***Significance***

*The exchange rate expresses the* ***national currency's quotation*** *in respect to* ***foreign*** *ones. For example, if one US dollar is worth 10 000 Japanese Yen, then the exchange rate of dollar is 10 000 Yen. If something costs 30 000 Yen, it automatically costs 3 US dollars as a matter of accountancy. Going on with fictious numbers, a Japan* [*GDP*](http://www.economicswebinstitute.org/glossary/gdp.htm) *of 8 million Yen would then be worth 800 Dollars.*

*Thus, the exchange rate is a* ***conversion factor****, a multiplier or a ratio, depending on the direction of conversion.*

*In a slightly different perspective, the exchange rate is a* ***price****. If the exchange rate can freely move, the exchange rate may turn out to be the* ***fastest moving*** [***price***](http://www.economicswebinstitute.org/glossary/pricel.htm) ***in the economy****, bringing together all the foreign goods with it.*

***Types of exchange rate***

*It is customary to distinguish* ***nominal*** *exchange rates from* ***real*** *exchange rates.* ***Nominal*** *exchange rates are established on currency financial markets called "****forex*** *markets", which are similar to stock exchange markets. Rates are usually established in continuous quotation, with newspaper reporting daily quotation (as average or finishing quotation in the trade day on a specific market). Central bank may also fix the nominal exchange rate.*

*Real exchange rates are* ***nominal rate corrected*** *somehow by* [***inflation***](http://www.economicswebinstitute.org/glossary/inflat.htm) *measures. For instance, if a country A has an inflation rate of 10%, country B an inflation of 5%, and no changes in the nominal exchange rate took place, then country A has now a currency whose real value is 10%-5%=5% higher than before* *[*[*1*](http://www.economicswebinstitute.org/glossary/exchrate.htm#m1)*]. In fact, higher prices mean an appreciation of the real exchange rate, other things equal.*

*Another classification of exchange rates is based on the number of currencies taken into account.* ***Bilateral*** *exchange rates clearly relate to two countries' currencies. They are usually the results of* ***matching*** *of demand and supply on* ***financial markets*** *or in* ***banking*** *transaction. In this latter case, the central bank acts usually as one of the sides of the relationship.*

*Other bilateral exchange rates may be* ***simply computed*** *from* ***triangular relationships****: if the exchange rate dollar/yen is 10 000 and the dollar/Angolan kwanza is 100 000 then, as a matter of computation, one yen is worth 10 kwanza. No direct yen/kwanza transaction needs to take place. If, instead,a financial market exists for yen to be exchanged with kwanza, the expectation is that actions by speculators (****arbitrage*** *among markets) will bring the parity of 10 kwanza per yen as an effect.*

***Multilateral*** *exchange rates are computed in order to judge the general dynamics of a country's currency toward the rest of the world. One takes* ***a basket of different currencies****, select a (more or less) meaningful set of relative* ***weights****, then computes the "****effective****" exchange rate of that country's currency.*

*For instance, having a basket made up of 40% US dollars and 60% German marks, a currency that suffered from a value loss of 10% in respect to dollar and 40% to mark will be said having faced an "effective" loss of 10%x0.6 + 40%x0.4 = 22%.*

*Some countries* ***impose the existence of more than one*** *exchange rate, depending on the type and the subjects of the transaction.* ***Multiple*** *exchange rates then exist, usually referring to commercial vs. public transactions or consumption and investment imports. This situation requires always some degree of capital controls.*

*In many countries, beside the official exchange rate, the* ***black market*** *offers foreign currency at another, usually much higher, rate.*

***Exchange rate regimes***

*When the exchange rate can* ***freely move****, assuming any value that private demand and supply jointly establish, "****freely floating*** *exchange rate" will be the name of currency institutional regime. Equivalently, it is called "****flexible****" exchange rate as well.*

*If the* ***central bank timely and significantly intervenes*** *on the currency market, a "****managed*** *floating exchange rate regime" takes place. The central bank intervention can have an explicit target, for example in term of a band of currency acceptable values.*

*In "freely" and "managed" floating regimes, a loss in currency value is conventionally called a "depreciation", whereas an increase of currency's international value will be called "appreciation". If the dollar rise from 10 000 yen to 12 000 yen, then it has shown an appreciation of 20%. Symmetrically, the yen has undergone an 8.3% depreciation.*

*But central banks can also* ***declare a fixed exchange rate****, offering to supply or buy* ***any quantity*** *of domestic or foreign currencies at that rate. In this case, one talks of a "fixed exchange rate".*

*Under this regime, a loss of value, usually forced by market or a purposeful policy action, is called a "devaluation", whereas an increase of international value is a "revaluation".*

*The most* ***stabile fixed exchange*** *regimes are* ***backed by an international agreement*** *on respective currency values, often with a formal obligation of loans among central banks in case of necessity.*

*A "****currency crisis"*** *is a rupture of fixed exchange rates with an unwilling devaluation or even the end of that regime in favour of a floating exchange rate. It can dominate the attention of the public, policymakers and entrepreneurs, both in advance and after. For instance, people expecting a crisis can borrow inside the country, convert in a foreign currency, lend that money (e.g. by purchasing bonds). When the crisis comes, they sell the bonds, convert to the national currency, pay back their loans, are gain a hefty profit.*

*An extreme national engagement to fixed exchange rates is the transformation of the central bank in a mere "****currency board****" with no autonomous influence on monetary stock. The bank will automatically print or lend* [*money*](http://www.economicswebinstitute.org/glossary/money.htm) *depending on corresponding foreign currency reserves. Thus,* [*exports*](http://www.economicswebinstitute.org/glossary/exports.htm)*,* [*imports*](http://www.economicswebinstitute.org/glossary/imports.htm) *and capital inflows (e.g.* [*FDI*](http://www.economicswebinstitute.org/glossary/fdi.htm)*) will largely determine the monetary policy.*

***Monetary unions*** *phase out the national currencies in favour of one (new or existing). Some further countries can target to join the union and put in place economic and financial policies to that aim, especially if there are explicit conditions for entering into that monetary area.*

***Determinants******of the nominal exchange***

*Fixed exchange rates are* ***chosen by central banks*** *and they may turn out to be* ***more or less accepted*** *by financial markets.*

***Changes in floating rates or pressures on fixed rates*** *will derive, as for* ***other financial assets****, from three broad categories of determinants:*

*i) variables on the "****real****" side of the economy;   
ii)* ***monetary and financial*** *variables determined in cross-linked markets;   
iii)* ***past and expected values of the same financial market*** *with its* ***autonomous dynamics****.*

*Let's see them separately for the case of the exchange rate.*

***Real variables***

***1.*** [***Exports***](http://www.economicswebinstitute.org/glossary/exports.htm)*,* [***imports***](http://www.economicswebinstitute.org/glossary/imports.htm) *and their difference (the* [***trade balance***](http://www.economicswebinstitute.org/glossary/tradebalance.htm)*) influence the demand of currency aimed at real transactions.*

*A rising trade surplus will increase the demand for country's currency by foreigners, so that there should be a pressure for appreciation. A trade deficit should weaken the currency.*

*Were exports and imports largely determined by price competitiveness and were the exchange rate very reacting to trade unbalances, then any deficit would imply depreciation, followed by booming exports and falling imports. Thus, the initial deficit would be quickly reversed.* [***Net trade balance***](http://www.economicswebinstitute.org/glossary/tradebalance.htm) ***would almost always be zero****.*

*This is* ***hardly the case*** *in contemporary world economy. Trade unbalances are quite* ***persistent****, as you can verify with* [*these real world data*](http://www.economicswebinstitute.org/data/worldtradefigures.zip)*. Additionally, not so seldom, exchange rates go in the opposite direction than one would infer from* [*trade balance*](http://www.economicswebinstitute.org/glossary/tradebalance.htm) *only.*

***2.*** *An even more radical form of real determination of exchange rate is offered by the "****one price law****", according to which any good has the same price worldwide, after taken into account nominal exchange rates. If a hamburger costs 3 US dollars in the United States and 30 000 yen in Japan, then the exchange rate must be 10 000 yen per dollar. The forex market* ***would passively adjust*** *to permit the functioning of the "one price law".*

*But in order to equalise the price of several goods, more than one exchange rate may turn out to be "necessary". Moreover the "one price law" seems to suffer from* ***too many exceptions*** *to be accepted as the fundamental determinant of exchange rates.*

*Large, persistent and systematic violations of Purchasing Power Parity are connected to price-to-market decisions of firms* [*in this paper*](http://www.economicswebinstitute.org/essays/pppviolation.pdf) *of September 2007.*

***Monetary and financial variables in cross-linked markets***

***1.*** [***Interest rates***](http://www.economicswebinstitute.org/glossary/interest.htm) *on* ***Treasury bonds*** *should influence the decision of foreigners to purchase currency in order to buy them. In this case,* ***higher*** *interest rates attract capital from abroad and the currency should* ***appreciate****. Decisive would be the difference between domestic and foreign interest rates, thus a reduction in interest rates abroad would have the same effects.*

*Similarly other fixed-interest financial instruments could be objects of the same dynamics. Accordingly, an increase of domestic interest rates by the central bank is usually considered a way to "defend" the currency.*

*Nonetheless, it may happen that foreigners rather buy* ***shares*** *instead of Treasury bonds. If this were the strongest component of currency demand, then an increase of interest rate may even provoke the* ***opposite results****, since an increase of interest rate quite often depresses the stock market, favouring a tide of share sales by foreigners.*

*In the same "reversed" direction* [***foreign direct***](http://www.economicswebinstitute.org/glossary/fdi.htm)[***investments***](http://www.economicswebinstitute.org/glossary/fdi.htm) *would work: arestrictive monetary policy usually depresses the growth perspective of the economy. If* [*FDI*](http://www.economicswebinstitute.org/glossary/fdi.htm) *are mainly attracted by sales perspectives and they constitute a large component of capital flows, then FDI inflow might stop and the currency weaken.*

*Needless to say, those conditions are quite restrictive and not so usually met.*

*A matter of discussion would be whether the relevant interest rate is the nominal or the real one (which, in contrast with the former, keeps into account inflation). Usually foreign investors do not purchase* [*bread, clothes, and the other items included in the bundle used to compute price level and its dynamics:*](http://www.economicswebinstitute.org/glossary/pricel.htm) *they do not buy anything real in the target economy. So nominal rates are more likely to be taken into account.*

*As a temporary conclusion,* ***interest rates*** *should have an important impact on exchange rate but one has to be careful to* ***check*** *additional conditions.*

***2.*** [***Inflation rate***](http://www.economicswebinstitute.org/glossary/inflat.htm) *is often considered as a determinant of the exchange rate as well. A high inflation should be accompanied by depreciation. The more so if other countries enjoy lower inflation rates, since it should be the difference between domestic and foreign inflation rates to determine the direction and the scale of exchange rate movements.*

*All this would be implied by a weak version of "one price law" stating that price dynamics of a good are the same worldwide, after taking into account nominal exchange rates. Thus, here not absolute level but just the* ***percentage differences*** *in price are requested to be equalised .*

*If an hamburger costs in Japan 5% more than a year ago, while in USA it costs 8% more, then the dollar should have been depreciated this year by about 8-5=3%.*

*But in order to equalise the price dynamics of different goods, more than one exchange rate change may turn out to be "necessary".*

*In reference to the overall* [*price level*](http://www.economicswebinstitute.org/glossary/pricel.htm) *of the economy, if exchange rates would move exactly counterbalancing inflation dynamics, then* ***real*** *exchange rates should be* ***constant****. On the contrary, this is not true as a strict universal rule.*

*Still, even if this weak version of the "law" does not always hold,* ***high inflation*** *usually give rise to* ***depreciation****, whose exact dimension* ***need not match*** *the inflation itself or its difference with foreign inflation rates.*

***3.*** *The*[***balance of payments***](http://www.economicswebinstitute.org/glossary/bop.htm) *can highlight pressures for devaluation or revaluation, reflected in large and systematic trend of foreign currency reserves at the central bank. In particular, large inflows, due for instance to a rise in the world price of main export items, tend to raise the exchange rate. Conversely, a collapse in the trust of government to manage the economic conditions might provoke a flight of capital, the exhaustion of foreign currency reserves and force devaluation / depreciation.*

***Autonomous dynamics on the forex market***

***Past and expected values of the exchange rate itself*** *may impact on* ***current*** *values of it. The activities of forex specialists and investors may turn out to be extremely relevant to the determination of market exchange rate also thanks to their complex interaction with central banks. Sophisticated financial instruments like* ***futures*** *on exchange rates may play an important role.* [*Imitation*](http://www.economicswebinstitute.org/glossary/imitation.htm) *and* [*positive feedbacks*](http://www.economicswebinstitute.org/glossary/feedback.htm) *give rise to herd behaviour and financial fashions.*

*Fears and confidence in a currency are heterogeneosly distributed across agents, with special events (as unexpected news) realigning them and generating large movement in the exchange rate.*

*For a full-text free book on artificial forex market based on empirical field research see* [*here*](http://www.economicswebinstitute.org/books.htm)*.*

***Impact on other variables***

*Levels and fluctuations in the exchange rate exert a powerful impact on* [*exports*](http://www.economicswebinstitute.org/glossary/exports.htm)*,* [***imports***](http://www.economicswebinstitute.org/glossary/imports.htm) *and the* [***trade balance***](http://www.economicswebinstitute.org/glossary/tradebalance.htm)*. A* ***high*** *and rising exchange rate tends to depress exports, to boost import and to* ***deteriorate the trade balance****, as far as these variables respond to price stimuli.* [*Consumers*](http://www.economicswebinstitute.org/essays/consumers.htm) *find foreign goods cheaper so the* [*consumption*](http://www.economicswebinstitute.org/glossary/cons.htm) *composition will change. Similarly, firms will reduce their* [*costs*](http://www.economicswebinstitute.org/glossary/costs.htm) *by purchasing intermediate goods abroad.*

*In extreme cases, local firms producing for the domestic market might go bankrupt. If the reason of appreciation was a soaring world price of main exports (e.g.* [*energy carriers*](http://www.economicswebinstitute.org/glossary/energy.htm)*, like oil for many oil producing countries), the composition of the industrial texture would be starkly simplified and concentrated to those exports. This is at odds and works in the opposite direction of the* [*diversification of the economy that is often the stated goal of public strategies*](http://www.economicswebinstitute.org/essays/proximityproduct.htm) *in countries depending on too few productions (*[*high export concentration*](http://www.economicswebinstitute.org/essays/conexp.htm)*).*

*A* ***devaluation*** *or depreciation should work in the opposite direction, improving the* [*trade balance*](http://www.economicswebinstitute.org/glossary/tradebalance.htm) *thanks to soaring exports and falling imports.*

*If, however, imports have* [*an elasticity*](http://www.economicswebinstitute.org/glossary/elasticity.htm) *to price less than 1, their values in local currency will grow instead of falling. Moreover, if the state, the citizens and / or the enterprises have a debt denominated in a foreign currency, their principal and the interests to be paid soar because of the devaluation. They usually squeeze other expenditures and launch a recessionary impulse throughout the economy.*

*Hosting different industries,* ***regions*** *usually exhibit a differentiated degree of international openness: exchange rate fluctuations will have an uneven impact on them. Similarly, the number of* [*job places*](http://www.economicswebinstitute.org/glossary/employ.htm) *and the working conditions may be influenced by the degree of international competition and exchange rates levels.*

*Exchange rate influences also the* ***external purchasing power*** *of residents abroad, for example in term of purchasing real estate and other assets (e.g. firm equity as a* [*foreign direct investment*](http://www.economicswebinstitute.org/glossary/fdi.htm)*), so by different channels, also the* [*balance of payments*](http://www.economicswebinstitute.org/glossary/bop.htm)*.*

*Exchange rate devaluation (or depreciation) gives rise to* [***inflationary pressures***](http://www.economicswebinstitute.org/glossary/inflat.htm)*: imported good become more expensive both to the direct consumer and to domestic producer using them for further processing. In reaction to inflation (actual and feared), the central bank can rise the interest rates, thus sending a recessionary impulse.*

*Currency crisis have a sweeping impact on income distribution. The few rich able to borrow (because they have collateral and the banks trust them) will get richer and the people purchasing imported goods facing inflation and reduction of real incomes.*

*Symmetrically, the central bank may use a fixed exchange rate as a* ***nominal anchor*** *for the economy to keep inflation under control, compelling domestic producer to face tougher competition as soon as they decide to increase prices or accept to pay higher* [*wages*](http://www.economicswebinstitute.org/glossary/wages.htm)*.*

*For statistics purposes, international comparisons of current values converted to a common currency are "distorted" by wide exchange rate fluctuations.*

***Long-term trends***

*Some geographical monetary areas have enjoyed long periods of* ***stable*** *exchange rate, with moments of consensual realignment after divergence in inflation rates. Many countries strive to keep their currency at a fixed level toward the dollar, the Euro (earlier the German mark) or a basket with multiple currencies.*

*Still, most currency progressively* ***devaluate,*** *especially those issued by* [*periphery countries*](http://www.economicswebinstitute.org/essays/tradehierarchy.htm)*. The US dollar has extremely wide fluctuations with years of "weak" and "strong" dollar.*

***Business cycle behaviour***

*Too many elements are at work for the exchange rate to exhibit a clearly-defined business cycle behaviour. To the extent that the exchange rate is determined by the* [*trade balance*](http://www.economicswebinstitute.org/glossary/tradebalance.htm)*, the exchange rate is* ***counter-cyclical*** *as the latter. At* ***peaks****, the trade deficit would depress the exchange rate, forcing it to* ***depreciate****.*

*If it is rather the* [*interest rate*](http://www.economicswebinstitute.org/glossary/interest.htm) *that turns out to the main driver of the exchange rate, a possible pro-cyclicity of the interest rate would imply a* ***pro-cyclical*** *exchange rate.*

*In this scenario, recovery and boom are accompanied by rising interest rates and exchange rates. At* ***peaks****, we would see very* ***strong*** *currency. Together with domestic demand pressures, this would be the source of a high trade deficit.*

*If autonomous dynamics in the forex market are the main determinants of the exchange rate, then* ***intense micro-fluctuations and long term tides would ride the exchange rate****, possibly with central bank significant interventions.*