

4th session

6th March 2014

Monetary model with sticky prices and expectations (Dornbusch 1976) – From SR to LR



Pugel, chap.18

- (short after Bretton Woods)
- Hybrid :Long Run/ SR model.
- New elements: sticky prices of goods in the SR. Only in LR- PPP: the foreign exchange rate and the interest rates are more volatile than the other variables.
- UIP permanently holds .
(approximately) Expected depreciation rate = $i - i^*$
- Regressive Expectations $E(S_{t+1}) = \alpha \cdot S_{LP} + (1 - \alpha) \cdot S_t$ or Rational Expectations
- Full employment.

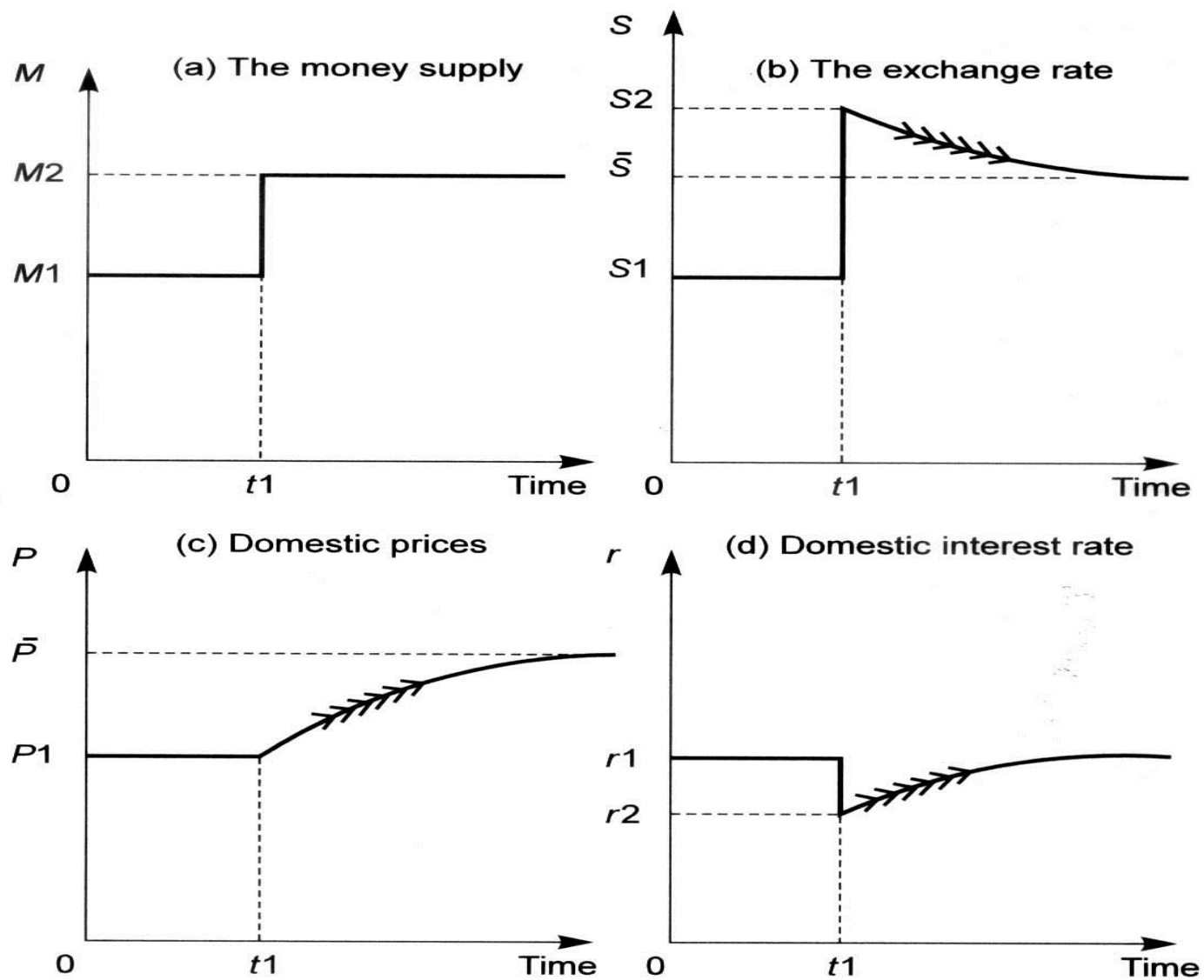


Figure 7.2 *The dynamics of the Dornbusch overshooting model*

- Expansion of $M^s \rightarrow$ (sticky P) M^s/P increases. \rightarrow interest rate decreases.
- Capital outflows and currency depreciates. (**departure from PPP**)
- Investors know that this currency depreciation is not lasting. According to the UIP, if $i - i^* < 0$, that must be compensated by an expected appreciation. (foreign exchange rate overadjusted)
- In the LR, P start rising, as a consequence of the rise in demand. (The demand rises because of $\downarrow i$ and because of the currency depreciation) .
 - $\nearrow P$ will reestablish PPP.
 - $\nearrow P \rightarrow \downarrow M^d/P \rightarrow \nearrow i$
 - The currency slowly appreciates to its LR values.

- This model shows how the foreign exchange rate may be highly volatile in the SR, even converging to the PPP in the LR.
- Movements apparently inconsistent with the fundamentals may be part of LR sensible adjustment process. Exchange rate volatility is needed to temporarily equilibrate the system in response to monetary shocks

- Meese & Rogoff (1983) Empirical exchange rate models of the seventies: do they fit out the sample?, *J. International Economics*, 14, pp.3-74

Exercise

- In the discussion of short-run exchange rate overshooting, we assumed that real output was given (fixed). Assume instead that an increase in the money supply raises real output in the short run. How does this affect the extent to which the exchange rate overshoots when the money supply first increases?

Technical Analysis



Neely, C., Weller, P. 2011, Technical analysis in the Foreign Exchange Market, *Federal Reserve Bank of St Louis* WP 2011-001B

- In foreign exchange markets, it is basically used in intradaily transactions.
- Surveys of dealers – almost all use to some extent.

“The trend is your friend.”

- Fundamental Analysis (examination **of the product**) vs Technical Analysis (observation of behaviours)
- Trends – changing attitudes of investors
- Trends - predictability

- It is based on the assumption that the market is inefficient and so it is possible to forecast the behaviour of the foreign exchange rate: the past is used to forecast the future.
Extrapolation.

“History repeats itself.”

- Identification of patterns.

- Signals to sell or to buy based on trends or on more complex rules.
- Extrapolative methods. Charting, mechanical rules.
 - Charting (very subjective)
 - Peaks and Throughs; Trendline
 - Mechanical rules
 - Filter rules: produce a buy (sell) signal whenever the exchange rate rises (falls) by more than a given percentage from its most recent low (high).
 - Moving averages
 - Other, more complex mathematical functions.

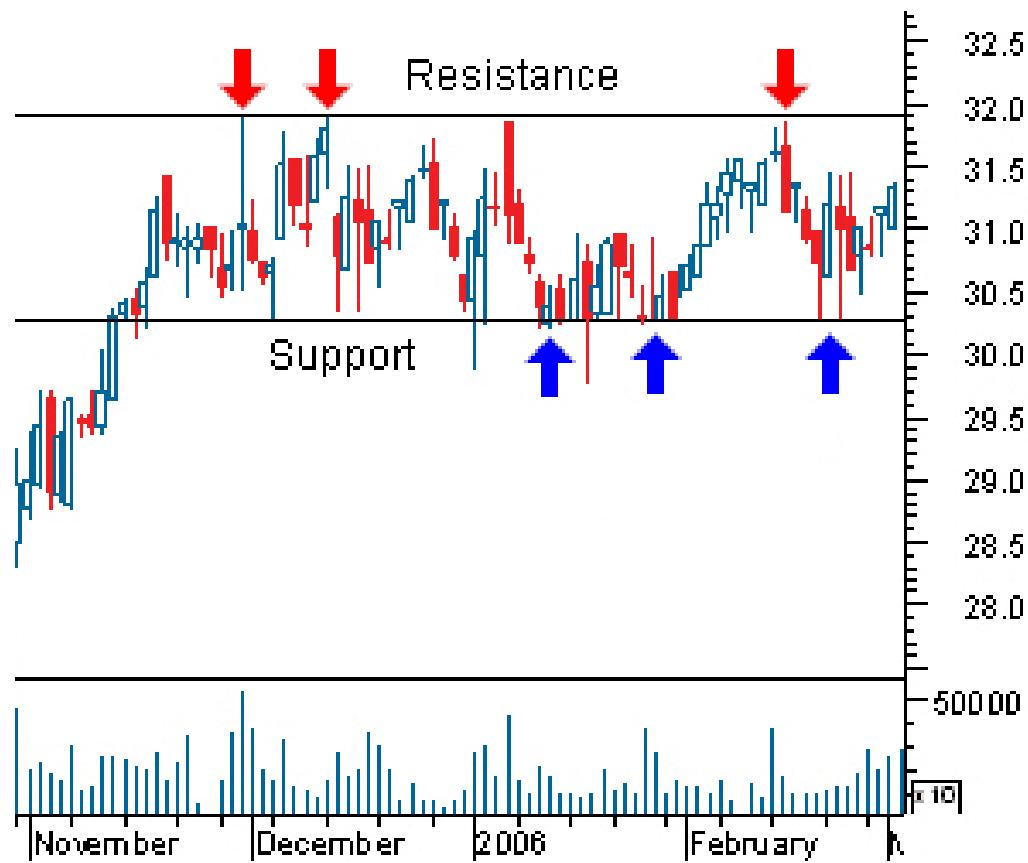


Chart by MetaStock

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- It is considered that the price seldom passes the resistance level or comes under the support level.
- Inversion, once the levels are broken.

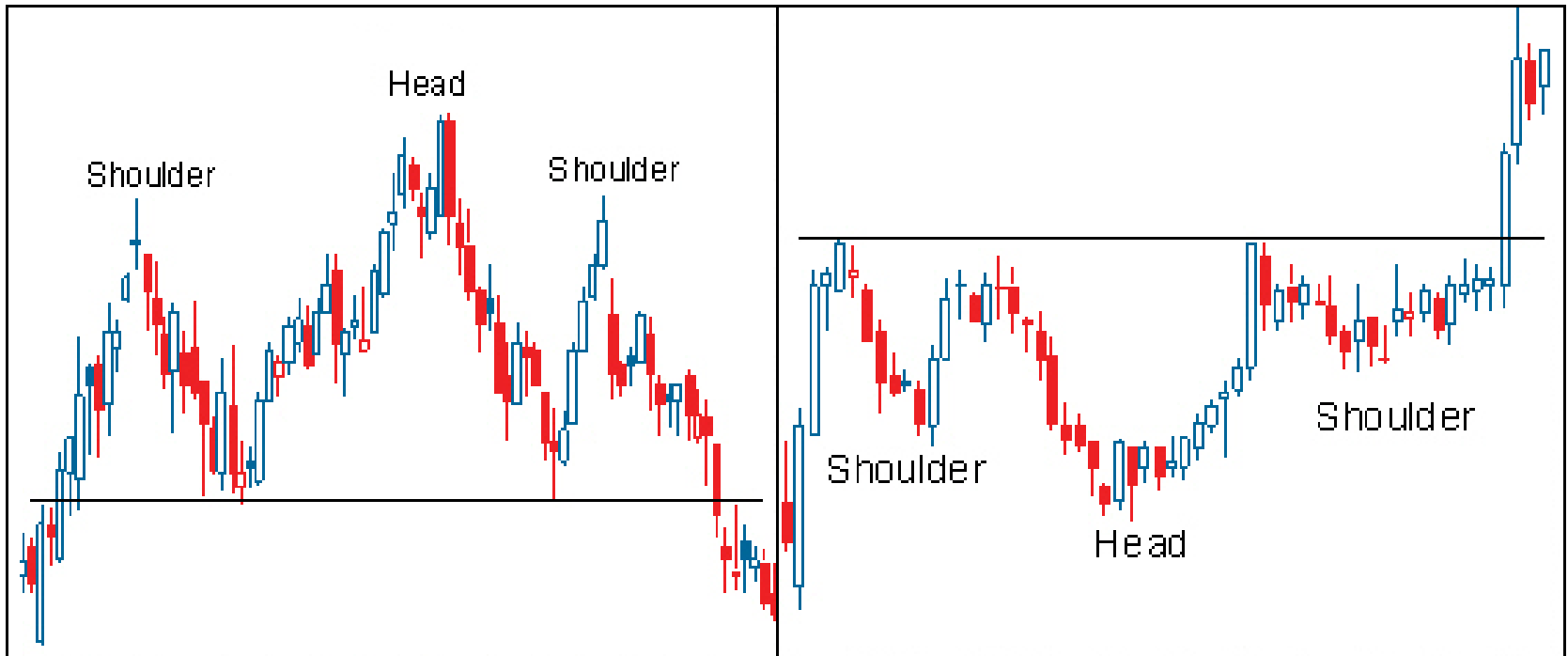


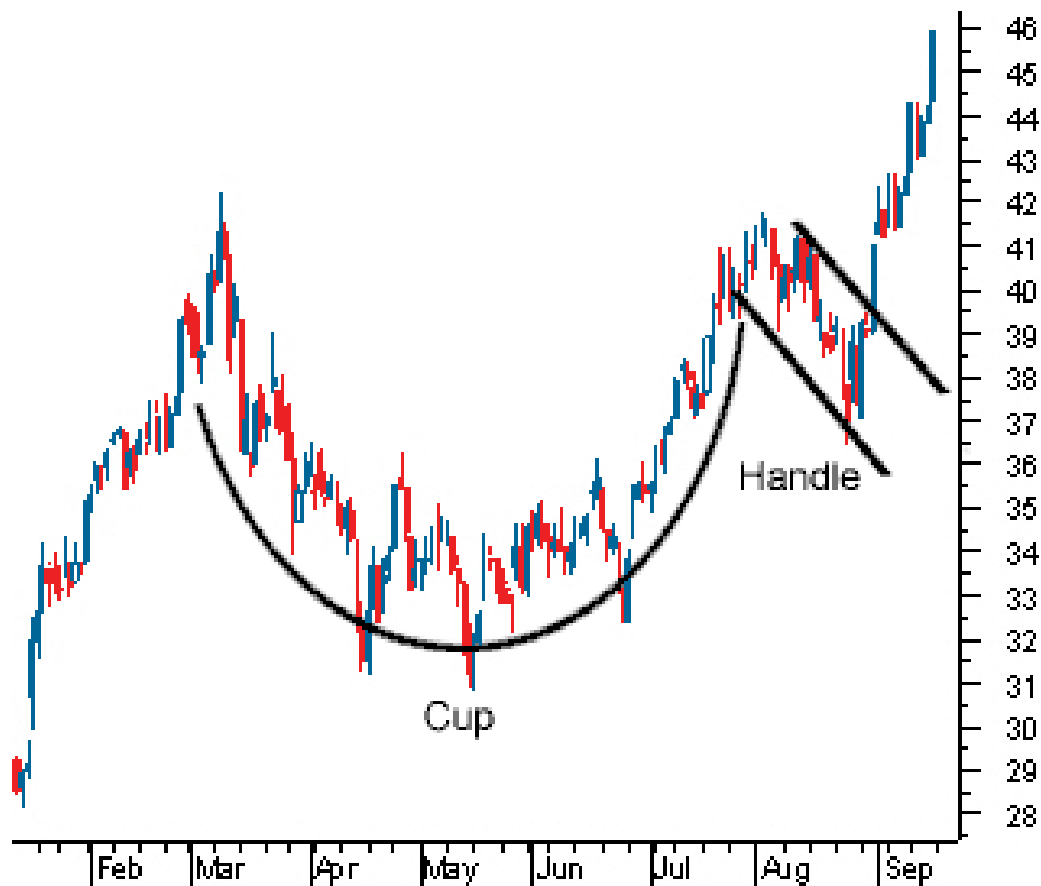
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- To identify a trend inversion .

Triple top – trend reversal





Source: Chart by MetaStock

- **Continuation pattern**, when crossing the resistance level of the handle. The cup must always precede the handle.

Notice how the short-term average crossing above the long-term average signals the beginning of an uptrend.

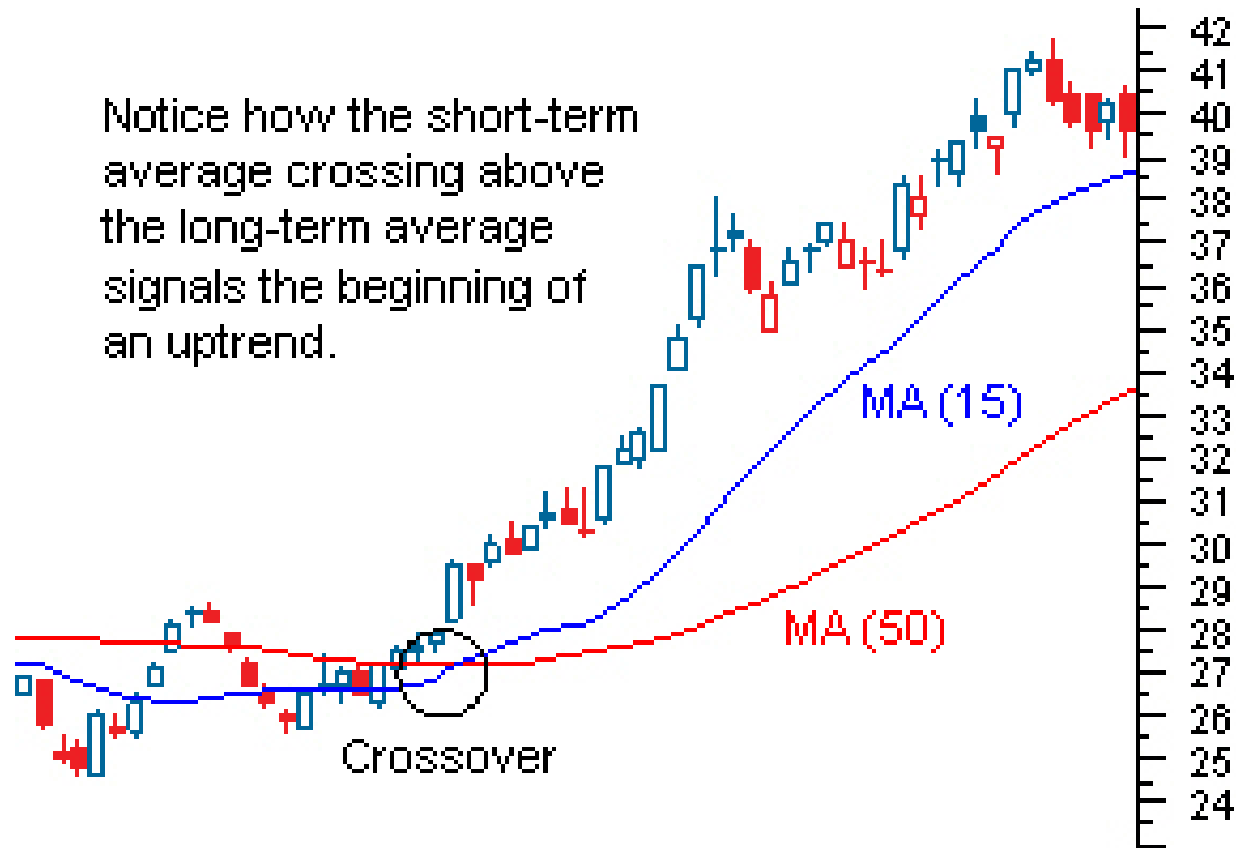


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Bollinger band: considers the volatility in the determination of the resistance and support levels . The bands are 2 standard deviations above and below the Moving Average (of approx. 20 days).

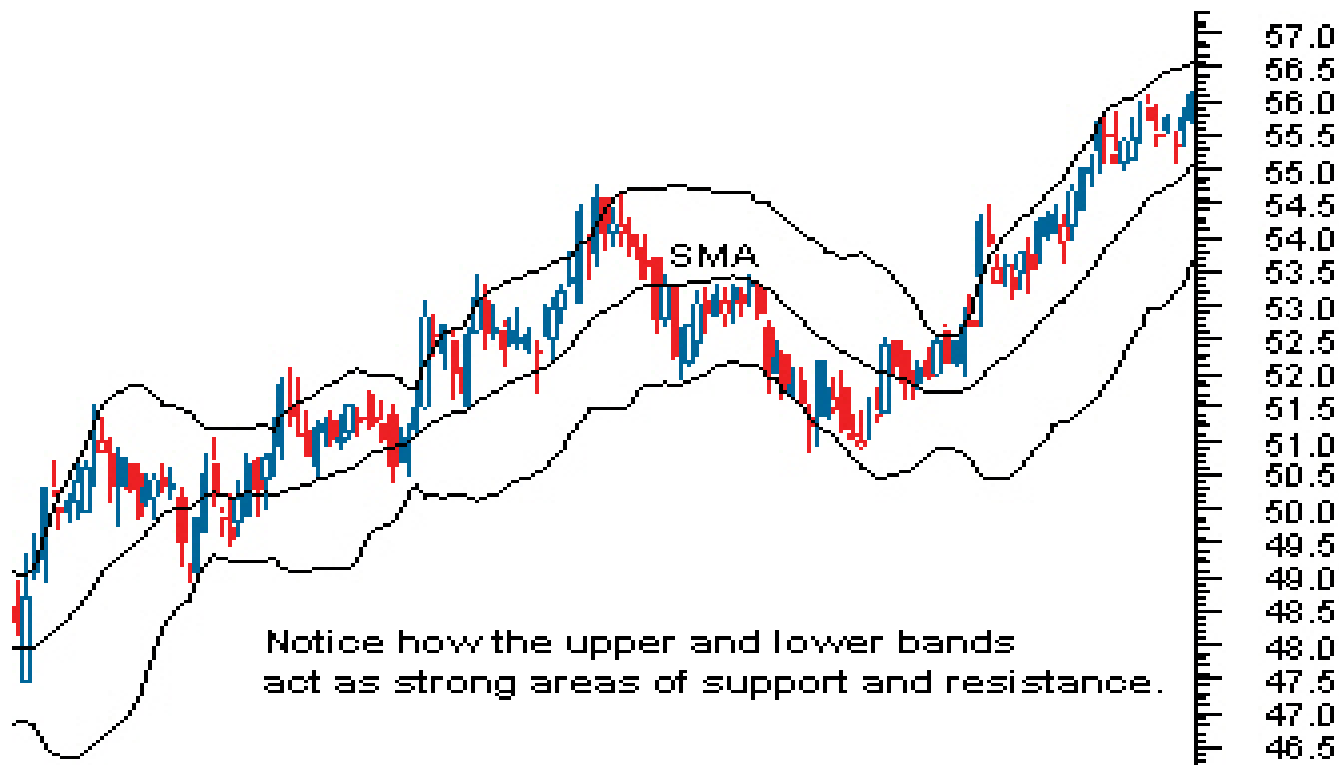


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$$\text{momentum} = \text{close}_{\text{today}} - \text{close}_{N \text{ days ago}}$$

Gives an idea of the intensity of the trend.

Another measure that gives the idea of the intensity of the trend is VOLUME.

technical analysis video

<http://rapidforex.com/technical-analysis/forex-trading-chart-exercise/>

Efficient Markets and Technical Analysis

- Technical Analysts believe they can **beat the market**.
- **Efficient Markets Hypothesis:** Prices reflect all relevant information. They are the market's best guess of the fundamental value.
 - Only news causes prices to move. Markets adjust very rapidly.
 - Trends occur by chance. They cannot be exploited to make money.

- Evaluation of technical trading strategies
 - Mixed results
 - Difficulties:
 - Results may show profitable trading rules on certain datasets, not on others. Negative results ignored but positive results published.
 - Apparently successful trading strategies may indicate that risk is not measured properly, and not necessarily inefficiency

- The Technical Analysis and **the Psychology of Investors**
 - ❖ **Patterns exist because of the predictability** (not necessarily the rationality) **of investors**
 - ❖ **TA may be popular because of:**
 - Representativeness

Not considering other determinants of the probability of an event, a period of partial observation is representative of the global image.
 - Communal Reinforcement

Believing what many people say. Doing what many people do.
 - Selective Thinking

Believing more in positive events than in negative events, ignoring negative evidence.

 - Confirmation bias is a subcategory – People look for evidence that confirms one's previous beliefs. .

- Might create some departures from perfect efficiency that permit trading rules to have value. But that does not explain the time variation in the returns (profitable simple rules from mid-70's 1990, not so much after that).

EXCHANGE RATE



Pugel, chap.20, 23, 25

REGIMES

International Monetary System

- 1870-1913: Gold Standard working well
- 1914-45: Collapse of the Gold Standard
- 1946-70s: Bretton Woods (dollar standard)
- 1970s-present: end of Bretton Woods
- Current exchange rate arrangements
<http://www.imf.org/external/pubs/ft/ar/2012/eng/pdf/a2.pdf>

Extreme
Fixed

- Currency Board (Painel de Moedas)
- Dollarization/Euroization
- Monetary Union

Traditional
Peg

Crawling
Peg

Currency
Bands

Floating
exchange
rates

- Dirty
- Clean

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- A **Monetary Union** is a fixed exchange rate regime, where countries **irrevocably fix** the exchange rates, where there is only a monetary authority that determines the monetary policy in the whole union, and where capital movements are free. All countries use the same currency.
- Examples: European Monetary Union, East Caribbean Currency Area, West African Economic and Monetary Union (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo).

Extreme Fixed

- Dollarization/Euroization

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- The government adopts the foreign, more stable currency as a legal tender.
- Also informal dollarization.
- Eliminates the risk of a sudden devaluation of its currency, raising confidence among international investors, lowering interest rates on foreign borrowing..
- Difficult reversion.
- Seignorage loss.
- Examples: Equator, El Salvador, Micronesia, Panama, Timor-Leste (US dollar), San Marino, Kosovo (Euro).

Extreme Fixed

- Currency Board (Painel de Moedas)

Traditional Peg

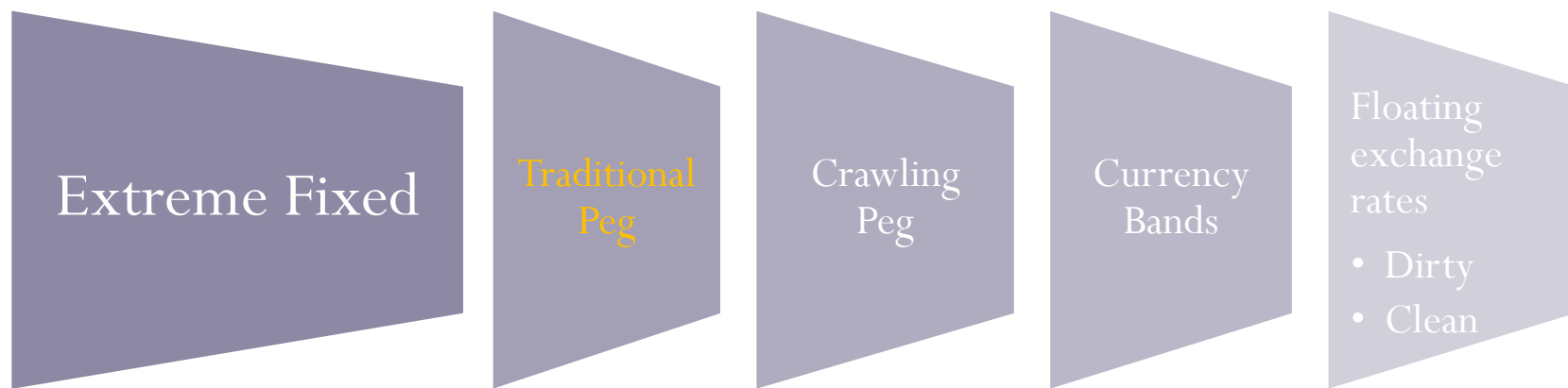
Crawling Peg

Currency Bands

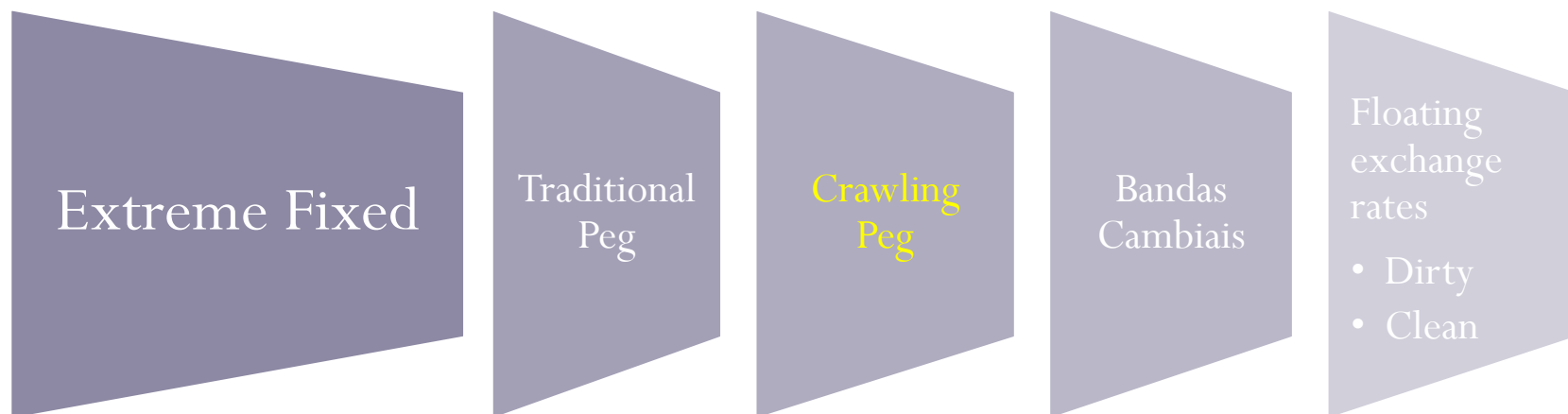
Floating exchange rates

- Dirty
- Clean

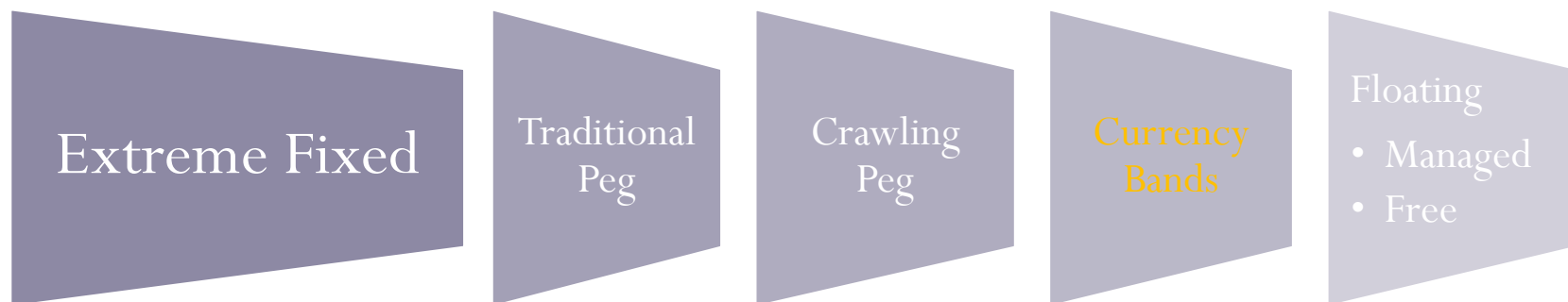
- Fixed exchange rate in terms of the reserve currency. Domestic currency is fully backed by international reserves.
- Typically used between Britain and its colonies. The reserve currency is the one used in the metropolis.
- Examples: Bulgaria, Lithuania (Euro), Hong-Kong (USD).



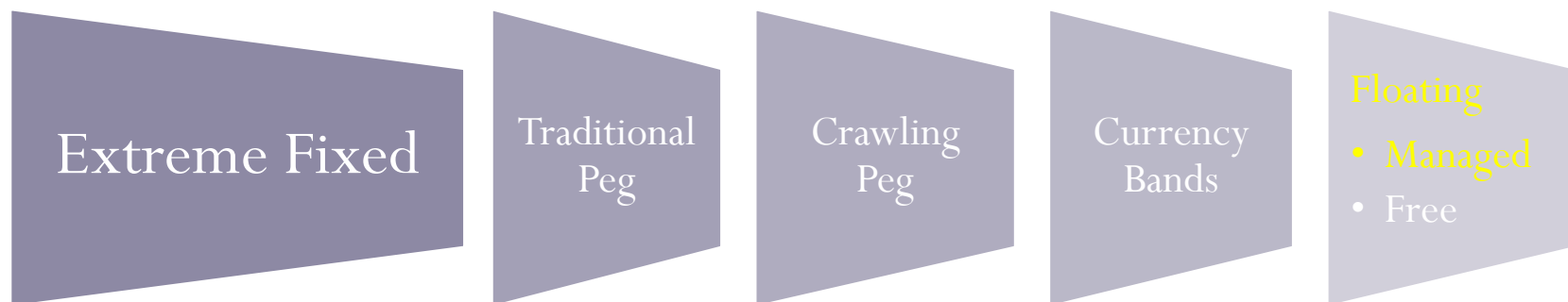
- The country fixes the value of its currency in relation to another, or a basket of others. Central banks keep issuing their own currency. The fixed rate must be defended.
- There is no irrevocability: in case of a fundamental disequilibrium, a devaluation or revaluation can take place.
- Examples: Cape Verde, São Tomé e Príncipe (Euro), Saudi Arabia, Bahrain, Jordan (USD), Swaziland (South African Rand), Kuwait (basket).



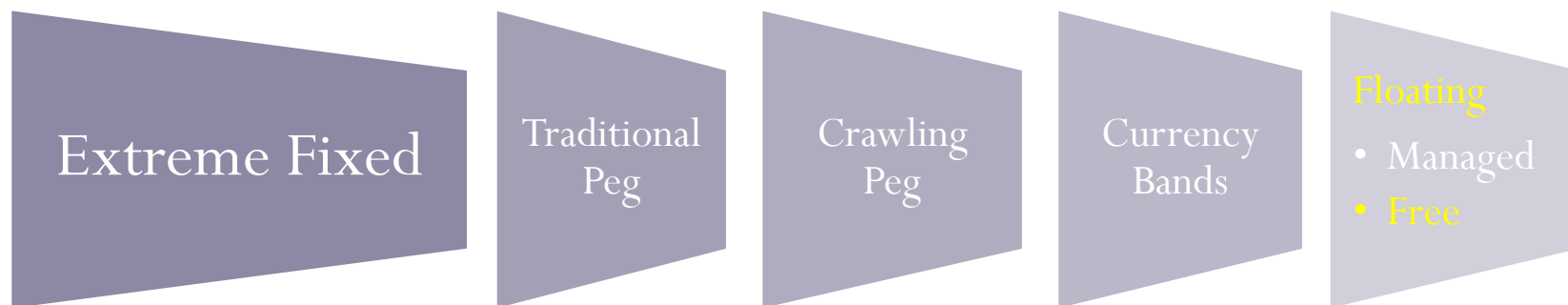
- Parity is adjusted according to a pre-defined rule, either at a predetermined rate or as a function of inflation differentials. The inflation indicator may be *forward-looking* or *backward-looking*.
- Attempts to combine flexibility and stability.
- Examples: Bolivia, Nicaragua Ethiopia, (USD).



- The rate is allowed to fluctuate in a band around a central value. Examples: Denmark (ERMII, $\pm 2,25\%$ Euro),
- Crawling band: The rate is allowed to fluctuate in a band around a central value, which is adjusted periodically. Examples: Honduras, Costa Rica.



- Exchange rates are determined in the foreign exchange market. Authorities intervene, but are not bound by any intervention rule.
- Examples: (Many) Indonesia, Albania, Mozambique, Mongolia.



- The exchange rates are determined in the market without public intervention.
- Examples: Canada (authorities do not intervene since March 1998). USA very rarely intervenes.

Suggested Reading: “Designing a Middle Way between Fixed and Flexible Exchange Rates”, by John Williamson,
<http://www.iie.com/publications/papers/print.cfm?doc=pub&ResearchID=392>

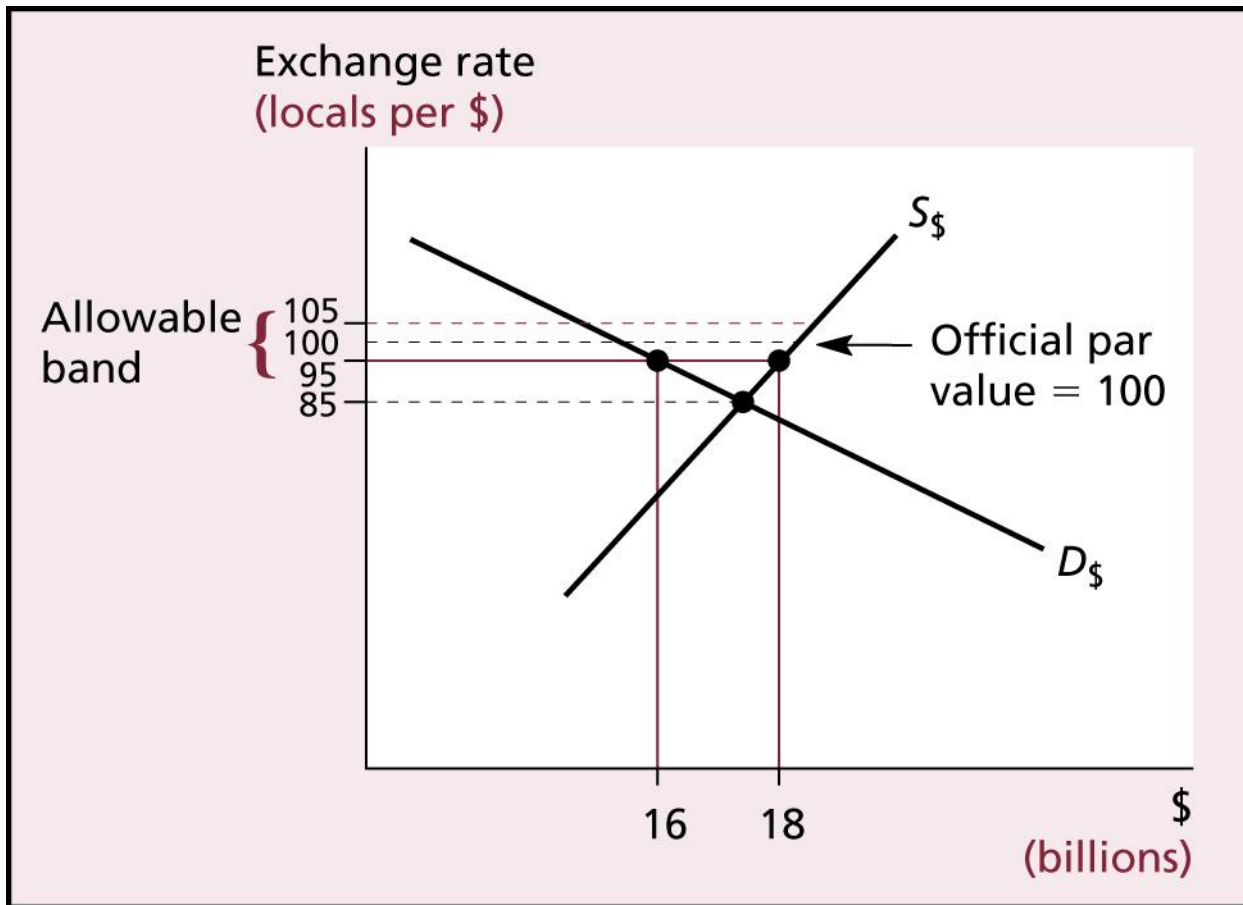
- There is no “perfect foreign exchange regime”. It depends on the characteristics of each economy.
- Textbooks classify exchange rate regimes in one of two categories: fixed *vs* floating.

Fixed Exchange Rates

- How is parity defended?
 - The authorities buy or sell foreign currency in exchange for domestic currency.
 - The authorities impose exchange controls to influence the exchange rate by constricting the demand or supply in the foreign exchange market.
 - The authorities alter domestic interest rates to influence short-term capital flows, and therefore, the foreign exchange rate .

Buying or selling foreign currency

- Defending against depreciation
 - Buy domestic currency/sell foreign currency.
 - Corresponds to the financing of a country's deficit.
 - The sale of foreign currency decreases the stock of official reserves. If it runs out of reserves, it is possible to borrow from abroad.
 - The purchase of domestic currency reduces money in circulation: reduces Money Supply.
- Defending against appreciation: similar, in the opposite direction.




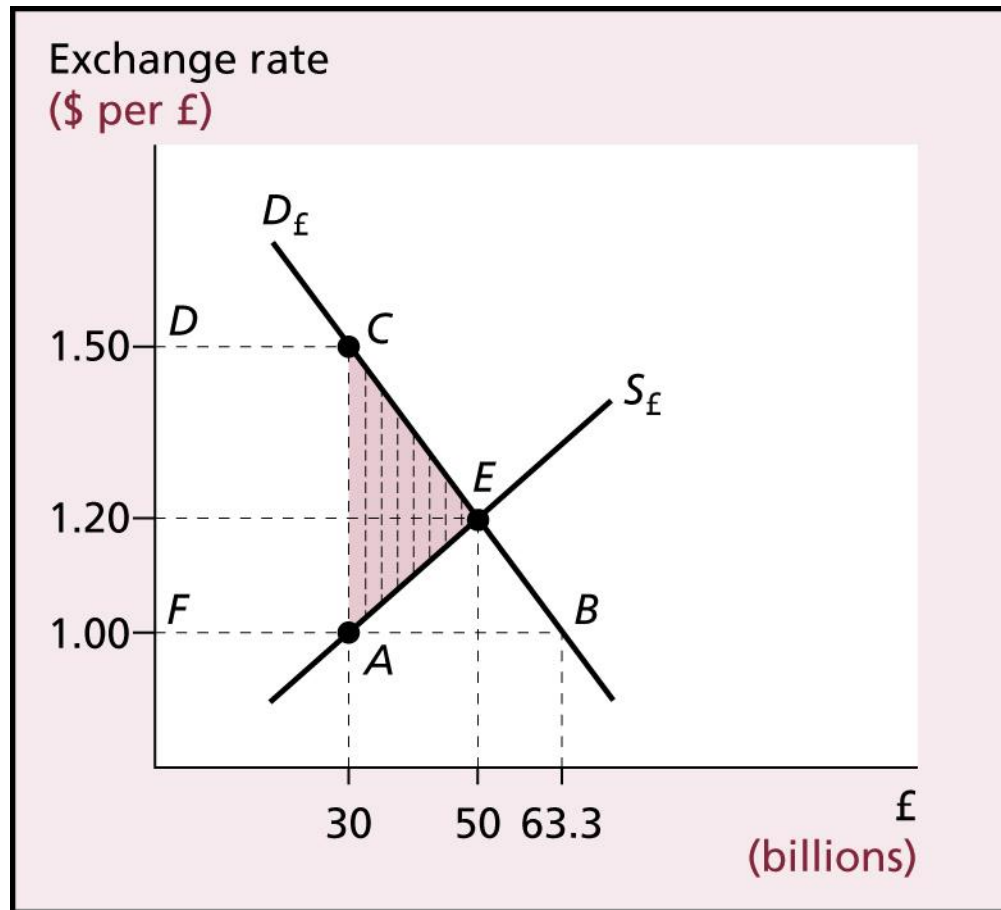
Source: Chap. 20 from Pugel.

- A temporary external unbalance can be overcome in this way. It is not sustainable to defend a permanent disequilibrium.

Costs

Using capital controls

- Capital controls are quantity restrictions 
 - Create inefficiencies,
 - High administrative costs,
 - Create incentives to black markets.
 - Instead of foreign exchange risk concerning the price, there is risk as to the possibility of trading.

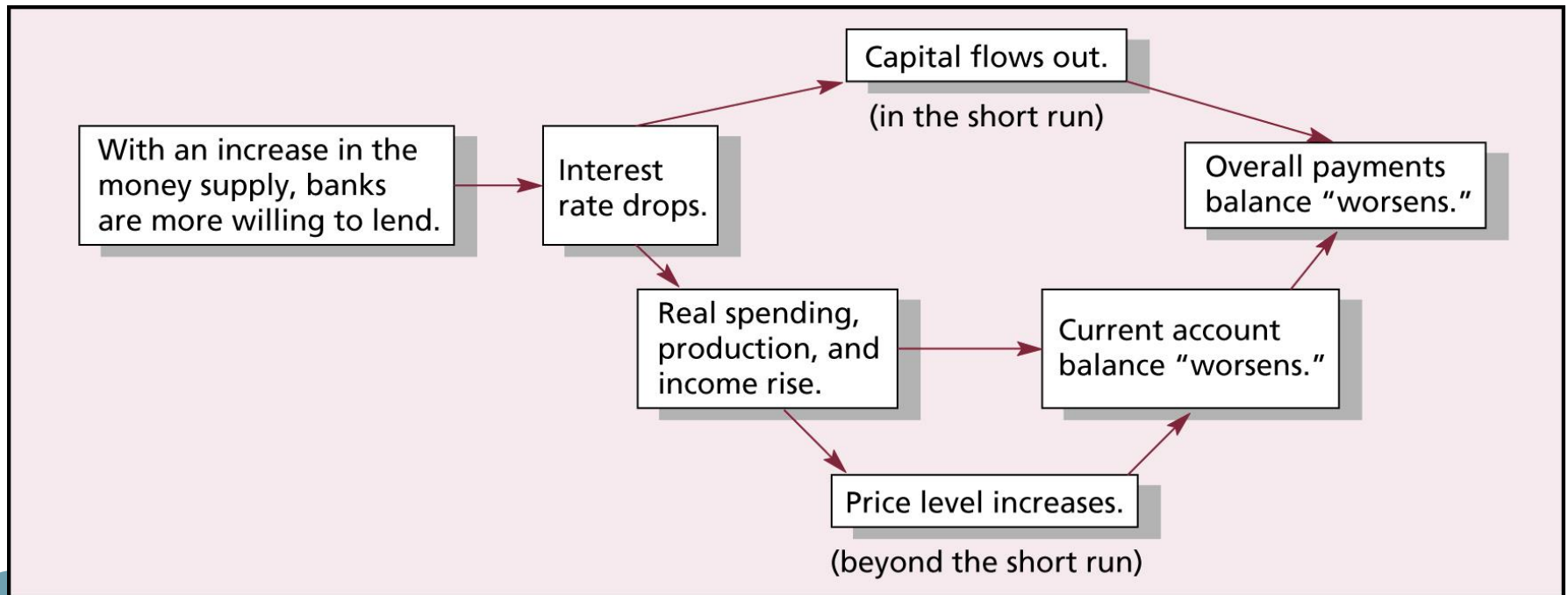


Source: Chap. 20 from Pugel.

Changing interest rates

The foreign currency demand and foreign currency supply move.

- Efeitos da intervenção no mercado de câmbios
 - Ao procurar influenciar o equilíbrio externo, afecta-se a Oferta de Moeda. → impossibilidade de manter política monetária independente.
 - Superavit → pressão para apreciação da moeda nacional → intervenção: compra de moeda estrangeira/venda de moeda nacional → aumento da Oferta de Moeda →



- Intervenção de defesa dos câmbios fixos restabelece o equilíbrio externo.
- ...Problema: o efeito que a variação da Oferta de Moeda tem nos Preços, pode não ser consistente com o equilíbrio interno.
- Solução: ESTERILIZAÇÃO.
 - Superavit → pressão para apreciação da moeda nacional → intervenção: compra de moeda estrangeira/venda de moeda nacional acompanhada de operações de mercado aberto : compra de moeda nacional/venda de títulos do governo.
 - A Oferta de Moeda fica igual, o que muda é a composição dos activos do Banco Central: mais divisas e menos activos domésticos.

- Déficit: lógica semelhante, na direcção inversa.
- Limites:
 - Déficit: dificuldade na obtenção de divisas.
 - Superavit: desagrado dos outros países quanto à continuidade do superavit, vontade do Banco Central de deter divisas, possibilidade de esgotar os activos financeiros que tem para vender.
- Continuidade do superavit: Não havendo efeito sobre as taxas de juro, nem sobre os preços, não há indução de movimentos de capitais nem alteração da competitividade.
- Eficácia da intervenção esterilizada:
 - Quando os activos nacionais e estrangeiros são substitutos perfeitos: se não se alteram as taxas de juro, pela paridade das taxas de juro não haverá alteração da taxa de câmbio.

- Intervenção esterilizada pode ser eficaz através dos seguintes canais:

a. **Equilíbrio de carteira (portfolio balance)**: quando os activos nacionais e estrangeiros não são substitutos perfeitos pode haver diferenças nos rendimentos esperados dos activos, porque os investidores têm preferência por um tipo de activo, independentemente do rendimento esperado. No mercado de câmbios o principal factor que justifica essa diferença é o risco.

Intervenção altera a composição de carteira desejada pelos investidores.

Se tiver havido venda de activos domésticos – têm mais activos domésticos do que desejam , relativamente aos activos estrangeiros – demasiada exposição ao risco doméstico - subida da tx de juro doméstica para compensar o risco acrescido.

- a. **Sinalização (signaling)**: Intervenção esterilizada pode constituir informação sobre as intenções das autoridades e, conseqüentemente sobre as variáveis fundamentais futuras. Apesar de não ter efeito sobre a oferta de moeda no presente pode significar disposição para intervir de forma não esterilizada no futuro, com efeito sobre a oferta de moeda. EXPECTATIVAS. Não exige perfeita substituibilidade.

- Em conclusão: Não é fácil influenciar a taxa de câmbio com intervenções esterilizadas e com intervenções não esterilizadas perde-se a independência da política monetária.
- **Trilema** - Não se pode ter simultaneamente:
 - Taxas de câmbio fixas
 - Independência de políticas
 - Mobilidade de capitais