Eco 10350 Principles of Macro

Lecture 11

FX

- For this class we always define exchange rate as units of foreign currency per US dollar
  - Note that popular press sometimes flips so hear 111 JPY/USD or 1.13 USD/EUR but we keep USD in denominator
- Exchange rates show the price of one currency paid to buy another currency
- Many foreign exchange (FX) markets are huge; total is over $5tn/day
- Price can change with value of either currency
- Supply of one currency is demand for another currency
- Label exchange rate of some foreign currency to dollar as e (for example, 111 for e = JPY/USD)
  - as e rises, the dollar appreciates (gains value); as e falls the dollar depreciates (loses value)
  - but vice versa for the foreign currency – as dollar appreciates against the yen, the yen depreciates against the dollar
  - if e goes from 111 ¥/$ to 100 ¥/$, this is dollar depreciation (dollar buys fewer yen)

FX

- 4 main groups of market participants
  - Firms trading goods & services between countries
  - Tourists visiting foreign countries
  - Investors buying ownership in foreign firms
  - Investors building financial portfolios
- Firms exporting have revenues in FX but costs in domestic currency
  - eg a Chinese manufacturer selling in US will supply USD but demand RMB
- Tourists supply home currency and demand FX

2 broad types of foreign investment

- Foreign Direct Investment, FDI, is purchasing ownership (at least part) in another country, such as in companies or real estate
- Portfolio investment is purely financial investment, sometimes called "hot money" since it can easily & quickly reverse
- There are many financial instruments to help portfolio investment
  - Can buy/sell futures or forward; options; swaps; many exotics
  - Can divide portfolio investors into those who want to hedge, arbitrage, or speculate
  - Hedgers might want to plan ahead
  - Arbitrageurs keep all these ratios on target, so can't change RMB -> JPY -> EUR -> GBP -> USD -> RMB and make a profit
  - Speculators try to profit from predictions of future markets

Changes in Exchange Rates

- As the dollar appreciates,
  - What happens to US exporters? [Also US investors buying abroad]
    - A product that costs $100 now costs more in foreign countries
  - What about imports to US? [Also foreign investors buying in US]
    - A product that costs 100 foreign currency now costs fewer dollars (alt same dollar sale price buys more FX)
- Vice versa as dollar depreciates
- Why is a "strong dollar" that appreciates in value considered good?

Purchasing Power Parity (PPP)

- Tradeable goods should tend to cost about the same in different countries
- Otherwise people can make a profit by importing/exporting
- In longrun we might expect that exchange rates move so that tradeable goods cost similar
- Of course many common goods are not (easily) tradeable
- Services are often difficult/impossible to trade
- Big Mac Index

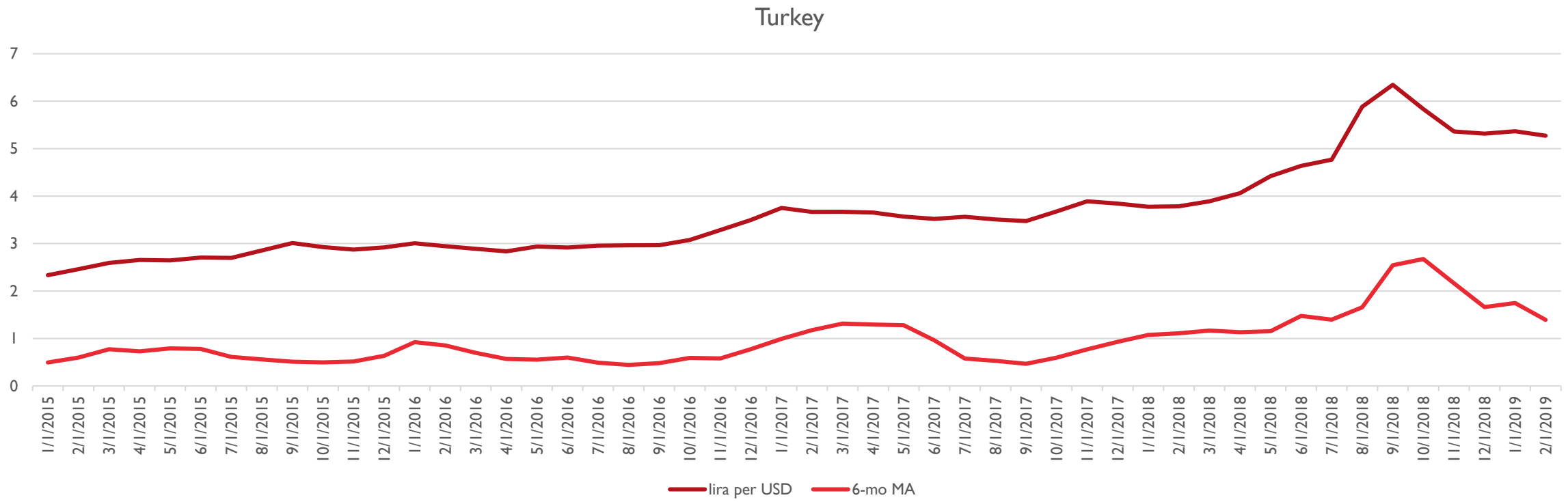
Interest Rate Parity

- Why do exchange rates have a particular level?
  - one theory is Interest Rate Parity
  - Investors could buy bonds of domestic or foreign government, paying different interest rates
  - They can even lock in their domestic return with forward transactions
  - So the future exchange rate should equilibrate
  - eg if e is currently 120 FX/$, dollar interest rate is 2.5% and foreign rate is 2%, then either:
    - take $100, buy dollar bond, get $102.5 at end of year
    - take $100, buy 12000 of FX, get 12,240 at end of year, then change that back to $ so get 12240/e
    - What future value of e makes the 2 choices have the same value? (if out of equilibrium then change to values)
  - Differentiate between e_0 the exchange rate now and e_1 the exchange rate in 1 year
  - Differentiate between R_d the domestic interest rate and R_f the foreign interest rate
  - $R_d = \frac{e_1}{e_0} R_f$ (covered interest rate parity if can lock in forward rates; uncovered if not)
  - If foreign interest rate is higher then that implies foreign currency will depreciate

at least 2 different theories of exchange rate…

- Purchasing Power Parity & Interest Rate Parity
- (also, trivially, as price that balances flows of funds ie supply & demand for FX)
- neither is quite right, certainly not in short run
- but they inter-relate
- If some country has prices double, what happens to exchange rate (by PPP)? So future exchange rate (e_1 in previous notation) goes down so interest rate parity implication
- So define real exchange rate, where P_f is foreign price level and P is domestic, as $RER = e\frac{P_f}{P}$
- For international comparisons, often use PPP or similar

Exchange Rate & Inflation



Exchange Rate Crisis

- Today in FT, "*Bondholders take on forex risk as hedging costs soar.* The soaring cost of buying protection against dollar gyrations is spurring more foreign investors to buy US bonds "unhedged", raising the risk of painful losses and wider market ructions if the US currency weakens."
- Exchange Rates can rapidly change
- If people expect that FX will stay steady then ok, but expectations can shift suddenly
- Particularly bad for people/firms that borrowed in foreign currency
- eg people in Eastern Europe borrowed in euro € and their home currency (that they got their salary) had steady value against € … until it didn't, home currency devalued and boom

Exchange Rate Policies

- Some Governments care about their Exchange Rate
  - Fixed Rate – intervene to keep FX pegged at certain value
  - Managed Float – intervene on occasion to nudge currency in a direction or if it gets too far
  - Manage by restricting trade of currency
  - Float within a Band – let currency value change within a range
  - Floating – let FX change as markets move
  - Extreme Fixed is to merge currency or give up domestic currency
- Tradeoff: by Interest Rate Parity, if exchange rate is fixed then interest rate is fixed
  - Euro zone can't have different exchange rates in Italy, Germany
  - Fixing rate is costly if buying foreign currency to prop up currency value