6. How much money has an economy?

http://stephenlaughlin.posterous.com/buy-an-100-trillion-zimbabwe-dollar-bank-note
http://en.wikipedia.org/wiki/Zimbabwean_dollar

Money

- Money is everything considered money. Money is recognized by its three main functions.
- Medium of exchange. Goods can be generally obtained in exchange for money, that is, money must can be used to make purchases of goods.
- Store of value. Money has the ability to preserve (at least part) of its purchasing power in time: it is a way of accumulating purchasing power.
- Unit of account. The value of goods is expressed in terms of money (this was the € from 1999 to 2002).

Fiat money

- Essentially, money is anything which is generally accepted as a payment for goods.
- But money is accepted in exchange for goods because of the belief that it will be subsequently accepted in exchange for goods.
- To reinforce that belief, originally money had to have intrinsic value: money itself was a good (like cattle or silver: commodity money). With time, it became unnecessary for money to have intrinsic value. Money is now fiat money: intrinsically worthless pieces of paper and metal.

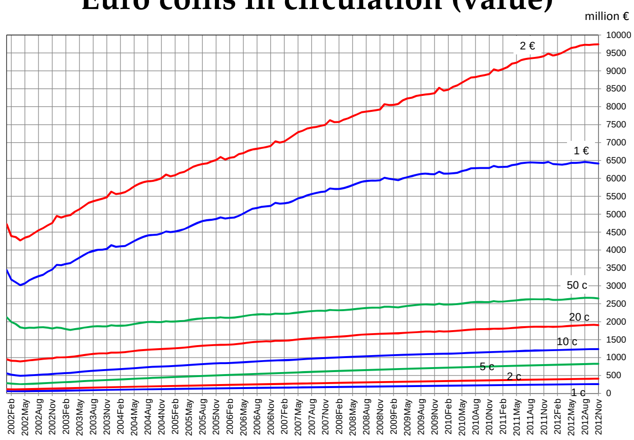
Our currency: the euro

- The euro (sign: €; code: EUR) is the official currency (= physical money) of the 17 members of the eurozone (officially called *euro area*): A, B, C, E, FI, FR, GE, GR, IR, IT, L, M, N, P, SLA, SLE, & SP.
- The euro was born in Jan. 1999 as a unit of account and became currency on 1 Jan. 2002. It is managed by the Eurosystem: the European Central Bank plus the central banks of the eurozone members.
- It is the 2nd most traded currency in the world, after the $. By mid-2010, it surpassed the $ as the currency with highest value in circulation (€800 b.).

Eurozone / European Union

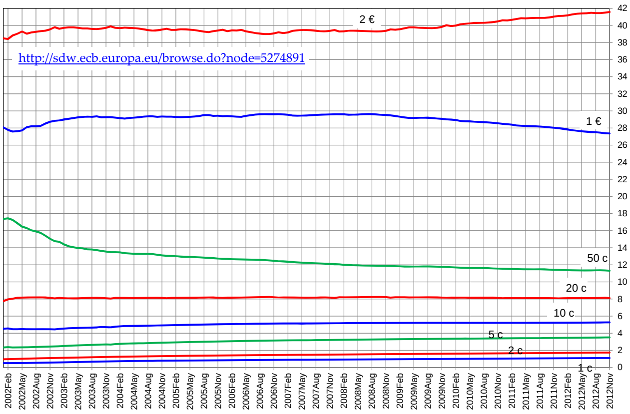
http://aviagemdosargonautas.blogs.sapo.pt/437873.html

Euro coins in circulation (value)



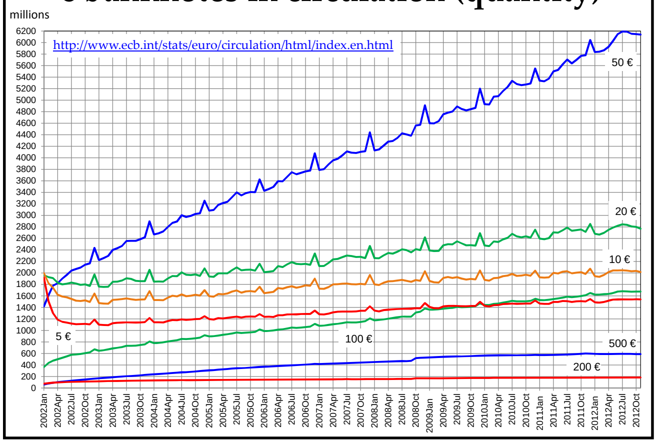
II 7

Euro coins in circulation (% of value)



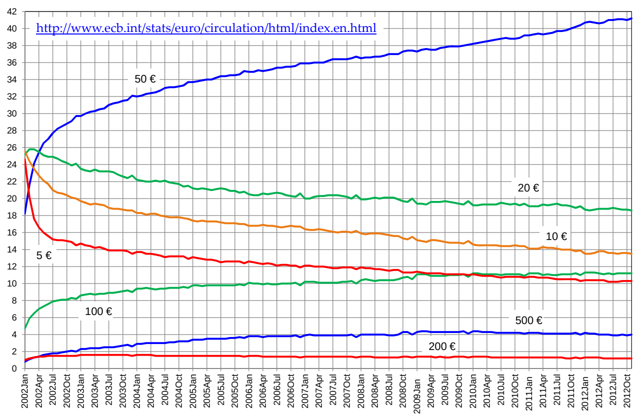
II 8

€ banknotes in circulation (quantity)



II 9

€ banknotes in circulation (% quantity)



II 10

Circulation of low denomination coins - Quantities (outstanding amounts, millions)

Circulation of high denomination coins - Quantities (outstanding amounts, millions)

https://stats.ecb.europa.eu/stats/download/bkn_coins_quant/bkn_coins_quant/bkn_coins_quant.pdf

Table 3: Euro coins, quantities
(millions, unless otherwise indicated, not seasonally adjusted)

	TOTAL	2 EUR	1 EUR	50 CENT	20 CENT	10 CENT	5 CENT	2 CENT	1 CENT
	% share of total coins (circulation of euro coins)								
2012 Nov. (p)	100.0	4.8	6.3	5.2	9.4	12.2	16.3	20.2	25.6
	Circulation of euro coins (outstanding amount, end of period)								
2007	76,298	3,811	5,718	4,657	7,855	9,927	12,359	14,394	17,579
2008	82,314	4,033	6,015	4,835	8,336	10,597	13,376	15,779	19,343
2009	87,457	4,264	6,184	5,005	8,665	11,061	14,218	17,000	21,059
2010	92,894	4,521	6,345	5,143	9,021	11,566	15,118	18,299	22,880
2011	97,760	4,742	6,458	5,265	9,314	12,058	15,879	19,474	24,570
2012 Q1	98,358	4,753	6,384	5,229	9,330	12,089	15,998	19,708	24,868
Q2	99,819	4,831	6,433	5,294	9,461	12,232	16,218	20,021	25,329
Q3	101,072	4,862	6,444	5,336	9,547	12,342	16,418	20,337	25,787
2012 Sep.	101,072	4,862	6,444	5,336	9,547	12,342	16,418	20,337	25,787
Oct.	101,432	4,868	6,429	5,325	9,556	12,372	16,483	20,453	25,947
Nov. (p)	101,318	4,870	6,413	5,298	9,514	12,335	16,465	20,436	25,987

II 11

Circulation of low denomination banknotes - Quantities (end of period, millions)

Circulation of high denomination banknotes - Quantities (end of period, millions)

https://stats.ecb.europa.eu/stats/download/bkn_notes_quant/bkn_notes_quant/bkn_notes_quant.pdf

Table 1: Euro banknotes, quantities
(millions, unless otherwise indicated, not seasonally adjusted)

	TOTAL	500 EUR	200 EUR	100 EUR	50 EUR	20 EUR	10 EUR	5 EUR
	% share of total banknotes (circulation of euro banknotes)							
2012 Nov. (p)	100.0	4.0	1.2	11.2	41.2	18.6	13.5	10.3
	Circulation of euro banknotes (outstanding amount, end of period)							
2007	12,114	453	156	1,209	4,442	2,468	1,965	1,421
2008	13,116	530	170	1,381	4,912	2,618	2,030	1,476
2009	13,643	564	178	1,472	5,199	2,690	2,042	1,498
2010	14,171	576	181	1,551	5,550	2,752	2,039	1,522
2011	14,948	599	181	1,650	6,045	2,853	2,073	1,546
2012 Q1	14,429	592	181	1,633	5,868	2,695	1,964	1,496
Q2	14,999	594	187	1,675	6,146	2,819	2,042	1,537
Q3	14,980	593	185	1,673	6,152	2,808	2,030	1,539
2012 Sep.	14,980	593	185	1,673	6,152	2,808	2,030	1,539
Oct.	14,975	591	185	1,675	6,146	2,798	2,036	1,543
Nov. (p)	14,913	590	185	1,677	6,139	2,769	2,014	1,539

II 12

Circulation of low denomination banknotes - Values (outstanding amounts, EUR billions)

Circulation of high denomination banknotes - Values (outstanding amounts, EUR billions)

https://stats.ecb.europa.eu/stats/download/bkn_notes_val/bkn_notes_val/bkn_notes_val.pdf

Table 2: Euro banknotes, values
(EUR billions, unless otherwise indicated, not seasonally adjusted)

	TOTAL	500 EUR	200 EUR	100 EUR	50 EUR	20 EUR	10 EUR	5 EUR
	% share of total banknotes (circulation of euro banknotes)							
2012 Nov. (p)	100.0	33.1	4.2	18.9	34.5	6.2	2.3	0.9
	Circulation of euro banknotes (outstanding amount, end of period)							
2007	676.6	226.3	31.1	120.9	222.1	49.4	19.7	7.1
2008	762.8	265.0	34.0	138.1	245.6	52.4	20.3	7.4
2009	806.4	281.9	35.6	147.2	260.0	53.8	20.4	7.5
2010	839.7	287.9	36.1	155.1	277.5	55.0	20.4	7.6
2011	888.6	299.6	36.3	165.0	302.3	57.1	20.7	7.7
2012 Q1	869.9	295.9	36.3	163.3	293.4	53.9	19.6	7.5
Q2	893.7	297.1	37.3	167.5	307.3	56.4	20.4	7.7
Q3	892.5	296.5	37.0	167.3	307.6	56.2	20.3	7.7
2012 Sep.	892.5	296.5	37.0	167.3	307.6	56.2	20.3	7.7
Oct.	891.4	295.6	37.0	167.5	307.3	56.0	20.4	7.7
Nov. (p)	889.7	294.8	37.0	167.7	306.9	55.4	20.1	7.7

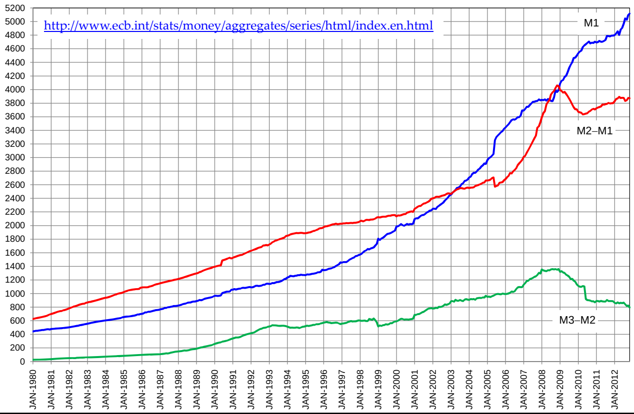
Monetary aggregates

- Monetary aggregates are technical ways of defining (measuring the amount of) money.
- M0 = monetary base = high-powered money = E + R
  - E = currency held by the public (cash)
  - R = bank reserves = currency in bank vaults + the banks' deposits at the central bank
- M1 = E + D (money stock, money supply, monetary mass)
  - D = deposits = non-interest-bearing accounts at banks
- M2 = M1 + savings deposits
- M3 = M2 + time deposits + others

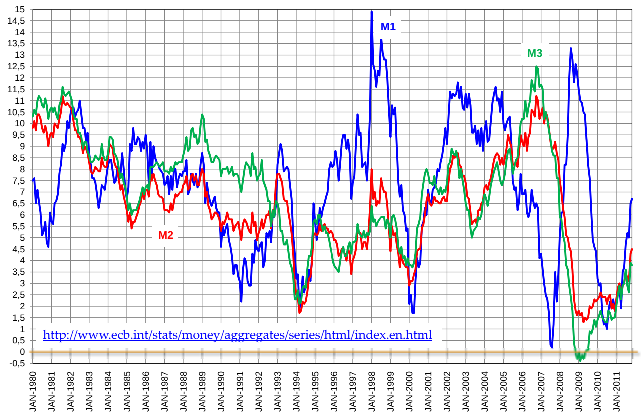
Technical definitions of money (ECB)

- ***Narrow money* (M1)** *includes currency, i.e. banknotes and coins, as well as balances which can immediately be converted into currency or used for cashless payments.*
- ***"Intermediate" money* (M2)** *comprises narrow money (M1) and, in addition, deposits with a maturity of up to two years and deposits redeemable at a period of notice of up to three months. Depending on their degree of moneyness, such deposits can be converted into components of narrow money.*
- ***Broad money* (M3)** *comprises M2 and marketable instruments issued by the MFI (Monetary Financial Institutions) sector. Certain money market instruments (money market fund shares/units and repurchase agreements) are included in this aggregate. A high degree of liquidity and price certainty make these instruments close substitutes for deposits.*

Monetary aggregates, levels, eurozone



Monetary aggregates, growth, eurozone



7. Why do financial assets exist?

- Every activity taking place in an economy can be assigned to one of two sides.
- In the real side of the economy, goods (= goods & services) are exchanged for money. Wealth (goods) is generated in the real side.
- In the financial side, financial assets (which in essence are promissory notes or money substitutes) are exchanged for money (or other financial assets).
- Though each side has a life of its own, most of what happens in an economy is the result of the interaction between these two sides.

The business of making money

- In a (modern) monetary economy, goods are typically not exchanged for goods but for (fiat) money.
- Therefore, the first activity in which people must engage in a monetary economy is raising money.
- One way of raising money consists of selling goods others want. Thus, one may sell his/her time for a wage or a good he/she can produce for a price.
- What if one has no good others may want? Then one can raise money by issuing a financial asset, which is little more than a promise of payment.

Financial assets

- A financial asset is basically an IOU: a paper where someone acknowledges a debt ("*I owe you*").
- A financial asset is a substitute for money, as it represents a promise today to pay money in the future. It is a way of capitalizing future revenues.
- Suppose you do not have money today, but expect you will have in the future. A financial asset is like a time machine allowing you to take your money back from the future: you issue an IOU and sell it today for money. Problem: part of your future money is lost when reaching the present.

II 19

Enter interest rates

- Suppose you know you will get 1,000 € in a month and need (or want) them today. You then issue a financial asset stating that you will pay 1,000 € in a month to the bearer (owner) of the asset.
- But it will illusory to expect to sell that asset for 1,000 €, for the buyer gives 1,000 € and receives 1,000 € in a month: the buyer losses the possession of 1,000 € for a month in exchange for nothing.
- So the asset must be sold for less than 1,000 €. The interest rate of the asset is its implicit rate of return.

II 20

Rate of return of an asset

- Let V the nominal (face) value of the asset: how much it promises to pay in the future.
- Let P be the price at which the asset is sold.
- Then the (implicit) rate of return i_A (or rate of profit) of the asset is the profit $V - P$ obtained from buying the asset per monetary unit invested in the purchase. The formula is (multiply the right-hand by 100 to get a percentage):

$$i_A = \frac{V - P}{P} .$$

- For instance, if $V = 1000$ and $P = 800$, then $i_A = 25\%$.

II 21

Functions of financial assets

- From the perspective of the purchaser, the financial asset is a way of saving purchasing power (a way of sending it from the present to the future).
- From the perspective of the issuer (or the seller, if the buyer becomes a seller), the financial asset is a way of acquiring purchasing power (a way of bringing it from the future to the present).
- A financial asset is an instrument to get money if you need it from someone not needing it now. Put it briefly, a financial asset is a loan of money.

II 22

Properties of financial assets

- Liquidity. Ease and rapidity with which the asset can be turned into money (can be sold).
- Risk. The likelihood that the compromise of repayment will not be respected.
- Rate of return. Ratio of the profit to the cost of obtaining that profit.
- Maturity. The date at which the issuer must pay the face value to the holder of the asset.

II 23

A selection of financial assets /1

- Currency. It is an extreme case of financial asset: instant maturity (1€ pays 1€ now), no return, no risk, and maximum liquidity.
- Bank deposit. By depositing money in a bank, the depositor is purchasing an asset issued by the bank: the deposit. This asset is riskier than currency: if the bank goes bankrupt, the money is lost.
- Loan. The loan is the reverse of the deposit: it is as if the bank deposited money on you in exchange for a premium and the repayment of the deposit.

II 24

A selection of financial assets /2

- Bonds. A bond is a debt security that, in exchange for the face value *V*, pays a certain amount (the coupon) at fixed periods before maturity and repays *V* at maturity. A 4-year 100 € bond offering an annual 5% pays 5 € at the end of years 1, 2, 3, and 4, and repays the 100 € at the end of year 4.
- Variations: perpetuities (bonds with no maturity), floating-rates bonds, inflation-linked bonds…
- Zero-coupon bonds. Bonds issued at a discount , that is, sold for less than the face value. Example: Treasure bills (or, for short, T-bills).

II 25

A selection of financial assets /3

- Commercial paper. They are promissory notes issued by firms to fund operational expenses.
- Shares. The share of a firm is an indivisible unit of the firm's capital. Shares are equity security. A security is a fungible, negociable instrument representing financial value.
- Securities are divided into debt securities (like bonds) and equity. Having an equity means owning part of a firm; having a bond issued by the firm means being a creditor of the firm.

II 26

Are shares financial assets?

- In a strict sense, shares of a firm are not financial assets, since they represent parts of a firm: the owner of shares is a shareholder (owns the firm).
- Unlike debt securities, shares do not entitle to a regular payment: the payment of dividends is discretional.
- But shares typically represent such a small part of the value of a firm that they are bought and sold not because of their intrinsic value, but because of the expected evolution of their price.

I 74

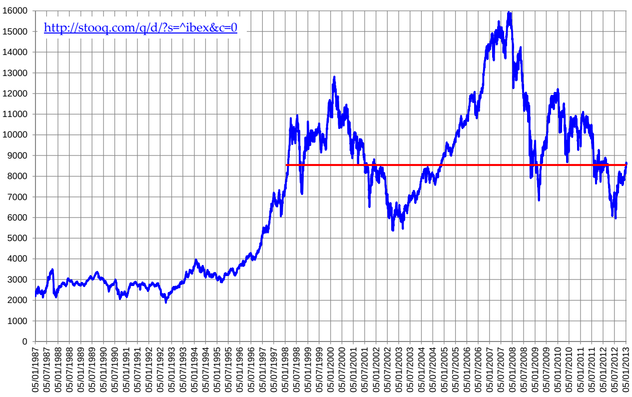
Goods turned to financial assets

- Buying shares is a form of saving, and selling them is a form of raising money. Thus, shares become indistinguishable from financial assets.
- Any good sold and bought according to the expected evolution of its price behaves like a financial asset: it is not sold or bought due to intrinsic qualities, but as a tool for making money by exploiting price changes.
- This may generate "speculative bubbles". Known cases: oil, real estate, raw materials, stamps…

II 28

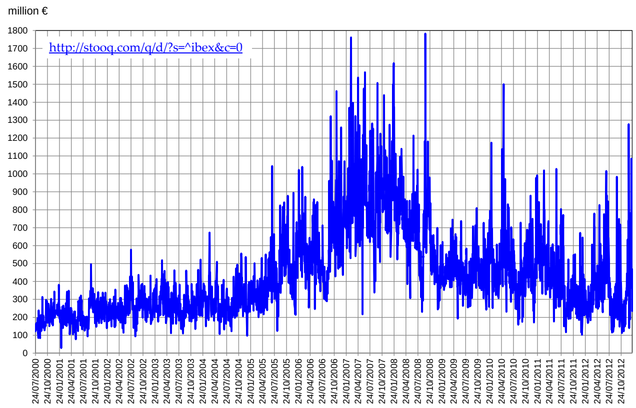
II 29

IBEX-35, 05 Jan 1987–17 Jan 2013



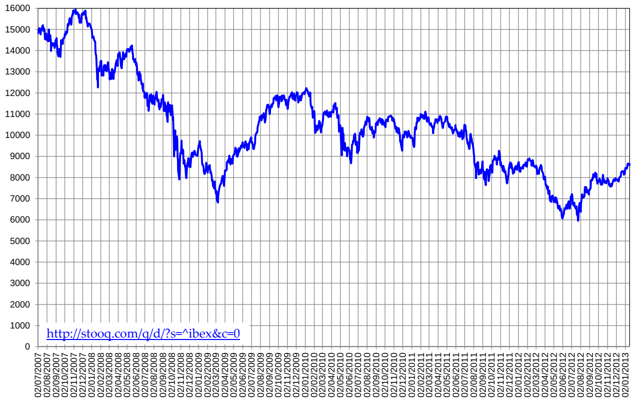
II 30

IBEX-35, volume, Jul 2000 - Jan 2013



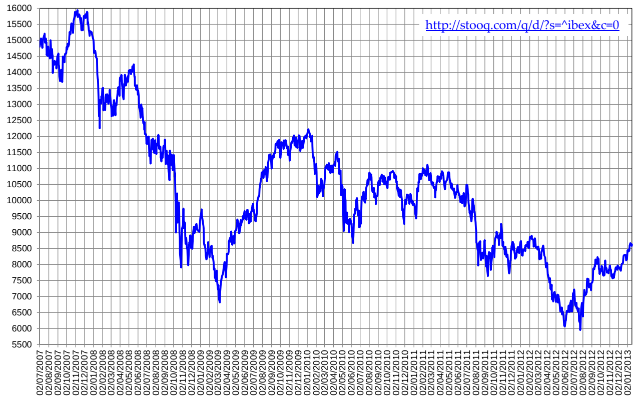
II 31

IBEX and how to misled with graphs /1



II 32

IBEX and how to misled with graphs /2



Trade-off between properties

- Financial assets can be viewed as money imitators. But as they cannot have maximum liquidity, they must offer something in return to be attractive.
- Liquidity & profitability. If two assets differ only in liquidity and profitability, the more liquid must be the less profitable and vice versa (money vs bonds).
- Risk & profitability. If two assets differ only in risk and profitability, the riskier should be the more profitable and vice versa (shares vs deposits).

II 33

Inverse relationships

- Having more of the favourable properties is balanced by having more of the unfavourable ones.
- More profitability will be accompanied by less attractive qualities: more risk and/or less liquidity.
- More liquidity will be accompanied by less attractive qualities: more risk and/or less profitability.
- More risk will be accompanied by more attractive qualities: more profitability and/or more liquidity.

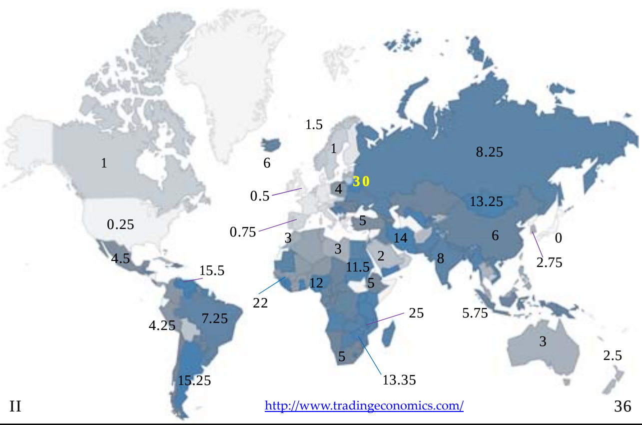
II 34

8. Why are interest rates so important?

- The rate of return associated with a financial asset is the nominal interest rate of the asset.
- An economy has nearly as many interest rates as financial assets. Fortunately, all the them move in parallel, so it is reasonable to adopt the fiction that there is a unique interest rate *i* in the economy.
- That unique rate could be taken to be the interest rate of a loan, which is itself a reference interest rate. From now on, *i* will represent the average interest rate charge for a typical loan.

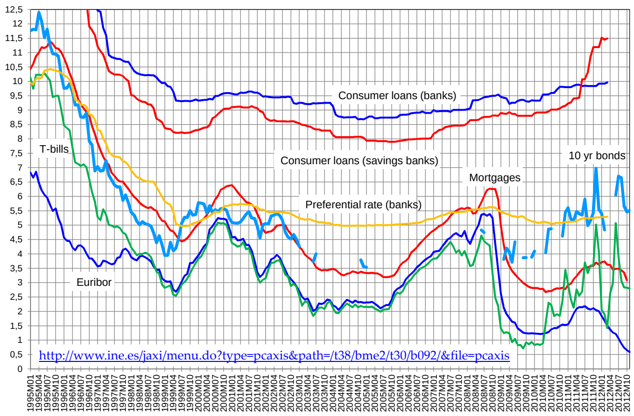
II 35

Interest rates around the world, Jan 2013

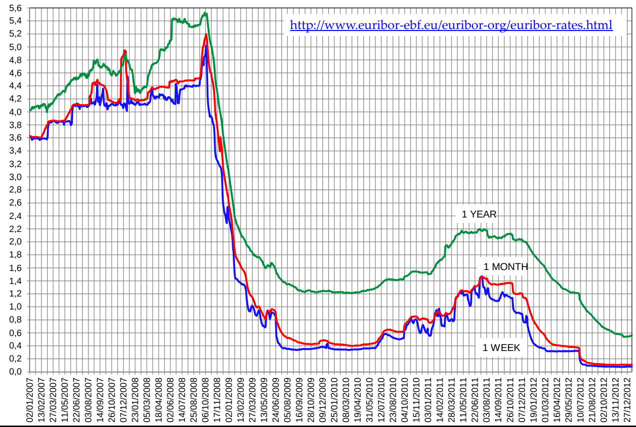


II http://www.tradingeconomics.com/ 36

Interest rates, Spain (Jan 95 – Nov 11)



Euribor (2 Jan 2007- 15 Jan 2013)



Meaning of the interest rate /1

- Defined as the rate of return of a loan (of currency), having an interest rate of i means that a moneylender receives at maturity $1 + i$ for every unit lent. So 1 (in t) becomes $1 + i$ (in $t + 1$).
- For the moneylender, i measures the profit of lending 1 unit of currency. For the borrower, i measures the cost of receiving a loan of 1.
- For the moneylender, i is the reward of saving: by giving up 1 today, (s)he gets $1 + i$ tomorrow. For the borrower, i is the cost of bringing currency from the future: $1 + i$ units from tomorrow can be transformed into 1 unit today.

Meaning of the interest rate /2

- On the one hand, i represents the profit of sending money to the future: the reward for saving.
- On the other, i also represents the cost of bringing money from the future: the cost of a loan.
- It can also be interpreted as a measure of patience: the higher i, the more a borrower is willing to pay for having 1 unit of currency today instead of tomorrow, so the less patient the borrower is.
- A positive i expresses a preference for the present: better to have money today than tomorrow.

The discount factor

- The interest rate transforms today's money into tomorrow's money: 1 today is $(1 + i)$ tomorrow.
- The discount factor does the opposite: it transforms tomorrow's money into today's money. It determines present values out of future values as follows.

t		$t+1$
1	$\longrightarrow$	$1+i$
β	$\longleftarrow$	1

- The discount factor transforms 1 into β. This β is the value that, with interest rate i, becomes 1.

- By the rule of three, $\beta = \dfrac{1 \cdot 1}{1+i} = \dfrac{1}{1+i}$ is the discount factor (it depends on i).

Interest rate and asset prices

- The price of an asset and the price of money (= the nominal interest rate) move in opposite directions.
- Illustration. A T-bill has face value V and price P. Let i be defined for a loan with the same maturity as the T-bill. If you have P €, you have two options.

- Option 1: lend P. At maturity, you get $(1 + i)\cdot P$.
- Option 2: buy the T-bill. At maturity, you get V.

- If the results must be equal, then $(1 + i)\cdot P = V$, so

$$P = \frac{V}{1+i}$$: the larger i, the smaller P.

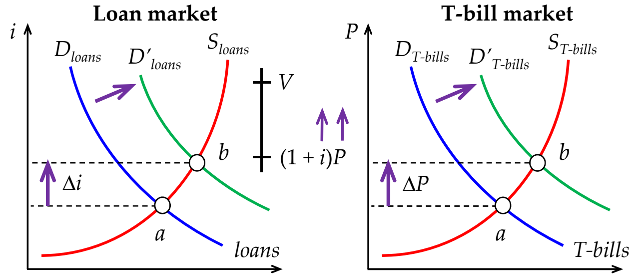
Arbitrage in action /1

- Suppose $V > (1 + i)\cdot P$. An arbitrageur can then obtain sure profits (even having no money at all).
- First, P € are borrowed, so $(1 + i)\cdot P$ must be repaid the next period. A T-bill is purchased with the P €.
- At maturity, the T-bill pays V. As $V > (1 + i)\cdot P$, the arbitrageur repays the loan and pockets a profit of $V - (1 + i)\cdot P$. If $V = 1000$, $P = 800$, and $i = 10\%$, each T-bill financed by a loan generates a profit of 120.
- If this is done by many arbitrageurs, both i and P tend to rise, so $V - (1 + i)\cdot P$ diminishes.

II 43

Arbitrage in action /2

- If $V > (1 + i)P$, € are borrowed in the loan market. D_{loans} shifts to the right and i rises. T-bills are bought with the borrowed €. This shifts $D_{T\text{-}bills}$ to the right and P goes up. Thus, $P(1 + i)$ approaches V.



Prices of assets as present values

- The future value of the T-bill is V. With interest rate i, the present discounted value of V is

$$\frac{1}{1+i}V, \quad \text{where} \quad \frac{1}{1+i} \text{ is the discount factor.}$$

- Therefore, the condition

$$P = \frac{V}{1+i}$$

states that the price of a T-bill coincides with the present discounted value of its face (future) value.

II 45

Equalization of rates of return

- It is reasonable to expect the equalization of the interest rates of all financial assets, for otherwise the assets with smaller rate would have no demand.
- The interest rate i_B implicit in the T-bill is $i_B = \dfrac{V-P}{P}$ and i represents the interest rate of a loan.
- Accordingly, the equalization $i = i_B$ of rate leads to

$$i = i_B = \frac{V-P}{P} = \frac{V}{P} - 1, \quad \text{so } 1 + i = \frac{V}{P}.$$

- Solving for P yields the condition $P = \dfrac{V}{1+i}$.

II 46

9. How does an economy create money?

- The real side of an economy comprises all the activities related to the production, exchange, and consumption of goods. Real GDP, the inflation rate, the unemployment rate, and the accounting identities summarize the outcomes of the real side.
- The financial side of an economy comprises all the activities related to the issuing, purchasing, and reselling of financial assets. The interest rate is one of the main financial prices. The money stock is one the main financial quantities and it is created by the interaction between the real and the financial side.

II 47

Relationship between M0 and M1

- Define the cash reserve ratio $r = R/D$ to be the amount of reserves banks must hold per euro of deposit. It is the percent of deposits banks cannot lend.
- Define the liquidity ratio $l = E/D$ to be the amount of currency that people hold per euro of deposits.
- The money multiplier is $mm = \dfrac{1+l}{r+l}$.
- It then follows that $\text{M1} = mm\cdot\text{M0}$, so $mm = \text{M1}/\text{M0}$. Hence, if mm remains constant, $\Delta\text{M1} = mm\cdot\Delta\text{M0}$.

II 48

The money multiplier

- Calling M1 the money stock, the money multiplier *mm* indicates how many units of money stock is generated by one unit of monetary base.
- In fact, M1 = E + D and l = E/D imply M1 = lD + D = D(1 + l). In addition, M0 = E + R, l = E/D, and r = R/D imply M0 = lD + rD = D(r + l). Therefore,

$$\frac{\mathrm{M1}}{\mathrm{M0}} = \frac{\mathrm{D}(1+l)}{\mathrm{D}(r+l)} = \frac{1+l}{r+l} = mm.$$

- In sum, M1 (the money stock) is a fixed multiple (*mm*) of M0 (the monetary base).

II 49

Money creation process /1

- Suppose M0 is increased by 600 million €. For instance, the central bank buys financial assets from the banks and pays by increasing in 600 million the reserves of banks on the central bank.
- Since the deposits *D* on banks have not changed, banks have an excess of reserves equal to 600. They can then lend the 600 million to consumers and firms. Let consumers and firms be always willing to borrow any amount offered by banks.
- The people that borrows the 600 million will spend them buying goods or financial assets.

II 50

Money creation process /2

- The sellers of the goods or the financial assets will receive de 600 million. Suppose l = 1/5 = 0.2. This means that people hold in cash 0.2 cents for each euro deposited on banks.
- People must then allocate the 600 million in cash and deposits to make the increase in cash ΔE divided by the increase of deposits ΔD equal 0.2. The equations providing the solution are
  - $\Delta E + \Delta D = 600$
  - $\Delta E / \Delta D = 1/5$ or, equivalently, $\Delta D = 5{\cdot}\Delta E$.

As a result, $\Delta D = 500$ and $\Delta E = 100$.

II 51

Money creation process /3

- This means that people deposit 500 million on banks and hold 100 million in cash. Suppose r = 0.1. Hence, banks only need to keep as reserves the 10% of new deposits and can lend the rest. The following table summarizes the process so far.

round	ΔM0	Δ*D*	Δ*E*	Δ*R*	Δ *loans* = Δ*D* – Δ*R*	ΔM1 = Δ*D* + Δ*E*
1	600			600	~~600~~	
2		500	100	50	450	600

- Now the process recommences: people borrow and spend 450, and those receiving the 450 keep a part in cash (75) and deposit the rest (375) on banks.

II 52

Money creation process /4

- The following table represents the process.

round	ΔM0	Δ*D*	Δ*E*	Δ*R*	Δ *loans* = Δ*D* – Δ*R*	ΔM1 = Δ*D* + Δ*E*
1	600			~~600~~	600	
2		500	100	50	450	600
3		375	75	37.5	337.5	450
4		281.25	56.25	28.125	253.125	337.5
5		210.9...	42.1...	210.9...	189.84...	253.125
...		...	...	...	...	...
TOTAL	600	2,000	400	200	1,800	2,400

- Deposits grow continuously: 500 + 375 + 281.25 + 210.9 + … In the limit, the sum converges to 2,000.

II 53

Money creation process /5

- M0 was initially increased by 600. What fraction is finally held in cash? The sum 100 + 75 + 56.25 + 42.18 + …, which converges to 400.
- Since M0 = E + R, ΔM0 = ΔE + ΔR. That is, 600 = 400 + ΔR. Thus, ΔR = 200. This is also the value to which the sum 50 + 37.5 + 28.125 + 21.09 + … converges (the 600 at round 1 should not be counted because banks lend this amount: they represented voluntary, not legal reserves).
- M1 = E + D yields ΔM1 = ΔE + ΔD. As ΔE = 400 and ΔD = 2,000, ΔM1 = 2,400: an increase of 600 in M0 has multiplied itself into an increase of 2,400 in M1.

II 54

Money creation process /6

- This suggests that the money multiplier *mm* must be 4: ΔM0 = 600 generates ΔM0 = 1 = 2,400. In fact, $mm = (1 + l)/(r + l) = (1 + 0.2)/(0.1 + 0.2) = 12/3 = 4$.
- *mm* captures the total effect on the cash held by the people and the deposits generated by the process

  … ⇒ ↑ deposits ⇒ ↑ loans ⇒ ↑ expenditures ⇒
  ⇒ ↑ revenues ⇒ ↑ deposits ⇒ ↑ loans ⇒ …
- This sequence illustrates the <u>interaction between the financial side</u> (deposits and loans) <u>and the real side</u> (purchases of goods).

II 55

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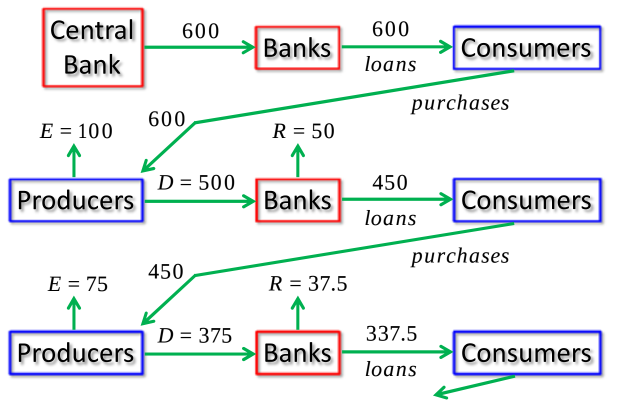
Summary of the money creation process



II 57

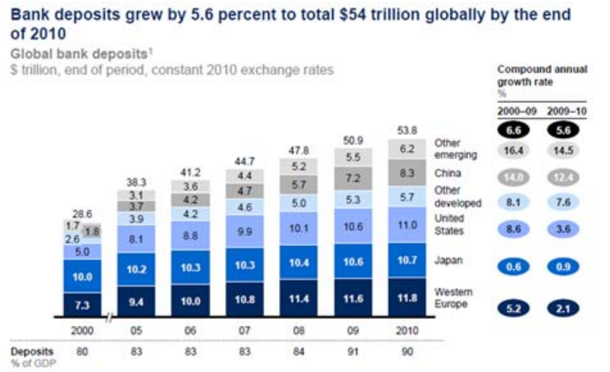
Loans and deposits (eurozone)

	Total	Consumer credit	Loans for house purchase	Other loans
2010	5,158.6	638.5	3,701.1	819.0
2011	5,233.2	626.3	3,778.3	828.6
2012 Q2	5,248.8	614.0	3,809.0	825.7
Q3	5,240.4	603.2	3,812.7	824.5
2012 Aug.	5,243.8	606.8	3,810.3	826.7
Sep.	5,240.4	603.2	3,812.7	824.5
Oct.	5,243.1	601.6	3,814.9	826.7
Nov.	5,246.8	598.6	3,821.3	826.8

http://www.ecb.int/pub/pdf/mobu/mb201301en.pdf

II 58

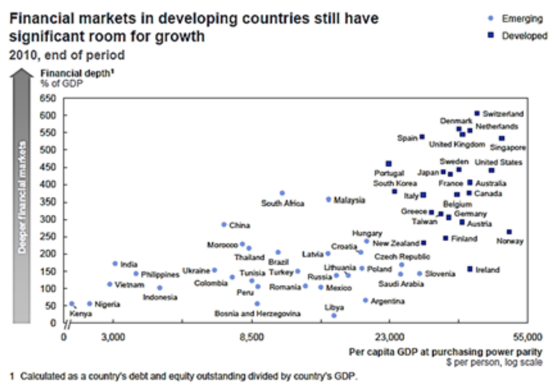
Global bank deposits



http://www.mckinsey.com/insights/mgi/research/financial_markets/mapping_global_capital_markets_2011

II 59

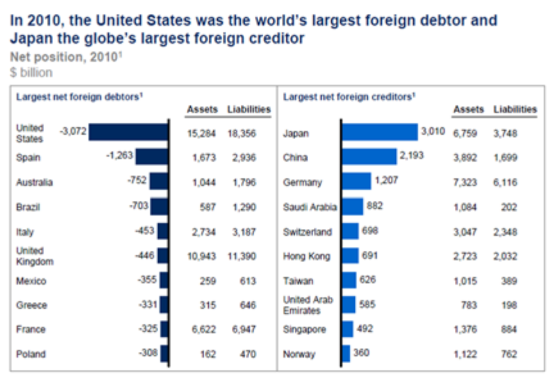
Financial depth



http://www.mckinsey.com/insights/mgi/research/financial_markets/mapping_global_capital_markets_2011

II 60

Debtors and creditors



http://www.mckinsey.com/insights/mgi/research/financial_markets/mapping_global_capital_markets_2011

Fragility of the financial sector /1

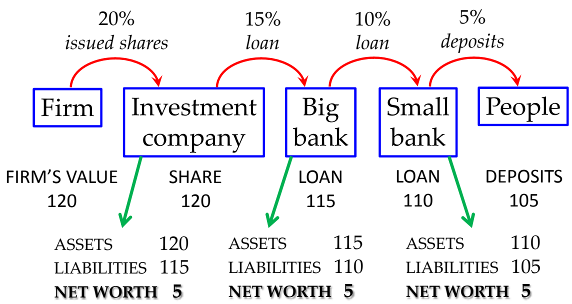
- The next example illustrates the fragility of the financial sector and its power to magnify (in either direction) the outcomes the real sector generates.
- There is a firm worth 120 (million €) that plans to carry out an investment project to enhance its productive capacity. To raise the necessary funds, shares for the 100% value of the firm are issued.
- To attract investors, the price 100 of the shares is set below the value 120 of the firm. An investment company buys all the shares.

Fragility of the financial sector /2

- The investors obtain a 20% rate of return: they pay 100 for something whose actual value is 120. Yet, investors run short of cash and ask a big bank for a loan. The bank grants a loan of 100 at a 15%.
- But the bank is also short of liquidity and obtains from a small bank a loan of 100 at a 10%.
- The small bank's vault is empty. The bank offers prefential clients a 5% reward for new deposits. The bank succeeds and collects 100, which are lent to the big bank, which are lent to investors, which are paid to the firm in return for the shares.

Fragility of the financial sector /3

- The sketch summarizes all the transactions made and the net worth effect on investors and banks.



Fragility of the financial sector /4

- Everybody gets a profit in the process: the firm funds the project, and investors, banks, and depositors earn 5 each. Thanks to the financial sector, the firm's expansion generates a profit for investors, banks, and depositors.
- The example also shows the leverage effect of the financial sector. There are assets in the economy worth 430: shares, 100; loans from the big bank, 115; loans from the small bank, 110; and deposits by clients, 105. But those assets are all backed by the firm's value, which is merely 120.

Fragility of the financial sector /5

- Therefore, financial wealth worth 430 is lifted by real wealth (wealth created by the real sector, that is, goods) worth 120.
- This is the positiva magnifying effect of the financial: real assets worth 120 sustain financial assets worth 430.
- The magnifying effect also works in the reverse. For instance, imagine that the investment project fails because the customers that would have bought the goods produced thanks to the project are those depositing money on the small bank.

Fragility of the financial sector /6

- Given that depositors put their money on the small bank, they cannot buy the new goods the firm produces using the expanded productive capacity. Let us assume that, as a result, the firm goes bankrupt and closes down.
- Shares become worthless. Investors cannot settle their debt with the big bank, which cannot repay the loan to the small bank, which cannot give back the money to depositors. In sum: everybody loses.
- Where have the depositors' funds gone? The firm made use of them to finance an unsuccessful project.