



EMERGING CAPITAL MARKETS
Lecture 2: Foreign Exchange Fundamentals

Dr. Edilberto Segura
Partner & Chief Economist, SigmaBleyzer
Chairman, Advisory Board, The Bleyzer Foundation
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I. The International Monetary System

- The International Monetary System includes all the institutions and instruments that link together the world's currency and money markets.
- It can be defined as the structure within which:
 - foreign exchange rates are determined,
 - international trade and capital flows are accommodated, and
 - adjustments to the balance of payments are made.
- The **Nominal** Foreign Exchange Rate is the relative price of the “**currencies**” of two countries. The American notation is units of domestic currency per unit of foreign currency (e.g. UAH/\$).
- When we talk of FX rates, we normally refer to Nominal FX rates.
- The **Real** Foreign Exchange Rate is the relative price of the “**goods**” of two countries, converting one of the prices with the nominal FX rate.
- That is, the real exchange rate tells us the rate at which we can trade the goods of one country for the goods of another (eg., using the same currency, a BigMac costs 1.25 times more in the US than in Ukraine).
- As such, the real exchange rate is an index. The real exchange rate is sometimes called the *terms of trade*.

1. Geographical Extent

- Major world trading of currencies starts each morning in Tokyo and Sydney, moves west to the main European markets of Frankfurt, Zurich and London, then jumps to New York and ends up in San Francisco.
- Timing differences introduce some settlement risks (the so-called **Herstatt risk**): German regulators forced the troubled Bank Herstatt into liquidation on June 26, 1974. That day, a number of banks had released payment of DEM to Herstatt in Frankfurt in exchange for US\$620 million that was to be delivered in New York. Because of time-zone differences, Herstatt ceased operations between the times of the respective payments. The counterparty banks did not receive their USD payments. This led to cascading cross-defaults among many banks.
- In order to address the cross-jurisdictional implications of the Herstatt debacle, the G-10 countries formed a standing committee under the auspices of the Bank for International Settlements (BIS) called the **Basel Committee on Banking Supervision** to ensure orderly bank liquidations.
- The market is deepest, or more liquid, early in the European afternoon, when both Europe and the USA East Coast are opened. This is the best period to ensure smooth execution of large orders.
- At the end of the day in California, the market is thinnest. During these hours, aggressive speculators sometimes try to move prices by trading large blocks, to influence attitudes the following morning.

2. FX Market Participants

- The FX market has two tiers: (i) the interbank or wholesale market; and (ii) the retail market.
- Five types of institutions operate in these two tiers:
 1. Bank and non-bank **FX Dealers**:
 - They profit by buying FX at a “**bid**” price and selling it at a higher “**offer (ask)**” price.
 - They also try to profit from “simultaneous” exchange rate differentials in different markets.
 - They do not seek profits by taking open positions.
 - Dealers often function as “**market makers**”: they maintain an “inventory” of some currencies and stand willing to trade at any time, subject to the firm’s trading limits.
 - The world’s largest dealers include the largest commercial banks.

2. **FX Brokers:**

- they facilitate trading between dealers, without themselves becoming principals in the transaction.
- They charge a commission (for their intelligence work).
- Dealers use brokers for speed, when they wish to remain anonymous or when they want to avoid reciprocity commitments.

3. **Firms and individuals** conducting commercial and investment transactions:

- Their use of the FX market is necessary but incidental to their main commercial or investment purpose.
- Some participate to “hedge” FX risk.

4. Speculators and Arbitrageurs:

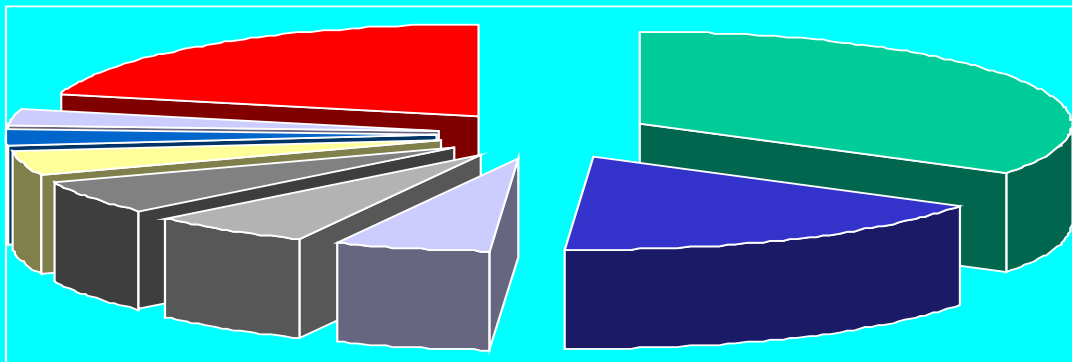
- Whereas dealers seek profits mainly from spread between bid and offer prices,
 - speculators seek all of their profits from exchange rate movements.
 - arbitrageurs try to profit from simultaneous exchange rate differentials in different markets.
- They operate in their own profit interest, without a need or obligation to serve clients or ensure continuous markets.

5. Central banks and treasuries:

- They use the market to spent or acquire FX reserves as well as to influence the price for their own currency.
- This later objective may led them to be willingly loss makers.
- Thus, their behavior may differ from all other market participants.

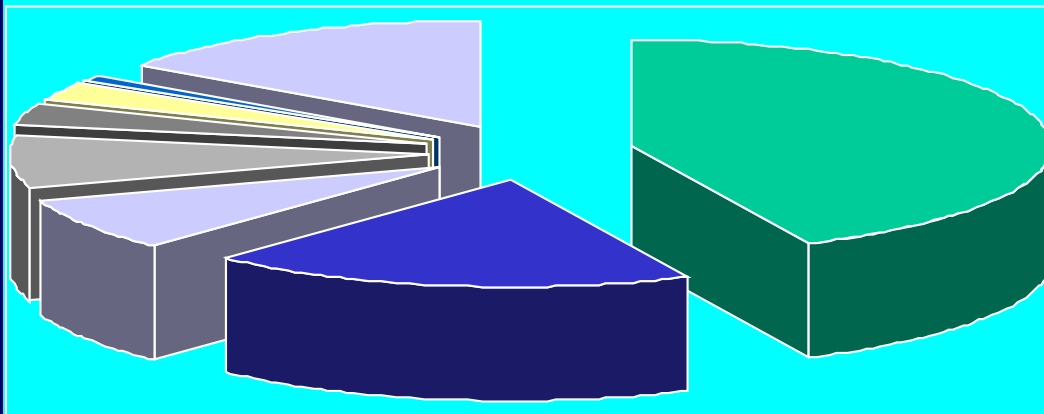
3. Transaction Volumes

- The volume of all spot, forward and swap FX transactions in the world increased from \$0.7 trillion per day in 1990 to \$3.3 trillion per day at the end of 2007 – or 24% pa. (source: BIS).
- This figure is 100 times bigger than world exports of \$33 billion per day – highlighting the growing importance of financial flows.
- The largest trading markets in 2007 included:



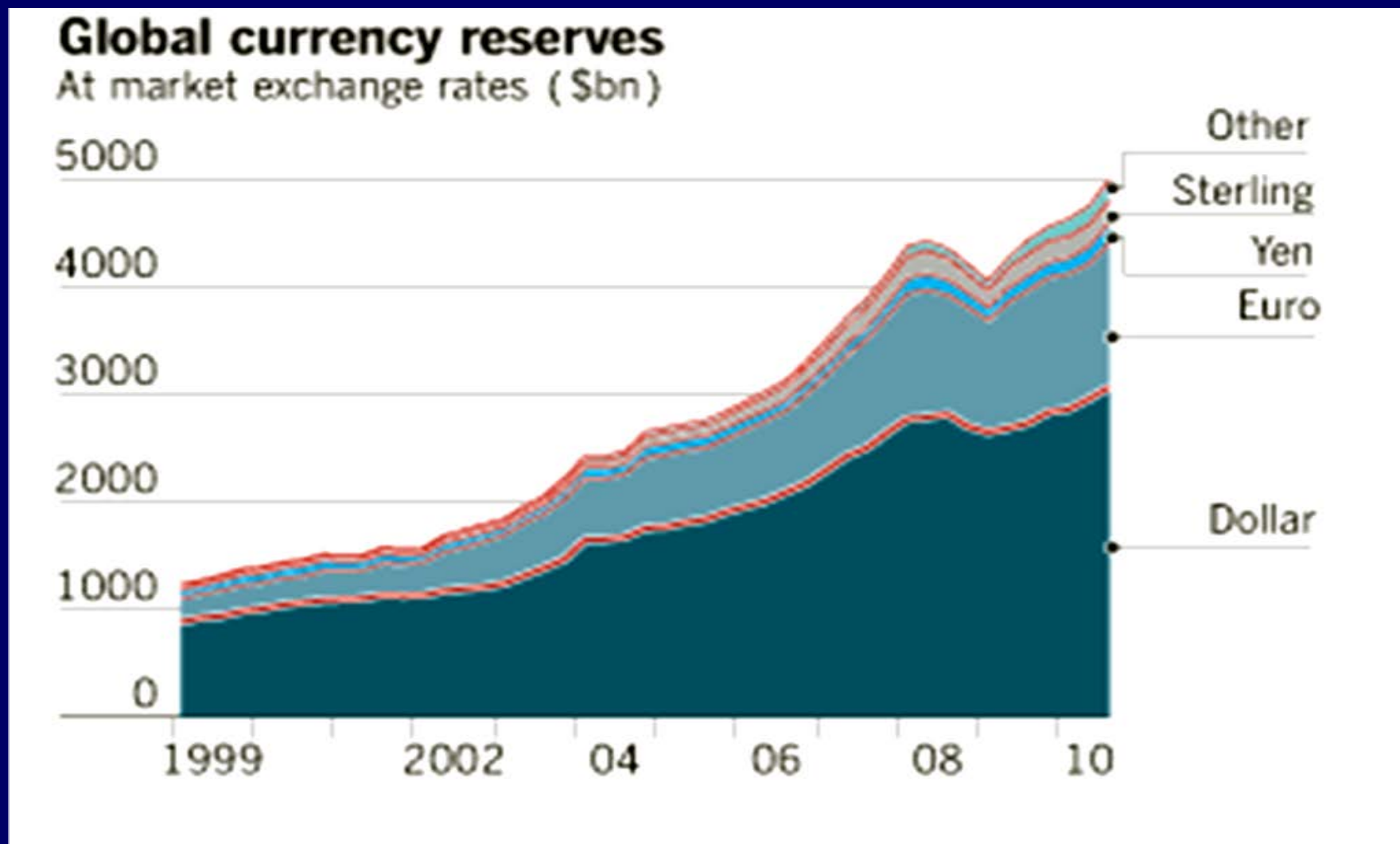
■ United Kingdom	- 34%
■ USA	- 17%
■ Japan	- 6%
■ Switzerland	- 6%
■ Singapore	- 6%
■ Hong Kong	- 4%
■ Germany	- 3%
■ France	- 3%
■ Others	- 21%

- The USA dollar is still the major “**Vehicle Currency**”, involved in the largest percentage of transactions, as follows (2007 data – 1996 in parenthesis):

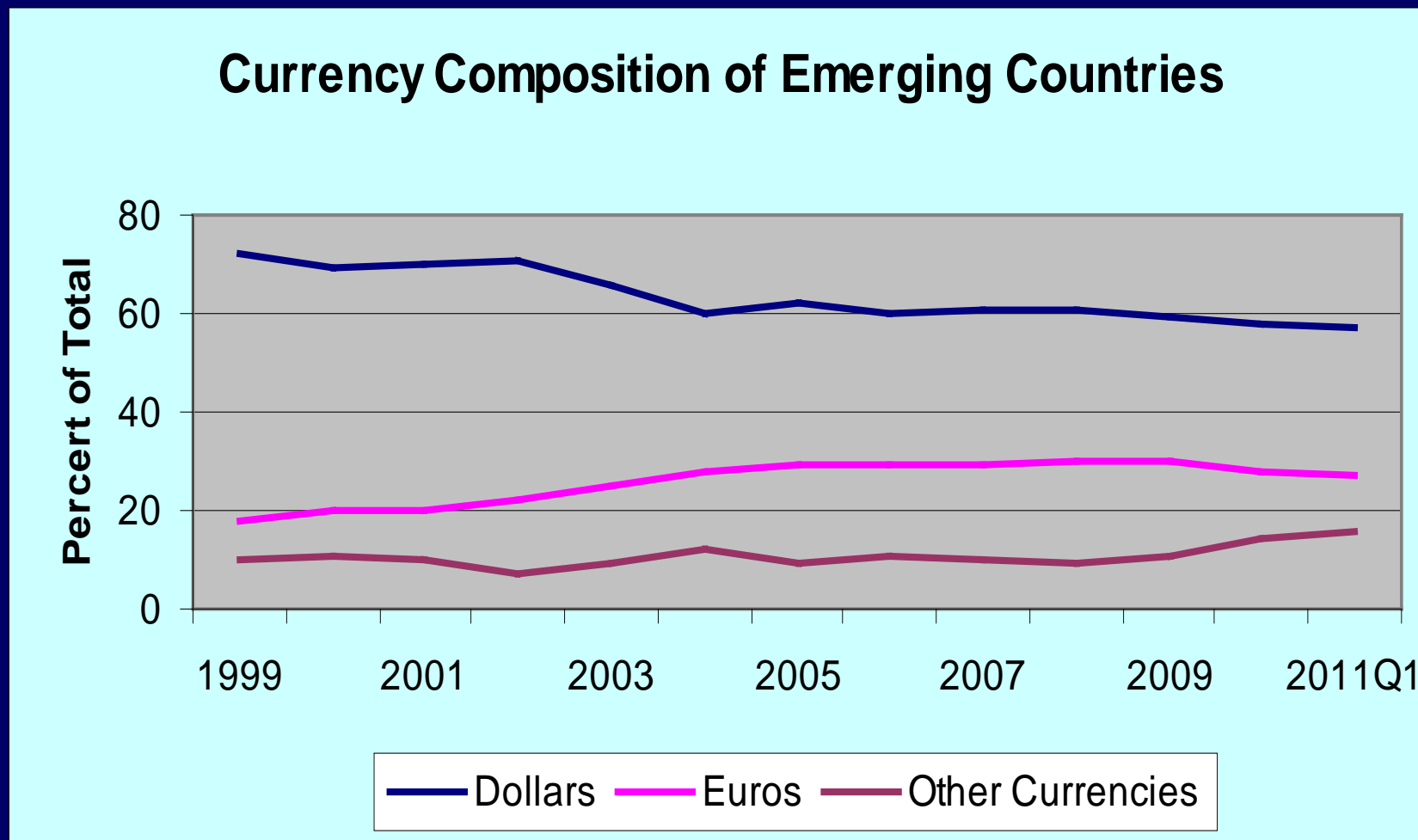


■ US Dollar	- 43% (42)
■ Euro	- 19% (25)
■ Yen	- 8% (12)
■ GB Pound	- 8% (4)
■ Swiss Franc	- 3% (3)
■ Autralian Dlr	- 3% (1)
■ Sweden Korona	- 1% (1)
■ Others	- 15% ₉ (12)

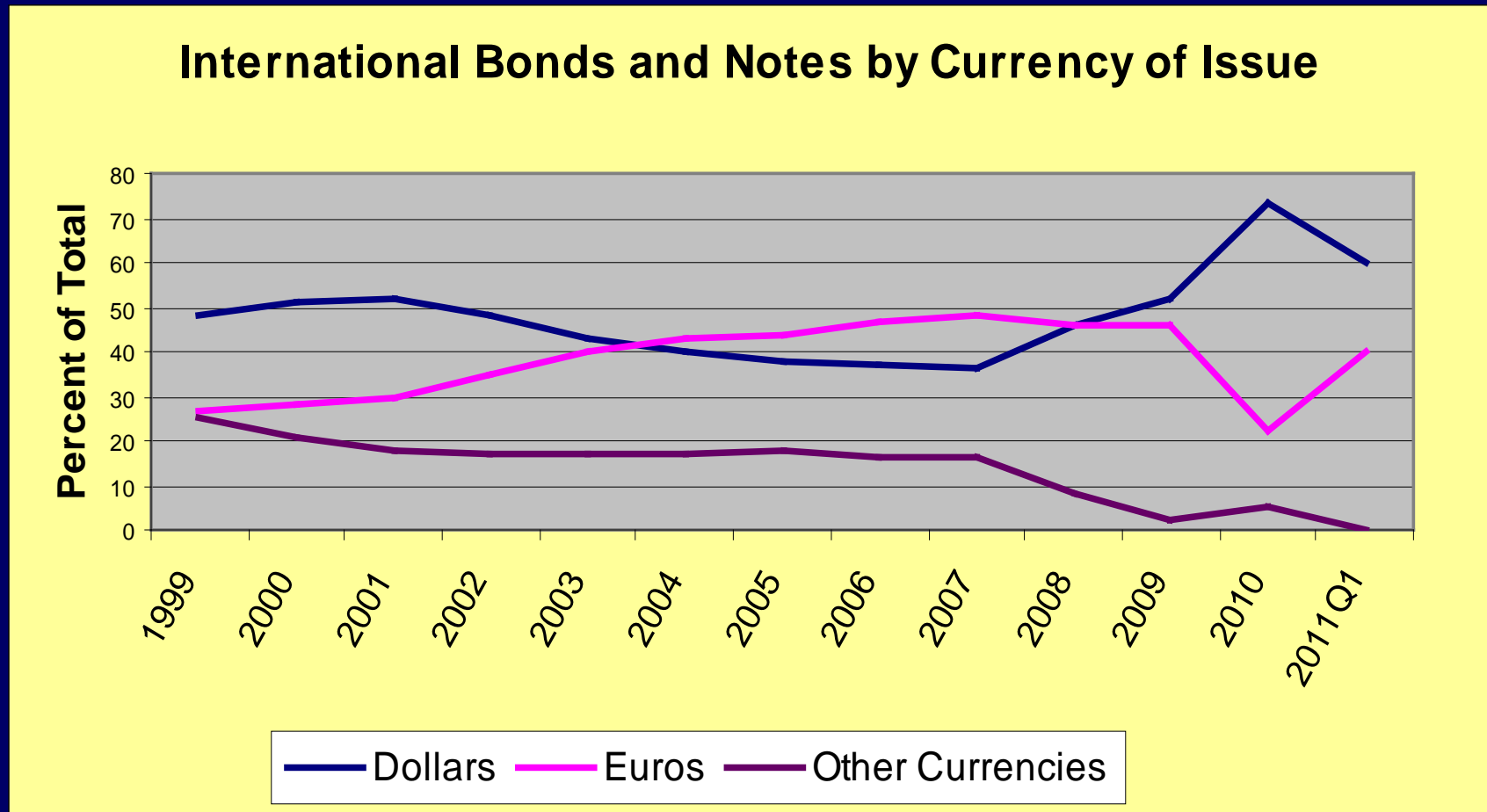
The US dollar is also the most important “**Reserve Currency**”, accounting for 60% of the international reserves of all countries.



- But, since 2002, Central Banks in emerging countries have diversified their international reserves away from the dollar:



From 2003 to 2009, the Euro was becoming the preferred currency for the issuance of international bonds and notes by all countries. But the situation changed in 2010 due to the crisis in the periphery of Europe:



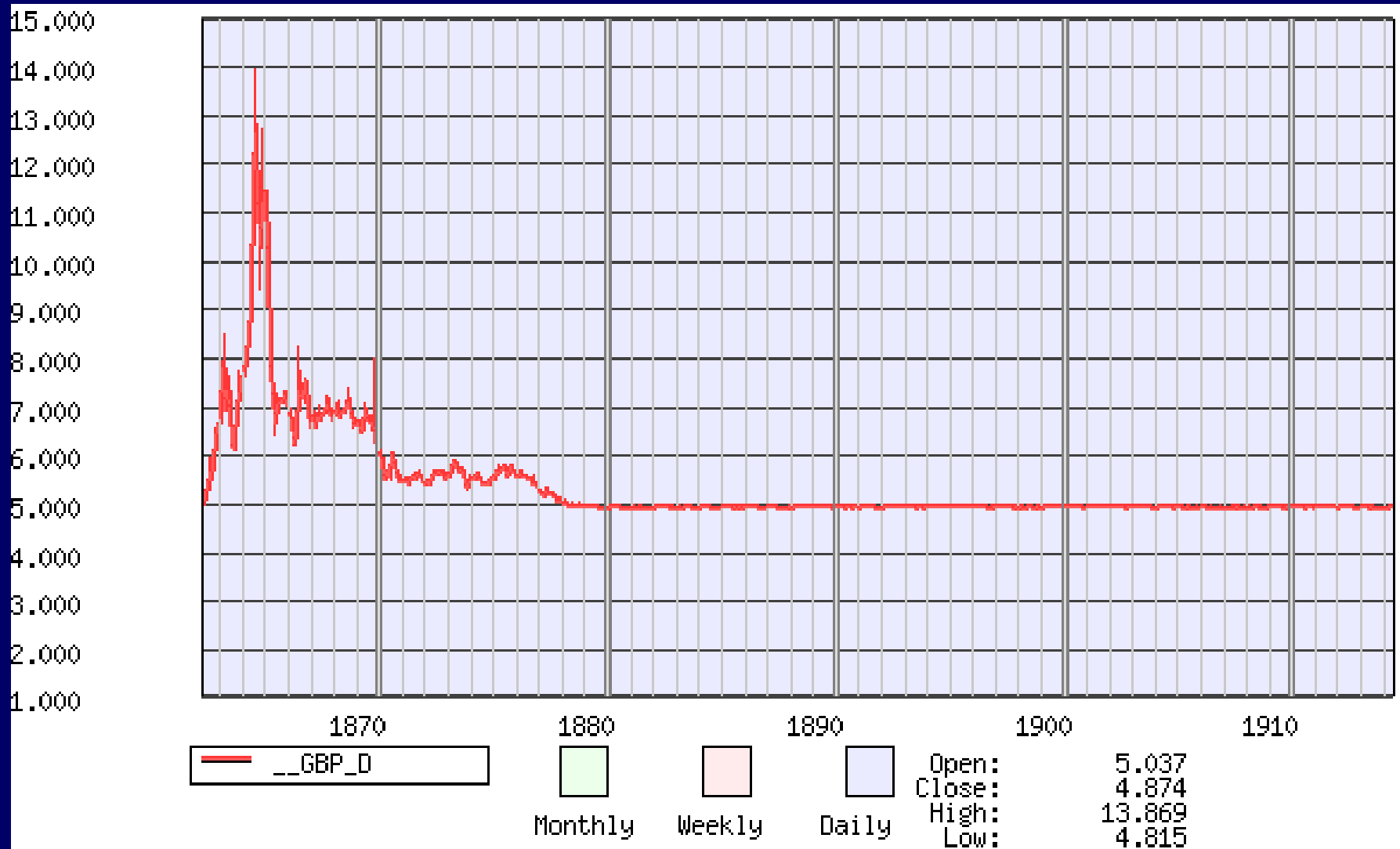
II. History of the International Monetary System

The Gold Standard, 1876-1913:

- In 1821, the UK introduced the first gold standard for the Pound (the Pound was fully guaranteed and backed by a weight of gold).
- As few countries followed the UK, currencies fluctuated widely.
- In the 1870's, Europe and the USA formalized the classic **Gold Standard System** for settling international trade balances, by:
 - setting the par value of their currency in terms of gold;
 - guaranteeing convertibility to a weight of gold (e.g., for the US dollar, US\$20.67/ounce of gold) by issuing national currency only with gold backing; and
 - allowing free movement & trade of gold among countries.
- A country maintained enough gold reserves to back its currency.
- This also limited the rate of expansion of money supply.
- The system worked fine until War World I, with world trade expanding significantly in these decades.

The Gold Standard after 1862

Exchange Rates 1862-1914: USDollar/GBPound

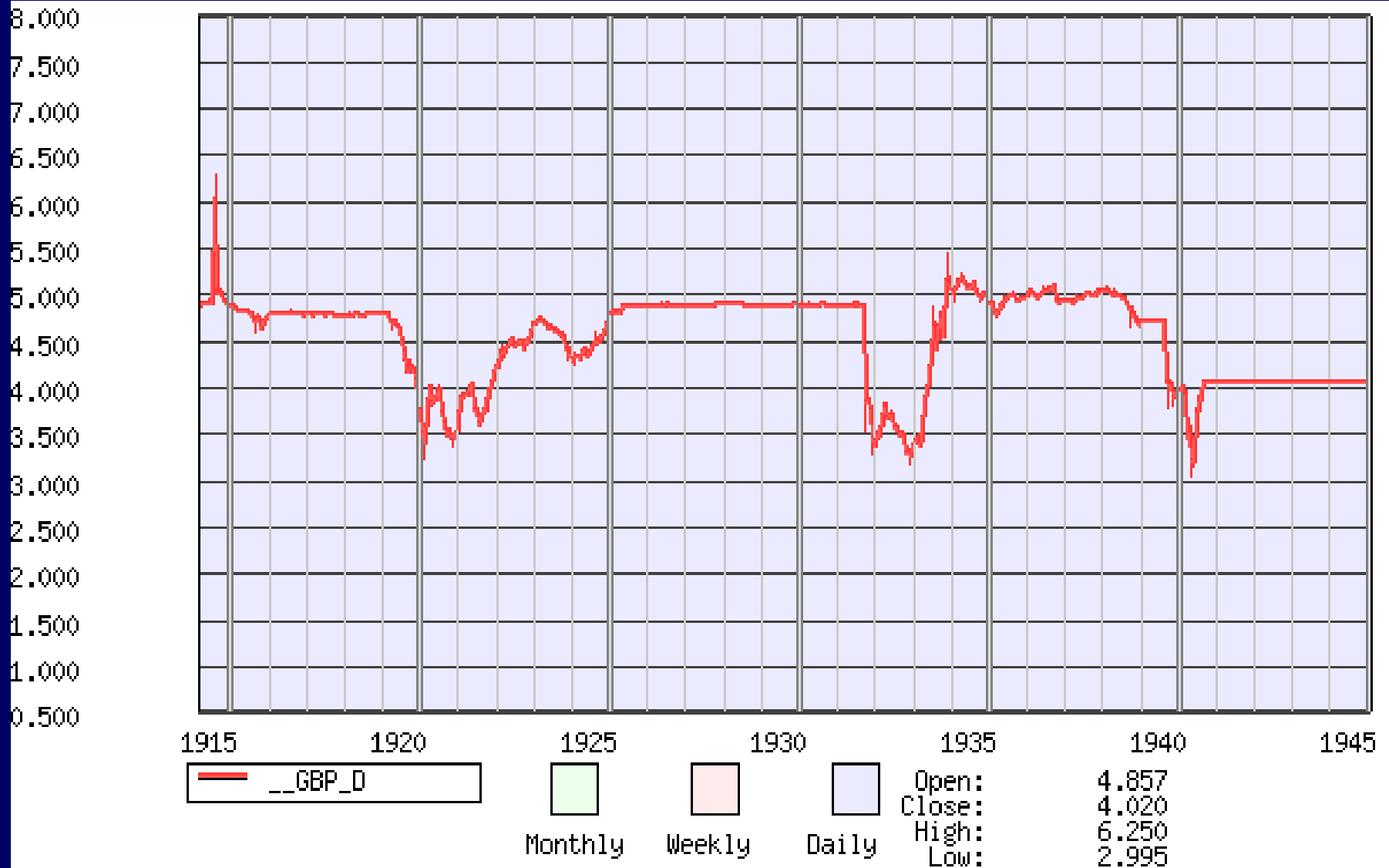


The Inter-War Years 1914-1944.

- The 1914 War interrupted the free movement of gold.
- During the Wars and the inter-war years, currencies fluctuated widely in terms of gold and one another.
- Many countries attempted to return to the Gold Standard, without success, because:
 - Many countries engaged in competitive devaluations.
 - The problem of establishing new and reasonable stable parity values to gold was never resolved.
- The banking crises of Austria in 1931 led most countries to abandon the Gold Standard once again. This crises started with the collapse of Austria's largest bank, Kredit Anstalt, which provoked a wave of bank failures across Europe. The bank's collapse was due to a high **level of external debt** and the French government's decision to withdraw short-term credit to Austria to pressure the Austrians to reject the Austro-German Customs Union plan. Panic quickly spread. This crises led to discontent and the emergence of the Nazi regime.
- Except for the dollar, many currencies, including the UK Pound, lost their convertibilities into other currencies.
- The volume of world trade decline significantly, as a share of GDP.

Inter-war Years:

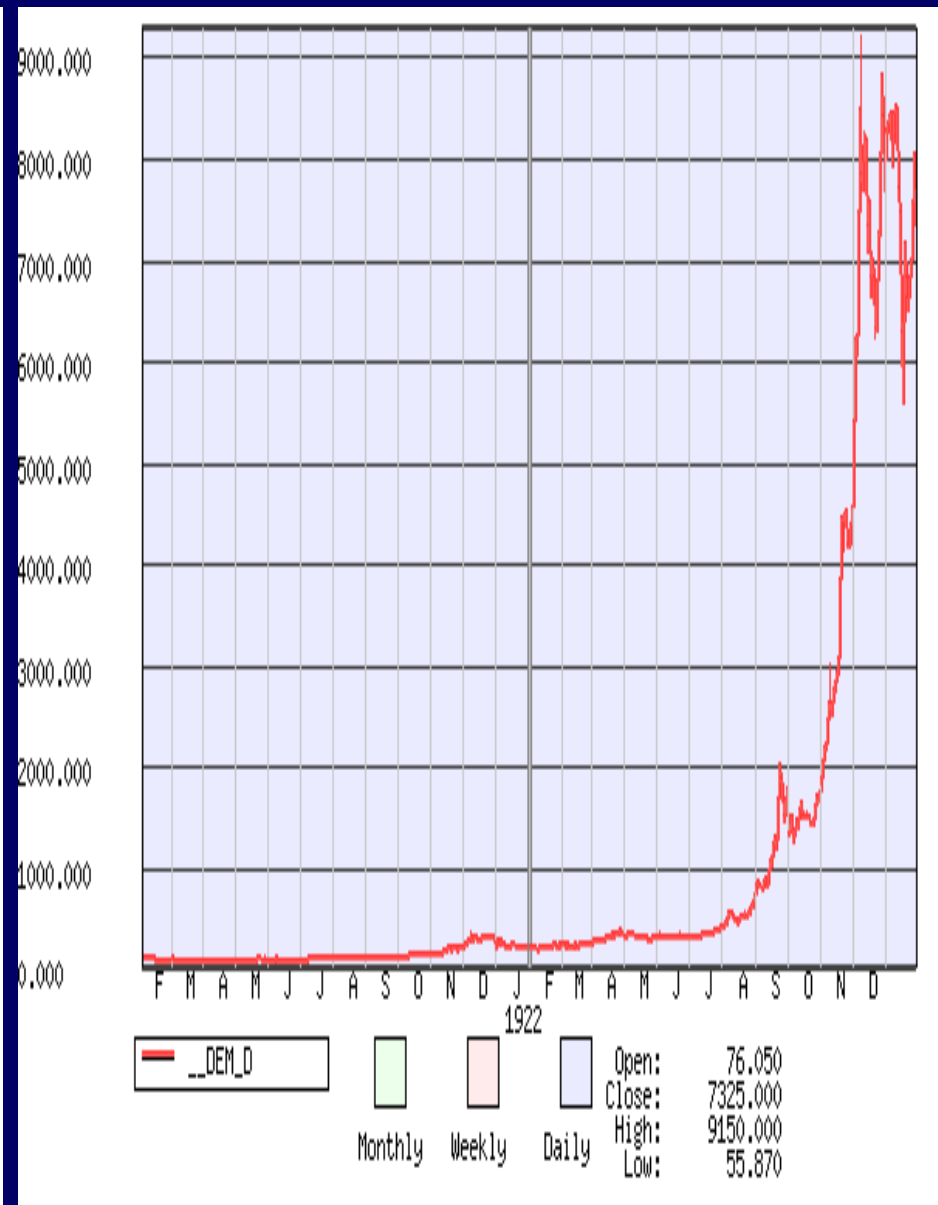
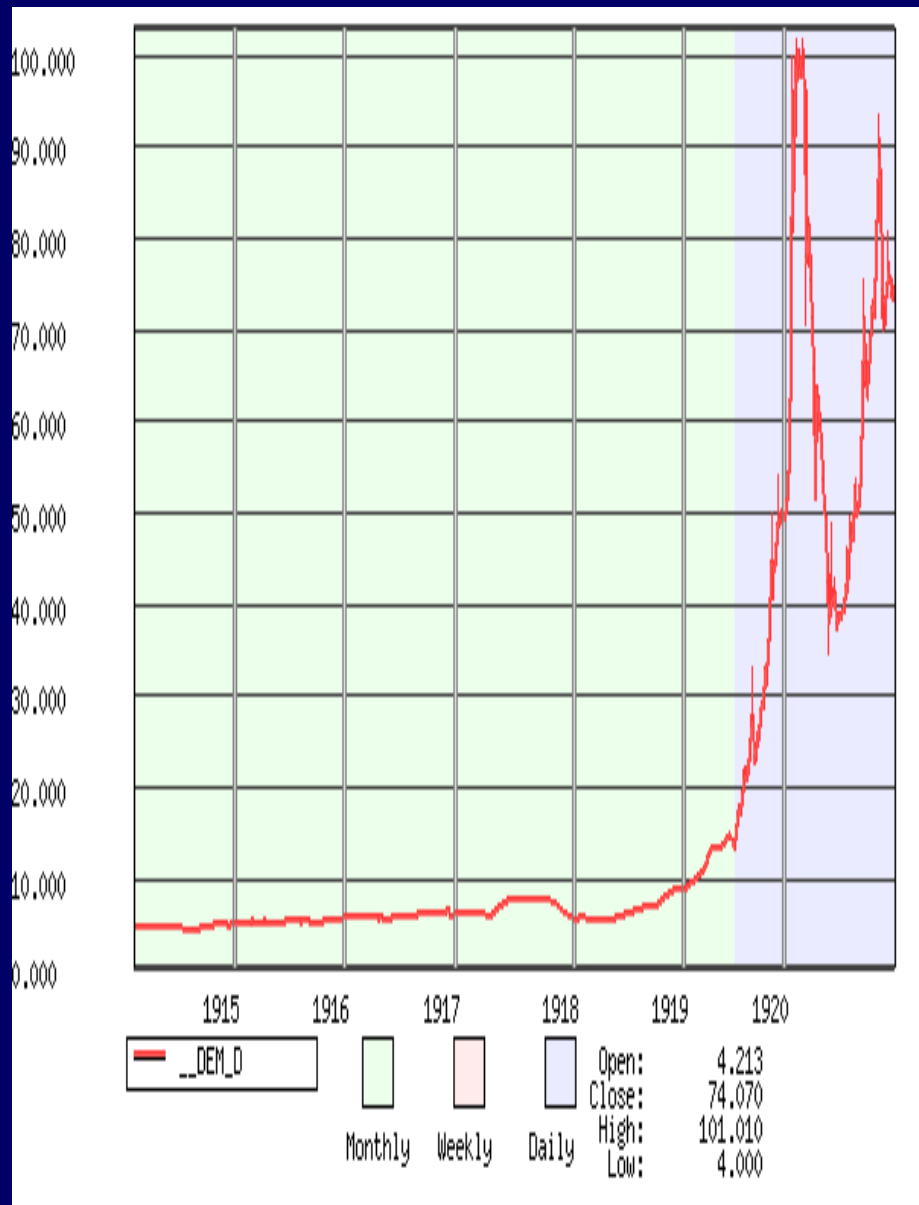
Exchange Rates 1914-1944: USDollar/GBPound



Exchange Rates 1914-1944: DEM/USDollar

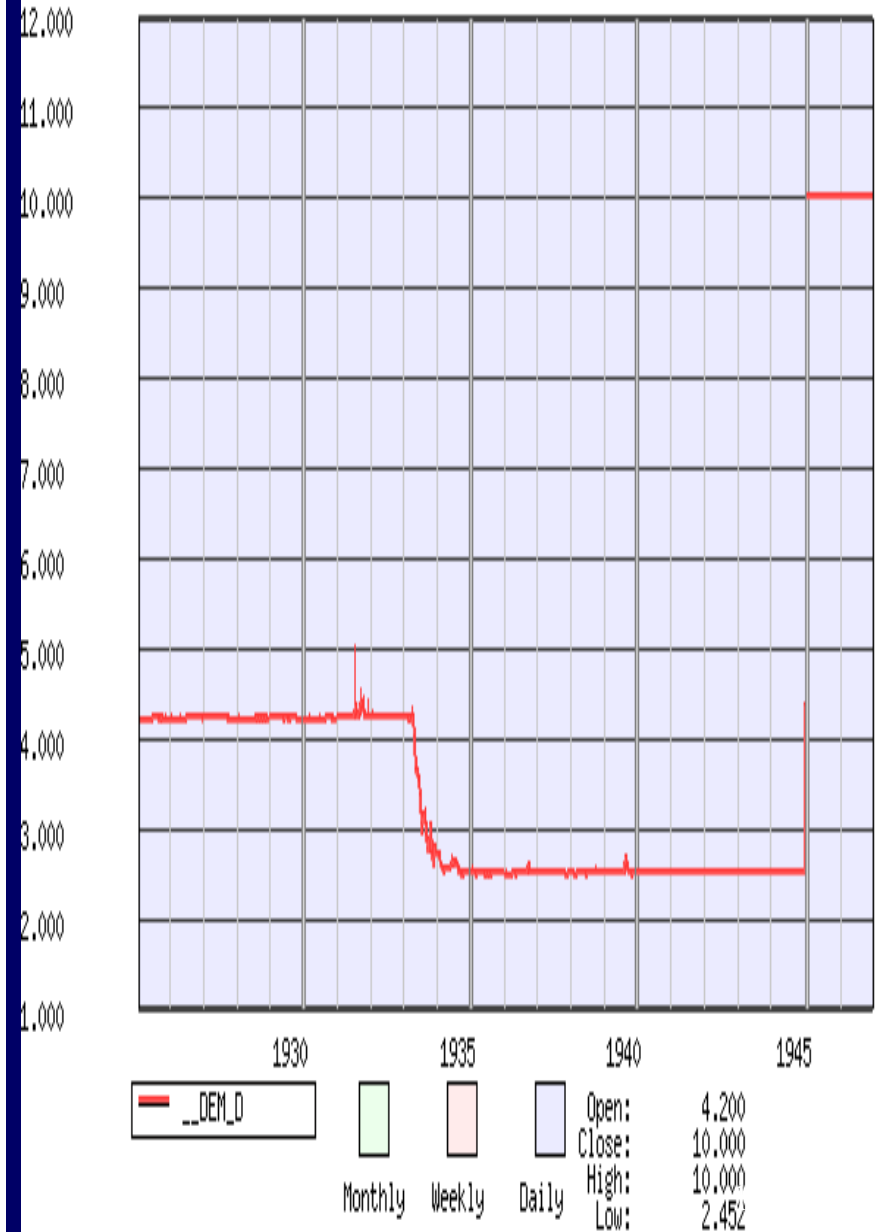
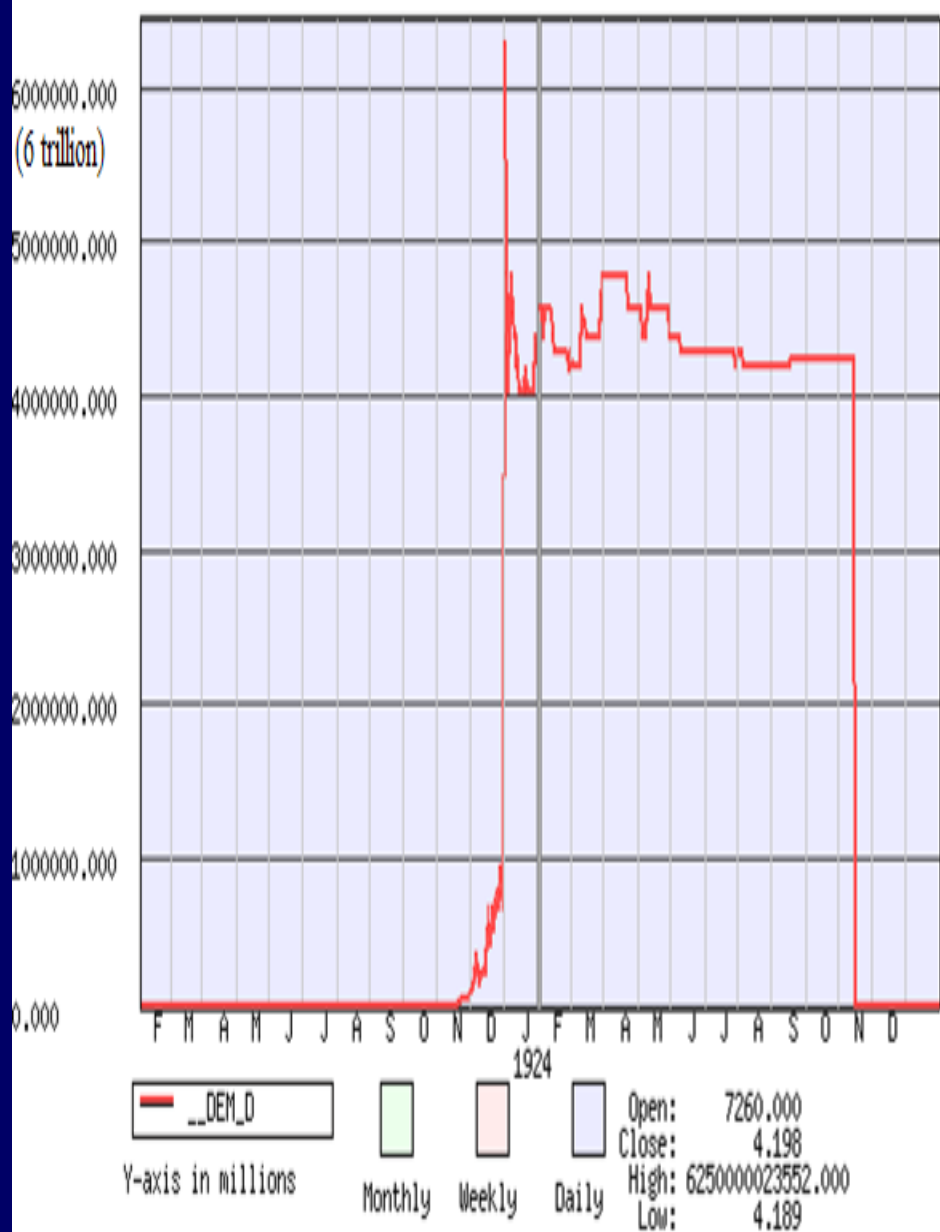
1914-1920: 5-100 DEM/\$

1921-1922: 100-9,000 DEM/\$



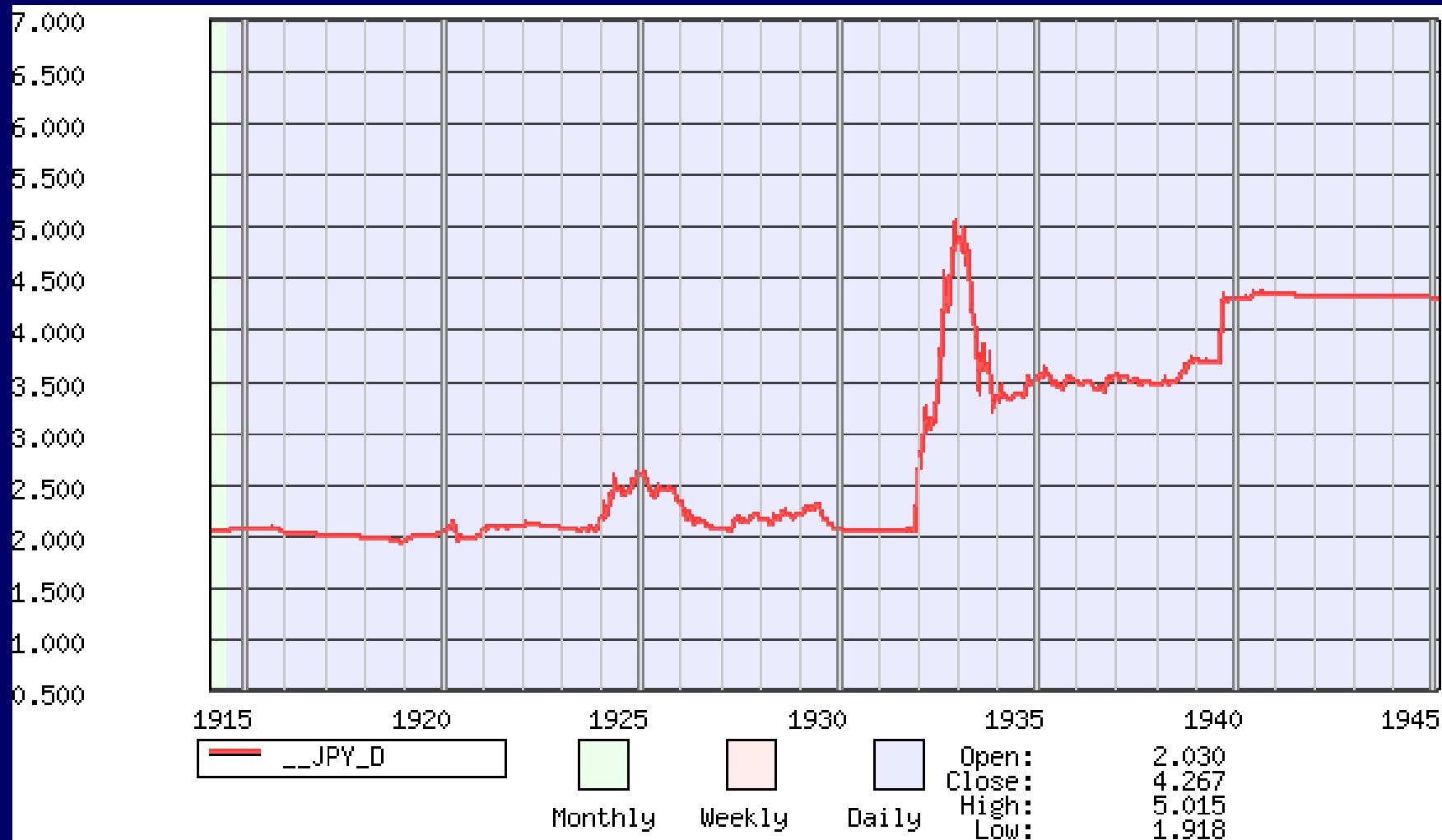
1923-1924: 10,000-6 trillion DEM/\$

1925-1945: 4-2.5 DEM/\$



Exchange Rates 1914-1944:

- JYen/USDollar



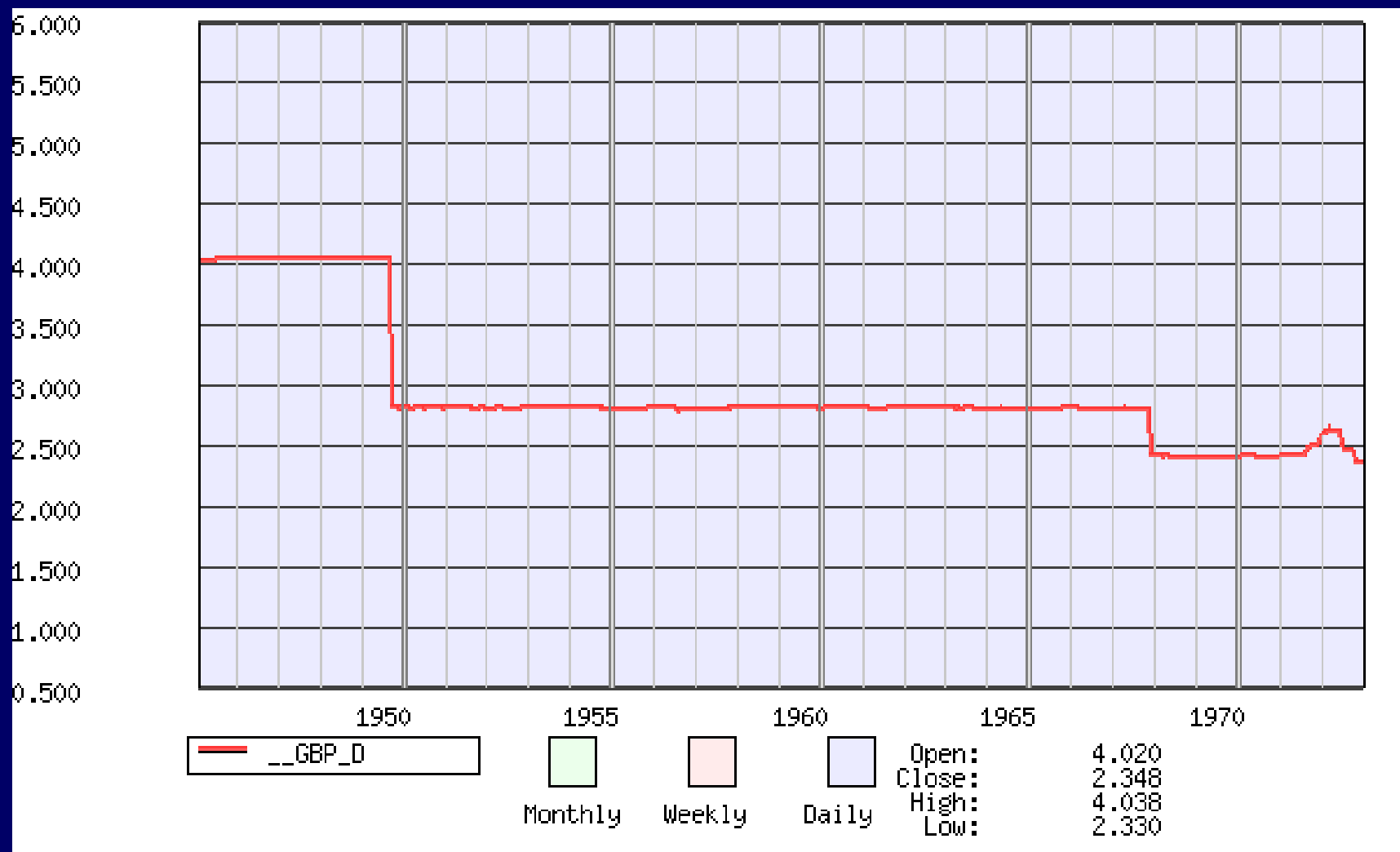
The Bretton Woods Fixed Exchange System: 1945-1973.

Under the provisions of the 1945 BW agreement:

- Countries fixed the values of their currencies in terms of gold or a currency tied to gold, but were not required to exchange their currencies for gold.
- Only the dollar was convertible into gold (at \$35/ounce).
- After the War, the US had accumulated 20,205 metric tons of gold (about 650 million ounces) or 2/3 of world's reserves (today, the US has 8,200 metric tons with the EURO area holding 11,000 mt).
- Countries set their exchange rates against the dollar.
- Countries agreed to maintain their currency values within 1% of par, by buying or selling of foreign exchange or gold.
- Countries agreed to have currency convertibility for current account transactions, but could impose capital controls.
- Devaluation was not to be used as competitive trade policy, though a devaluation of up to 10% did not required IMF approval.
- The BW Conference also led to the creation of the International Monetary Fund (IMF) and the World Bank.

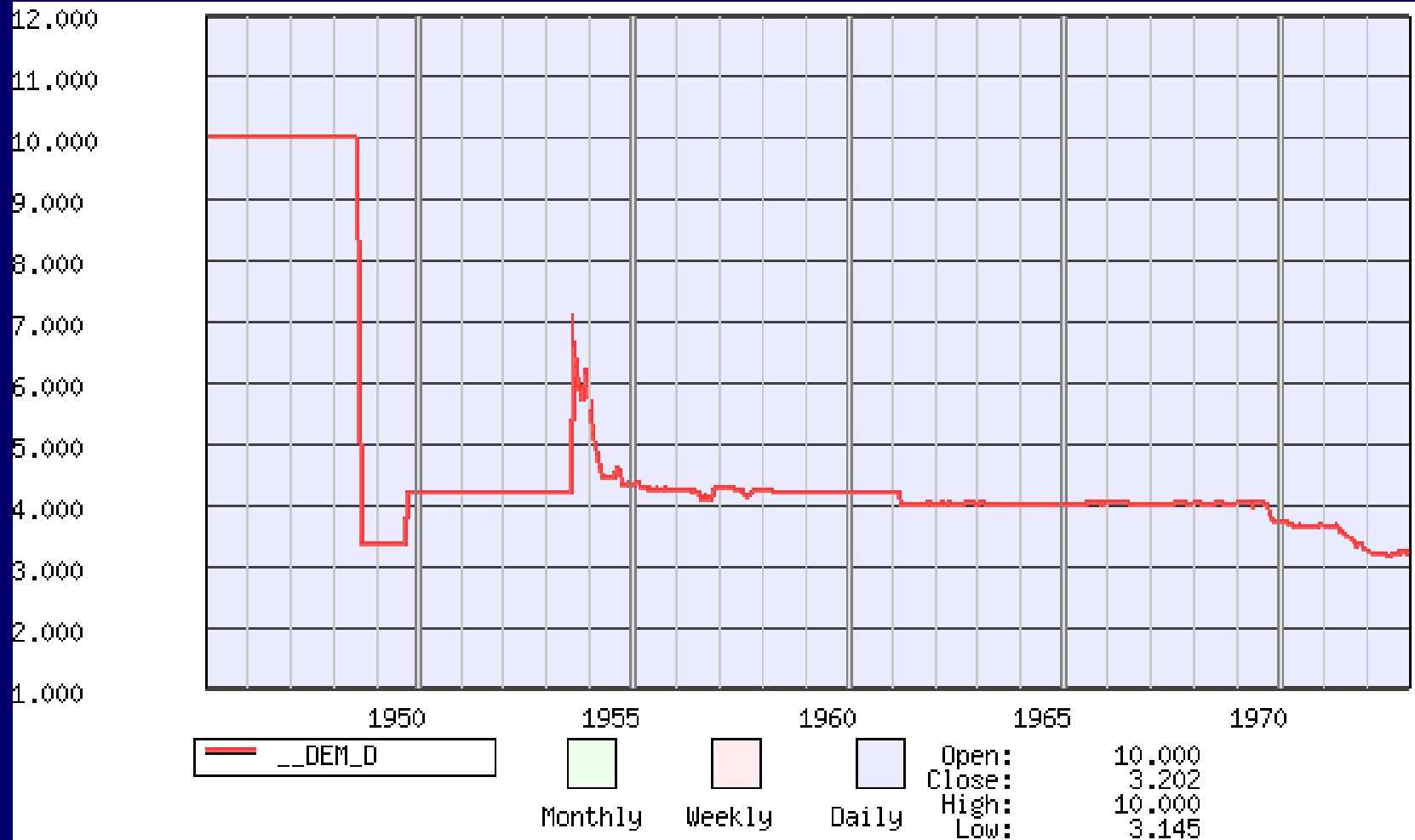
Bretton Woods Fixed Rates:

Exchange Rates 1945-1973: US Dollar/GBPound



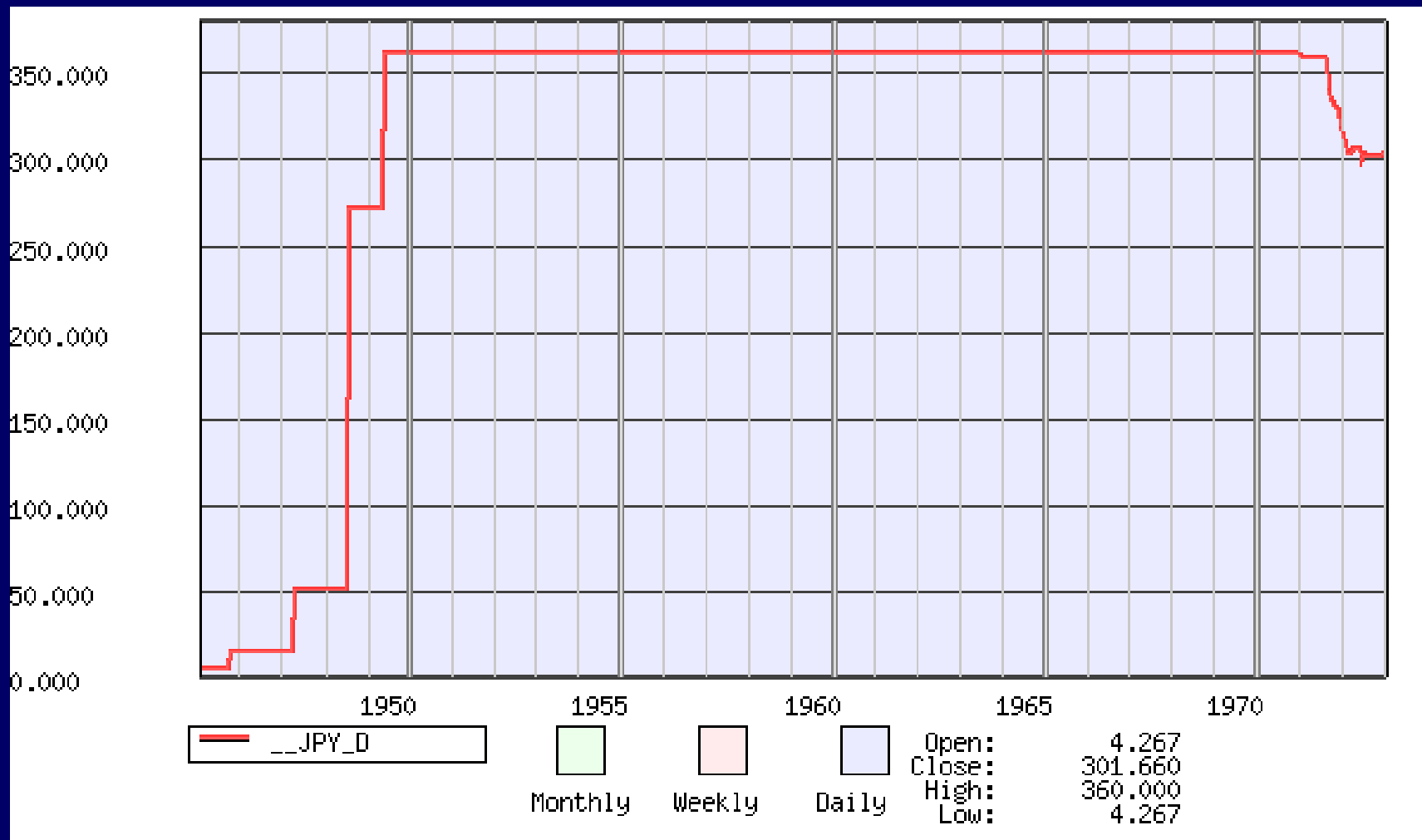
Exchange Rates 1945-1973

- DEM/USDollar



Exchange Rates 1945-1973

- JYEN/USDollar



- The Bretton Woods Fixed Exchange system failed in the early 1970's due to the persistent B/P deficits of the USA, and the large purchases of US gold principally by Europe (Germany, France, Italy and Switzerland):
 - In 1971, President Nixon suspended official purchases/sales of gold, after the US suffered outflows of 1/3 of its gold reserves in 7 months.
 - Exchange rates of most countries were allowed to float: Eurodollar financing collapsed.
 - In the Smithsonian Agreement of December 1971, the US agreed to devalue the dollar to \$38/ounce (from \$35/ounce).
 - Other countries agreed to revalue their currencies and to maintain a fixed rate vis-a-vis the US dollar.
 - This arrangement lasted for just over one year.
 - In March 1973, market forces led most leading countries to decisions to float their currencies.

Multiple Currency Arrangements from 1973 to Present.

- Countries have opted for different currency systems, blessed by the IMF in the Jamaica Conference of 1976 (under “firm surveillance”, floating rates were accepted if consistent with "market" forces).
- The only way to cope with international FX instability is to have greater economic policy coordination among countries: A stable international monetary system has yet to emerge.
- A number of currency events and crises have occurred since then that produced significant volatility in exchange rates, including:
 - The oil crisis of 1973 and its petrodollar flooding to banks.
 - The lost of confidence in the dollar in 1977/79 (due to large deficits and inflation during the Carter years).
 - The second oil crisis of 1979.
 - The formation of the **European Monetary System** (EMS) in 1979.
 - Diversification by central banks of Int. Reserves, from 1979.
 - The international debt crisis of 1982-83 -- in part due to excessive, uncontrolled lending by banks having high liquidity from oil producing countries.

- The strength of the dollar in 1981-85 (by an effective rate of 50%) during the Reagan Presidency. This was due to soft fiscal policies with a large fiscal deficit that required financing- coupled with tight monetary policy with high interest rates that attracted FX to the US.
- The Plaza Agreement of 1985 to intervene in the markets to bring the dollar down, in view of protectionists “signals” in the US.
- The decline in the dollar from 1985-1988 (by an effective rate of 33%); and the Louvre Accord to avoid “overshooting” and further decline in the dollar.
- The EMS crisis of 1992, with a major devaluation of the Pound that led to the separation of the Pound & Lira from the Exchange Rate Mechanism (ERM) of the EMS.
- The Mexico Debt Crisis of 1994 with devaluations in EMs.
- The East Asia Financial Crisis of 1997.
- The Russia Debt Crisis of 1998.
- The Euro launching in 1999 and its physical introduction in 2002.
- The decline of the dollar vis-à-vis the Pound and Euro since 2002.
- The International Liquidity crisis of 2007-2010

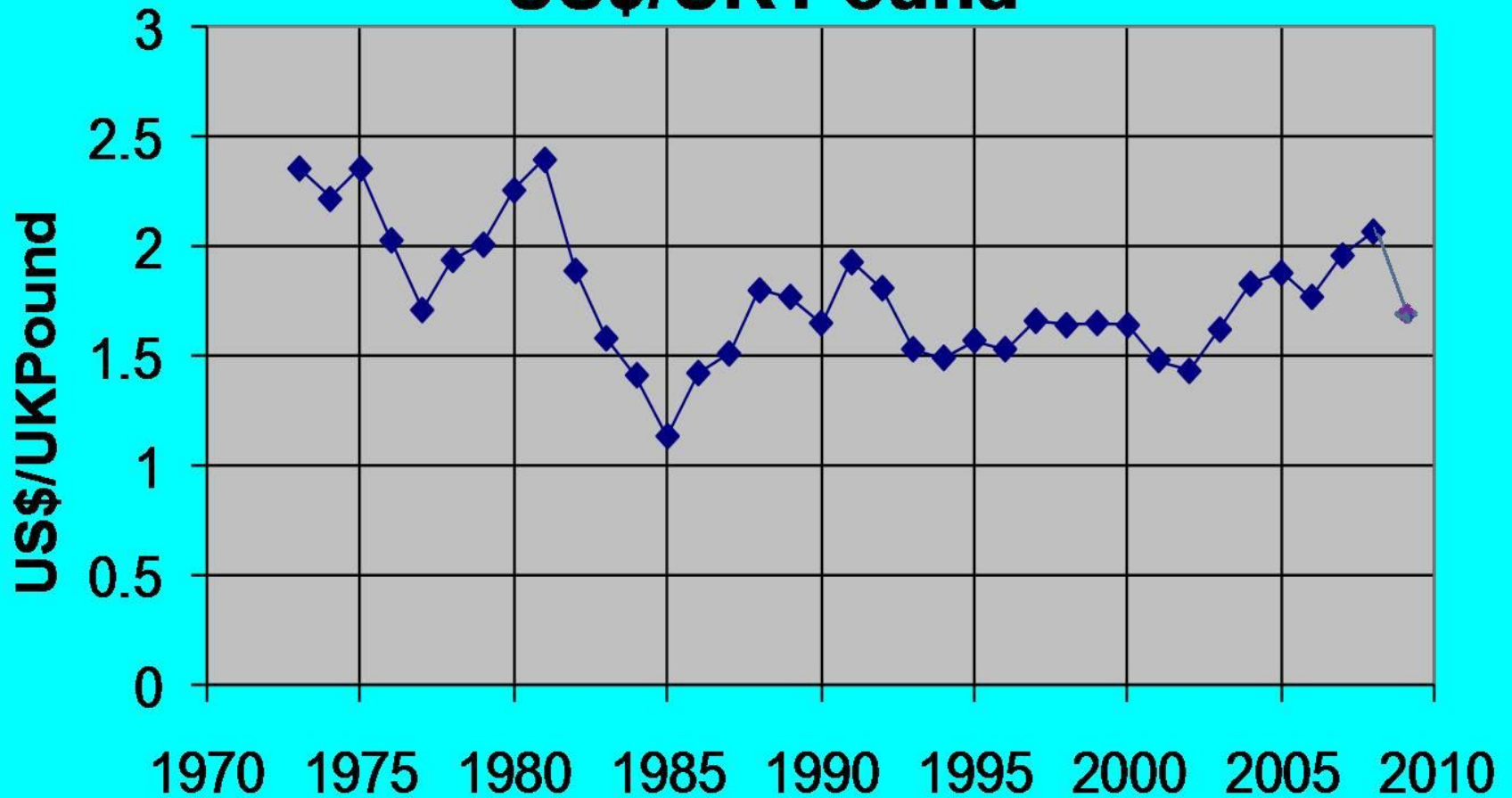
Increased FX Volatility

- Since 1973, exchange rates have become more volatile and less predictable, providing the basis for arbitrage, speculation, and the development of financial derivatives.
- For example, in 1992, George Soros “sold short” US\$10 billion of Pounds, betting on a pound devaluation: Soros made a billion dollars.
- In the late 1980’s Soros had also profited significantly when he predicted a collapse of the Japanese yen.
- However, during the Asia crises, Soros lost approximately a fifth of his assets. He even wrote a book and articles where he proposed to the international community to consider implementing mechanisms that could control the “uncontrollable” markets.
- Also in 1999-2002, Soros lost further when he decided to play with the EURO exchange rate hoping that the new European currency would be harder than the US dollar. But it all turned out the other way round during this period.
- A final word about Exchange Rate Speculation: It has become a riskier business.

Exchange Rates 1973-2008

- US Dollar/GBPound

US\$/UK Pound



Exchange Rates 1999-2011

USDollar/EURO

Change from 4 January 1999 to 4 November 2011 **+0.1984 (+16.8%)**

Minimum (26 October 2000): **0.8252** - Maximum (15 July 2008): **1.5990** - Average: **1.2034**



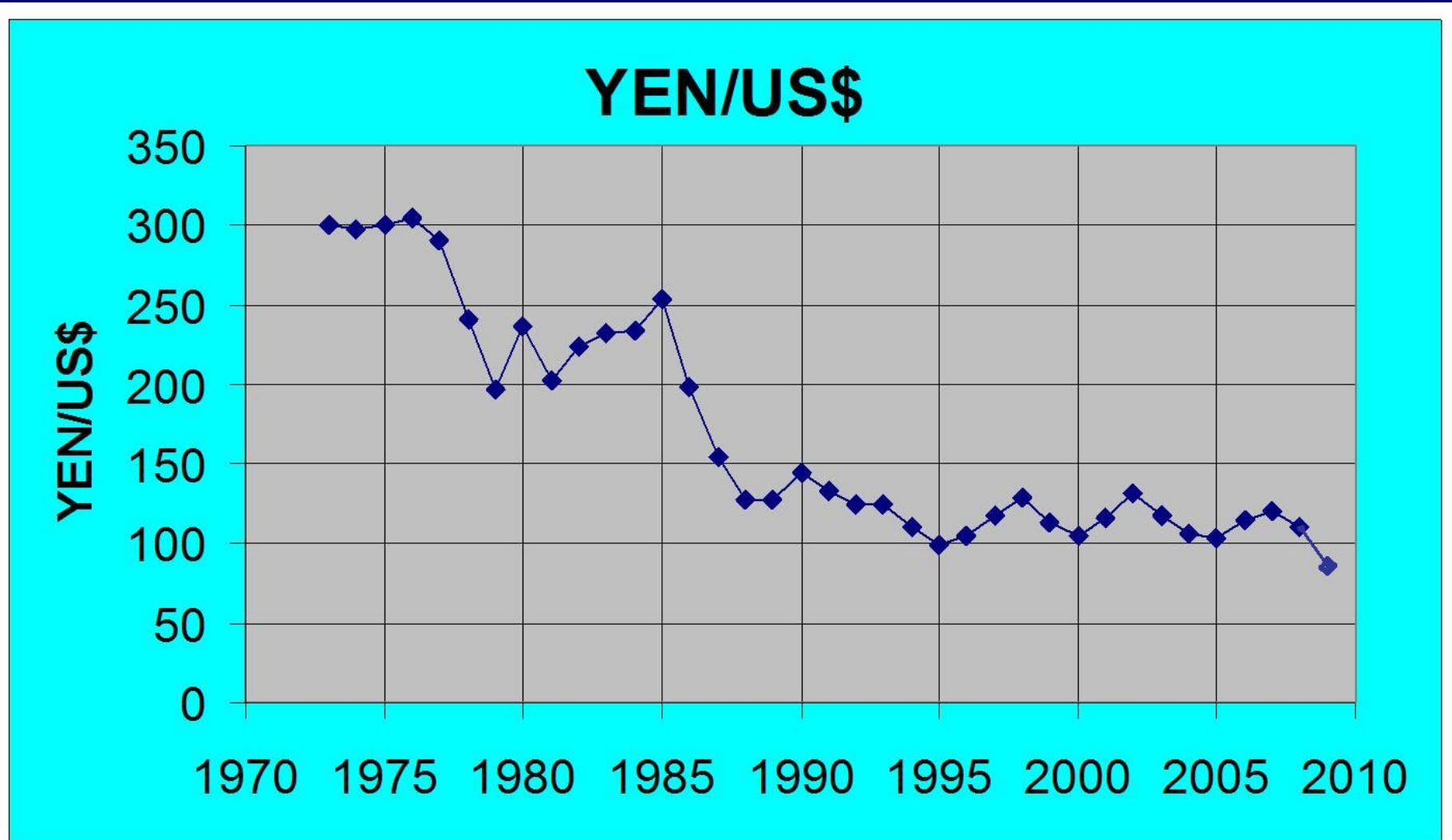
Exchange Rates 1973-2001

- DEM/USDollar



Exchange Rates 1973-2008

- JYEN/USDollar



Since 2008, Gold prices have soared.

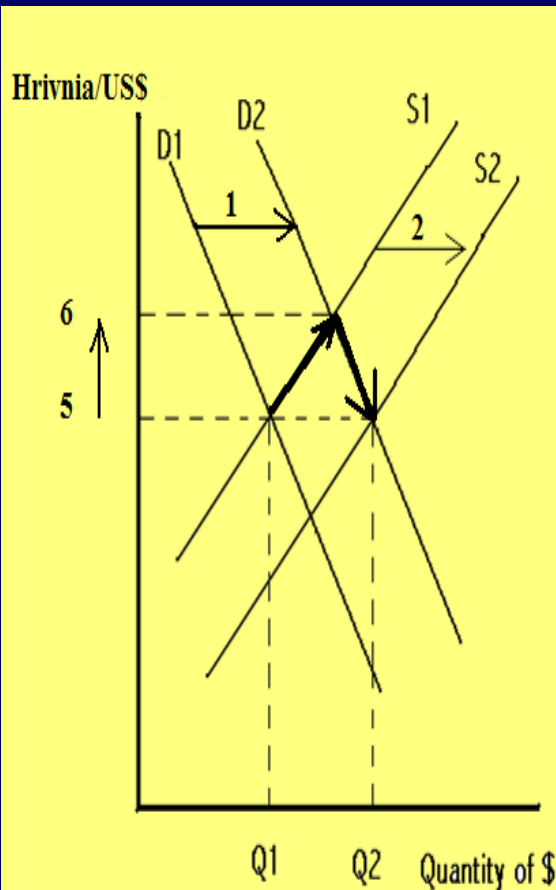


III. Currency Regimes in EMs

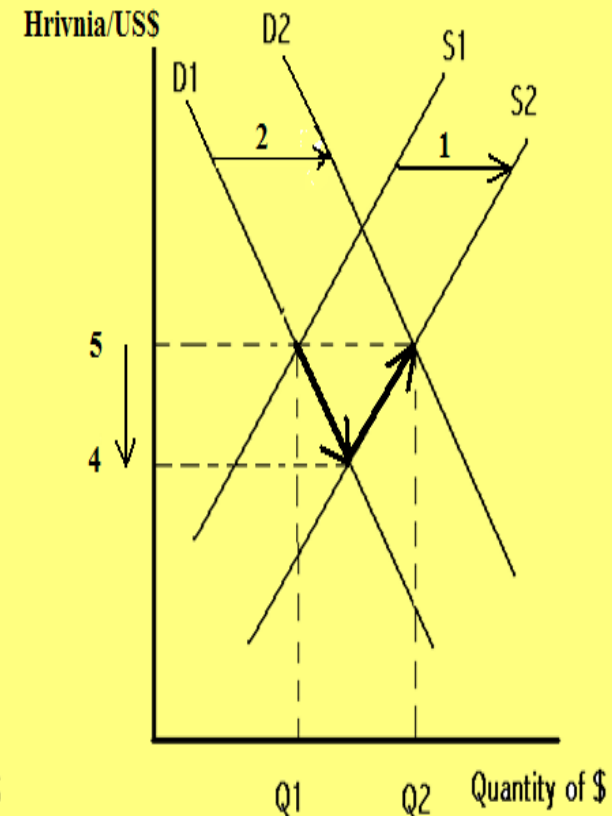
ALTERNATIVE EXCHANGE RATE REGIMES

1. Fixed (Pegged) Exchange Rate:

- The CB fixes the exchange rate and stands ready to buy or sell foreign exchange at the fixed exchange rate.
- It will buy or sell as much as is needed to maintain the FX rate.
- The CB is the ultimate “market maker” at a fixed price.



- There is an increase in demand for \$.
- Hrivnia FX Rate tends to depreciate.
- Central Bank intervenes by selling \$, thereby increasing the supply of \$.



- There is an increase in the supply of \$ (from exporters or capital inflows)
- Hrivnia FX Rate tends to appreciate.
- CB buys \$, thereby increasing \$ demand.

- Under the fixed exchange regime, the currency could be pegged to another currency, or to a basket of currencies.
- The benefits of a fixed FX rate system are:
 - Promotes trade and investments by minimizing currency risks
 - Provides a nominal anchor to prices
 - Provides discipline to fiscal budget policies since the CB has no independent monetary policy
- The CB's stock of foreign currencies (called “**international foreign exchange reserves**”) will fluctuate with its buying/selling of FX.
- Therefore there is a limit on the amount that the CB can sell, which is given by the size of the “gross” FX reserves held by the CB.
- When reserves are exhausted, the exchange rate de facto floats.
- Therefore, the regime is not sustainable if monetary/fiscal policies are not sound and lead to excessive demand for foreign exchange.
- To introduce limited flexibility, a variation of this regime is the “**crawling peg**”: the FX rate is adjusted periodically by the authorities based on inflation differentials with trading partners.

2. Independently Floating Exchange Rates:

- Under a Floating FX Regime, the CD will not intervene to buy or sell FX.
- The exchange rate is negotiated in the **Interbank Market of commercial banks** and authorized foreign exchange dealers. Under an alternative system, export receipts are surrendered to the CB at the prevailing exchange rate and the CB, in turn, decides what amount of foreign exchange must be **auctioned**.
- In any event, the value of the currency will respond to changes in the supply and demand for foreign exchange.
- The benefits of a Floating Regime are:
 - Ensure balance of payment equilibrium (an unsustainable current account deficit will lead to excess demand for FX & depreciation, which reduces imports and increases exports until balance is restored).
 - Ensures monetary autonomy, enabling each country to set its own money supply and inflation rate.
 - Insulates the economy from foreign inflation, since this new price differential will just lead to FX changes.
 - Facilitates the adjustment to foreign shocks, including devaluations in competing countries.
- But excessive and sudden FX fluctuations are also destabilizing and generate risks to businesses.
- The choice between a fixed or a floating regime is not clear-cut: **Why?**³⁵

ATTRIBUTES OF AN IDEAL CURRENCY

An ideal currency should have **three attributes**, which cannot be achieved simultaneously by a single regime:

- (i) **Fixed Value** – a fixed FX rate generates less risk and facilitates business planning. But, there is no independent money supply.
- (ii) **Independent Monetary Policy** - The ability to set your own money supply provides a tool to control inflation and to deal with economic disequilibria. BUT, but it requires a floating FX system.
- (iii) **Convertibility of financial account** – Free capital movements will drive money supply. This requires a floating rate.

Open-economy trilemma: a country cannot simultaneously maintain fixed exchange rates and an open capital market while pursuing a monetary policy geared toward domestic economic objectives.

CENTRAL BANK

Net Int. Reserves	50	Monetary Base	
		Currency in Circ	160
Net Domestic Credit	150	Required Reserves	
Government		of Comm Banks	30
Comm Banks		Equity	10
	-----		-----
Total Assets	200	Total Liab & Eq	200

COMMERCIAL BANKS

Dep with CB	30	Demand Deposits	300
		Time Deposits	100
Loans	500	CDs	50
		Equity	80
	-----		-----
Total Assets	530	Total Liab/Eq	530

3. Managed Floating Exchange Rates:

- Tries to combine the best of the two systems, but requires credibility from sound fiscal, monetary and other economic policies.
- The Central Bank pre-sets a target rate, but allows the rate to vary.
- CB's support of the rate is not automatic, and is based on judgment on B/P position, reserves, black rates, etc.
- CB intervention may aim:
 - at smoothing daily fluctuations, or
 - at delaying, but not resisting, fundamental changes, or
 - at providing market “guidance” that stabilizes FX rates.
- To give “guidance” the CB may establish and announce a “**Band**” within which the currency would be expected to float. The band could be set periodically; or it could be a “**crawling peg band**”, that moves based on some parameters, such as inflation differentials.
- The CB will seek to maintain a target FX rate by **indirect interventions**, influencing the “motivations” of market activity (such as interest rates), or also through **direct intervention** (purchase/sale of FX) in the markets. **Issue: not fixed versus floating rates, but rather good versus bad macroeconomic policies.**

4. Hard-Fixed Rates and Currency Boards

Under a “**Currency Board**” the currency is **irrevocably** fixed against a foreign currency. CB operations stop as it is not allowed to own any domestic assets, so that its currency is **fully backed by FX only**.

In practice, the CB is closed: this constrains the scope for excessive monetary expansion and helps to control inflation.

A Currency Board requires relinquishing the CB’s ability to issue money freely: **high-powered money can only be issued to a value equal to foreign exchange reserves, at a fixed exchange rate**. The domestic currency is fully backed, has a known value, and is fully convertible into the “anchor currency”.

Thus, monetary policy can not be used to support demand expansion or budget deficits.

Some countries with a history of instability (Argentina, Bulgaria, Bosnia, Estonia, Lithuania) opted for fixed exchange rates under “Currency Boards” to stabilize the currency, reduce uncertainty, improve business confidence and encourage investments (by removing monetary policy from politicians).

The credibility gain helps to reduce speculative attacks and crises.

Currency Board Disadvantages:

- If exports and capital inflows **increase**, foreign exchange rises, and so does money supply. This expands bank credit & Inv't's.
- But if foreign exchange reserves **decline** (due to domestic or international shocks), then this reduces money supply and bank credit. This forces companies to reduce investments.
- **The depth of business cycles may be exacerbated by the procyclical behavior of credit.**
- Without a lender of last resort, there will be bank and business failures and unemployment (Lithuania experienced all these problems. Unemployment in Argentina was around 20%).
- **Equilibrium will not be reestablished by a FX change**, but only by reductions in asset prices and labor wages – which are very hard to implement.
- With credibility loss, the currency and banks may collapse.
- Despite its attractions, Currency Boards can not be substitutes for sound fiscal, monetary and exchange policies. If they exist, there is no need for a Currency Board. If they do not exist, a Currency Board will give only temporary solutions.

5. Currency Union: No Legal National Currency

- A group of countries decide to use a single currency to eliminate foreign exchange fluctuations, increase trade, promote economic growth, and foster political integrity. Example: the Euro in 2000.
- Countries transfer **Monetary Policy** to the European Central Bank.
- The Optimal Currency Area theory (based on the work of Columbia University's Nobel winner Robert Mundell) sets out the economic conditions needed to make a monetary union feasible:
 - High mobility of labor and capital to accommodate shock
 - High flexibility of prices and wages to accommodate shocks
 - A good degree of fiscal transfers and political integration
 - High level of economic/trade openness, with high integration
 - Comparable economic development levels, with diversification
 - Symmetry of external shocks (correlation in shock effects)
 - Similarity of inflation rates (through sound fiscal/debt policies)
- But many countries in the periphery of Europe (Greece, Portugal) did not meet these criteria, leading to the current Eurozone crisis.⁴⁰

- On the other hand, the foreign exchange rate is an effective tool of short term adjustment to economic shocks if the following conditions hold:
 - The two countries face asymmetric shocks so that an adjustment of the relative prices of the goods produced in the two countries is needed;
 - Domestic prices are not fully flexible and hence prices do not adjust immediately to the shock
 - Domestic prices are not immediately indexed to the exchange rate, implying that a relative price change due to an exchange rate change is not immediately neutralized by domestic price movements
 - Other mechanisms of adjustment to shocks, such as labor and factor movements or fiscal federalism, are absent or are small
 - Adjustment through the exchange rate is less costly than through other instruments.

Benefits and costs of a Currency Union

- The net benefits from participating in a Currency Union **increases** with:
 - the extent of efficiency gains derived from the adoption of a common currency (due to lower transaction costs, etc);
 - the correlation of real shocks among participating countries so that the policies selected by one country will also be appropriate for the others;
 - the degree of international labor mobility;
 - the degree of adjustment provided by fiscal tools;
 - the inflationary bias of the domestic authority versus the inflationary bias of the Union's central bank.
 - the variability of domestic monetary shocks.
- The main cost of a currency union is the relinquishing of the exchange rate and monetary policies as internal mechanisms of adjustments to shocks.

CURRENT CURRENCY REGIMES

Currency regimes are based on agreements with the IMF (as of 2006):

- 1. Currency Union/No Legal Currency:** 41/192 countries, including EURO area, Caribbean, West Africa, some Latin American countries (Panama, El Salvador).
- 2. Currency Board:** 7/192 countries, including Bosnia, Brunei, Bulgaria, Hong Kong, Djibouti, Estonia, Lithuania.
- 3. Fixed to Another Currency:** 52/192 countries, including Belarus, Bolivia, China, Egypt, Iraq, Jordan, South Arabia, Ukraine, Venezuela.
- 4. Fixed to a Basket (SDR/Composite):** 5/192 countries, including Fiji, Libya, Jamahiriya, Morocco, Samoa, Vanuatu.
- 5. Peg to a Band:** 11/192 countries, including, Denmark, Slovakia, Slovenia, Hungary, Azerbaijan, Botswana, Costa Rica, Iran, Nicaragua.
- 6. Managed Float:** 51/192 countries, including Afghanistan, Algeria, Armenia, Argentina, Bangladesh, Colombia, Czech Rep., Croatia, Georgia, India, Kazakhstan, Malaysia, Moldova, Mongolia, Peru, Paraguay, Romania, Russia, Serbia, Singapore, Tajikistan, Thailand, Tunisia, Uruguay, Uzbekistan
- 7. Independently Floating:** 25/192 including United States, Australia, Brazil, Canada, Chile, Iceland, Indonesia, Israel, Japan, Korea, Mexico, New Zealand, Norway, Philippines, Poland, South Africa, Sweden, Switzerland, Turkey, United Kingdom.

Factors in Selecting an Exchange Rate System

- **Size and degree of openness of the economy:** the higher the share of foreign trade in output, the higher the costs of exchange rate volatility, and a country is more likely to follow a pegged exchange rate regime -- particularly if its business cycle is similar to that of the trading partners.
- **Level of inflation:** a country maintaining a rate of inflation that is higher than that of its trading partners needs to maintain a flexible exchange rate.
- **Degree of price and wage flexibility:** the more rigid real wages are, the greater the need for FX rate flexibility to respond to external shocks.
- **Degree of financial development:** if financial markets are thin, a flexible FX rate regime may lead to large fluctuations in the exchange rate.
- **Degree of credibility of policymakers:** the weaker is the **anti-inflation reputation** of the central bank and Gvt, the stronger the case for pegging the FX rate in order to build confidence that inflation will be controlled.
- **Degree of capital mobility:**
 - the more open the economy is to capital movements, the more difficult it is to defend and maintain a fixed exchange rate regime.
 - A fixed exchange rate is a target for speculators because it offers a **one-sided bet** (leads to **over-borrowing**, spending and **bubbles**).

IV. The Balance of Payment

- The B/P is an important indicator of pressures on a country's foreign exchange rate, and thus on the potential losses or gains for investors.
- It is a statistical statement that systematically summarizes, for a specific period of time, the economic transactions of an economy with the rest of the world. It is a “flow” not a “stock” concept.
- It uses a **double-entry accounting**: every transaction is entered as a debit and as a credit with equal but opposite sign. Therefore, the B/P **always balances** including changes in Reserves. Terminology:
 - **DEBIT**: An increase in assets or decrease in liabilities, for which foreign exchange is expended (marked by a -). Involves making a payment in FX to buy real foreign assets (such as imports) or foreign financial assets (such as bonds, stocks – capital outflow).
 - **CREDIT**: A decrease in assets or increase in liabilities, for which foreign exchange is earned (marked by a +). Involves receiving a FX payment by selling our real assets (such as exports) or our financial assets (such as bonds, stocks – capital inflow).
 - For example: an **export** is a credit (+, decrease in our assets) whereas its payment is a debit (-, increase in our foreign assets, receivables). A **Foreign Direct Investment** here is a credit (+, increase in liabilities) and its payment in FX to us is a debit (-, increase in our foreign assets).

B/P Definitions:

- **Trade Balance:** Balance on Goods (merchandise exp-imp).
- **Service Balance:** Transport (air/sea passenger and freight), business travel, communications, computer services, construction, insurance, financial, royalties.
- **Income Balance:** employee compensation, dividends, income/interests on direct investment, portfolios and credits.
- **Transfers:** unilateral workers remittances, Govt. transfers.
- **Current Account Balance:** Balance on Trade, Services, Income & Transfer accounts
- **Capital/Financial Account:**
 - Direct Investment: Equity with Manag. control (more than 20% ownership).
 - Portfolio Investment: Minority equity, bonds, notes and derivatives, both short and long term.
 - Other Investment: Short and long term loans, credits and deposits.
- **Reserve Assets:** A negative sign = an increase in Reserves.

Balance of Payment of Ukraine (US billion)

	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
A. Current Account				
Exports of Goods, fob	49.8	67.7	40.4	69.2
Imports of Goods, fob	-60.4	-83.8	-44.7	-73.2
Balance on Goods	-10.6	-16.1	-4.3	-4.0
Exports of Services	14.2	17.9	13.9	17.1
Imports of Services	-11.7	-16.2	-11.5	-12.7
Balance on Services	2.4	1.7	2.4	4.4
Balance on Income, net	-0.7	-1.5	-2.4	-2.0
Balance on Transfers, net	3.5	3.1	2.7	3.0
Current Account Balance	-5.3	-12.8	-1.7	-3.0

Note: The current account deficit for 2011 is about \$8.0 billion

	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
B. Financial Account				
Foreign Direct Investment, net	9.2	9.9	4.7	5.8
Portfolio Investment, net	5.8	-1.3	-1.6	0.3
Other Investment, net (Loans/Dep)	0.2	0.5	-16.0	1.8
Long-term Loans, net	14.4	14.8	-3.3	3.9
Short-term Capital, net	-0.6	-3.0	-1.5	2.8
Currency & Deposits (mainly Resid trans)	-13.7	-11.3	-11.3	-4.9
Financial Account Balance	15.1	9.2	-12.3	7.9
C. Net Errors and Omissions	-0.4	0.5	0.2	-1.4
D. Official B/P Balance	9.4	-3.1	-13.9	5.0
(Total Groups A through C)				
E. Official Financing Items	-9.4	3.1	13.9	-5.0
Change in FX Reserves(- is increase)	-9.0	-1.1	5.7	-8.4
Exceptional Financing to NBU	-0.4	4.2	8.2	3.4
(Mainly Use of IMF Credit)				

Sustainability of large current account deficits

- It depends on the nature of the real variables that determine the current account deficit and the sustainability of its financing (FDI is more sustainable).
- A current account deficit is less sustainable when GDP growth is low, budget deficits are high, private savings rate are low, investment rates are low or in the wrong sectors, trade openness is low and the CA deficit is high relative to GDP.

Impact of CA Imbalances on the Exchange Rate.

The effect of CA imbalance on the FX rate depends on whether the country has fixed exchanges rates, floating exchanges rates, or managed systems.

- **Fixed Exchange Rate:** A CA deficit leads to accumulation of foreign debt or to reductions in reserves. With fixed exchange rates, there is no self-correcting mechanisms to bring equilibrium back to the CA. Eventually the accumulation of debt and reductions in reserves may become unsustainable: the government will not have foreign exchange resources to make the market and stop its market intervention. Left alone, the currency will float and without credibility it will devalue, possibly with a large “over-shooting”.
- **Floating Exchange Rate:** Under a floating exchange rate system, if there is an unsustainable CA imbalance, the exchange rate should adjust depending on FX supply/demand in the direction necessary to bring equilibrium.
- **Managed Floats:** If B/P pressure develops, the Government will seek to maintain a target FX rate by influencing the determinants of market activity (particularly interest rates) or by direct intervention in the markets. The adjustment to the exchange rate may be delayed by government actions such as tight monetary policies that increase interest rates and bring foreign capital (the US in the early to mid 1980's).

Impact of Devaluations on the Trade Balance

- The effect of exchange rate changes on trade flows and the trade balance has been the subject of debate.

1. Conventional analysis:

A nominal devaluation affects the economy through 2 channels:

- **As an expenditure-reducing policy**, devaluation reduces private spending and aggregate demand by **raising the domestic price level** and lowering real money balances;
- **As an expenditure-switching policy**, it influences the composition of output and domestic absorption between traded goods and nontraded goods (and exports and imports).
- If prices of **production inputs** rise **less than proportionately** to the increase in the **domestic-currency price of output**, a devaluation may lead to an expansion in activity.
- Increase in the relative price of importables tends to lower the demand for them and to increase demand for nontradables.

2. The analysis of the effects of exchange rate changes on trade balances can be performed in a partial equilibrium framework.

- **Trade balance in real terms** (TB , in terms of domestic currency):

$$TB = Q_X - SQ_J = (P_X)(V_X) - (S)(P^*_J)(V_J)$$

With Devaluation: + + + - $\rightarrow Q_X++$, but $SQ_J +/-$

Q_X, Q_J : value of real exports and imports

S = Exchange rate: relative price of imports in domestic currency.

- **Changes in the TB:** $\Delta TB = \Delta Q_X - S\Delta Q_J - Q_J\Delta S$

$$(\Delta TB/\Delta S) = (Q_X/S) \{ (\Delta Q_X/Q_X) (S/\Delta S) - S(\Delta Q_J/\Delta S) (S/Q_X) - (SQ_J/Q_X) \}$$

- Under what conditions will $(\Delta TB/\Delta S)$ be positive (a devaluation improves the TB)? or negative (deterioration in the TB)?

- Assume that initially trade is balanced, then $Q_X = SQ_J$

- Therefore: $(SQ_J/Q_X) = 1$

Also note that $(\Delta Q_X / Q_X)(S / \Delta S) = \eta_X =$ elasticity of exports to ΔS

And: $- S(\Delta Q_J / \Delta S) (S / Q_X) = - S(\Delta Q_J / \Delta S) (S / S Q_J) =$
 $- S(\Delta Q_J / \Delta S) (1 / Q_J) = \eta_J$

This is equivalent to:

$$\Delta TB = (\Delta S / S) Q_X (\eta_X + \eta_J - 1)$$

η_X : elasticity of foreign demand for exports;

η_J : elasticity of domestic demand for imports.

- **Marshall-Lerner condition**: For the trade balance to improve following a devaluation (for $\Delta TB > 0$), the sum of the elasticities of export demand and import demand must exceed unity :

$$\eta_X + \eta_J > 1$$

- This condition suggests that a key step in assessing the effect of exchange rate changes on the trade balance is to assess the sensitivity of trade flows to changes in relative prices.

- Example of the Marshall-Lerner condition:
- Assume that the **demand for imports** has zero elasticity (the quantity of imports will not change), then the **value of imports in local currency** will go up by the full percentage of the real devaluation.
- For the trade balance to improve, the value of exports in home currency has to go up by more than the full percentage of the real devaluation. This is the case when the export demand elasticity is greater than one.
- At the other extreme, suppose that the elasticity of **demand for exports** is zero; then, following a real devaluation, the value of exports in home currency will remain the same.
- For the trade balance to improve following a real devaluation, the value of imports in home currency has to go down. This is the case when the elasticity of demand for imports is greater than one.
- If the sum of the two elasticities is greater than one, the increases in exports (in home currency) will more than offset the increases in imports (in home currency) and the trade balance will improve. 53

Weaknesses of the Marshall-Lerner Condition:

- The use of **aggregate data** on trade flows may obscure differences in behavior across different **types of goods**, such as manufactured products and commodities.
- The ML condition assumes that the country has the capacity to supply exports if a devaluation takes place. Many countries do not have excess capacity or even supply responses in the short term.
- Empirical studies have shown significant differences in the **timing** of the responses of trade volumes to activity and relative prices.
- In particular, in many countries, in the short-run, the elasticities are very small (little response of quantities to prices) and do not satisfy the ML condition. That is, the B/P will deteriorate.
- But over the medium term, the elasticities increase, meeting the ML condition.
- Therefore, it appears that in many countries, a devaluation first deteriorates the B/P, but the B/P will improve later on (**J Curve**).