluses (% of GDP)



Source: EIU, CountryData

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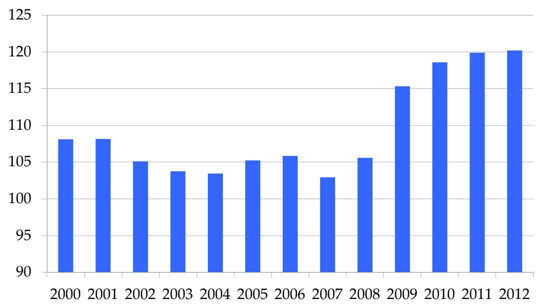
Spain

- What's happening in Spain?
  - Modest debt and deficits prior to crisis
  - Global downturn hit revenue hard, led to large deficits
  - Larger housing boom and bust than most
  - Rigid labor markets likely slowing recovery
- Questions
  - How big are hidden liabilities of regional governments and "cajas"? [like Korea?]

Italy

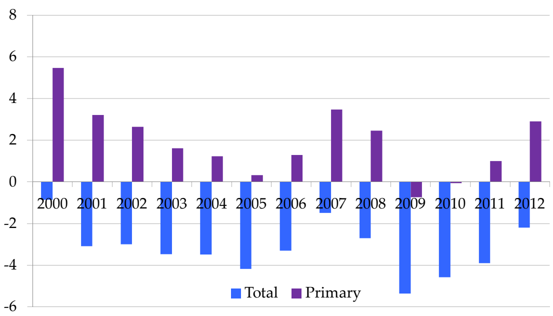
- What's happening in Italy?

Italy: government debt (% of GDP)



Source: EIU, CountryData

Italy: government surpluses (% of GDP)



Source: EIU, CountryData

Italy

- What's happening in Italy?
  - Large debt prior to crisis, but deficits modest and primary balance is in surplus
  - Rise in rates raises burden of debt
  - Problem is growth: B/Y stuck high because Y is stalled
  - Rigid labor markets, other economic frictions, hurting growth
  - Widely regarded as best case among troubled countries
- Questions
  - What will it take to restart economic growth?

Euro Zone as enabler

- Why could countries borrow at German rates?
- Euro Zone as "enabler"
  - Treaty limits on debt and deficits not enforced
  - National bank regulators accepted all sovereign debt as riskless
  - Payments system (TARGET2) leaves central banks of strong countries with claims on those of weak countries [implicit loans from Bundesbank to Greece, etc]
  - Free capital mobility plus national deposit insurance is an invitation to a bank run
  - No exit plan

Euro Zone leadership vacuum

- Federal structure unworkable
  - Political power lies with the countries – also fiscal authority
  - Unanimous consent needed for everything
  - That's what killed the "Articles of Confederation"

Euro Zone future

- Where from here?
  - More centralized "federal" system?
  - Or the reverse?
  - Slow response makes years of low growth more likely
  - Also rigid labor markets and other market restrictions

What have we learned?

- Crises happen
- Hard to predict, but signs of trouble include
  - Government debt and deficits
  - Financial weakness
  - Fixed, overvalued exchange rate
  - Weak political leadership, unstable politics
  - [aka "the checklist"]
- Europe's a complicated mess