Monetary Integration and Regulation of Financial Markets

&

EU Eastern Enlargement

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Required Reading

  http://www.federalreserve.gov/newsevents/speech/bernanke20130710a.htm

- Paul de Grauwe (2012), Economics of Monetary Union, Oxford

- European Commission, Banking union: restoring financial stability in the Eurozone
  European Commission - MEMO/14/294 15/04/2014

- New papers 2017 from ECB/EU Commission on Banking Union

- ECB, Monetary Policy
Financial Markets, Banks, Insurance Companies

- **Banks important** institutions
  - Financing investment and innovations
  - Prudential supervision/regulations
  - Too big, to fail problems
  - Information asymmetry
  - Adverse selection of risk (e.g. insurance market)
  - Moral hazard (opportunistic behavior – contract...)

- **Prudential supervision**: banks: equity ratio >8%, regulations mainly for bank’s asset quality (bank’s investment), lack of rules for liability =liquidity

Minimum Equity Capital Ratio and New Post-2008 Requirements

1) **Equity capital should absorb losses;** if equity capital ratio is high survival of bank is easier (Basel I, Basel II, more core capital required under Basel III: until 2019)

2) **Post-2008: e.g Loan to Value-Ratio** as one key element; if LTV ratio (for real estate investment) raised, this will raise volume of loans = higher construction output = GDP rises = reaction of monetary policy (? Taylor Rule: $i^{CB} = r + h(\pi - \pi^\#_{target}) + h'(Y - Y^\#)$)

Long Term Interest Rates in Germany (Eurozone), US, UK,

- Long term government interest rates are close to zero in mid 2016
  - gov. interest rate is basis of the interest pyramid (assuming zero risk for government bonds)
  - Company bonds with AAA rating slightly above government bonds (in both the US, Germany, and the UK) = risk premium for company bonds
- The inflation rate in the US, Eurozone and the UK in early 2016 close to zero; \( \text{real interest rate} \ r = i - \text{inflation rate} \)
Inflation rate in Eurozone rising due to cyclical upswing (Germany close to 2% in 2018)

Inflation rate in UK close to 3% in UK due to massive devaluation of the Pound

Inflation in the US moderate, but FED has started in 2017 with phasing out QE and raising Central Bank interest rate

China has also modest inflation rate
Annual Inflation Rate US, Eurozone, UK, China, 2000-2016
What real interest rate $r=0$ implies?

- Profit maximization brings **overinvestment** of firms (marginal product of capital = $r$)
- Savings $S$ not really attractive in the bond market, but **yield is positive in stock markets in most OECD countries**; firms (retained earnings) and individuals save because saving is part of accumulation of wealth.
- Central banks have set central bank interest rates at lower zero bound in the course of Banking Crisis and for fear of deflation; banks would like to impose negative interest rate, **but**
Stock Market Development US, UK, Eurozone, Germany, 2000-2017 (Q; Index)

- Dax
- EuroStoxx50
- FTSE 100
- S&P 500
Percent Change in Stock Market Indices (quarterly growth rate; $Q_t$ rel. to previous year: $Q_{t-1}$), selected countries
Growth Rate of Money Supply for M1 (Selected Countries), 2000-2016, annual growth rates

Source: IMF, IFS
Growth Rate of Money Supply M3 (Broad Money), Selected Countries

Source: IMF, IFS
Hodrick-Prescott Filter: Trend Output Growth USA

Hodrick-Prescott Filter (lambda=1600)

real GDP, quarterly, 1947Q1-2017Q1
Trend Output Growth

Eurozone

Hodrick-Prescott Filter (lambda=1600)

real GDP, quarterly, 1995Q1-2017Q1
Hodrick Prescott Filter: Trend Output Growth UK

Hodrick-Prescott Filter (lambda=1600)

real GDP, quarterly, 1975Q1-2017Q2

Risk Premium US (Goodhardt paper, artificially low 2003-06); Risk premium = corporate rate – government bond interest rate (rising in bus. cycle)

Nominal Interest Rate at the Lower Zero Bound

- **Nominal interest rate very low** in the five years after 2008 in US, Eurozone, UK as Central Banks have adopted **Quantitative Easing** in USA and UK after 2008; in Eurozone after 2015 – **CB buys government bonds and other assets**; gov. bonds not more than 1/3 in Eurozone countries (relevant level of Germany was close to 25% of gov. bonds in mid-2017)

- **QE policy reduces** at first long run interest rate

- Deposit rate of banks at ECB is **negative**
Normal Yield Ratio and Compressed Yield Ratio (Problem for Banks’ Profitability) – get from Mrs. Yu
Banking Criss, Central Banks, QE

- **FED, Bank of England and ECB** have strongly reduced the nominal – and real – **interest rate** after banking crisis 2008/09: Quantitative Easing = central bank buys government bonds, corporate bonds, other assets

- **Strong incentive to invest more in stocks** = overvaluation of stocks (e.g. buy back programmes of firms in the USA)
Long Run Nominal Interest Rate
US, UK, Eurozone, 2000Q1-2017Q1 (Quarterly)

Source: OECD Data
Exchange Rate of British Pound (vis-à-vis €), 2000-17
Better Banking Regulation after Banking Crisis

- Bank recapitalization in US, UK, Eurozone after 2008/09; stricter regulation and for international banks **BASEL III rules** (2019): higher CORE EQUITY CAPITAL requirements

- Problem with better Regulation after 2016: US under Trump (2017) heading for deregulation already, UK – under BREXIT pressure – will follow: = next Transatlantic Banking Crisis in the pipeline

- Joint EU27/UK regulation after 2019(BREXIT)?
What is the present value of obtaining 1 € interest payment every year (in economy with zero inflation?)

- **Present value** = \( \frac{1}{1+r} + \frac{1}{(1+r)^2} \ldots \); this convergent series is equal to \( \frac{1}{r} \); *hence the present value of discounted future profits of firms is rather high with low interest rate*

- Very low interest rate (i and r) is a problem for banks, households; particularly retired households.
  - **An advantage for firms** (corporate sector) and **government** (net debtor position)
  - **An advantage for those** who want to buy a house for credit

Bonds of AAA Countries (and China) Are Good Substitutes

US

UK

World interest rate (interdependency)

Eurozone (Germany, France, Netherlands, Austria)

China and Japan

Eurozone Interest Rate (i)

- Influenced by
  - ECB monetary policy
  - US interest rate developments
  - Exchange rate expectations
  - Output gap/business cycle dynamics (actual inflation and infl. expectation)
  - Inflation expectation
After BREXIT Referendum June 23, 2016

1a) Bank of England has reduced interest in July 2016 interest rate to 0.25%

1b) Eurozone: reinforces Quantitative Easing of ECB = low r in € area

2) Stock market value is rising (above normal values)

More (private) investment & consumption

World Economy Perspective

- a) Real economy in country I and II
- b) Monetary economy in country I and II ([and links a)/ b])

Financial Markets

- Financial market dynamics in country I and II
- Euro Monetary Integration
- Special aspects of financial market development in South (developing countries, NICs)

Selected Issues

- Domestic debt and foreign debt (country I and country II)
- Asymmetries in the world (reserve currency, big vs. small)
- Controlling the dynamics of economic development
- Institutional learning; eg via benchmarking or cooperation
Reserve currency

- Money of US, UK, CH, € area is held by foreign central banks = international reserve asset

- Dominant market share: US 60%, € ca. 25%; challenger is Chinese Yuan; 2016 part of SDR = Special Drawing Rights of the IMF ($, €, Yen, pound; and YUAN)

- Advantage/exorbitant privilege (Eichengreen): low yield US bonds held by foreign central banks; there is difference between yield on investment and bond yield; reserve currency country effectively enjoys free imports of goods
Advantage of Reserve Currency

- This advantage rests on the difference between:
  - Low yield on bonds held as reserve asset
  - High rate of return on investment (global marginal product of capital)
  - US pays 0.5% on bonds held as reserves by central banks abroad, global marginal product of capital is 2.5%. So if 4000 bill. are held as reserves in $, 80 bill. $ is the annual US advantage = 0.5% of US GDP

- Euro area has similar advantage (Welfens, 2014)
Oldest Form of Monetary Integration...

- **Gold Standard**: 1844 – 1914; money creation/stock of money based on gold reserves: British pound has fixed gold parity and money creation based on gold \( (M = vGOLD; v>0) \)

- **Strong interest convergence in gold standard** countries; specie flow mechanism: country with current account deficit \( (J>q*X) \) has to settle balance in gold = stock of money \( M \) declines = aggregate demand declines; since \( X_{net} = Y - (C+I+G) \) current account improves in small open economy, in big country \( P \) falls = \( dX > 0 \)
International Reserves...

- Central banks hold/accumulates international reserves (including GOLD and SDR)
  - for international payments of imports of goods and services (2 months of imports is standard; precautionary money demand; if there is an earthquake or strike in export industry); big country currency useful in the field of payments for imports)
  - for wealth accumulation; reserve currency should be from low inflation country with stable banking system; convertibility in real terms matters
### Three time horizons in analysis

($\pi'$ is expected inflation)

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Monetary Integration

- Monetary integration through **fixed exchange rate system** (Bretton Woods 1944-1971/73)
  - Facilitates trade: $P = eP^*$; Law of 1 price; and
  - capital flows; interest rate convergence $i = i^*$ (if $\pi = \pi^*$)
- **Economic and monetary union** for € countries since 1999 (11); ECB = common central bank
Financial Markets: Key Perspectives

- **Banks**: big banks vs. small regional banks
- **Too big to fail** problem; EU reforms after banking crisis – living will requirement
- **Asymmetric information problems** in financial markets: investor/innovator vs. bank
- **Moral hazard problems** (insurance...; „unfair opportunistic behaviour“)
- **Free rider problems** – financial stability is a public good, potentially an international pub. Good; euro area problem (?) or global problem
Moral Hazard Problems in Insurance Markets (CDS = Credit Default Swap)

- Banks could buy insurance against default of debtors (companies, governments): CDS etc.

- **Moral hazard refers** to a problem that once economic agents have an insurance policy, the behavior will change – more risk-oriented = ex post the price of insuring risk is too low (see behavior of banks in the US and the UK)

- **AIG, the largest US insurance company** had to be saved by gov. 2 days after bankruptcy of Lehman
Too Big to Fail-Problem

If bank is rather big (relative to Y) the managers of the bank and investors (e.g. in bank bonds) will anticipate that big bank cannot go bankrupt/will be saved by taxpayer in case of imminent bank run etc. Several effects

- **Lower cost of capital** of big banks than smaller banks = bias in competition (bank services)
- Managers will engage in more **risky projects** than otherwise; could have output effect (+ in the short run, - in the long run: case of bank failures...)

Prudential Supervision

- Prud. superv. used to be mainly national task;
- Eurozone in Nov. 2014: Start of EU Banking Union; national supervision is a task with respect to rather small banks; the top 125 banks in the Eurozone are under the supervision of the ECB that is facing a potential conflict of interest – ECB might want to restrict liquidity in inflation period which in turn would undermine stability of banks. No separate organization created in EU for political reason

Bank Supervision

(1) Microprudential supervision = supervision of individual banks

- Since 1974 – failure of Herstatt Bank (Cologne) – new institution within BIS: Basle Committee on Banking Supervision
- 1) Minimum Equity Requirement, 2) Microprudential supervision of individual bank, 3) market discipline strengthened through enhanced transparency!

Banking Union in Eurozone refers to (1)

In the US after 2009: FED with greater role; UK: Bank of England also (UK/US fraud problems)
(2) Macroprudential supervision = looking at the greater macro picture in the banking system; in the Eurozone ECB in charge of this = recognizing systemic risks (avoiding systemic crises); this concerns interaction of big banks, hedge funds, government actions et cetera;

- European Systemic Risk Board, ESRB (in the ECB: =ECB, national regulators, national central banks, EU)

- IMF active in (2) in the sense that Financial Sector Assessment Program (FSAP) introduced after the Asian Crisis of 1997/98 in which bank instability in some countries has played a major role

- FSAP failure Switzerland (UBS no problem); in Ireland (FSAP 2006= no problem in banking = nonsense)
Regulation of Financial Markets?

EU Banking Union (€zone partially)

Basel I-III* (BIS)

National prudential supervision

*minimum equity ratio of banks (B. I-II: 8%)
Regulation = sector specific competition rules

Role of Profits/Equity Capital

- **Banks**: Equity capital needed to absorb economic shocks.

- In US Banking Crisis 2008: **government has required mandatory recapitalization of banks**.

- **If there is a banking crisis, bondholders are exposed**. **Contingent convertible bonds (Cocos) mean bail in (Switzerland, Eurozone); but no requirement that banks cannot hold Cocos**.

New Regulatory Approach after the Banking Crisis in US and EU

- **Basel III**: until 2019 higher core equity capital; needed to absorb potentially high losses

- **ECB starts** with supervision of big banks; in the Eurozone banks are more important for investment financing – relative to capital markets – than in the US

- **National supervision** of euro countries responsible for smaller bank in euro area countries
Certain Problems Remain

- Many Banks have high share of assets in the form of national governmet bonds that are/were considered as riskless.
- Financial globalization continues to raise serious challenges in the banking sector.
- Fin-techs are digital newcomers in the banking system (e.g. Vodafone in cooperation with special firms, mpesa/Kenia)
Quality of Banking Subdued after Banking Crisis 2007/08

- Confidence crisis of households vis-à-vis big banks in many EU countries continuing

- If confidence crisis should spread in a critical way one get bank run(s)

- In Germany there is still a confidence crisis in 2016 – not as strong as in 2008/09 when banks would no longer lend to each other (as banks lend to each other = cross party risk)
Debate in the EU

- The new Juncker Commission (2014 Nov.) wants to launch a €300 billion investment programme.

- DIW (Berlin) has argued on the basis of the nominal investment GDP ratio that there is a major private sector investment gap in Germany (3% of GDP 2010-2012; similarly for euro area).

- EIIW (Welfens et al. 2014) raise doubts about investment gap in Germany; gap in Italy/Spain.

- Which policy mix for euro area facing deflation and stagnation in 2015? QE policy as in US/UK?
Growth rate of M1

Source: OECD

Growth rate of M3

Source: OECD
Velocity V3: \( \frac{PY}{M3} = V3 \)

Velocity V3 in Euro area

- Year: 1995 to 2013
- Y-axis: Velocity V3
- X-axis: Years 1995 to 2013

Euro Area vs US

- US has **fully integrated financial markets** with one government and one currency and one central bank FED plus FDIC (closed/restructured about 450 banks in 2008-2014)

- EU is Euro area plux UK etc.; euro area faces 1 size fits all monetary policy (ECB); however, in the US this is a similar problem for individual states: looking at **Taylor rule** not much difference: $i = r + v'(\pi - \pi#) + v''(Y - Y#);$ $v' > 0, v'' > 0$; $Y - Y#$ (full capacity output) is
Important to consider is the savings process (A ‘# is real wealth target)

- Aggregate savings functions
  - $S = sY(1-\tau); \ 0<s<1;$ simple savings function
  - $S = s'[A ' # - A'_t]Y(1-\tau); \ 0<s'<1;$
- **Life cycle hypothesis:** taking loans when one is young, net accumulation of wealth prior to retirement age; then running down wealth during retirement age – also bequest motive; ageing of society is not global (Japan advanced in ageing = higher savings rate than US; China is ageing = high savings rate; also cultural trait: man gets married, if).

Savings and the Current Account

(1) \( Y = C + I + G + X' \) (\( X' \) is net exports := CA)
- \( X' = Y - [C(Y-T,\ldots) + I(r) + G] \); here \( C=C(\ldots), I(\ldots) \)

(2) \( Y = C+S+T \); uses side of household income

Plugging (2) into (1) gives:

(1’) \( S + [T-G] - I = X' \); consider \( S=S(\ldots), I=I(\ldots) \)
- \( X' = S(Y-T,\ldots) + [T-G] - I(r) \)
- If private savings + government budget surplus exceeds planned investment, then \( X' > 0 \)
- If savings ratio increases then \( X' \) will improve!
Two Country Perspective (eg, North-South); if CA balanced, then CA* balanced, too

- World Economy with country I, country II
- Country I in medium term perspective
  - Domestic equilibrium (full employment)
  - *External equilibrium (balanced current account)*
- Country II:
  - Domestic equilibrium (full employment)
  - *External equilibrium (balanced current account)*
and long term growth dynamics...
Long Run Growth Perspective

progress rate $a := \frac{d\ln A}{dt}; \ n := \frac{d\ln L}{dt}$

Supply side perspective $Y = K^\beta (AL)^{1-\beta}$ $0<\beta<1$

- $K$ capital stock, $A$ knowledge, $L$ labor; $Y^* = K^*\beta^*(A^*L^*)^{1-\beta^*}$

Growth accounting

- $\ln Y = \beta \ln K + (1-\beta)\ln[AL]$
- $\frac{d\ln Y}{dt} = \beta \frac{d\ln K}{dt} + (1-\beta)[\frac{d\ln A}{dt}+\frac{d\ln L}{dt}]$
- Growth rate output $\frac{d\ln Y}{dt} = \beta \frac{d\ln K}{dt} + (1-\beta)[a+n]$

Accumulation of capital stock has to be financed

- Domestic sources; foreign sources (FDI, Portfolio inflow)
- Progress rate $a = f(a^*); \ international \ spillovers?$
CA and Potential Output

- CA = Ypot – (C(...)+I(...)+G)) where C+I + G is dubbed **domestic absorption**; C could be reduced through higher income tax rate; I through raising interest rate r (Mon. policy).

- **If production potential is rising**: e.g. via foreign direct investment flows that raise K - case of greenfield investment - and bring rise of knowledge A (international technology transfer: M&A or greenfield inv.) the **current account position should improve**

Global imbalances (y is per capita GDP)

US has run large current account deficits over many years (up to 5% of GDP)

¾ of excess savings in world economy – outside the US – went to the USA (1995-2006)

Surprising that US with its high capital intensity (high K/L and y) attracts high net capital inflows

- Could be explained by differences in time preferences in the USA and in the rest of the world
- High progress rate US: Marginal product of capital +
- Quality of financial intermediation outside US weak!
  eg high Chinese savings, US banking intermediates
Capital Flow Liberalization

- Capital flows liberalized in OECD countries and some NICs since the 1970s.
- Foreign direct investment (FDI); rising since the 1980s, No. 1 sector of US was banking (!).
- Pressure on EU banks to match US rate of return on equity in banking sector: Threat of takeover by US banks; around 2000 new Wall Street benchmark for banks 25% rate of return.
- Banks in US and EU chasing for higher yields = facing – and hiding – higher risk.
Problem with International Banking Crisis 2007-09

- **US banking crisis**: bankruptcy of investment bank *Lehman Brothers, Sept. 15, 2008*; started in 2007 as subprime crisis (loans in the real estate market/private housing market; subprime = low quality of borrowers..)

- Banks in UK, Germany, France, Benelux, Irel. also affected = **Transatlantic Banking Crisis**

- 2010-2014: euro crisis (Greece, Ireland, Portugal, Cyprus; Spain and (?) Italy)
Role of the Monetary System; money market equilibrium (linearized equations)

- **Money market** is the mirror of all other markets (reflects payments made)

- Money supply \( M \) (in nominal terms); \( M/P \) (real terms)

- **Money demand in real terms** \( m(Y, i) \) where \( Y \) is output and \( i \) the nominal interest rate (sum of real interest rate \( r \) plus expected inflation rate \( \pi \)); let us specify \( m = hY - h'i \) (where \( h, h' \) parameters >0)

- **Money market equilibrium** condition \( M/P = hY - h'i \)
Money Market Equilibrium Condition (g is growth rate in%)

1) \( \frac{M}{P} = hY - h'i \) \( (h>0, \ h' > \beta) \)

1') Alternative specification: \( \frac{M}{P} = \frac{hY}{h'i} = Y(h''/i) \)

2) Quantity Equation: \( M \cdot V = P \cdot Y \); \( (V = i/h''; \text{ Welfens, 2014}) \)
   - \( \ln M(t) + \ln V(t) = \ln P(t) + \ln Y(t); \text{ differentiate:} \)
   - \( g_M + g_V = g_P + g_Y \) (instead of \( g_P \): \( \pi \) inflation rate)
   - \( g_P = g_M - g_Y \) if velocity \( V \) is constant (\( g_V = 0 \)); so the inflation rate is given by difference of growth rate of nominal money stock \( g_M \) and output growth rate \( g_Y \)
Determining price level $P$; $b$ is positive parameter; $Y^d$ aggregate demand, $V$ velocity, $M$ stock of money, $Y$ output

$$\frac{dP}{dt} = b(Y^d - Y)P; \quad Y^d = \frac{[M/P]}{V(i)}; \quad dV/di > 0;$$

Equilibrium condition $\frac{dP}{dt} = 0$; (almost) equivalent to the quantity equation $M \cdot V(i) = P \cdot Y$

$M \cdot V(i) = P \cdot Y$; for given real interest rate $(i)$ and given output $Y$ we have

$P = M \cdot V(i)/ Y$ or $(i=r+\pi^\prime; \pi^\prime$ denoting expected inflation$)$

Assuming $V$ is constant and growth rate of output $\frac{d\ln Y}{dt}$ given and $\frac{d\ln \pi}{dt} = (\pi^\prime - \pi) + \psi(gY^d - gY)$ we have $\pi^\prime = \pi$ and $\frac{d\ln \pi}{dt} = 0$: $\frac{d\ln P}{dt} = \frac{d\ln M}{dt} - \frac{d\ln Y}{dt}$;

Inflation rate is equal to the difference between the growth rate of the money supply and the output growth rate.
Money and the exchange rate (* for foreign variable)

- The nominal exchange rate (e) is the relative price of two monies; the exchange rate €/$ indicates how many € one has to pay per $.

- **Purchasing power parity (PPP) doctrine** (Gustav Cassel): under free trade and arbitrage, \( P = eP^*; \) \( e^{PPP} = P/P^*; \) fixed exchange rate! or devaluation rate \( d\ln e/\ dt = d\ln P/\ dt - d\ln P^*/\ dt \)

- As \( P = VM/Y; \) \( P^* = V^*M^*/Y^* \) we must have for constant e that \( M/Y = M^*/Y^* \) (if \( V = V^* \)); if home country policy dominates foreign central bank with \( M^* \) must follow.
Fixed Exchange Rate System vs. Flexible Exchange Rates

- Bretton Woods 1944(58)-1973
  - Anchor country is US; US has fixed $ vis-à-vis gold (ended in 1971 under Nixon who closed the gold window as US gold reserves insufficient)
  - Level at which Germany, Fr., It. to fix the parity(?)
- Floating since 1973 in Europe and elsewhere
  - Monetary policy autonomy = (?) lower inflation in world economy
  - Reduced need to hold foreign reserves (or gold)?
Foreign Reserves Rising!? (sample of countries: 1/3 of global reserves)

Source: IMF
Accumulation of Reserves by Non-US Central Banks

- Reserves are obtained through net export of goods and services in the bilateral trade balance with US = resource transfer in favor of US; and Eurozone

- Reserves (held by non-US central bank) in the form of short term US bonds = low interest rates = sometimes even below US inflation rates; high opportunity costs of holding R (US long term interest rate)
Monetary Integration (EU perspective is regional; also global integration through opening up of fin. markets)

- Monetary Integration means
  - ”strong“ fixed exchange rate system (narrowing of band)
  - Currency union absolutely fixed exchange rate
  - Adopting one common money & one central bank

- Monetary Integration puts the focus on
  - Money markets: Money supply, demand for money
  - Credit markets (integration of bonds markets etc.)
  - Foreign Exchange Markets
Fixed Exchange Rate= No independent monetary policy

- Nominal exchange rate $e$; which $e_0$ to chose?
- Real exchange rate: $q^* = eP^*/P$; is international relative price; how many units of the domestic (export) good one has to give in order to obtain one unit of imported goods. A rise of $q^*$ is called a real depreciation

- $q^*$ affects the quantity of exports $X$; $X$ is a positive function of $q^*$, import quantity $J$ is a negative function of $q^*$
Fixed Exchange Rate System: nominal exchange rate e fixed!

- PPP purchasing power parity \((P \text{ price level}, \,* \text{ for foreign variables})\)

- Based on logic of international arbitrage (Gustav Cassel): \(P = eP^*; \ e_{\text{PPP}} = P/P^*\); nominal depreciation if \(\frac{d\ln P}{dt} > \frac{d\ln P^*}{dt}\); monetary policies (!) matter

- Interest rate parity: \(i = i^* + a^E (a^E \text{ expected devaluation rate}; \text{ since nominal interest rate } i = \text{real interest rate} + \text{expected inflation rate } \pi^E\)

- Historical background is Bretton-Woods System 1958 (convertibility in Western Europe) to 1971/73
Fixed Exchange Rate System

- 1971 US president Nixon eliminates gold convertibility; 1973: full flexibility of exchange rates in Western Europe

- **1979: European Monetary System** (established on the basis of a Treaty among central banks of EU countries); system anchored on the ECU (basket of EU currencies), effectively anchor country was Germany= special role of DM and Deutsche Bundesbank, respectively
Demand for Money (M is nominal stock of money, i interest rate, Y real income)

- Real demand $\frac{M^d}{P} = m^d (Y, i)$; parameters $h, h' > 0$
  - Simple specification $m^d = hY - h' i$, $\frac{dm}{di} = -h'$
  - (Cagan-type demand): $m^d = Y^\theta e^{-\lambda i}$ (e Euler number, $\lambda$ semi-elasticity of the real demand for money; $\theta$ is income elasticity of the demand for money).
- Money market equilibrium $m = Y^\theta e^{-\lambda i}$
  Taking logarithms: $\ln m = \theta \ln Y - \lambda i$;
  note that $i =$ real interest rate $r + \text{expected inflation rate } \pi'$ (in the long run actual inflation rate $\pi = \pi'$)
- Short term bond rate: $i = (\theta \ln Y - \ln m)/\lambda$
Money Market Equilibrium; and further reflections ($\mu := \frac{d\ln M}{dt}$; growth rate of $M$)

- Money market equilibrium $\ln M - \ln P = \ln m^d$
  - $\frac{d\ln P}{dt} = \frac{d\ln M}{dt} - \theta \frac{d\ln Y}{dt} + \lambda \frac{d\ln i}{dt}$; inflation rate rise with growth rate of money supply and rise of nominal interest rate; falls with output growth

- If profit maximization and production function is Cobb-Douglas we additionally have (Welfens, 2008)
  - $\beta \frac{Y}{K} = r$; if additionally inflation rate is constant we have
  - $\frac{d\ln P}{dt} = \frac{d\ln M}{dt} - \theta \frac{d\ln Y}{dt} + \lambda [\frac{d\ln Y}{dt} - \frac{d\ln K}{dt}]$
  - $\frac{d\ln P}{dt} = \mu - (\theta - \lambda) \frac{d\ln Y}{dt} - \lambda \frac{d\ln K}{dt}$; hence inflation rate is proportionate to $\mu$, might fall if $\frac{d\ln Y}{dt} > 0$, falls if $\frac{d\ln K}{dt} > 0$
Monetary Integration: Euro Zone (starting on 1.1.1999)

- Economically creation of Euro zone
  - Implies downward interest rate convergence
  - „Convergence play“ implies that countries with high interest rates will record rising (real) price of bonds = transitory increase in consumption
  - **Downward real interest rate convergence** brings fall of government interest payments relative to GDP; interest rate payments of firms fall = higher profits = stock prices up (in real terms) = higher investment.
Nominal interest rate: at given maturity (note: i rises with maturity)

- Country risk premium (political stability!)
- Risk premium of firms
- Real interest rate plus expected inflation rate
Simple Analysis of Benefits of Monetary Union: Uniform Interest Rate in All Countries of the Union (fall of i in country which used to have high nominal interest rate and inflation rate, respectively – say Italy)

Fall of nominal interest rate brings Italian benefits/welfare gain; \((di)m^*_0 + 0.5dm^*di\); relative to GDP gain is given by \(di(m^*/Y^*+0.5dm^*/Y^*)= 0.03(1+0.5 \times 6)=12\%

Real demand for money will rise due to fall of i; demand for K will rise (risk averse portfolio investors= dI>0 K up, so Y(K,L) Medium term outward shift of \(m^d\)…

\[
m^d(Y^*_0, i^*_0) \quad m^d(Y_0, i_0)
\]

\[
i^*_0 \quad m^*_0 \quad 0 \quad m_0 \quad m
\]

\[
\begin{align*}
m^* & \quad m^*_1 \quad m^*_0 \quad 0 \quad m_0 \quad m
\end{align*}
\]
Quantify Benefit \((m := \frac{M}{P})\) from Monetary Integration for Italy

1) \(m_0 \times (i^{\text{Italy}} - i^{\text{Ger}}) + 0.5(i^{\text{Italy}} - i^{\text{Ger}}) dm/dt\)

Assume that equilibrium condition \(m = \frac{Y^\theta}{i^{\theta'}}\); hence \(d\ln m/dt = \theta d\ln Y/dt - \theta' d\ln i/dt\); as \(d\ln X/dt = (dX/dt)/X\) we can write alternatively simply \(dm/dt = \theta m(dY/dt)/Y - \theta' m(di/dt)/i\); easy for case of \(\theta = 1\) and \(\theta' = 0.01\); \(di = -0.03\) and \(m = Y = 2000\) bill.; \(dY = 100\) bill. \(\) €; \(i^{\text{Ital}} = 0.06\) t0

- 60 bill.€ + 0.5 \times 0.03 \times (€100 bill.) + 0.03/0.06 \times 2\) bill. = 60 bill. + 1.5 bill. + 1 bill. = € 62.5 bill. = 1000 € per capita; & saving of transactions cost plus reserve position

Interest rate $i$ and risk premium

Make distinction between

- Government bond interest rate $i$ (long term) which is relatively low – assuming AAA rating (gov. bond)

- Corporate bond yield $i' - i$ normally is positive = risk premium since corporate bonds is a mixture of yields of bonds with different ratings (AAA, B, C).

The difference $i' - i$ is the risk premium which in turn reflects differences in ratings = indicator for probability of default of debtor (not paying interest)

- Yield on equity $z = i + \Omega \sigma$ ($\Omega$ price of risk; $\sigma$ is volatility (risk proxy), approximated by variance of stock price index)
Monetary Union in EU: Requirements...

Convergence criteria:

- **Inflation rate** not more than 1.5 points about three lowest inflation rate countries: PPP logic

- **Interest rate** not more than 2 points about three lowest inflation rate countries \((i = r + \pi^E)\); if \(r = r^*\) (due to EU single market/capital flows) small gap between \(i\) and \(i^*\) within EU countries signals that expected inflation rates in both countries similar

- **Debt-GDP ratio**: maximum of 60 percent

- **Deficit-GDP ratio**: maximum of 3 percent, balanced budget in medium term required
Stability and Growth Paxt

- 3% deficit limit holds AFTER joining €
- 60% debt-GDP limit also holds
- Stability of Eurozone; no bail-out clause credible (?)
Mundell, McKinnon, Kenen criteria for monetary union

Optimum currency area criteria

- Get those countries on board that have high labor mobility; devaluation instrument/exchange rate not crucial since mobility of workers absorbs adverse shocks (Mundell)

- If degree of openness (share of tradables in output) is high, devaluation will not help: workers will call for offsetting wage increase so that price competitiveness cannot be improved (McKinnon)

- Countries with broad diversity in production/exports: = shocks will cancel out each other is likely; (Kenen)
Benefits from Monetary Integration: Euro Area: €, ECB

- Reducing nominal interest rate (some countries)
- Larger financial markets = more liquid
- Larger markets = economies of scale!
- Reserve Currency Status = Economic Gains
One Size Fits All Problem in Euro Area?

- The individual euro countries might wish national optimal monetary policy: Euro area worse than US (with 50 states)
  - Look at national/state Taylor rule for monetary policy: $i = r + v'(\pi - \pi#) + v''(g_Y - g_Y#)$; $r$ is normal real interest rate, $v'$ and $v''$ are positive parameters; $\pi#$ target ratio, $g_Y#$ is growth target ratio. Finding is that USA is similar to euroarea – euro problem not worse than in US for California versus Wyoming vs. ....
  - Monetary policy no longer national policy instrument
New Policy Option is Fiscal Devaluation

- Reduce the contribution rate (of workers or of employers) to social security = reducing costs = stimulating exports of goods and services
- Increase at the same time VAT rate: = reducing the domestic demand = will raise net exports of goods and services
- Overall budget position (government broadly defined, that is incl. Social security) neutral...
Some Analytical Reflections

- **Domar (1944) rule says**
  - debt-GDP ratio in the long run = deficit-GDP ratio divided by output growth rate

- Particular problems for countries with high foreign indebtedness: comes from cumulated high CA deficits; investors volatile!

- **Important is primary deficit** = deficit before paying interest
New Fiscal Pact in 2013

- Maximum structural deficit (filtering out business cycle effects) is 0.5%
- Hardly credible as long as not in constitutions of EU member states
- Who could force France or X to respect the 3% deficit-GDP limit?
Portfolio balance approach

Normally we have

- \( z > i' > i \) (if inflation is zero \( i = r \))
- Investors want asset allocation depending on yield of respective asset and (low) volatility of yield
- Combining assets \( V \) and \( V' \) whose yields are negatively correlated with each other one can achieve a reduced variance (risk); thus take a look at countries’ correlation of business cycles
- Interest rate parity: \( i = i^* + a^E \) (\( a^E \) is expected devaluation rate, \( i^* \) foreign variable); if PPP holds we have in the long run \( a^E = \pi - \pi^* \); thus \( r = r^* \)
Regional monetary integration
(absolutely fixing parities; then €)

- Which countries in the integration club
  - Countries should join with same low inflation rate (logic of purchasing power parity)
  - Fall on nominal and real interest rates could be achieved if “average“ credibility of monetary policy is raised; external devaluation rate???

- Quality of crisis management = difficult task as fiscal policy coordination unclear
- Prudential supervision mainly national task = coordination problems

Distinctions to Be Made

- Make a distinction between **one-off effects** (in the run-up to Euro zone); eg convergence play; diversification pressure = appreciation of $ etc.

- **Sustained effects of economic & monetary integration**
  - Elimination of international transaction costs (euro zone)
  - Higher transparency in markets = more competition
  - Increase of credibility of monetary policy (ECB politically independent; national central banks independent) = lower inflation expectations in €zone (?)
  - Effects of Growth and Stability Pact...
Monetary Integration

- Monetary Integration: Eurozone and creation of ECB – Jan. 1, 1999
- European Central Bank is located in Frankfurt; is part of the European System of Central Banks (ESCB = ECB + national central banks of those countries which officially have entered the Eurozone)
- 11 countries (of EU15) started in 1999; 01: +GR; etc. (in 2014: 18 countries)
Considering the Role of Banks; note:
\[ tr := \frac{TR}{D1+D2} \] reserve coefficient
\[ rf := \frac{RF}{D1+D2} \] refinancing coeff.

- Consolidated Balance Sheet: Asset Side
  - Assets (loans to non-banks) KR
  - Banks’ deposits with central bank (reserves) TR
  - Equity

- Balance Sheet: Liability Side
  - Sight Deposits from private sector D1
  - Term Deposits from private sector D2
  - Credit from central banks RF
Monetary Integration: Analytical Basis (g is growth rate)

- Quantity Equation: \( M \cdot V = P \cdot Y \) or \( M = (1/V)PY \)
  - If velocity \( V \) is constant we have \( gM - gY = gP \) (inflation rate is determined by difference of growth rate of money supply and output growth)

- Consider credit market; and money market
  - Supply \( Q^s = b'B' \) (\( B' \) is exogenous monetary base, \( b' \) credit multiplier)
  - Money supply \( M^s = n'B' \) (\( n' \) money supply multiplier); \( B' := \text{Cash} B_P + \text{net reserves of banks} (TR-RF); TR \) is deposits with central bank, \( RF = \text{loans from central bank} \)
Basic Insights for Money Supply (B”“ is Monetary Basis)

- Asset Side of Central Bank (B1+B2+RF=B”“)
  - Foreign Exchange B1
  - Government Bonds B2
  - Refinancing Component RF

- Liability Side of Central Bank (B^P + TR= B”“)
  - Cash B^P
  - Reserves of Banks TR (gross)
We can derive (tr is banks’ deposits with central bank/D); hypothesis: \( tr = tr(rr, i, d) \) \( t_r < 0; \) \( d \) is discount rate; \( rf = rf(d, i, rr) \), \( rf_d < 0; \) \( i \) interest rate, \( rr \) is the minimum reserve ratio of banks.

- Nominal credit volume is linked to nominal output; real credit \( Q/P \) to real output \( Y \)
- \( Q^s = b''(i, d, rr, it, Y_K) B''; \) \( b''_d, b''_rr, b''_YK < 0 \)
- \( M1^s = n''(i, d, rr, it, Y_K) B''; \) \( rr \) is required reserve ratio
  - \( n''_d < 0, n''_rr < 0, n_{it} < 0 \) if \( tr > rf \) (RF = \( rf(D1 + D2) \))
  - \( t := D2/D1 \) (\( D2 \) is term deposits; \( D1 \) deposits)
  - \( bk := B^P/D1; \) normally constant; BUT rises in crisis!
  - \( n'' := (1 + bk)/(bk + (tr-rf)(1+t')); \) \( tr = TR/D \) (reserve coefficient)
Credit Multiplier $Q^s=b^"B$ (see \{b"\})

(BRUNNER/MELTZER; see KATH 2003; WELFENS, 2009)

- $Q^s = \{(1+t')(1-(tr-rf))/[bk + (tr-rf)(1+t')]\}B^"$;
  $t = D2/D1$; also: $t' = t'(it, rk)$, $t_i > 0$, $t_Y < 0$; $rf =$ loans from central bank to banks divided by $D1+D2$

- Apply the above formula to the crisis 2007/08
  - The cash ratio $bk$ will rise in a financial market crisis – or with negative deposit interest rate; multiplier for the exogenous monetary basis thus will fall! Risk that monetary policy undermines growth of credits and brings about recession...

  - The ratio $Q^s/M1 = (1+t')(1-(tr-rf))/(1+bk)$ so that the ratio will fall as $bk$ is rising during crisis; take a look at 2008-2010, Greece, Eurozone 2015/2016

Banking markets have internationalized
- in the context of capital flow liberalization in the 1970s and 1980s in OECD countries and many NICs
- in the context of rising multinational companies‘ activities („banks follow subsidiaries“)
- in the context of GATS – General Agreement on Trade in Services, established in 1995 (within WTO)
- through technological progress; e.g. internet banking
International banking services

- Banking services are offered
  - to households
  - to firms – and to other banks
  - to governments (deficit/debt financing)

- Banking services concern
  - financing investment
  - providing foreign exchange
  - financing international mergers & acquisitions
  - financing „speculation“ or providing hedging
Trade and Finance

- Foreign exchange markets
  - Which finance trade
  - Which finance speculation (includes futures markets, future spot markets)
  - Which face „hot potato trade in foreign exchange“
Major assets traded in financial markets

- Regarding assets one may distinguish
  - Short term and long term assets
  - domestic bonds (B) and foreign bonds (F*)
  - domestic stocks and foreign stocks
  - derivatives
  - foreign exchange (foreign currency)
  - real estate at home and abroad
  - primary goods
Banking and Financial Markets

- Financial market actors
  - Face prudential supervision
  - Rating
  - Capital markets
- Investors care about
  - Yield (return on investment)
  - Risk (volatility)
  - Liquidity: ability to sell at short notice without a large fall of the market price
Introduction

Benchmark: „Normal Economy“

- Low inflation rate and low unemployment rate (internal equilibrium); markets work; including secondary markets
- Normal yield curve (long term interest rate > short term int. ra)
- Sustainable government deficit-GDP balance (incl. soc. secu)
- Sustainable current account position $CA = S(r,Y) + [T-G] - I(\ldots)$
- Positive growth rate of output ($g_Y$); modified neocl. model
- Positive real interest rate $r$ (nominal rate minus inflation rate)
- LONG RUN: $g_Y = r = 2-3\%$ in OECD countries
Crisis Economy (one variant for the US in 2007/08)

- Crisis = *rapid* decline of economy/destabilization
  - Confidence crisis in markets, induced market failure
  - High instability of asset prices – includes periods of strongly falling asset prices
  - Negative real interest rate (generates overindebtedness)
  - Primary goods inflation bubble (in the future the bubble will burst suddenly and destabilize domestic economy or foreign trading partners)
  - Nonsustainable budget deficit or current account deficit
1. Introduction

Financial market integration basically refers to:

- **Cross-border investment and foreign direct investment** in banking and insurance etc.: home bias increasingly becomes less important over time and indeed should be irrelevant under monetary union in long run.

- **Convergence of national institutional setups** relevant for financial markets – *institutions include the field of prudential supervision (anti-crisis)*.

- **Role of stock markets increasing** (?) in countries with financial systems which so far bank-dominated; particularly as y rises; pension reforms...

- **Demand side more mobile across countries** – particularly within Eurozone (?); higher mobility on the demand side, convergence.

- **More competition in financial markets** (see EU27 or EU+US+JP) =
  - Higher efficiency in banking system etc.; = lower real interest rate = investment+
  - Effect on governance of firms (static and dynamic efficiency gains)
  - Potentially also easier R&D financing as price of risk is reduced = *reduced price of risk/reduced cost of capital? More investment in equipment & investment = output expansion*
Dynamics

Financial Market Integration raises $Y$ and $y$ (per capita income);
Accumulation of $K$, $K^*$, $B$, $F$...

Ratio of Net Wealth $A / y$ rises; demand for financial services $++$

Expanding Financial Markets & Financial Market Integration
BM integration 2: beta coefficients

2. Basic Reflections on Economic Growth

Fig. 4 - Volatility of stock markets on the basis of growth rates of stock market indices (monthly values; Y/Q/M): Variance of the following 12 months

Decline of volatility

Source: Eurostat
(Financial Market) Integration and Economic Expansion

- Y expansion stimulates financial markets/services
  - As per capita income $y = \frac{Y}{L}$ is rising, the ratio of net wealth $A^\prime$ to $Y$ is rising so that demand for financial services will increase, which in turn stimulates creation of greater banks/financial services firms, which in turn could be more innovative than firms in initial market structure.

- FM-Y; technological progress in financial intermediation in integrated markets:
  - Technological progress in the field of financial services (e.g., due to ICT investment) reduces intermediation costs; input prices of intermediate products/financial services in sectors fall = expansion of output.
3. Theoretical Analysis

Fig. 6 - Decomposition of Average Growth Rates of GDP in Selected EU Countries, 1969-1988 – how can this be related to financial markets?

Source: JUNGMITTAG (2006)
Financial markets important for growth

- Decomposition of growth for EU countries
  - Suggests that financial capital accumulation
  - Financing trade (proxy for diffusion)
  - Financing high tech specialization is crucial (venture capital markets)

- Additional aspects in the South
  - Micro-financing (JUNUS) often quite important
  - Government budget surplus (savings) could be useful – see Korea
Financing and Growth: Changing the Level of the Growth Path vs. Change of Growth Trend; many studies on the link between financial market & growth, but no prior test on structural break in level of growth path and/or trend growth rate = doubtful insights!

\[ y = \{A_0(s(1-\rho)/(a+n))\}^{\beta/(1-\beta)}e^{\alpha t} \]

Reform Agenda …raising „a“

\[ S = s(1-\rho)Y; \, dK/dt = S; \, Y = K^\beta(AL)^{1-\beta}; \, d\ln L/dt = n; \, d\ln A/dt = a; \, y = \lambda Y/L = A_0[s/(a+n)]^{\beta/(1-\beta)}e^{\alpha t}; \]

\( \rho \) (in \([0,1])\) is parameter indicating transaction costs in financial markets; integration means fall of \( \rho \) so that we get higher level of the growth path in \( t_I \); rise of \( a \) in \( t_{II} \)... How is financial market integration affecting \( s \); & financing growth rate of knowledge?
Credit Markets: Financing investment of firms and residential real estate projects

- Supply of loans through banks is constrained through prudential supervision (8% capital ratio required by Basel Accord I = ratio of bank ‘s equity capital to loans)
- Profit of banks through intermediation: taking in short-term deposits and selling long term loans;
- Loan business can be expanded through selling of loan portfolio as a quasi-security (asset backed security ABS): banks create special investment vehicle (SIV) to which they sell the ABS; fees from advising SIV generates new profits!
- Top rating of ABS plus high credit line of bank for the special investment vehicle = top rating of SIV which then can sell ABS or ABS-backed papers (eg IKB in Germany)
ABS papers allow bank to expand loan business = higher I/Y = higher per cap. income.

Risk premium implicit in interest rates becomes tradable more easily: international business: Originator-Distributor...

We assume that ratings are correct (modeling is ok); tight oligopoly Moody’s, S&P, Fitch
Banks can only survive if
- Regulatory capital standards fulfilled (Basel II)
- Liquidity of bank is assured at any point of time (fractional minimum reserve system); bank cannot survive a bank run which occurs if CONFIDENCE crisis occurs (Austrian Bank in 1930; Northern Rock in UK in 2007; Bear Stearns in NY in 2008)
- Solvency of bank is assured
US 2006: Real Estate Markets entering downturn

- **Subprime crisis:** the rising share of households which became homeowners in the 1990s (from 55% to more than 65%) become a problem as in 2006 real estate price index starts to fall; foreclosures as some households are not able to serve mortgage debt – unsound practice in the US to sell mortgage credits without adequate income of household asset: „don’t worry, as long as housing prices rise you can always repay the loan and still pocket a nice profit“. As $p_{house}$ falls...

- Asset backed securities linked to subprime segment of real estate financing of private households become a problem, value of ABS portfolios falls; some SIVs become near-insolvent as re-financing of ABS portfolio impossible; ABScommercial paper market collapses in summer 2007. IKB must mobilize an 8 bill. Euro line for Rhineland Funding which is impossible so that KfW (state-owned bank) as major owner enters with guarantee to save the bank...Questions **which bank is next?**
Three Triggers of the Confidence Crisis

- Bearn Stearns Bank (NY) had to close two SIVs in spring 2007 as refinancing became impossible – ABS (short term) commercial paper market collapsed in US
- Northern Rock in UK faced refinancing crisis in summer 2007 and suffered bank run...nationalized
- IKB crisis in autumn 2007 as refinancing of its SIV Rhineland Funding become impossible; KfW (state-owned bank) as main owner stepped in with guarantees. Similar desaster SachsenLB...
Ultimate trigger is excessive required rate of return on equity

- R‘ as required rate of return on equity: new benchmark since the late 1990s was 30% in New York and London; 2005 also M. Ackermann (Deutsche Bank endorsed target...); previously 10-15% was considered as adequate (New Greedy Capitalism..)

- New benchmark fueled by *unregulated hedge funds*...

- Riskless interest rate on government bonds in periods of 1% inflation is about 4%. Implication is that R‘ of 30% implies a risk premium of 26% which is way to high = too many risky projects; beyond the short term real economy cannot come up with such R‘
Theory of Leverage: R is overall Rate of Return, E is Return on Equity, i is the loan rate (interest rate)

- Overall Rate of Return R
  - $R = \alpha E + (1-\alpha)i$
  - $\alpha$ is the share of equity capital (relative to overall capital)

- Overall Rate of Return
  - Overall Rate of Return
  - $E = \frac{1}{\alpha}R - \left[\frac{(1-\alpha)}{\alpha}\right]i$
  - $E = \frac{1}{\alpha}R + \left[1 - \left(\frac{1}{\alpha}\right)\right]i$
  - $E = i + \frac{1}{\alpha}(R-i)$: as long as $i$ is lower than $R$ a fall of the share of equity capital – hence a rise of the loan share in the investment – will raise the rate of return on equity! Periods with low nominal interest rates encourage high leverage, that is a low share of equity capital. **However, roll-over risk is then all the more important**
New Greedy Capitalism from Wall Street

Not sustainable:

- Too much short-term
- Wrong incentives through stupid bonus systems
- Lack of transparency: Books of banks based on inadequate accounting & reporting standards
- Ratings partly faulty and non-sense
- Too much financial innovation without adequate testing procedure
With Major Effects of Bank Crisis

- Rising US unemployment
- Massive real dollar depreciation (seriously undermining global dominance of $) = weakening exports of other countries and stimulating more FDI inflows into US (provided that confidence crisis can be overcome)
- Reduced credit growth = lower investment (in EU and US; and every other country in the world in the medium term)
- Falling real estate prices (undermines labor mobility in the US; and growth in long run)
- Stock market prices WILL fall – as soon as interest rates are back to normal
- Primary goods price bubble WILL burst – serious consequences worldwide
- WINNERS will be Eurozone plus China/Singapore/Arab countries/Russia...
Solutions to problems

- Strong reduction of interest rates: from over 5 to 2.25 within ½ year in the US; but inflation rate is 3% in 2008!! January 2008: short term rate in the market falls, but long term rate has increased!

- Massive liquidity injections in the US and in Eurozone and UK in order to compensate periods of market failure in the interbank market = Confidence crisis; even in Switzerland (UBS etc.)

- Structural problems in the US etc. cannot be solved through expansive monetary policy + fiscal policy

- US should stimulate private savings; adopt reforms
Necessary reforms

1) More transparency: impose sanctions on faulty ratings; create more competition through state-sponsored new EU rating agency = restoring confidence =A

2) Include hedge funds & private equity funds in the regulatory framework = returning to normal capitalism =B

New accounting & reporting standards for „banks“ = A

New tax system which imposes tax on high risk! negative externality is the economic rationale for this! = B&A

IMF must be more serious in Article IV reporting standards (surveillance: Report on US in 2007 weak!) = B&A

EU & G8/OECD/BIS/IMF organizations for stimulating reforms!
5. Banking Crisis and Prudential Supervision

- **profitability of banks as a buffer; Basel I and II imposing a minimum regulatory capital;** disclosure rules

- **central bank: as the lender of last resort** the central bank could inject liquidity into banks in periods of confidence crisis in the market – the sums often needed for only a few days are typically huge, but medium term monetary growth targets or inflation targets need not be damaged if the confidence crisis is overcome quickly. Lack of liquidity is a crucial potential knock-out problem in periods of a confidence crisis.

- all actors, namely prudential supervisors, the central bank and the government **must cooperate** swiftly in periods of crisis: otherwise there can be an ongoing downward spiral and massive negative international spillovers. In this respect the eurozone raises serious problems as only informal rules have been adopted.
Role Central Banks, NBs, ECB

- ECB only „advisor“ although Treaty of Maastricht gives certain mandate
- Many memoranda of understanding (bilateral und multilateral); no treaty
- Involvement of NB in EU27 differs:
  - Yes
  - No
  - and (Germany, Austria)
5. Banking Crisis and Prudential Supervision

To the extent that such short term speculation destabilizes international markets nationally and internationally, one should consider imposing two potential reforms leading to internalize negative external effects:

- Higher reserve requirements for banks involved in short term transactions
- A “Financial Pigou” tax on the respective short-term transactions (day trading/no serious info base because industrial output figures available on monthly basis), because such speculation creates negative external effects. Negative external effects in financial markets are unlikely to be less harmful than emissions in the field of environmental quality.

- The European Commission which has established some reputation for institutional innovation in the context of CO2 emission trading should now consider the options of a Financial Pigou tax.
  - Might sound interventionist, but if there is clear empirical evidence on negative national and international external effects: follow theory, not ideology
Financial Market Crisis in 2007/08

- August/September 2007: collapse of interbanking market; confidence crisis – US subprime crisis

- Where are the risks really? Unclear in EU countries? Contingency credit lines not covered by Basel I; with expansion of Special Investment Vehicles (off balance-sheet activities) this became important...

- More Financial Market Integration combined with lack of Consistent Prudential Supervision in larger financial markets not conducive to long term growth (rise of y# or of trend growth rate); WHICH Reforms?
Key Issue

- More financial market integration
  - Can generate economic benefits and more growth in the long run
  - But not without serious consideration of Basel III
  - Very different models of supervision – and 120 national derogations from common EU regulatory framework – is weakness of € zone: What to do?
3. Theoretical Analysis

Fig. 8 - European Innovation Scoreboard (2005)

Ranking of average innovation performance by sector

- DL Electrical and optical equipment: 0.63
- ICT Information and communication technologies: 0.61
- K72 Computer and related activities: 0.59
- DG24 Chemicals and chemical products: 0.58
- DM34 Motor vehicles, trailers and semi-trailers: 0.57
- K Real estate, renting and business activities: 0.56
- DL31 Electrical machinery and apparatus n.e.c.: 0.55
- DM Transport equipment: 0.55
- DK29 Machinery and equipment n.e.c.: 0.54
- DH25 Rubber and plastic products: 0.48
- D Manufacturing: 0.47
- Total industry (excluding construction): 0.45
- DJ27 Basic metals: 0.45
- DL26 Other non metallic mineral products: 0.43
- DE Paper and paper products; publishing and printing: 0.40
- DJ28 Fabricated metal products, exc. machinery and eq.: 0.39
- Business services: 0.39
- DA Food products; beverages and tobacco: 0.38
- J Financial intermediation: 0.37
- DD20 Wood and products of wood, exc. furniture: 0.36
- E Electricity, gas and water supply: 0.35
- G51 Wholesale trade and commission trade: 0.35
- DB Textiles and textile products: 0.34
- C Mining and quarrying: 0.29
- I Transport, storage and communication: 0.29

Nominal Oil Price Index, Agricultural Price Index ($based), US Consumer Price Index

Index, 2000=100

Source: Bloomberg; IMF; EIA
Real Agricultural Price Index

Index, 2000=100

Source: Bloomberg
Oil Price Dynamics

Cushing, OK WTI Spot Price FOB (Dollars per Barrel)
Oil Price Dynamics

- What determines the Oil Price?

- A) demand and supply in oil markets

- B) Monetary policy in country 1 and country 2 (world economy): Change of M is part of national wealth $A'$;
  
  - global aggregate demand for oil is a positive function of world real income $Y + q*Y*$; and a positive function of global wealth $A' + q*A^{*}$
  
  ($A' = \frac{M}{P} + \frac{KP'}{P} + \frac{QP''}{P}; A^{*} = *\frac{M}{P} + K*\frac{P'^*}{P*} + QP^{``}/P$); $P'$ is stock market price; $Q$ is oil reserves, $P^{``}$ is oil price
Hotelling Rule determining oil price $P^*$; $P^E$ is expected price

- Intertemporal profit maximization requires that marginal profit rate from current extraction is equal to the profit rate of future oil extraction ($H$ is unit cost, $i$ is the nominal interest rate, $t$ is time, $Q$ quantity):
  
  1. $i(P^* - H) = \frac{dP^E}{dt}$ (implicit supply curve)
  2. $i(1 - H/P^*) = \frac{dP^E}{dt}/P^*$; assume $H/P^* = h^*Q$

- See WELFENS (2011), Innovations in Macroeconomics: Assume that $H/P^*$ is close to 0, then
  
  3. $\ln(i/\pi^E) = H/P^*$; assume that $h^* := H/P^* = vQ$ (v is a positive cost parameter, $Q$ is supply of oil). Then...
Deriving Equilibrium from Intertemporal Hotelling Approach (Welfens, 2011)

- (4) \[ Q^s = \frac{\ln(i/\pi^E)}{v}; \]
  - \( \pi^E \) is expected oil inflation rate; note that \( i = r + \text{inflation rate } \pi \)
    where \( \pi := \alpha' \pi' + (1 - \alpha') \pi'' \) (here \( \pi' \) is non-oil inflation rate; \( \alpha' \) is
    a weight factor between 0 and 1 and indicates the share of non-oil products in total consumption);

- (5) \[ Q^d = n'Y - n''P''/P \] (here \( P \) is the general price level, \( n'' \)
  and \( n' \) are positive parameters; \( Q^d \) is aggregate oil demand)

- Equilibrium solution (from (4)=(5)) is given by
  \[ P''/P = (n'/n'')Y - (\ln(i/\pi^E))/(n''v) \]
  \( P''/P \) is positive function of expected oil inflation rate and of \( Y; \) \( P \)
  could be explained through quantity equation (but \( Y(K,L,Q,A) \))
See WELFENS (2011): Innovations in Macroeconomics

- Welfens (2011) also looks at the role of technological progress in the oil exploration sector (e.g. fracking)
- \( i(P'' - H) = \left( \frac{dP''^E}{dt} \right)(1+\phi) \) where \( \phi \) is an effective "ressource access extension" parameter (e.g. reflecting fracking technology)
- (3') \( \phi + \ln(i/\pi^E) = h"Q \) (supply side)
Equilibrium in the World Oil Market (with Techn. Progress)

- \[ \frac{P^\prime}{P} = \frac{(n'/n^\prime)Y_{world} - (\phi + \ln(i/\pi^E))/h^\prime}{n^\prime} \]

- Considering that the interest rate \( i = r + \) expected inflation rate we get for \( \pi^\prime = \pi^\prime \)

- \[ \frac{P^\prime}{P} = \frac{(n'/n^\prime)Y_{world} - (\phi + r/\pi^E)/h^\prime}{n^\prime} \]

- The oil price should be proportionate to the world market price (read: the US price index taken as a proxy here); \( P^\prime \) is a positive function of \( Y_{world} \); it is a negative function of \( r \); technological progress raises \( \phi \) and reduces cost parameter \( h^\prime \)!
A Few Remarks on the $-€ Exchange Rate (Eurozone perspective)

- (1) Long run: \( P = eP^* \); hence (1\') \( e = P/P^* \)
- Short term: consider (2) \( i = i^* + a^E \) where \( a^E \) is the expected depreciation rate
- Ad (1) consider (3) \( M = PY/(\sigma_i) \) where \( \sigma \) is indicating size of (quasi-)interest elasticity of the real money demand \( Y/(\sigma_i) \); equilibrium condition for money market abroad is (4) \( M^* = P*Y*/(\sigma*i^*) \); using (3) and (4) we get: (5) \( e = ((M/Y)/(M^*/Y^*)) (\sigma_i)/(\sigma*i^*) \); conclusions...
Monetary Integration (home country is eurozone)

- \[ e = \frac{(M/Y)/(M*/Y*))}{(\sigma i)/(\sigma*i*)} \]

Monetary integration in EU/creation of euro area will have two effects: **raising the interest elasticity in absolute terms** and \( \sigma \), respectively, as more liquid financial assets become available; **reducing \( i \)** due to lower intermediation costs in integrated and more competitive banking market.

Empirical question which one-off effect dominates.

From risk-diversification perspective creation of € raises demand for $, British Pound, Swiss Franc...
Oil Aspects of Exchange Rate

Oil trade is denominated in US dollar

- As oil price declines the world demand for $ is falling so that there will be an appreciation of the €, the Yen, the British Pound etc.
- Note that global GDP is a positive function of world population and global capital stock: global demand will increase in the long run, BUT rising share of renewables in energy generation! Also technological progress could raise global GDP, but also the accession extension parameter; and it could reduce cost term v!
Decline of Oil Prices 2014/2015

- Russia is facing massive economic crisis in 2015 and oil prices could reduce to about 50$ per barrel.
- Lower oil price means lower price level or favorable real income gain (terms of trade effect) for most OECD countries.
- Aggregate demand of Russia and OPEC countries will decline in late 2015, exports of OECD countries thus will be dampened.
Why Deflation in 2015?

Deflation was a problem in the early 1930s in the US and Europe: Vicious cycle when first commodity prices decline, some banks faced problems and went bankrupt, loans volume shrank, output and employment decline, P declined, rising debt of government and firms in real terms = lower investment = lower Y, lower empl. etc.

Deflation in Germany in 2000: -0.7%; but Eurozone is 3x Germany? How to fight deflation? Raise growth rate of money supply: = task of ECB!

Deflation was a problem in Japan in the 1990s. Deflation becomes a problem in euro area once the standard 2% inflation expectation rate is falling towards 0 or to negative figures; with nominal and real inflation rates falling the burden of old high yield loan contracts become bigger (problem in continental EU countries; long term loans!)

Deflation Dynamics

- Commodity prices might continue to fall (might fall for several years)
- Prices of information & communication technology capital goods (ICT) are strongly falling over time in all countries
- Services prices are not falling rarely (hedonic pricing shows that in digital services this is observed)
- Output elasticity in globalized economy is high
- Question of inflation expectation changes

Reconsider Microeconomics...

- **If expected prices** in j-markets (j=1,2,...,N) are falling, supply will increase and demand will reduce: current equilibrium prices falling

- Hence the role of inflation/price expectations is critical in euro area etc. (*for many years: 2%*)

- At the end of 2014 long term **inflation expectations** in the euro area have started to fall considerably...(*inflation rate: Nov. = 0.3%*)
EU Banking Union of 2014

- In 2013: ECB start of **European Systemic Risk Council** = macroprudential risk analysis (ECB is leading this new institution)

- **Microprudential risk:** until end of 2014 everything in hand of national/regional regulators

- Since Nov. 2014: **New role for ECB which becomes active in prudential supervision of largest banks**
Single Resolution Mechanism

- **Stress test** in autumn 2014 for major banks
- All big banks **must contribute** to € 55 billion crisis fund
- Another 55 billion has been mobilized for **deposit insurance** for big banks
- **Taxpayer should not pay in EU** if bank in default: investors pay; equity owners, bond holders, big depositors with >€ 100,000 € deposits.

Deflation Pressure

- Inflation rate in 2015 likely to be negative in the Euro area; & in 2016? Deflationary process?
- Inflation rate in the UK in Dec. 2014: 0.5%
- Difference of indexed 2 year US government bond and non-indexed 2 year government bond in January 2015 implies that investors expect slight deflation in the US
- Oil price decline is continuing: Jan. 2015 below $ 50 =1/2 of the level of Jan. 2014
Oil and Gas Prices

- Oil and gas price is part of standard price index; but not included in CORE inflation which ignores volatile items such as energy and food.

- **Energy is an input in practically all products**, hence fall of energy prices should dampen price increase of all products (or could even contribute to deflation).

ECB Policy Perspective

- ECB likely to adopt **quantitative easing**: expansionary open market policy $dM = -dB$

- **European Court of Justice** Case: prosecutor suggests that intervention is basically ok (case brought up from Germany’s Constitutional Court which had to consider the OMT programme of the ECB – unconditional intervention in the government bond market for maturities of less than 3 years provided that the country still has access to capital markets AND has an adjustment programme with EMS rescue fund)

Effects of Open Market Policy and QE Policy, Respectively

- We had QE in the US in 2008-2014
- We had QE in the UK in 2009-2014
- Looking at the Branson Model (with domestic bonds $B$, foreign bonds $F^*$ and money $M$):
  - Decline of the interest rate
  - Depreciation of currency
  - BOTH short-term reactions should lead to higher output and employment
Branson Model (small open economy)

1. \( \frac{M}{P} = h(i,i^*)A'; \quad A' := \frac{M}{P} + \frac{B}{P} + \frac{eF^*}{P} \)
2. \( \frac{B}{P} = b(i,i^*)A' \)
3. \( \frac{eF^*}{P} = f(i,i^*)A' \)
4. \( A' := \frac{M}{P} + \frac{B}{P} + \frac{eF^*}{P} \)

From (4) we know that \( h + b + f = 1 \) (divide (4) by \( A' \) and we get this result); hence only 2 of the 3 equations (1)-(3) are independent; BB and \( F^*F^* \) line determine \( e \) and \( i \); \( M, B, F^*, P \) given; QE (open market policy) shifts BB-curve to the left.

Branson Model: QE (expansionary open market policy: \( dM = -dB \); note that MM has positive slope, not shown)
QE Policy (in an environment where i is close to zero)

- QE policy effects in the short run
  - Depreciation
  - Fall of long term interest rate

- QE in the medium term
  - Rise of output
  - Improvement of current account = dF*>0

- F*F* curve will shift downwards so that there is slight appreciation and rise of interest rate – dampening output expansion!
On January 15, 2015 the Swiss National Bank gave up pegging of the currency at 1.2 SFR/€ (implemented over 2011-2014)

- Short-term appreciation rate of about 30%
- Stock price index declined on 1 day by 14%
- Many households and firms in eastern Europe and western Europe facing serious problems as loans in SFR had been taken – after appreciation of SFR the burden of the debt has increased in domestic currency units
New Swiss Franc floating

- Pegging of SFR to € had been adopted in order to avoid appreciation pressure on Swiss economy
  - Central bank had declared that it will defend parity with unconditional intervention in foreign exchange market
  - „unconditional“ was chosen in order to deter speculators; some intervention necessary so that reserves have increased: € 500 bill.
  - with depreciation of € in 2014 and anticipation of QE of ECB more intervention would be needed...
Key Aspects of Trade and Trade Policy

Consider as point of reference: AUTARCHY = closed economy (equilibrium is determined by the intersection of demand curve DD and supply curve SS)

Small open economy: world market price $p^*$ is given (assume a given nominal exchange rate $e$):

- $p^*$ above $p_{autarchy}$ = export market
- $P^*$ below equilibrium price under autarchy = import market
QE-Policy of ECB

- QE policy of ECB adopted in January 2015
  - buying national government bonds of euro countries
  - National central banks buy national bonds and ECB also buys some bonds of all countries; Germany’s central bank clearly opposed to such QE since this could undermine the pressure for reforms in crisis countries
Consider QE Policy of ECB

- Short-term effects:
  - Interest rate will fall
  - Depreciation of currency

- Medium term effects: Improvement of current account and rise of output
- Reduction of the interest payments of government relative to GDP
- Fall of interest rates in other countries
Issues

- Role of expectations
- Role of money supply multiplier
  - $M = n'B^{ex}$
  - Banks and central bank have impact on supply multiplier $n'$ (has declined during period in which interbank market was disturbed)
- Structural reforms in euro countries important to reduce political pressure on ECB
Impact of Subsidy on Production

\[ p \]

\[ F \quad G \quad G' \]

\[ k_0' \quad k_1'(1-\alpha) \]

\[ e_0 p_0^* \]

\[ D \quad D' \]

\[ q_0 \quad q_1 \quad q_2 \]

\[ 0 \quad q \]

Import Market: The Problem of Dumping and Antidumping Duties:
if foreign price is set at \( p^*1 \) (instead of \( p^*0 = \text{marginal costs abroad} \)) import is raised: distance HI instead of distance JK;
domestic output falls to \( q_3 \) (originally: \( q_1 \))

(e exchange rate; \( p^* \) foreign price)
Export Duties and Domestic Prices: Assume a rise of the world market price $p^*$1; domestic price will rise, domestic consumption falls (point $F'$ instead of $F$); export tariff brings about reduction of domestic price ($p_2$ instead of $p_1$), BUT welfare loss (profits fall!!) (export tariff is $\tau''$)
World Market Equilibrium in 2-Country-Model

\[ \begin{align*}
\text{Country II} & \\
p & \downarrow p^* \\
q^* & \quad k'_0(\text{SS}_0) \\
q_1^* & \quad H^* \\
q_0^* & \quad I^* \\
\text{Country I} & \\
p & \uparrow p^* \\
q & \quad k'_0(\text{SS}_0^*) \\
q_0 & \quad H \\
q_1 & \quad I \\
\text{World} & \\
k' & \downarrow k'_1 \\
q & \quad q^* \\
q_0 & \quad q_0^* \\
q_1 & \quad q_1^* 
\end{align*} \]
Import Tariff and Harberger Triangle (FGE)
Network effects \((N + N^*)^2\) where \(N\) and \(N^*\) are the number of users – that is \(q\) and \(q^*\) (abroad). Network effects in home country reduce export quantity \((FG < FG)\)

Network effect might also affect supply side (dynamic or static ec. of scale...)

Dumping and Schumpeterian Price Discrimination: Dumping is selling below costs (abroad/in the production country); consider standard product vs. product innovation abroad (innovator can fetch Schumpeterian monopoly price: see Cournot point C; innovator can sell in II at price below $p^*1$!)

\[ DD_0 \]

\[ DD_0^* \]

\[ p_1^* \]

\[ p_0^* \]

\[ p_0 \]

\[ q_0 \]

\[ q_0^* \]

\[ q_1^* \]

\[ q^* \]

\[ k'_0^* \]

\[ E_0 \]

\[ E_0^* \]

\[ F \]

\[ D \]

\[ C \]

\[ V \]

\[ Z \]

\[ R'_0 \]
Thank you for your attention!
Macroeconomics and Global Financial Markets

1. International Macroeconomic Perspective
2. Financial Markets
4. Financial Market Integration and Regulation
5. Empirical Aspects of Global Monetary Analysis
6. Transatlantic Banking Crisis
Multi-country Perspective; or 2 Country-Approach

- Global allocation of savings
- Global financing of investment
- Global financing of government debt
Foreign Reserves of Central Banks;

International Reserves

- As means of international transactions
- International store of value
- Allows to postpone adjustment in real economy

Reserve currency should be stable (low inflation rate of the relevant country: USA) and have world class banking system

Reserve accumulation of central banks

- Foreign reserves exist because central banks – except for the US - have purchased $ or € or gold
- US central bank holds gold and €
International Macroeconomic Perspective
(e in €/$ nominal exchange rate, * foreign variable; A ‘ real wealth, P ‘ stock price index, P output price index)

- Consider 2 country model of world economy
  - World income is \( Y_{world} := Y + q^*Y^*; q^* := eP^*/P \)
  - World energy consumption: \( E_{world} = c 'Y + c '^*Y^* \)
  - World Wealth: \( A '_{world} = A ' + q^*A '^*; A ' \) is real wealth
    - \( A ' = QK + M/P; \) K capital stock, M stock of money, \( Q ' = P '/P \)
    - \( A '^* = Q^*K^* + M^*/P^* \)

- Policy Perspective: Organize world system
  - World monetary order
  - Real global economy: \( Y, Y^*, \) consumption \( C, C^* \)
Policymakers (people) interested in certain goals; L is labor, A is knowledge

- **Stable global monetary system** and broader set of institutions – should be adjustable
- Stable real economy \[ \text{supply } Y = K \exp(\beta AL) \exp(1-\beta) \]; demand side of economy \[ \text{Yd} = C(...) + I(..) + G + X_{\text{net}}(..) \]
- **Enhance economic growth** in country 1 & 2
  - Accumulation has to be financed \( \frac{dK}{dt} > 0 \)
  - Financing investment & innovation necessary
  - Savings process should be efficiently organized
  - Risk management necessary in multi-period world
Partly global actors, partly national actors

Stable Monetary System
- IMF, BIS, WTO
- National policy makers; country I/II

Stable Economic Development
- Cyclical monetary aspects \((P, e)\)
- Cyclical real aspects \((Y, u)\)

Savings and Financial Markets

Capital Accumulation
- Role of Banks
- Other intermediaries

Capital Inflows
- Portfolio capital flow
- Foreign Direct Investment (Multinational Comp.)

Capital Outflows
Some Key Insights (X is quantity of exports, J quantity of imports)

- Current Account in real terms is
  - $X' := X - q*J$
  - If country 1 has $X' > 0$, then country 2: $X'^* > 0$; $X'^* = -X$

- Current account surplus of country 1 (home country)
  - $dF^*/dt > 0$ ($F^*$ is stock of foreign assets owned by 1)
  - Abroad (in country 2) net foreign debt $D'^* will rise in parallel; can it rise forever; can $D'^*/Y^*$ rise and rise and rise???
Assume that you accumulate assets (in country 1 or 2)

Typical goals are

- **Yield** (r) on the asset should be high
- **High liquidity** (ability to sell at an – almost – unchanged price immediately)
- **Risk should be low**; risk is measured as variance of rate of return (variance is Sum of squared deviations from average return; and divide by number of cases n); **reducing risk through international diversification**!
In principle...

- International investment can help to
  - **raise rate of return** in mixed portfolio
  - **reduce portfolio risk** through investment in assets abroad which are subject to risks which are **negatively correlated** with risks of domestic assets (those of country 1)
  - **HOWEVER**, in periods of **global crisis** there is strong parallelism of business cycle across countries = high positive correlation
Can financial markets deliver in all countries?

- Quality of central bank and monetary policy: strong focus on price stability!
- Political stability; otherwise capital outflows!!
- Quality of banking system
  - Banking system is special: problem of systemic risk – crucial in monetary economy
- Quality of prudential supervision
- Degree of competition in financial markets and goods markets
Where do we see a role of financial markets in real economy? (0<β<1; 0<β ‘<1)

Simple approach is monetary growth model

- Stock of real money balances in savings function (consumption function); $S = S(Y, \frac{M}{P})$ or $S(Y, A^{\#} - A^{'0})$, where $A^{'}$ is exogenous wealth target

- More direct approach (WELFENS, 2007b) is $Y = (\frac{M}{P})^{\exp\beta}K^{\exp\beta} \cdot \exp1-\beta-\beta$ ‘; real money balance raises labor productivity $\frac{Y}{L} = y = \{[\frac{M}{P}]/L\}^{\beta} k^{\beta}$

- Basic question: what determines $(\frac{M}{P})/L$ or $\frac{Y}{(M/P)}$ where the latter is average productivity of real money?
M is the stock of money

- **Financial system** consists basically of central bank and private banks

- Banks aim at **making profits** through **intermediation** (transforming short term savings into long term investment financing) and provision of many financial services

- M could be defined as
  - A vista deposits plus cash (M1)
  - M2 = M1 + term deposits
  - M3 = M2 + savings deposits
Banks aim at profits from intermediation

- Banks accept short term deposits (liability of bank) which carry low interest rate
- Invest in high yield long term project
  - Potential problem is **maturity mismatch** and hence problem to refinance at low short term interest rates
  - Potential other problem is **currency mismatch** which occurs if short term deposits are in foreign currency, while project financing in domestic currency (also: consider loan in $ - foreign currency; then depreciation of domestic currency = higher debt (in domestic currency units))
Yield curve (normal curve), $R'$ is remaining time to maturity

Intermediation is profitable if yield curve is normal
Inverse yield curve

- Inverse yield curve is the result
  - Changing expectations biased in favor of falling long term interest rate

- Inverse yield curve
  - induces firms to hold back investment
  - Profitability of banks is reduced = reduced opportunity to raise equity capital = higher loans = more investment
  - reduces aggregate demand
Role of Transaction Costs: If integration of financial markets reduces transaction costs we get welfare gain! \( FE_0E_1 \)
Types of Assets Considered

- Nominal Assets
  - Money M (nominal)
  - Domestic Bonds B (government; or private sector/corporate bonds)
  - Foreign bonds F*

- Real Assets
  - Firms
  - Real Estate
  - Ships/Air planes

Transaction costs are low in bonds markets and in the money market (up to the transatlantic banking crisis)
Typical Assumption in Financial Market Literature

- Financial markets are efficient
  - Market participants exploit all available information
  - No insider information
  - High market transparency
  - If you know 1 interest rate (or asset price) you know all interest rates (asset prices)

- Some doubts
  - Financial markets are quite innovative
  - National regulators find it difficult to cooperate
  - Time horizon of bankers often rather short (behavioral finance)
RISK and Risk Management

- Role of risk
  - Risk implies risk premium and thus higher costs in all markets which rely on external financing (loans from banks or placement of bonds)
  - Are international markets for risk efficient?

- It is important for banks and firms to have adequate risk management
  - Consider various shocks
  - Worst case scenarios
  - Options for hedging
Consider an asymmetric world economy (country 1 is reserve currency country)

- Advantage of reserve currency:
  - Can pay for its net imports by printing new money
  - Country 1 (C1) has economic advantage since adjustment in situation of balance of payments disequilibrium falls on trading partners

- Equilibrium in money market of reserve currency is specific (Welfens, 2009b):
  - $M/P = m(...) + m'(...)$
  - Here $m'$ is the dollar demand in country II which basically stems from central bank, possibly also private sector
  - Seigniorage gain for C1
Seigniorage gain is from “printing money”

- Government budget constraint
  - $G-T = \frac{dM/dt}{P}$ and hence $G-T = \mu M/P$; here $\mu := \frac{dM/dt}{M}$
  - If Fisher equation/quantity equation is holding, then in steady state $\mu = [a + n] + \pi$; thus inflation is like a tax on holding money balances.

- Remember
  - Inflation causes direct **negative welfare effect** (nominal interest rate higher than in case of price stability)
  - Inflation causes confusion of absolute price changes and relative prices= additional welfare loss
Branson Model for a system of flexible exchange rates
Modified Branson Model (Welfens 2007; 2008; Innovations in Macroeconomics); P‘ is stock market price index, z marginal product of capital

- \( \frac{M}{P} = n(i, i^* + a', z)A' \)
- \( \frac{eF*}{P} = f(i, i^* + a', z)A' \)
- \( P'\frac{K}{P} = h(i, i^* + a', z)A' \)
- \( A' = \frac{M}{P} + \frac{eF*}{P} + P'\frac{K}{P} \)
  - \( n_i < 0; n_{i^*} < 0; n_z < 0 \)
  - \( i^* = i^* + a' \)
  - \( f_i < 0; f_{i^*} > 0, f_z < 0 \)
  - \( h_i < 0; h_{i^*}; h_z > 0 \)

\( e \)

\( e \)

KK equilibrium line

MM1 (\( dM > 0 \))

MM (money market line)
Basic Aspects in Asymmetric World Economy: M/P=m*+m

We will at first consider small open economy (1 country model)

- Under flexible exchange rate regime: Endogenous is r, Y, e
- Under fixed exchange rates (money supply is endogeneous); r, M, Y endogeneous
- Efficiency of monetary and fiscal policy (dY/dM?, dY/dG)

Next step would be two-country model

- Necessary if there are two big countries
- Medium term model
- Complex in quasi-fixed exchange system: e is endogeneous, but demand for $ is m*(Y*,i*)+m ‘(J(Y),i*)

Macroeconomic Perspective: Mundell Fleming Model

- Open Economy Macro Model (small open economy)
  - IS curve: \[ Y = C(Y-T) + I(r,Y/Y^*) + G + X(Y^*,q^*) - q^*J(Y,q^*) \]
  - LM curve: \[ M/P = m(Y,i) \]
  - ZZ curve: \[ Q(i,i^*,a^{'})+Q^{'}(Y/Y^*)= q^*J - X(Y^*,q^*) \]
  - Basic refinement here is to make explicit distinction between portfolio inflows and FDI;
    - a ' is exogenous expected depreciation rate
    - FDI inflow is positive function of \( Y/Y^* \) (for given \( K, K^* \)); more strictly with ratio \( [\beta Y/K]/[\beta Y^*/K^*] \)
More on the South...

- Cooperation in the south can be quite useful
- Many countries with high foreign external debt
  - Problem is short term foreign debt
  - Potential problems are exposure to interest rate shocks and currency mismatch

Demand for reserves $R$

- $f(\text{US interest rates } i^{**}, \text{ short term foreign debt } D{'} \text{ and volume of nominal imports } eP*J)$
- $R$ will fall if $i^{**}$ rising
- $R$ will rise along with $D{'}$
- $R$ will rise parallel to $eP*J$; $J = j(q*)Y$; so $R$ will rise parallel to $PY$
Some Problems of Developing Countries

- **Degree of political stability** partly is low.

- **Low credibility** of political institutions in some countries; rule of law sometimes weak.

- **Red tape problems** (bureaucracy).

- **Foreign debt** partly at variable interest rates and short term.

- **Institutions** often not consistent, partly efficient (sometimes lack of credibility).

- **Central bank** is rarely politically independent.

- Facing **protectionism** in the North.
Progress in the South

- Partly through regional economic or political integration = gain in stability and also higher economic growth; possibly also higher intensity of competition
- Some NICs/LDCs quite successful

Developing financial market systems is difficult in the South
- By contrast: Good examples are Singapore, Hong Kong = new financial centers: (M/P)/Y has increased over time!
- How good is China’s banking system? Quality of intermediation process?
Benefits of „financial market progress“ (read: lower intermedtion costs), product innovations (eg venture capital)

- \( S = s(1-z^\prime)Y; \ 0<z^\prime<1 \)
- \( z^\prime \) can be reduced through efficiency gains in the intermediation process = rise of the level of the growth path of \( Y \) (neoicl. model)

- If quality of financial system improves and equity capital is allocated more effectively (incl. venture capital) = rise of trend growth rate

Financial markets with 2 typical problems:

- Information asymmetries (investor or innovation knows better about project than the bank!) = imperfect capital markets
- Moral hazard pro-blems: Policy should design adequate incentives/institutions

Crisis in the North = Crisis in the South

- Banks in US and EU call back from NICs short term investment (liquidity shortage in the South) = rise of short term interest rates in NICs = rise of interest rates NIC

- Slowdown of GDP or GNP in the North undermines export growth of the South

- IMF and World Bank plus regional development banks could help the South

- During the banking crisis 07/08 & glob. recession
  - Special efforts of G20 (London 09 summit): strengthening IMF
  - China has special role
Transatlantic Banking Crisis and Eastern Europe

- Mainly foreign investors in banking (eg Swedish and Finnish banks in the Baltics; Austrian/German banks in X)
- Baltics with fixed exchange rate regime = impulse for high loans in foreign currencies and high CA deficit; fixed exchange rate doubtful in banking crisis
- Eastern European accession countries have faced strong fall of output in 2009 (except for Poland); coping with recessions!
- Some accession countries will consider postponing euro membership

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<td>Poland/EU27 Average</td>
<td>0,47</td>
<td>0,51</td>
<td>0,56</td>
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EU Eastern Enlargement

- EU Eastern Enlargement 2004 & 2007 (Bulg./Rum.)
  - Started with asymmetric trade liberalization
  - EU Phare programme (pre-accession aid)
  - Accession countries had few areas with extra transition period (eg land markets, Poland)

- EU15 fears:
  - Extra budget and intra-EU reallocation
  - Ineffective institution
  - Fear of migration

- EU Copenhagen requirements
  - Democracy
  - Ability to live with the EU single market

Eastern EU Enlargement

- Enormous short term income discrepancies; accession countries have per capita income (purchasing power parity) of about 30% of EU15 average.
- Enlargement raises Community GDP by about 12% in nominal terms, 6% in PPP terms; population increases by more than 15%.
- EU15 has imposed restriction on labor mobility (except UK, Ir, Sw. for 04 Accession countries.)
EU has supported ACs

- EU Structural Funds: mostly for eastern Europe (regions with y<75% of EU average)
  - Supports adjustment in poor regions
  - Requires often co-financing of ACs (difficult for some)

- EU agricultural funds

- eEurope+ which is for digital enlargement; support for Lisbon Agenda in ACs of eastern Europe
EU Accession Countries

- Have reoriented trade relations: mainly with EU (instead of former USSR; Russia still important in Energy)
- Export-GDP ratios have increased strongly
- Have attracted high inflows of foreign direct investment
  - Partly as greenfield investment (important for dK/dt)
  - Partly as international mergers and acquisitions
EU Eastern Enlargement = Part of economic globalization process (FDI = foreign direct investment)

- EU eastern enlargement brings eastern European countries under the EU single market regime with its 4 freedoms (free trade in goods, in services; free capital flows – incl. foreign direct investment = multinational firms invest abroad; free labor movement)

- Trade is powerful engine of structural change; but affects only tradables sector. FDI also affects nontradables sector
Key aspects of FDI

- Inward FDI depends
  - On attractiveness of location (low wages, high labor productivity, top infrastructure, large/growing market, low energy costs etc.
  - Multinational firm considers production abroad as more interesting than exporting/licensing

- Outward FDI: domestic firms have some competitive advantage/e.g. technology advantage which allows successful production abroad
FDI brings important impulses

- FDI inflow = long term inflow
- FDI brings
  - Technology transfer/product upgrading (access to foreign markets)
  - Increase of capital stock $K$; this implies that capital intensity $K/L$ ($L$ is labor) is rising and hence labor productivity and average per capita income; and hence real wage rate
  - Hungary and Tchech Republik have emphasized FDI inflows already early on: Privatization process!
Macro Supply Perspective (Y is output, t is time; Y:= real Gross Domestic Product = GDP, p is price)

- **Micro** = perspective of single firm i with production function $Y_i (K_i, L_i, A_i)$ where Y is output, K capital, L labor, A technology

- **Macro** = aggregate firms; GDP is $Y(K, L, A)$
  - $0 < \beta < 1$; consider $Y = K^\beta (AL)^{1-\beta}$
  - FDI affect $dK/dt$ and hence $K$; $dA/dt$, hence $A$
  - FDI inflow can be pro-competitive (more firms) and stimulate innovation; but also could lead to monopolization (specific sectors) = higher $p$, less innovation

Modernization of the Economic System

- Systemic transformation: Privatization etc.
- Membership in global organizations (IMF, WTO ...)
- Modernization of the Economic System
  - New institutions; compliance with EU acquis communautaire
  - Special case of membership of Euro zone (Slovenia, Slovak Rep.; Malta, Cyprus)
  - New economic policy: geared towards social market economy
Different developments

- Hungary, Czech R. with high FDI inflows per capita
- Poland and Slovak Republic attracted high FDI only later
- Supply-side reforms strong in most accession countries
- Prior to international banking crisis (07/08) economic development – after overcoming transformation recession – fairly good in most countries: high growth, declining unemployment rate;
- Hungary has problems...
Transatlantic Banking Crisis

- Serious problems
  - In Baltic Countries which had high current account deficit-GDP ratios
  - In Hungary which faces problems with debt refinancing and need to cut budget deficit-GDP ratio

- Industrial production in accession countries has decreased in 2008/09 since many firms are suppliers to EU15 firms or US firms (outsourcing); or part of offshoring-dynamics (subsidiaries of foreign MNCs)
Some Key Issues for Future...

- Stabilization
- Growth
- EU eastern enlargement III (which countries and when?)
- EU neighborhood policy
- EU15: full EU single market = no restrictions on labor mobility
- EU27-Russia
- Euro membership for which countries
  - Convergence criteria
  - When
  - With which effects?
More for Discussion

- EU28 and Russia
- EU and China
- EU and ASEAN
- Imperial overstretch of EU
- EU membership useful for all member countries; effects on outsiders
- Political development within EU and its member countries
- Role of EU in economic globalization?
- Lisbon Agenda 2020 (ICT/Internet etc.)
Modified RCA of Exports 1993-2008 and Export Unit Values 1993 + 2008, Austria

Source: Comext-Database and own calculations
Modified RCA of Exports 1993-2008 and Export Unit Values 1993 + 2008, China

Source: Comext-Database and own calculations
Modified RCA of Exports 1993-2008 and Export Unit Values 1993 + 2008, Germany

Source: Comext-Database and own calculations
Modified RCA of Exports 1993-2008 and Export Unit Values 1993 + 2008, Russia

Source: Comext-Database and own calculations

Modified RCA of Exports 1993-2008 and Export Unit Values 1993 + 2008, USA

Source: Comext-Database and own calculations
Modified RCA of Exports 1993-2008, Poland

Source: Comext-Database and own calculations

Modified RCA of Exports 1993-2008, Hungary

Source: Comext-Database and own calculations

Modified RCA of Exports 1993-2008 and Export Unit Values 1993 + 2008, Czech Republic

Source: Comext-Database and own calculations

Thank you for your attention