

# Exchange Rates

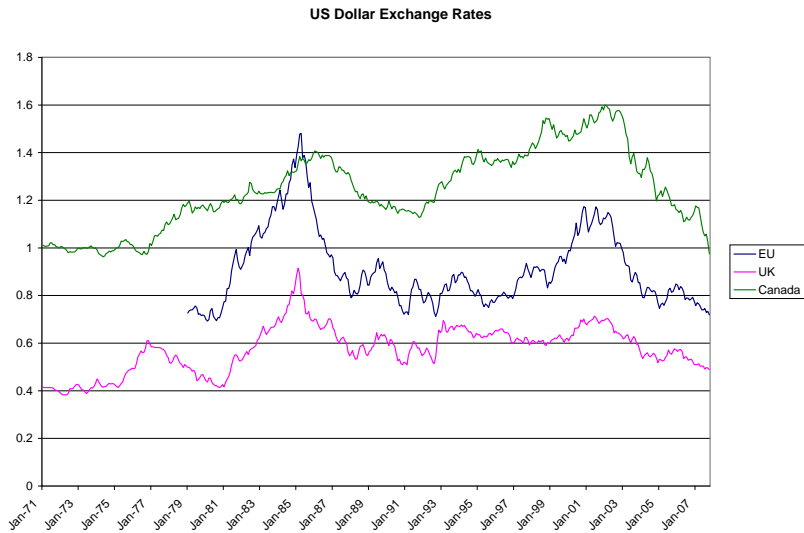
Betty C. Daniel

University at Albany

# What is an exchange rate?

- Domestic-currency price of foreign currency
  - Dollar price of euro is \$1.46
  - Dollar price of Canadian dollar is \$1.03
  - Dollar price of UK pound is \$2.05
  - Dollar depreciation is an increase in the price of foreign currency
- Foreign-currency price of the dollar
  - Euro price of dollar is  $1/1.46 = .68$  euros
  - Canadian dollar price of US dollar is  $1/1.03 = .97$  Canadian dollars
  - UK pound price of the dollar is  $1/2.05 = .49$  UK pounds
  - Dollar depreciation is a decrease in the price of the dollar

# US Dollar Exchange Rates (foreign currency per dollar)



# How does the falling dollar affect you?

- As price of the euro rises, foreign goods become more expensive
  - domestic consumers switch to cheaper domestic goods
  - domestic firms see demand increase
    - produce more and hire more workers
    - raise prices
- Consumers pay more for goods
- Firms produce more and hire more workers

# How does the falling dollar affect the price of oil?

- Oil is priced in dollars
- As the price of the dollar falls, the price of oil falls for everyone who buys oil with currencies other than the US dollar
- This increases the demand for oil raising its dollar price

# How does the falling dollar affect the trade balance?

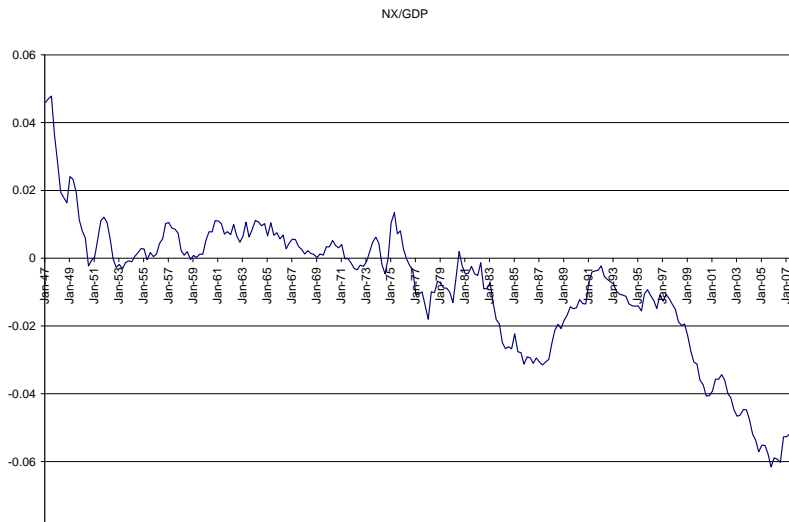
- Trade balance surplus = exports - imports
- Falling dollar increases the price of foreign goods relative to US goods
  - $P$  = price of US goods in dollars
  - $P^*$  = price of foreign goods in foreign currency
  - $E$  = exchange rate as dollars per unit of foreign currency
  - $E \times P^*$  = price of foreign goods in dollars
- Foreign agents switch to cheaper US goods importing more, raising US exports
- Domestic agents switch away from more expensive foreign goods, importing less, reducing US imports
- Trade balance increases

# Is a falling dollar good or bad for the US economy?

- Consumers face higher prices
- Firms produce more and hire more workers
- Dollar price of oil rises
- Trade deficit narrows

# Why is the dollar falling?

## Role of trade balance



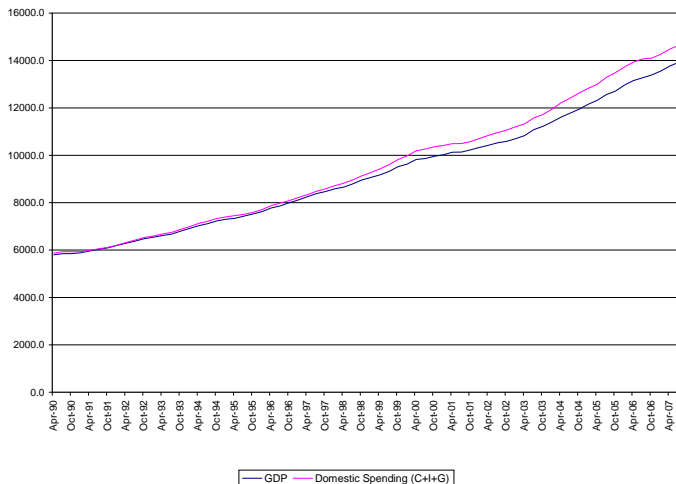
# Why is the dollar falling?

## Role of the trade balance

- Trade Deficit = Imports - Exports =  $-NX$
- GDP = Consumption + Investment + Government Spending + Net Exports ( $Y = C + I + G + NX$ )
- GDP minus Total Domestic Spending = Net Exports ( $Y - (C + I + G) = NX$ )

# Why is the dollar falling?

## GDP and Domestic spending



# Why is the dollar falling?

Gap between GDP and domestic spending

- Trade deficit implies that we are spending more than we are producing
- Foreign agents must have a trade surplus and are producing more than they are spending
- How do we pay for this extra spending?
  - Borrow from abroad
  - Sell assets (stocks, real estate, etc.) to foreign agents
  - This continues as long as foreign agents willing to sell their goods for US assets
- Trade deficit does not require a falling dollar
  - Domestic agents sell dollars to buy foreign goods
  - Foreign agents buy dollars to buy US assets
  - No change in demand for dollars and no need for exchange rate to change

# Why is the dollar falling?

Increase in foreign spending and falling US trade deficit

- What happens when foreign agents decide to buy more of their own output instead of exporting it in exchange for US assets?
  - US trade deficit must fall
  - A falling trade deficit requires a falling dollar
  - Dollar depreciation reduces imports and raises exports
- Falling trade deficit requires a falling dollar
  - Domestic agents sell dollars to buy foreign goods
  - Foreign agents do not want to buy those dollars to buy US assets
  - Dollar must fall inducing domestic agents to buy fewer foreign goods and thereby sell fewer dollars

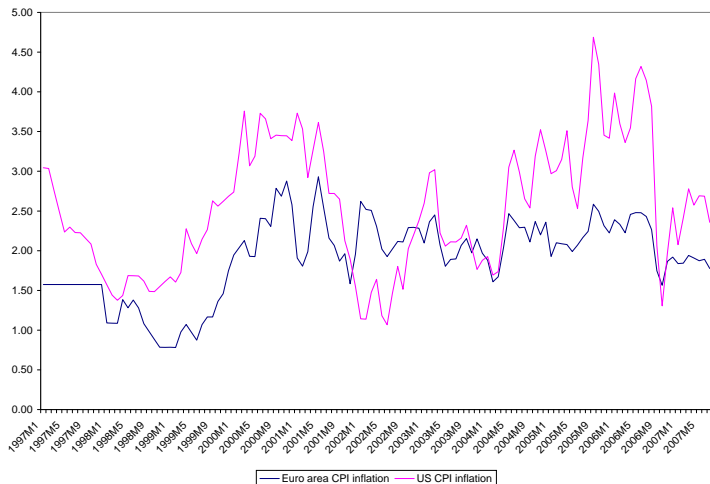
# Why is the dollar falling?

## Role of US inflation

- Purchasing Power Parity  $P = E \times P^*$ 
  - Law of One Price
  - Extension to PPP
    - Requires that there are no relative demand or supply shocks which would change the equilibrium relative price of domestic goods
    - Holds if most shocks are monetary shocks
- If the monetary authority determines price levels
- Then the exchange rate is just relative prices
- If domestic prices are rising faster than Euro prices, then it will take more and more dollars to buy a euro

# Why is the dollar falling?

US relative to foreign inflation



# Why is the dollar falling?

## Role of interest rates

- Interest rate parity  $1 + i_t = (1 + i_t^*) \frac{E_{t+1}}{E_t}$
- Alternative expression  $i_t = i_t^* + \frac{E_{t+1} - E_t}{E_t}$ 
  - When the domestic interest rate exceeds the foreign interest rate, the dollar is expected to depreciate
- When the Fed cuts the interest rate
  - Expansionary so expect prices to rise
  - From PPP expect future price of foreign currency ( $E_{t+1}$ ) to rise
  - Therefore, current price of foreign currency ( $E_t$ ) must rise more than future price ( $E_{t+1}$ ) for  $i$  to fall
  - Therefore, an interest rate cut causes the price of foreign currency to rise, implying that the price of the dollar falls
- Portfolio effect
  - When US interest rates are lower, US assets are less attractive
  - Agents less willing to buy US assets to finance the trade deficit
  - Forces adjustment of trade deficit with depreciation of the dollar

- China has a large trade surplus
  - This implies that Chinese are spending less than they are producing
  - Trade surplus requires that Chinese be willing to sell goods in exchange for assets
  - Chinese government has been willingly buying US government bonds
  - Implies no need for trade balance to adjust
- With no need for trade balance to adjust, there is no pressure for the exchange rate to change
- Therefore, the Chinese government has been reducing pressure on dollar to fall
- As the Chinese diversify their portfolio of assets out of dollar assets, failure to finance US trade deficit will put pressure on dollar to fall

# Conclusions

- Falling dollar will
  - Increase prices for US consumers and producers
  - Increase demand for US goods inducing firms to produce more and hire more workers
  - Increase the price of oil
  - Reduce the trade deficit
- Dollar is falling because
  - Other countries are reducing their demand for US assets, as they spend more and diversify out of US assets
  - US inflation has been relatively higher than in some other countries
  - US interest rates have been relatively lower than in some other countries
- China
  - Initially supported the value of the dollar by buying US government bonds
  - Recently has been diversifying out of US assets, allowing the dollar to fall