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Macroeconomics and Global Financial Markets

International Banking, Asset Market Dynamics and Monetary Policy in the World Economy

&

EU Eastern Enlargement *(end of file)*

Contents

Required Readings

- Chapter 2: IMF (2016), World Economic Outlook, April
- PRASAD, E.S.; RAJAN, R.G. (2008), A Pragmatic Approach to Capital Account Liberalization, IZA Working Paper No. 3475.
- WELFENS, P.J.J./RYAN, C., eds. (2010) – book!
- LINDGREN ET AL. (1999), Financial Sector and Restructuring: Lessons from Asia, IMF Occasional Paper No. 188, Washington DC
- WELFENS, PJJ (2018), EIIW paper 242, www.eiiw.eu

Financial Market Dynamics and Challenges 2014-2016

- **Instabilities in China** – domestic speculation wave or structural decline in output growth (total factor productivity growth and hence expected profits)
- Very low real interest rate (r) in the US, UK, EU, Japan and Switzerland – will global savings rate decline due to fall of r or will it continue to be high due to **global demographics (ageing?)**; about 23% global savings rate for many years
- **Low r brings rather high stock market price levels US/EU**

Real Interest Rate US, Germany, UK, Switzerland and France 2015-2017

- **Nominal interest rate of government bonds is zero (or even negative)**
- With positive inflation rate π – except for Eurozone 2016 (deflation!) – **the real interest rate is negative = incentives for overinvestment (MPC = r = i – π)**
- QE policy(Quantitative Easing: dM= -dB) of the ECB 2015-2017= lower real interest rate and real depreciation; European Central Bank buys government bonds (-dB); pays with money (dM>0)

BREXIT UK

- **UK will leave the EU** on the basis of referendum of June 23, 2016 (51.9% pro BREXIT); disorderly referendum (**normal result with standard gov info policy would have been 52% for Remain:** Welfens, An Accidental BREXIT,London:Palgrave 2017)
- **Higher financial market volatility** after June 23, 2016; **new May government in UK.**
- London as EU28 financial center losing ground; many jobs relocated to New York or EU27 as **EU financial passport for banks in the UK** no longer valid after March 29, 2019

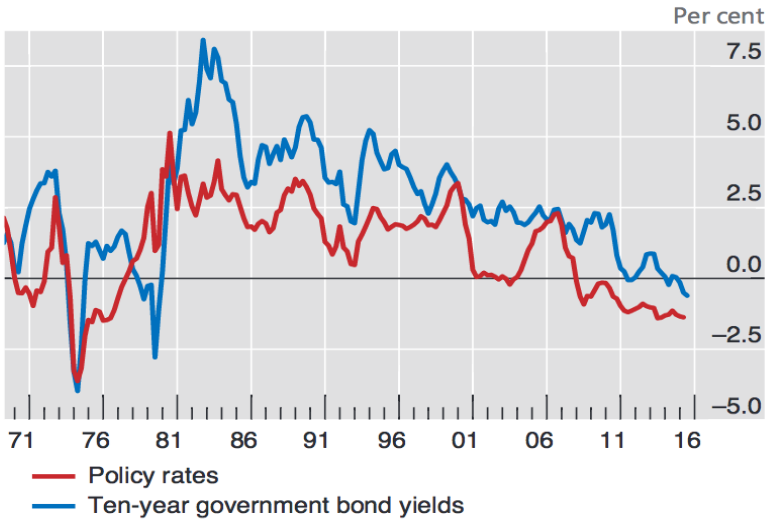
International Perspectives

- 2015/2016 temporary reduction of global output growth, trade growth; 2017 Trump as US president = US and EU stock market rally = higher growth...
- **ICT/internet expansion** in North +South still working = contributing to growth; innovation+
- Global **population growth** (7 bill. now, 10 in 2050)
- **Declining oil prices** 2014-2016; hardly strong increase to be expected (investment in renewables in 2015 =4 times that in conventional fuel), stimulates output in OECD+China; ***global growth rate = 3%***

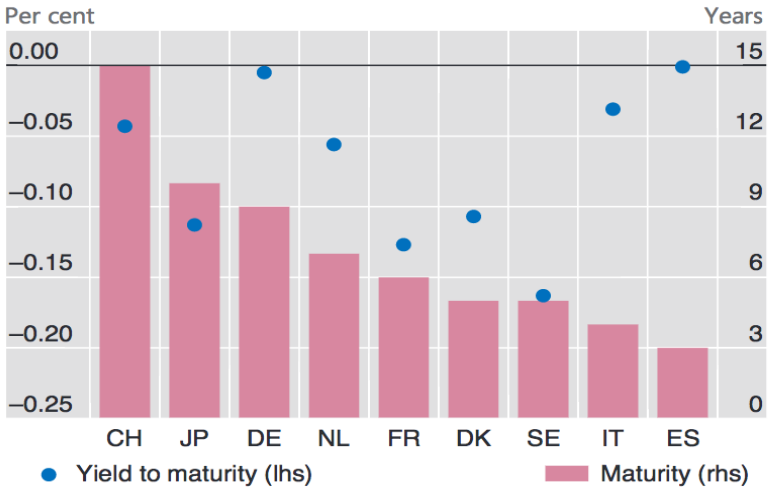
BIS Annual Report 2016: Low real interest rates for government bonds

Interest rates remain exceptionally and persistently low — Graph I.2

G3 rates, inflation-adjusted[1]



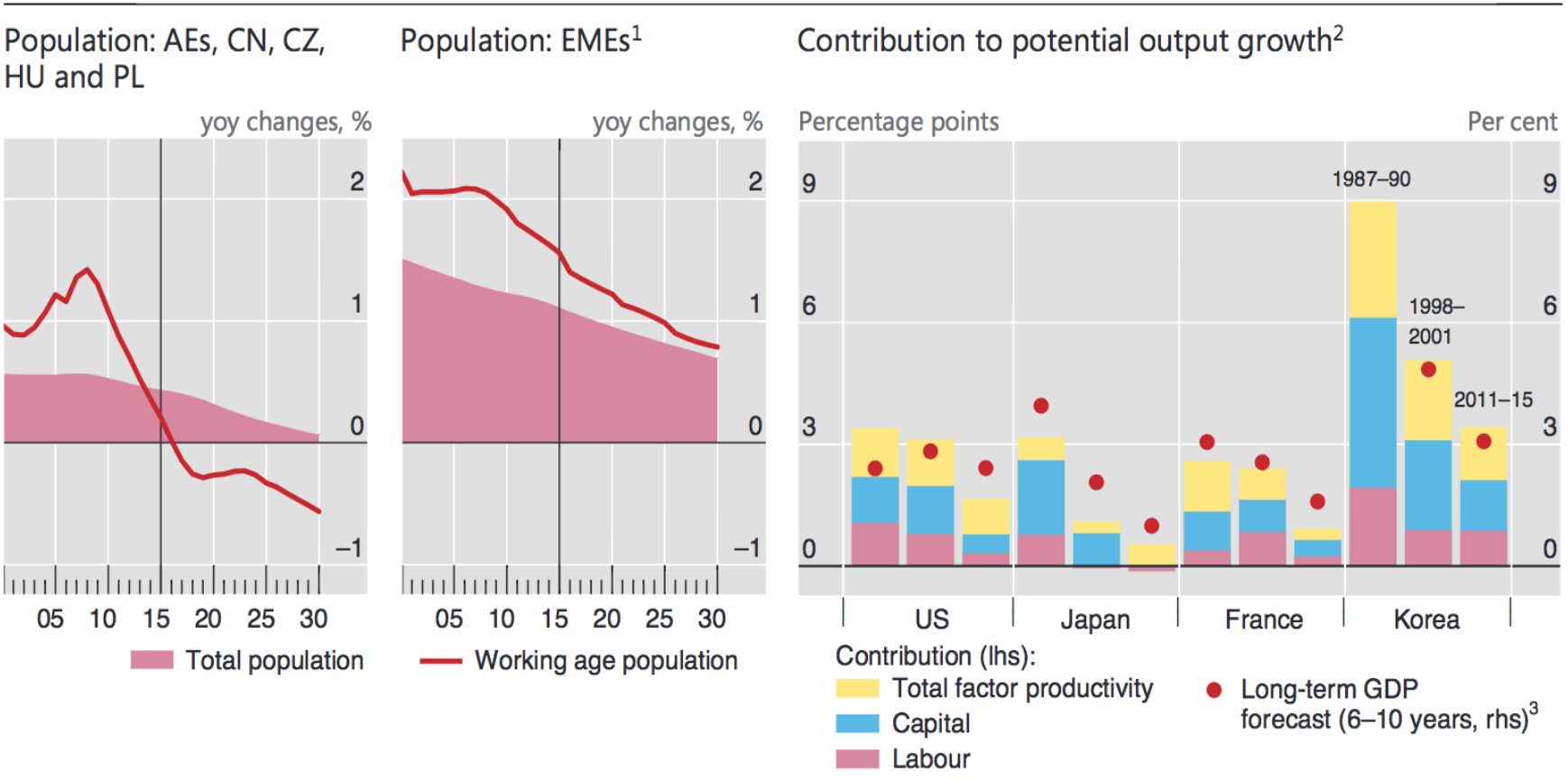
Longest maturity of government bonds trading at negative yields[2]



[1] Weighted averages based on rolling GDP and PPP exchange rates; nominal policy rate (yield) less consumer price inflation excluding food and energy. [2] Bloomberg generic bonds; as at 27 May 2016.

Sources: Bloomberg; national data.

BIS Annual Report 2016: Growth Decomposition (capital K, labor L, knowledge A); labor supply falling…

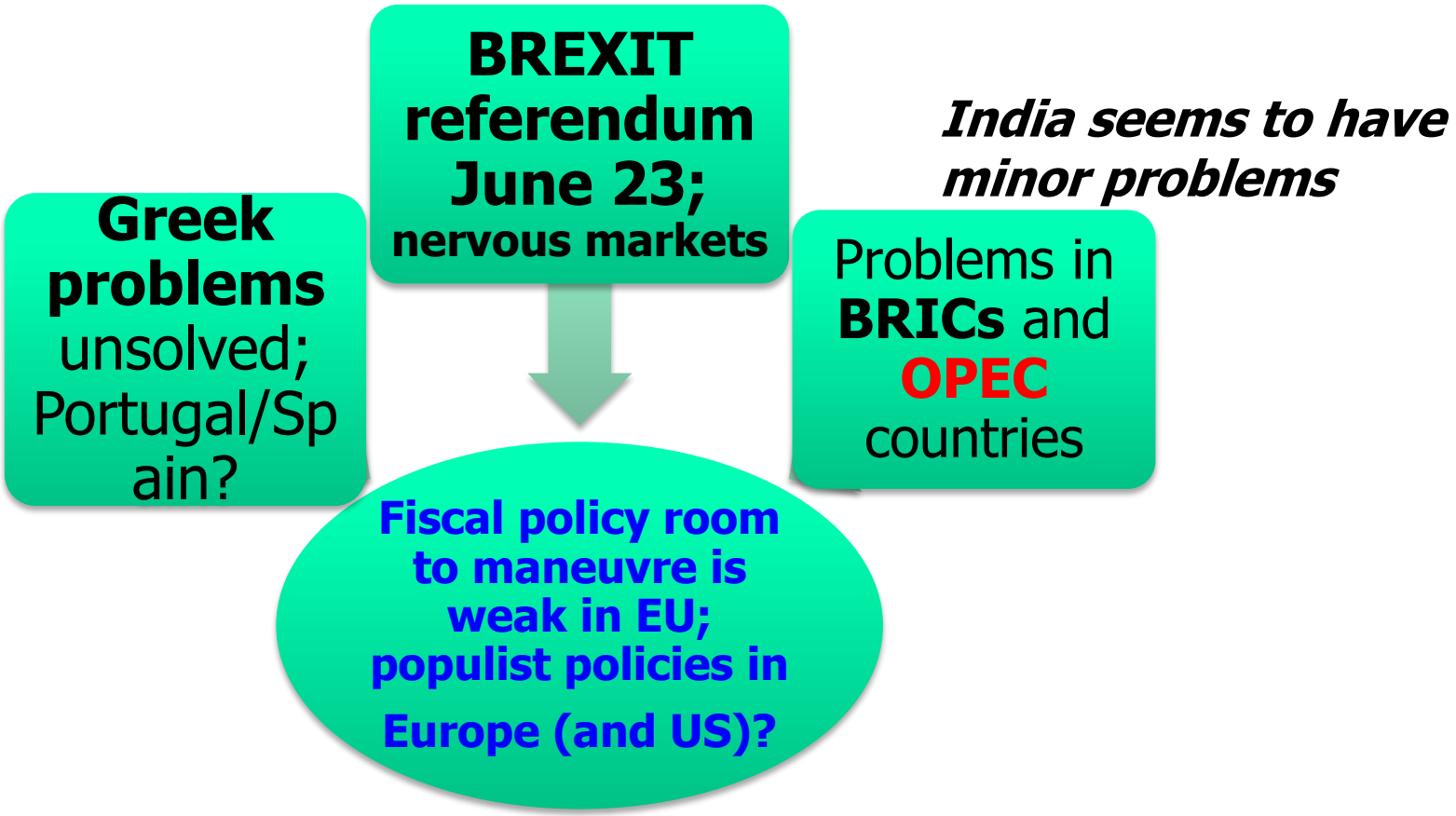


[1] Excluding China, the Czech Republic, Hungary and Poland. [2] Period averages. [3] For 1987–90, only 1990 forecast.

London as EU/global financial center

- **For EU28: Specalized financial services** (risk management, corporate bonds placement) in London; **if UK leaves the single market…**
- **Financial instabilities likely** if certain services are no longer available at normal prices for firms in EU27 countries after 2019.I
- **Does the EU27/do EU27 countries timely encourage provision of new key financial services?** No = Risk

EU und Euro Perspectives 2016; plus BRICs/OPEC



1. Introduction: Key Concepts and the Asian Crisis

- Global financial markets
  - Bonds (domestic government bonds, foreign bonds, domestic company bonds, foreign...)
    - Yield, risk (volatility of price), liquidity
  - Money: international reserve assets; international transaction currency (US $, Euro, Pound, Yen, Yuan)
  - Real estate markets: financed through loans
  - Stock markets (domestic vs. foreign)
    - Yield, risk (volatility of stock price index), liquidity

Financial Markets...

- Global financial markets = interdependent network of markets and banks
- Banks, interbanking market, central bank
  - Banking crisis in country X (big country) always a risk for the whole world economy
  - US/Transatlantic banking crisis 2007-09;
  - Euro crisis of 2010-2014: governments of Greece, Ireland, Portugal lose access to capital markets...; Spain &
  - Previously Asian Crisis 1997/98
  - World Depression 1929-1933 (GDP US: -25%)

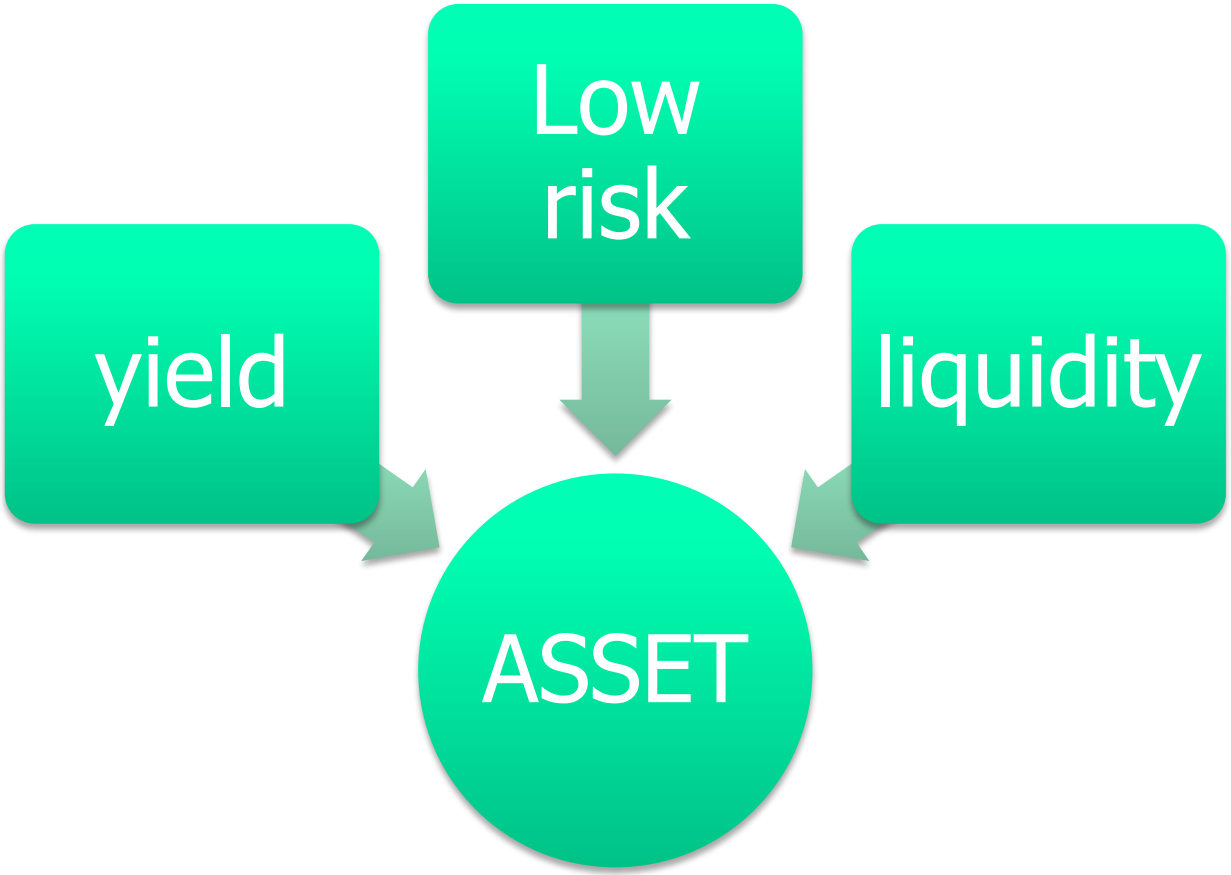
Why Are Financial Markets So Important?

- Accumulation of assets over time;
  - Ratio of wealth to income rising over time
  - Demographic challenge: life expectancy rising; retirement savings increasingly crucial
    - Pay-as-you-go state social security system (pensions): difficult with group of young people declining(19-64/64+)
    - Private savings; private capital funded pension funds rising in importance – unpleasant experiences in Latin America, Poland, Hungary after 2000 when governments nationalized private capital stocks and „enlarged" public pension plans; debt-GDP ratio of Poland, Hungary fell – **was accepted by the Commission= bad signal...**

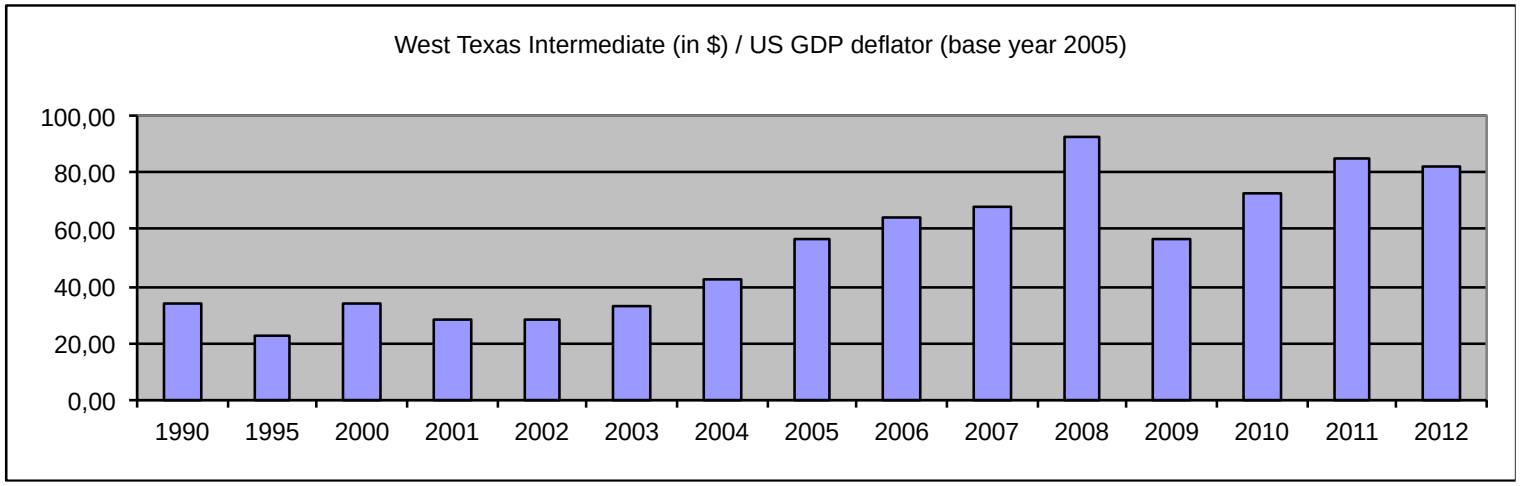
Inequality Within Countries is Rising

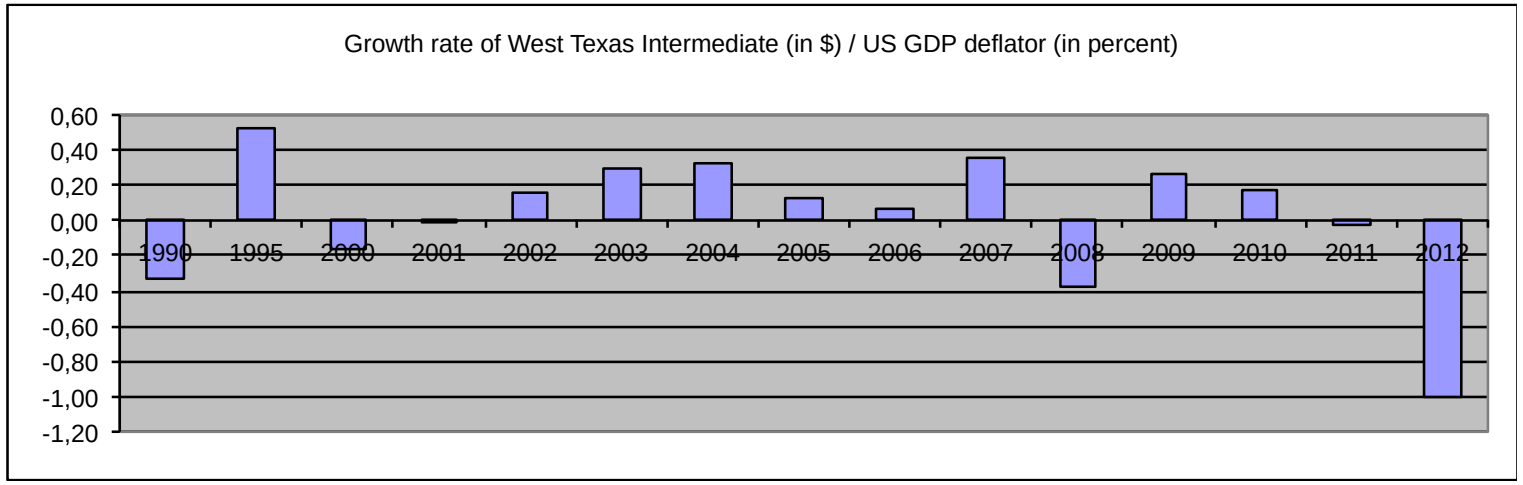
- Top 20% of income pyramid has 80% of wealth in OECD countries
  - Small group of owners of stocks
  - Bequest to smaller cohort of wealth owners than in the previous generation
  - Ratio of wage of skilled labor to unskilled labor is rising in OECD countries

Investors have three key goals



Ultimate safe asset is gold; gold vs. oil (or gas) vs x





Source: Statista, World Bank

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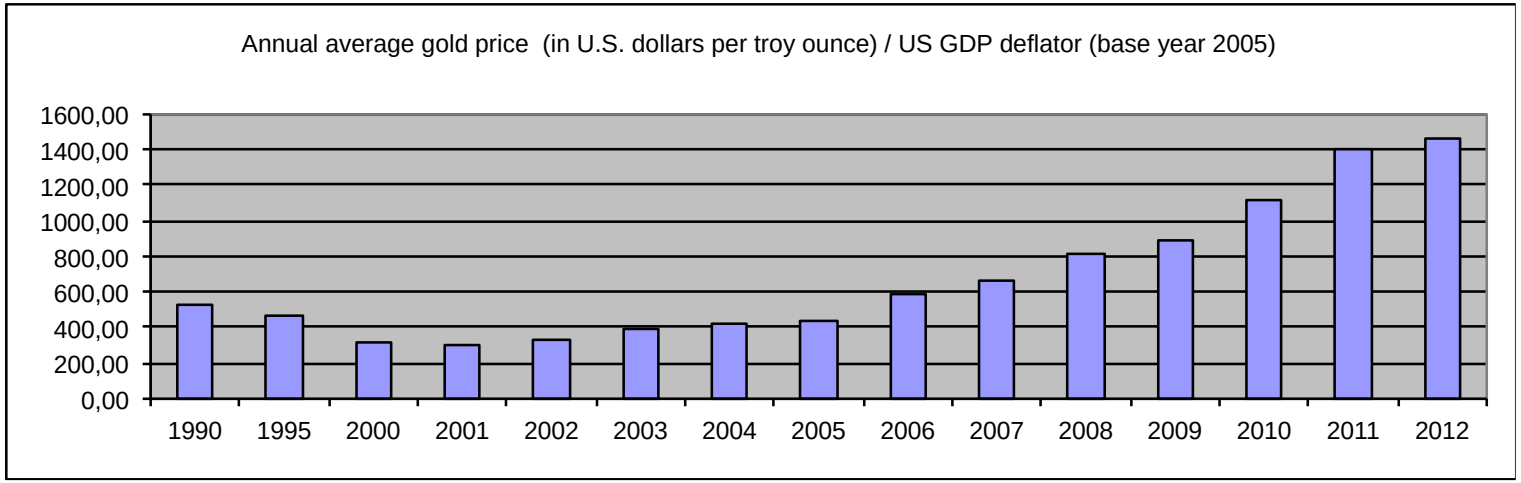

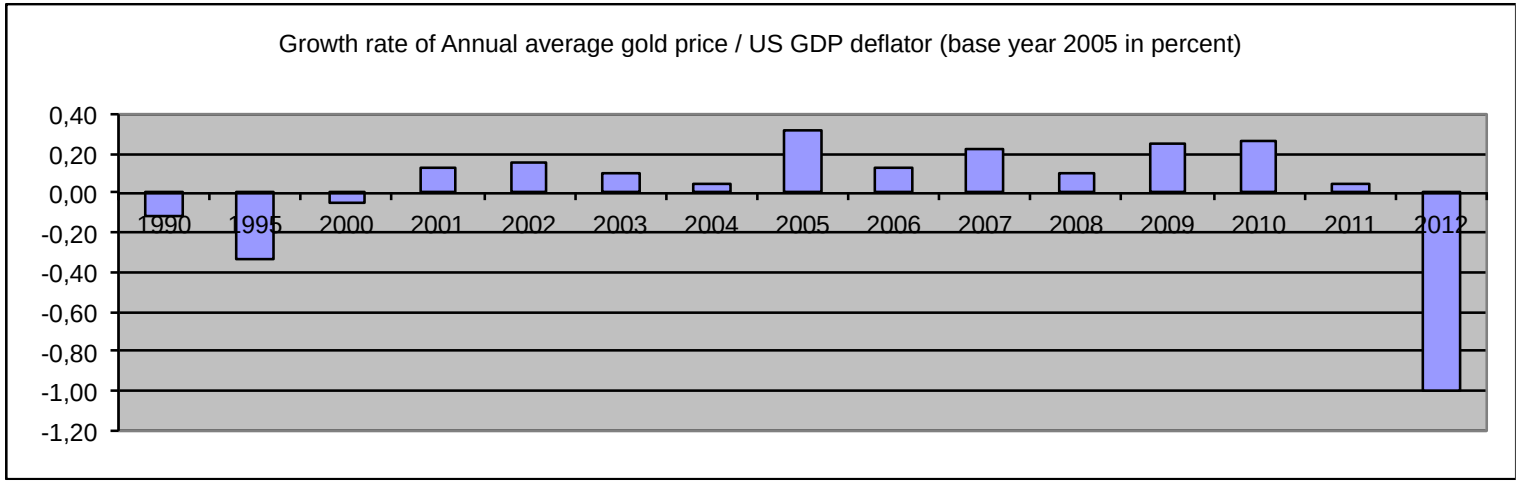

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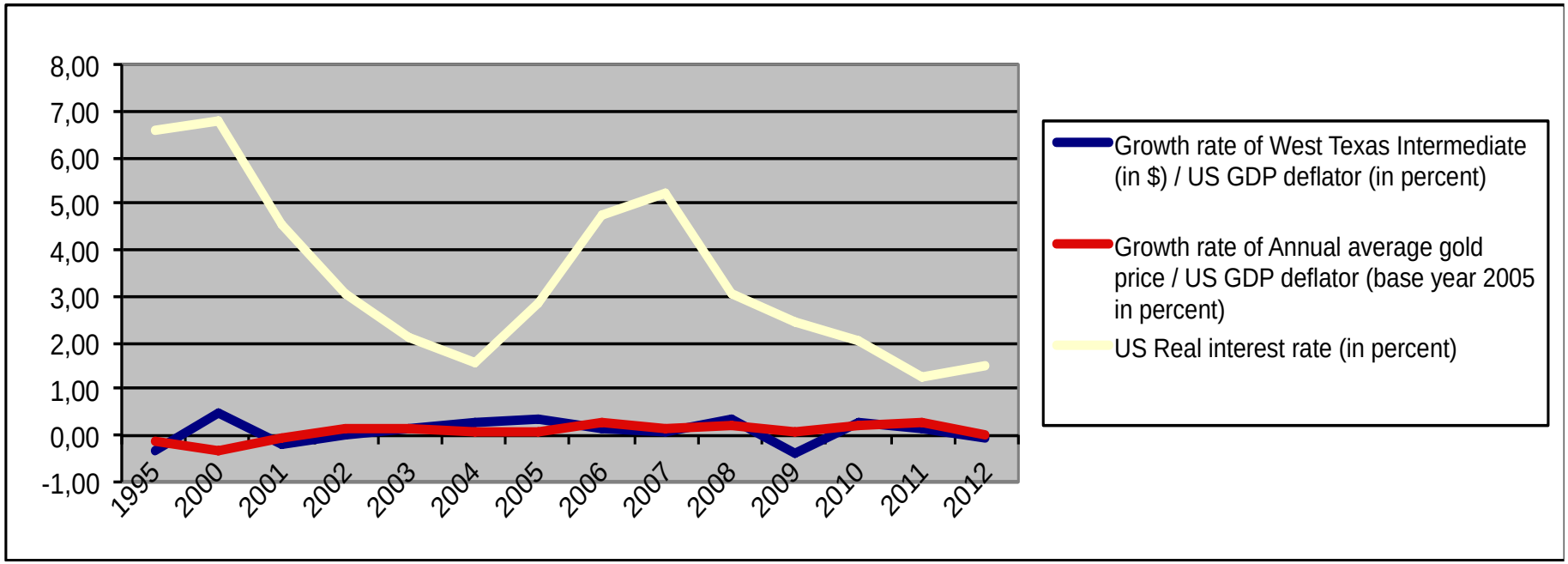
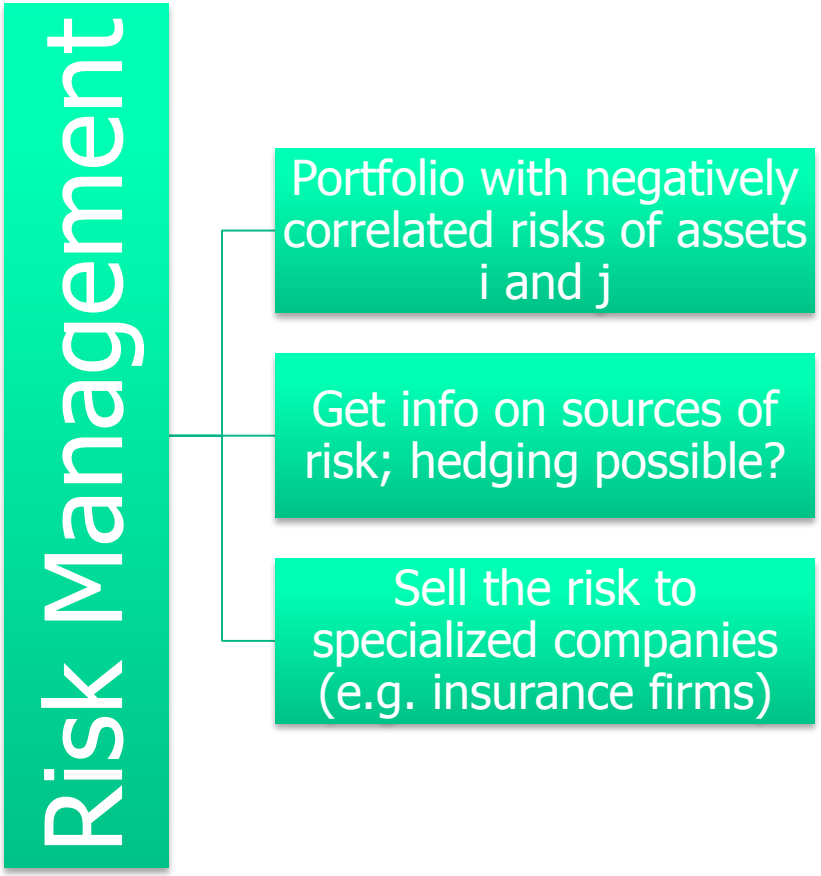


Source: Statista, World Bank

Risks Are A Fact of Life



Financial Market Globalization

- Financial Markets: main assets are
  - Government bonds (risk-free: CH, GE, US(interest i))
  - Risky company bonds (interest rate i‘); risk premium is i‘-i assuming that government bond is risk free
  - Stocks – specific risks, have high yield (in long run)
  - Real Estate – rather illiquid
  - Money (domestic money, foreign money) is liquid
- Financial globalization= more cross border investment; foreign savings financing investment. Capital flows: yield and risk!

Info derived from i‘-i (gov. bonds of country C and AAA)

- Risk of default typically assessed by rating agencies (AAA= 0 default probability; C= junk)
- Formula (quasi-arbitrage) for a world in which investors can chose riskless asset with yield i and risky asset with yield i‘ which has a **probability of default p‘**
  - (1-p‘)(1+i‘) = 1+i
  - Taking logs gives (ln 1+x = x for small x) i‘-i=p‘; that is the probability of default is equal to the difference between i‘ and i

How the Financial System Works

Government

Government defines the rules of the respective markets;

Bank of International Settlements (Basel) is reponsible for prudential supervision (minimum equity requirement for banks etc.; 8% under Basel I and II; even more ambitious under Basel III – to be implemented by 2019)

Private Institutions (e.g. banks; guarantee schemes)

Banks compete for depositors; transformation of short term/medium term deposits into long term loans = intermediation

Banks can also refinance loans through placement of bank bonds in the market. Rating of bank is important since this determines cost of capital

Risk for bank if confidence is lost

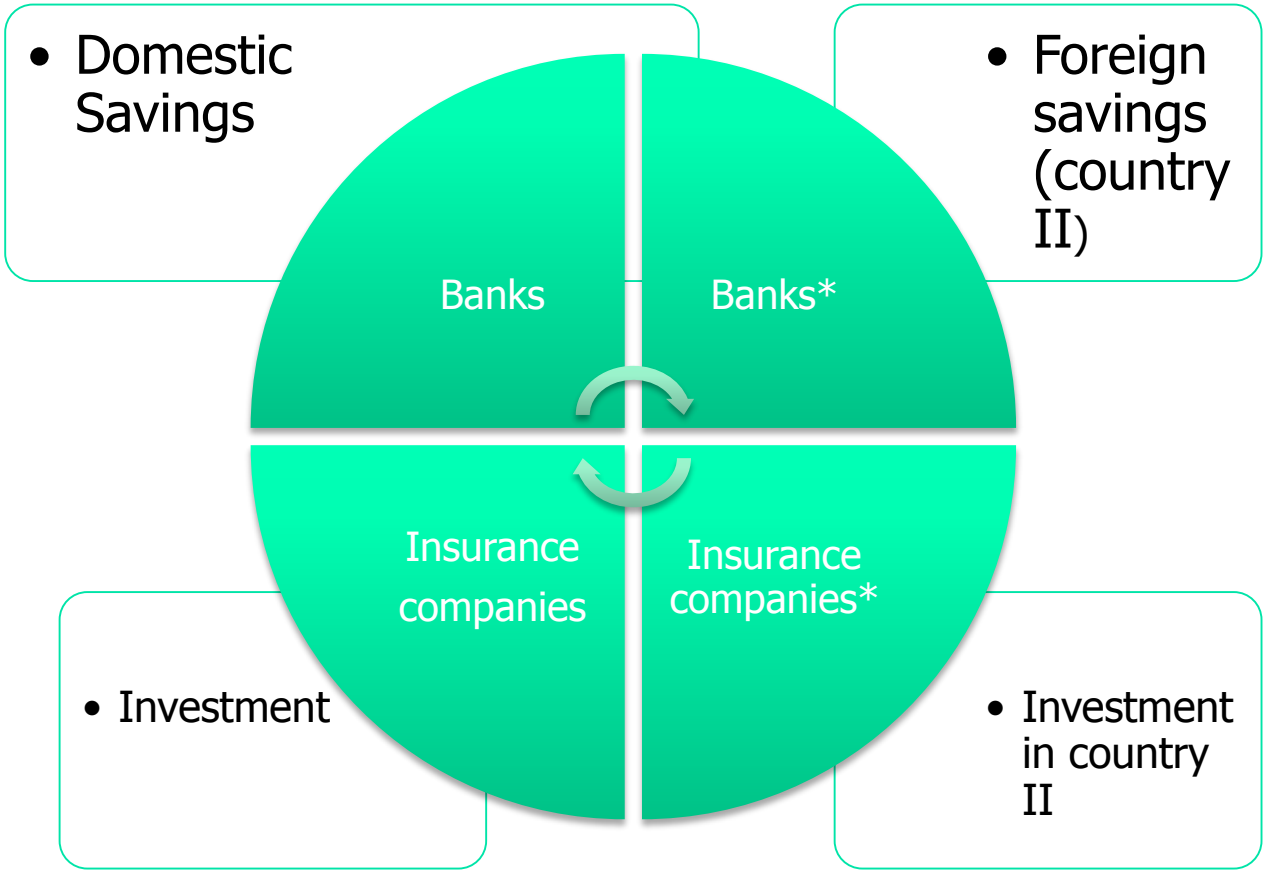
Depositors and Investors

Depositors are insured up to 100 000 Euro in EU (national rule); if insurance is from government this backing effectively is valid only to the extent that the government itself is solvent and could cope with a major banking crisis (Cyprus 2012/2013 is a case where government cannot come up with effective guaran-tee; banking sector to big=25% of GDP in 2012, government debt-GDP ratio too high; credible?

Asian Crisis

- **Crisis erupted in Thailand in 1997**, followed by several ASEAN countries; **regionalization!**
- Massive devaluation of the BAHT in Thailand (and of other currencies)= increasing burden of foreign indebtedness – reflecting currency mis-match under de facto fixed exchange rate regime (i=i*+a‘!)
- **Also maturity mismatch:** financing long-term investment projects short-term; if i* short goes up there will be problems – e.g. construction company in Bangkok ($ loan; revenue in Baht)

Financial System



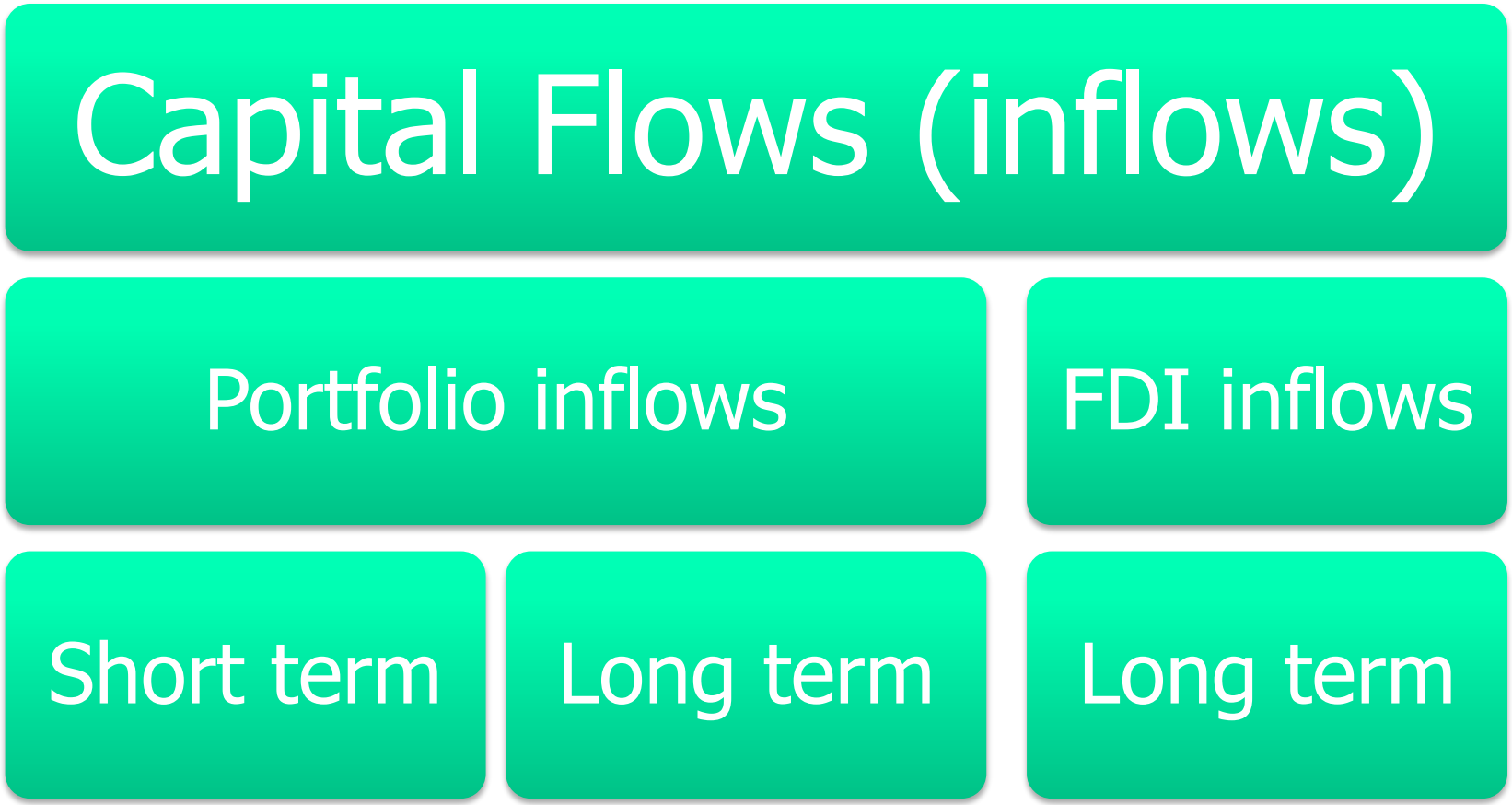
Domestic Investment/Foreign Savings

- Most investment is domestically financed
- Feldstein Horioka hypothesis („FHH"): no role of foreign savings for financing investment – even in a world with liberalized capital flows (since 1970s); **domestic S & I highly correlated**
  - **Empirically**(I/Y)i =a_0 + a_1 (S/Y)i + ε; cross country regression (countries i=1,2...N) as a_1 found to be unity we have the FHH confirmed – despite all liberalization of financial markets in the 1970s+1980s, respectivly.
  - Alternative (Welfens, 2016) approach: stock internationalization (ownership of stocks) of GERMAN MNCs and look at their geographical internationalization; = foreign savings in German I and German outward FDI is also crucial....

Feldstein-Horioka: New Thoughts

- Critique Welfens (2012): presence of foreign investment (MNCs‘ subsidiaries) creates problems for defining „domestic investment“ (now includes reinvested earnings of foreign subsidiaries); if domestic investors invest only in Volkswagen etc, die MNC charateristic of VW implies that German savings relevant for investment abroad!
- JUNGMITTAG/UNTIEDT show that FHH becomes less relevant in EU (consequence of single market)

Capital Flows (Inflows)



If we take closed economies (country I and country II)

- Opening up
  - A) First trade liberalization?
  - B) First capital account liberalization?
- The issue of sequencing is crucial: If B) is chosen this is often not sustainable; possibly, first high short term net capital inflows bring about appreciation of the currency – in a system of flexible exchange rate – which undermines exports of goods; under fixed rate central bank intervenes = increase of money supply (M)

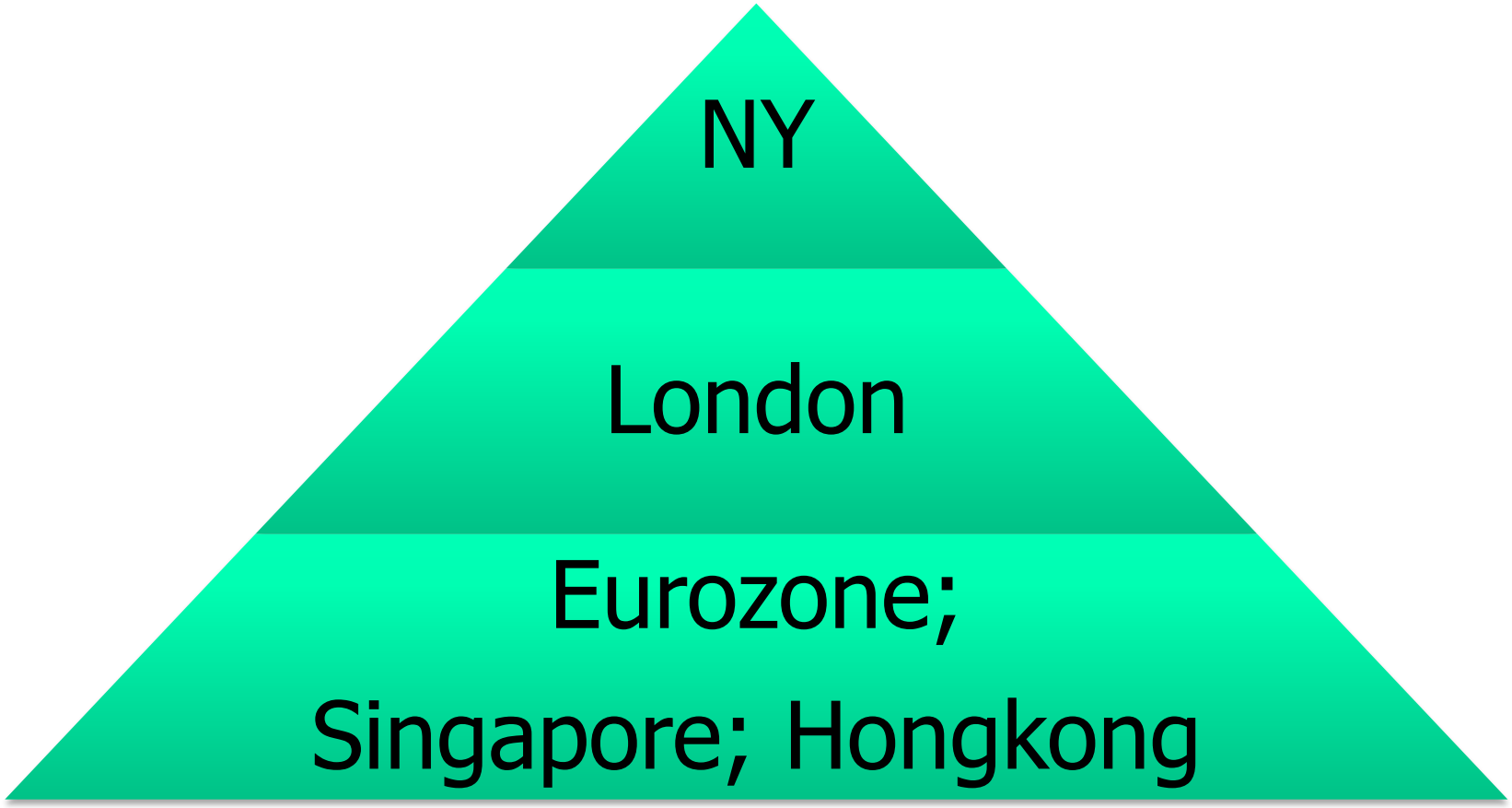
International Capital Flows and Current Account

- Under flexible exchange rate
  - Net import of goods and services imply
  - Equally high net capital imports (foreigners buying government bonds or real estate or stocks or...)
  - Net capital imports = increase in foreign indebtedness D*; critical ratio is D*/Y. If ratio exceeds critical level sudden outflows could occur (problem in some developing country; and GREECE, Ireland 2011/2012

Assume that capital inflows increase...

- Capital inflows increase – are there enough profitable investment opportunities?
  - Role of institutional framework set by government: improvement = more inflows
  - Role of entrepreneurship: if enhanced =more investment opportunities
  - If savings rate is relatively low then international capital inflows can raise investment-GDP ratio and this raises economic growth

Financial Innovations



Banks, Loans, Capital Markets, Innovations in the 2 Decades after 1990

Stage I: Bank gives loans; but has 8% equity requirement, so...

Bundling of loans and selling in capital markets = securitization

?Risk management

Originate & distribute": Poor incentives for banks' loan policy/risk management as banks anticipated: they could get rid of loan packages by selling loan bundles in capital market

Financial Innovations Raise Systemic Risk Unless Adequate Regulation

Light regulation= facilitates innovation

Banks strongly regulated on paper, not in reality

Can we get optimum regulation?

Big banks: too big to fail-problem

Regulatory approach in US and UK have strong impact on OECD countries

Asian Crisis 1997/98

- Thailand, Indonesia, Malaysia etc.
  - Had high capital inflows before (3-4% of GDP)
  - (In)formal fixing of exchange rate = incentive to take $-denominated loans at low interest rate
  - High growth, low inflation, low gov. deficit ratios
  - July 1997 Baht devaluation (Thailand); other devaluations followed, recession, mass unemployment; downgrades of sovereign debt, bank runs, inadequate prudential supervisions = became later starting point for **IMF FSAP**= Financial Sector Assessment Programme (regular reports)

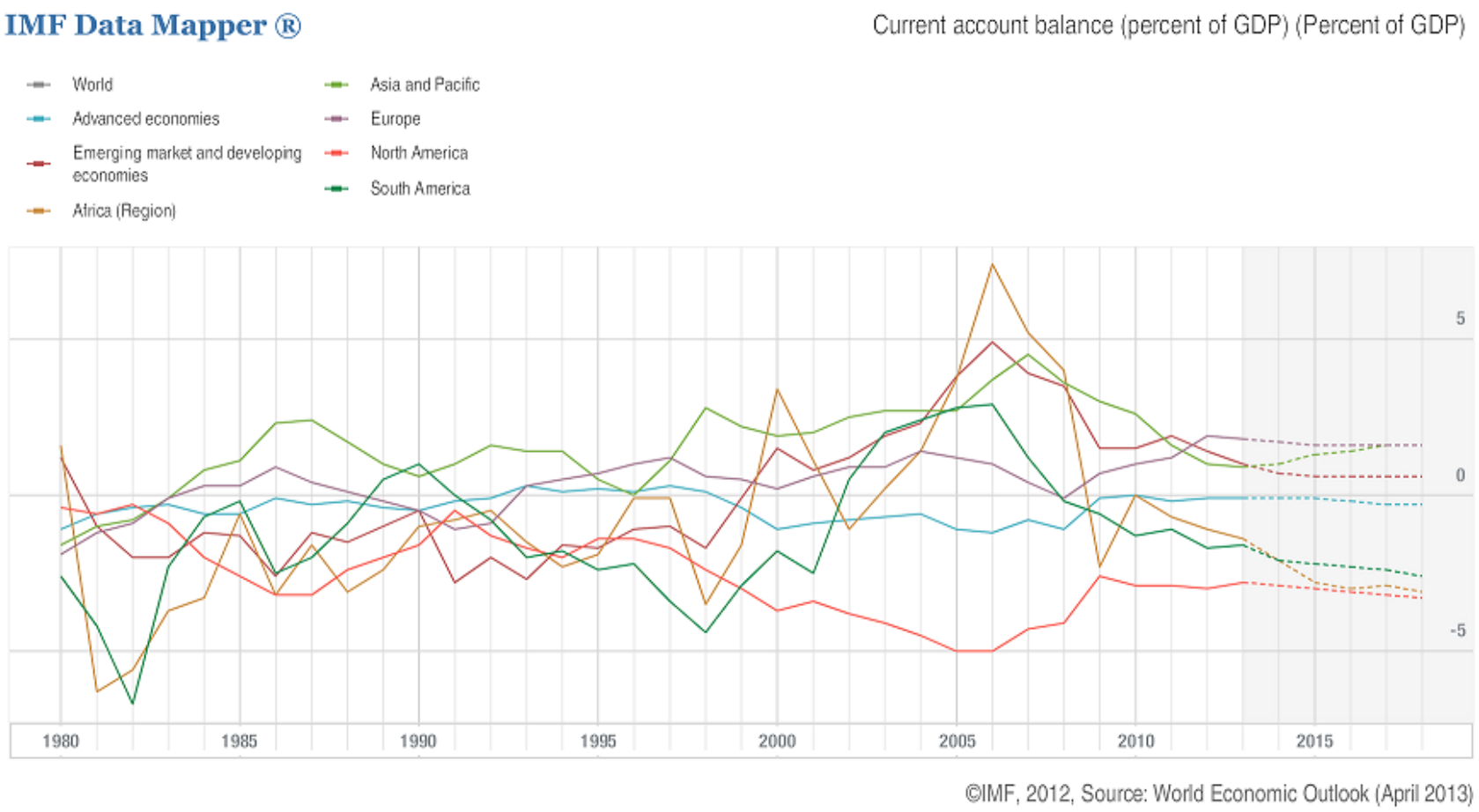
Lessons from Asian Crisis 1997/1998

- Initially normal growth, low inflation, effectively fixed exchange rates; domestic banks gave many loans, firms took even more $-denominated loans abroad at low interest rates
- Problem of original sin
  - **Currency mismatch** (peso revenue, $ debt of firm)
  - Maturity mismatch: short term lending abroad under fixed exchange rate: for financing long term investment project; what happens if there are high sudden outflows & **after devaluation?**

Effects of Free Capital Flows...

- Capital flows stimulate structural change/investment and economic modernization...
  - If capital flows out this will cause a strong rise of the real interest rate = fall of investment (I(r)) and recession; policymakers know: hence capital flows normally have a disciplinary effect on host country (except in monetary union with lack of rules...)
  - Caveat: capital flows out because of problems in host country **or positive shock in source country**

Current Account Deficit/GDP Ratio (by regions; IMF); USA with deficits; individual countries also



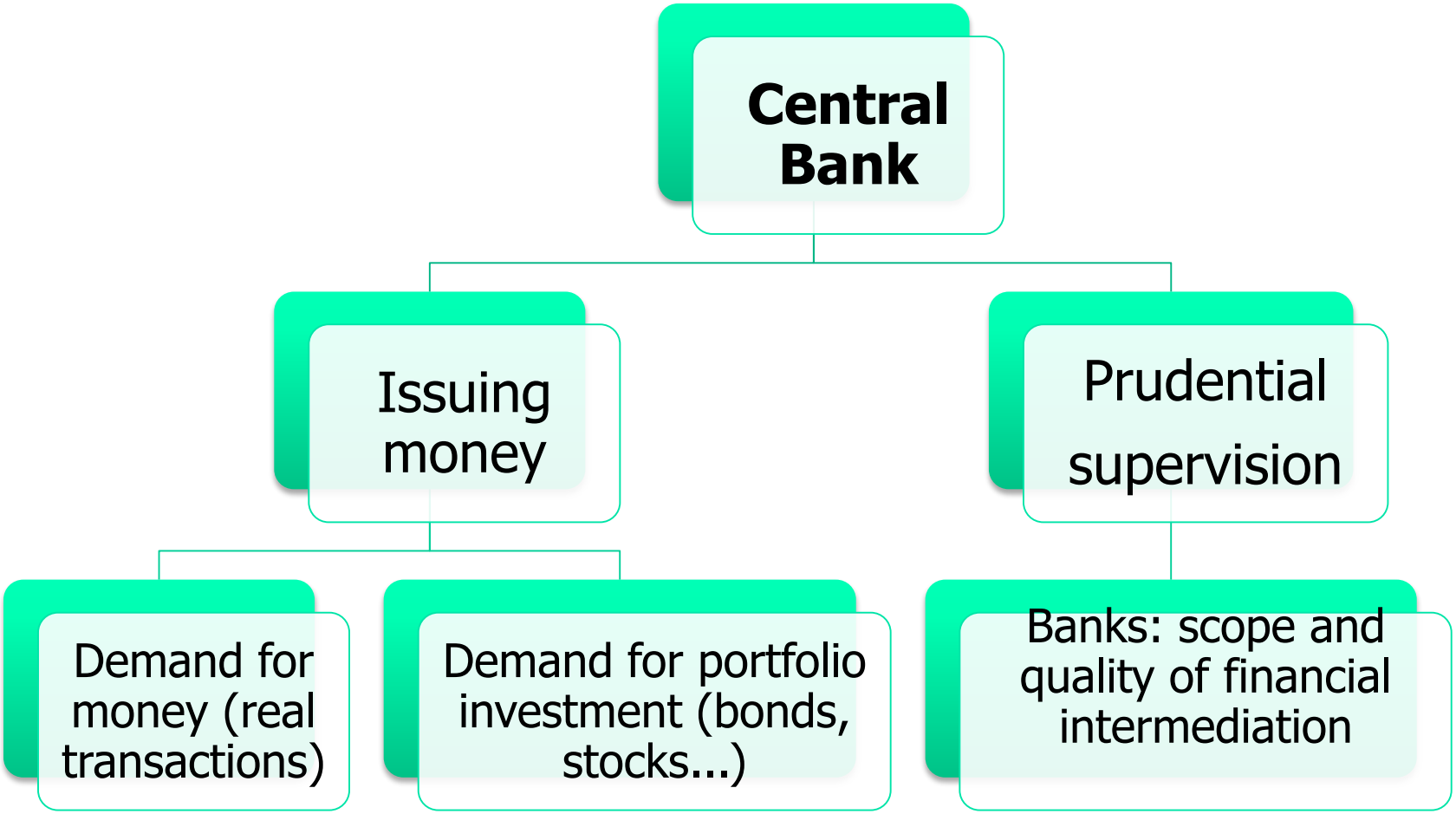
The Role of Money

- Money is
  - Unit of account
  - Means of transactions
  - Store of value
  - (vehicle currency; KRUGMAN)

Basic Aspects of Holding Money
(λ, λ‘ as positive parameters)

- Holding money (liquidity) has opportunity costs:
  - nominal interest rate i
  - real interest rate r = i – inflation rate (π); I(r)!
  - Demand for money: $M^d = Pm(Y,i) = \mathbf{P[\lambda Y - \lambda' i]}$; special specification (CAGAN; e‘ is Euler number) of the demand for money: $m = Y^{\eta} e^{-\varepsilon i}$; $\ln m = \eta \ln Y - \varepsilon i$
  - Equilibrium condition money market $M/P = \mathbf{\lambda Y - \lambda' i}$
- Foreign money; fixed exchange rate vs. flexible exchange rate system

Money and Capital Markets



Fixed exchange rate system

- Fixed exchange rate system:
  - Government fixes a parity (in a system with n countries and currencies there are n-1 exchange rate!); equilibrium parity derived from P=eP* (* for foreign variable, e is nominal exchange rate, P price level)
  - One country (or several countries) as „anchor country" vis-à-vis countries will fix the exchange rate: After World War II the US $ is dominating
  - $ as dominant international reserves: functions (e.g. view of China's central bank): liquidity, store of value

Fixing the Exchange Rate

- A system of fixed exchange rates
  - facilitates trade, but could cause disequilibrium in the **current account balance** which is determined by Y, Y* and the **real exchange rate eP*/P:=q***
  - facilitates international capital flows – if there are no risk premiums and no expected depreciation the nominal interest rate i (home country) will be equal to i*
  - The law of one price will hold: P=eP* (P is the price level); hence lnP(t) = lne(t) + lnP*(t); note: the logarithmic differentiation with respect to time t is a growth rate: Hence dlnP/dt = dlne/dt + dlnP*/dt ; small country facing problem of imported inflation (with dlne/dt=0)

Current Account in Nominal Terms and in Real Terms

- CA nominal= PX – eP*J (X is export quantity, J is import quantity)
- CA real = X(q*,Y*,v/v*) – q*J(q*,Y,v/v*) where v is rate of product innovation, v* is foreign product innovation rate; X is a positive function of q*,Y* and v/v* and J a negative function of the real exchange rate (* for foreign variables); dCAreal/dq*>0 if η+η*>1
- If P should increase faster than P* a given nominal exchange rate implies loss of international competitiveness and CA<0

The Analysis Can Be Refined…

- Consider tradable goods – for those the law of one price will hold (if such goods are homogeneous) and nontrabable goods
  - BALASSA-SAMUELSON effect: **price of non-tradables will increase faster than that of tradables** since wages in the non-tradables sector will increase as fast as in the tradables sector where, however, the productivity growth rate exceeds that of the nontradables sector; mark-up pricing then implies a rising role of the relative nontradables price since mobile workers (across sectors) imply equal rise of wages in T- & N-sector

Balassa-Samuelson Effect: Relative Price of N-Goods Rising over Time (as y:=Y/L rises)

- The inflation rate in a relatively poor open economy under fixed exchange rate will rise faster than in the advanced economy: the reason for this is the relative rice of non-tradables prices over time which is relatively strong in the poor country facing economic catching-up. Demand for non-tradables rises parallel to real per capita income
- Unclear to which extent foreign direct inflows in the N-sector/T-sector affect outcome.

Monetary Approach to the Balance of Payments (Harry G. Johnson, R Mundell); fixed ex. rate

- **Demand for money (1) $M^d = Pm(Y,i)$**
- Law of one **price (2) P=eP*; (3) M= H+eR‘** (H is domestic credit of central bank to commercial banks; R‘ is nominal foreign reserves at the central bank
- If the foreign price level (in the rest of the world/in the world market) is raised P* as well as P – note e is given! – will increase. As P is rising the demand for money increases; hence money supply $M<M^d$; excess demand for money causes additional export of goods = increasing supply of foreign currency in foreign exchange market: Central bank intervenes, buys foreign currency = increase of reserves = **increase of M** (money supply: note M= H+eR‘ so that a rise of R‘ raises M!)

Requirements for a currency to be a preferred foreign reserve

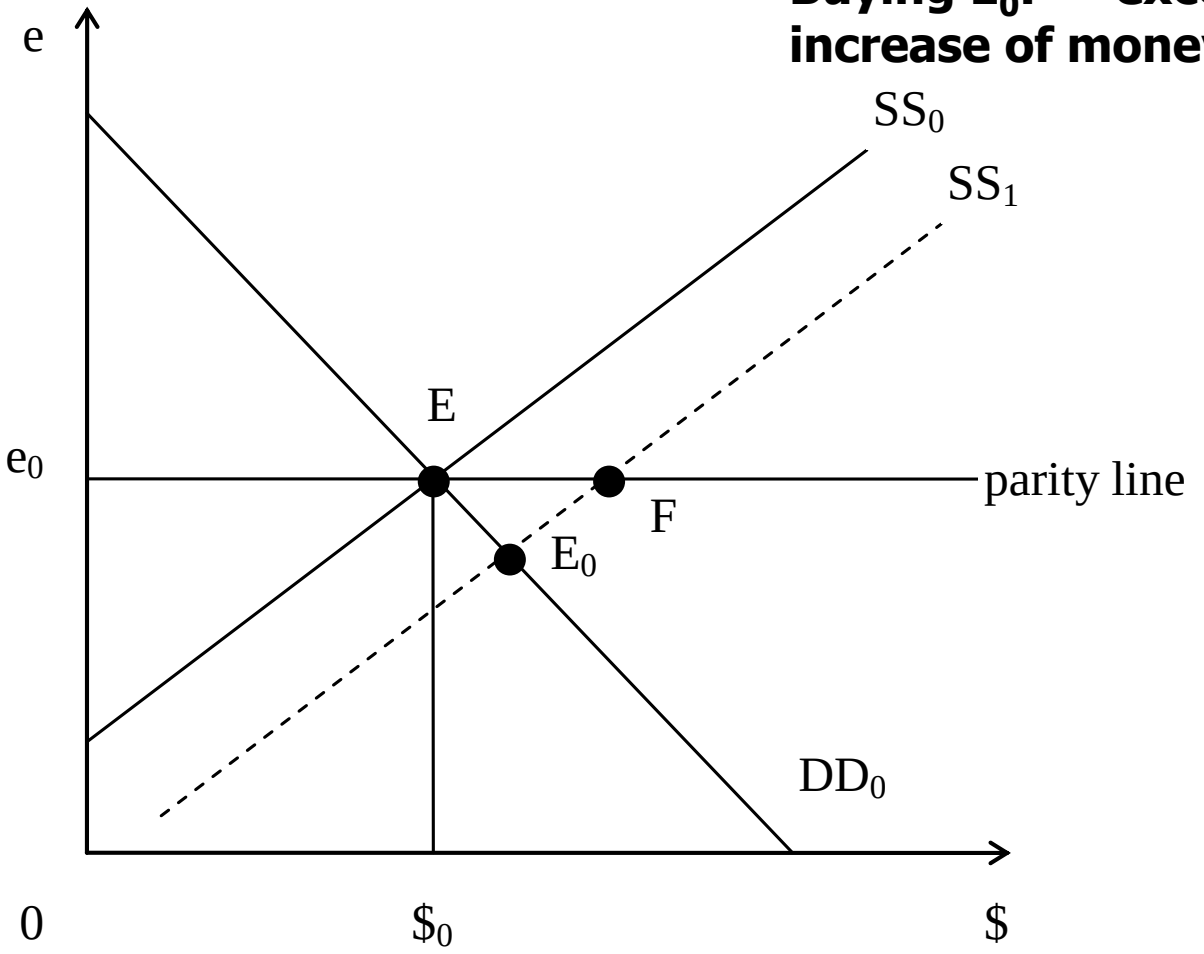
- Country (or origin of reserve currency) should have
  - **big economy** = major trading partner
  - **world-class banking system** (liquidity, store of value, intermediation)
  - **low inflation rate (monetary policy!)**; under fixed exchange rate system other countries will import the inflation rate of the reserve currency country

Monetary Approach to the Balance of Payments (Mundell, H.G. Johnson)

- Consider an open economy with tradable goods (T) and non-tradable goods (N)
- Arbitrage brings about 1) $\mathbf{P^T = eP^{T*}}$ (* for foreign variable; P^{T*} is price index of reserve currency country)
- Domestic price index ($0<\alpha<1$): $P = (P^T)^{\alpha}(P^N)^{1-\alpha}$
- Money market equilibrium $M = \mathbf{Pm(Y_0, i_0)}$
- Inflationary policy in reserve currency raises P^{T*} and hence P^T (via arbitrage) and hence P; hence excess demand in money market; small open economy raises exports = excess supply in foreign reserve market = central bank intervention = dM>0;

Fixed Exchange Rate System

Central Bank must defend parity: Buying E_0F = excess supply of $ = increase of money supply



If there is an excess demand…

- In case of excess demand the country must devalue – at some point!
  - central bank can cover excess demand until is has run down its reserves
  - can central bank/government borrow foreign exchange?
  - What happens in the context of a strong devaluation

EMU means one currency, one central bank

- Convergence criteria (selection starting countries and newcomers to EMU):
  - Inflation rate should be low (not more than 1.5 points above the 3 countries with the lowest rate)
  - Interest rate maximum of 2 percentage points above interest rate in three best inflation performing countries
  - Deficit-GDP ratio below 3%
  - Debt-GDP ratio below 60%

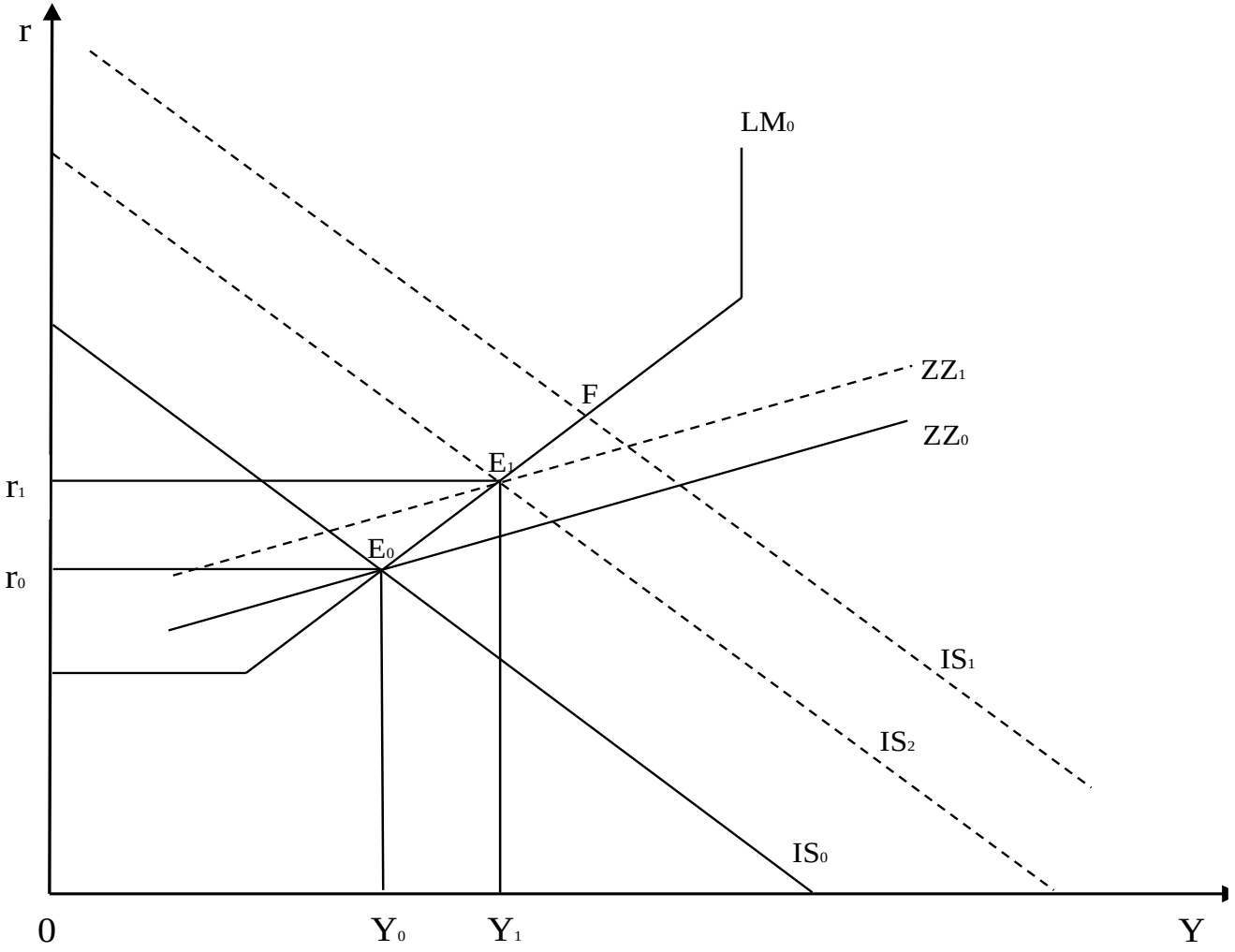
Analytical key elements in system of fixed exchange rate

- Small open economy can export as many tradables as it wishes; money supply is endogenous for country I (home country); II is reserve country
- Fixed exchange rate facilitates trade, but gives foreign reserve country big impact on both price level in II and in I!
- Recall quantity theory: M V = P Y
- $g_M + g_V = g_P + g_Y$ (g growth rate;V is velocity; g_P inflation rate π)

Fixed Exchange Rate System

- IS, LM, ZZ model (Price level is given)
  - Endogenous variables are r, Y, M
  - Mundell Fleming model of open economy under fixed exchange rate system); domestic equilibrium is full employment, external equilibrium: balance of payments (current account should be balanced)
- Flexible exchange rate
  - M is exogenous
  - Endogenous variables are r, Y and e (P is given in the Mundell Fleming model)

Mundell Fleming Model: Expansionary Fiscal Policy under Flexible Exchange Rates



Monetary Integration in EU

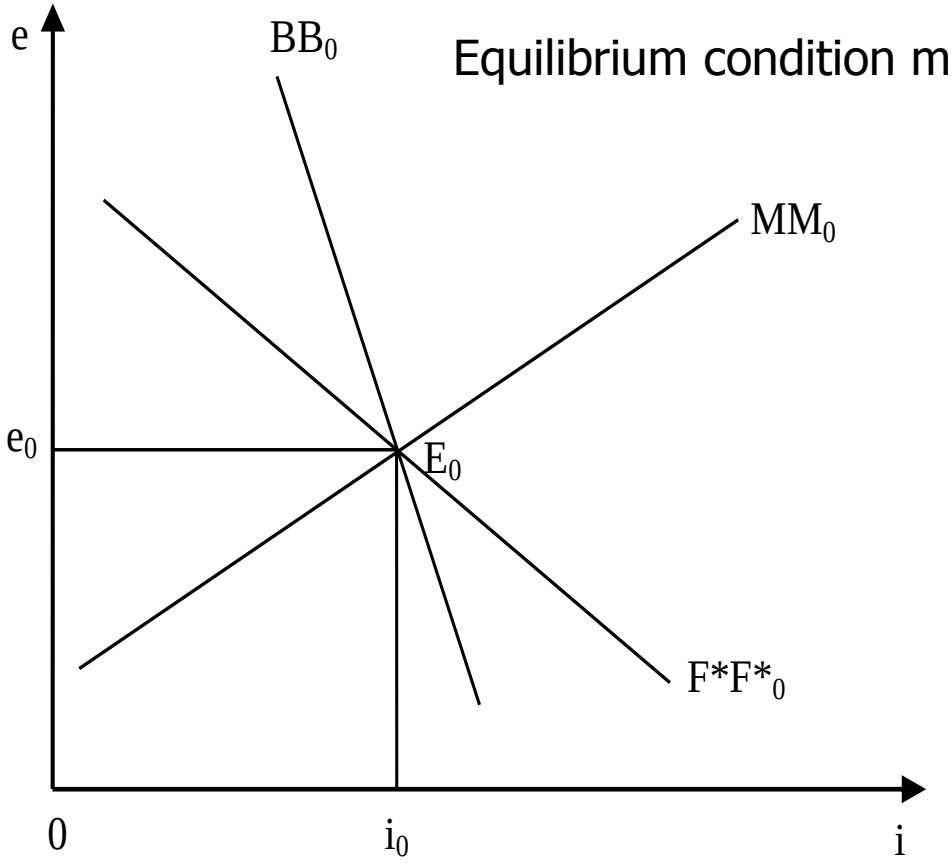
- Fixed exchange rate system until 1973: EU currencies fixed vis-à-vis the $...
- Bloc-floating 1973-1979
- 1979: Creation of European Monetary System (EMS I): parity grid with Germany's Deutsche Mark becoming the anchor of the system: +/- 2.25%; later up to +/- 12%
- 1999 start of the Euro and the European Central Bank/European System of Central Banks (ECB+national central banks); 2010/11 Euro crisis...

Flexible Exchange Rate System

- If the exchange rate is flexible what determines the short term and long run equilibrium in the foreign exchange market?
  - eP*=P is law of one price for the long run
  - In the short term the dynamics of portfolio decisions (and capital flows in the medium term) will determine the equilibrium exchange rate
  - Consider money M, domestic bonds B, foreign bonds B* which is the starting point of the Branson model; shares in M, B and F* **(in foreign currency)** must add up to 1.

Branson Model: nominal value of wealth is A", h is negative function of i and i*...

Stylized equilibrium lines in the graph



Equilibrium condition money market..1) $M = h(i, i^*)A''$

2) $B = b(i, i^*)A''$

3) $eF^* = f(i, i^*)A''$

4) $A'' = M + B + eF^*$

$[\ 1 = h + b + f\ ]$

(2) Domestic supply of short-term bonds = domestic demand for bonds
(3) Supply of foreign bonds expressed in domestic currency = demand for foreign bonds;
Note b is a positive function of i and a Negative function of i*; f is a positive function of i*, negative function of i

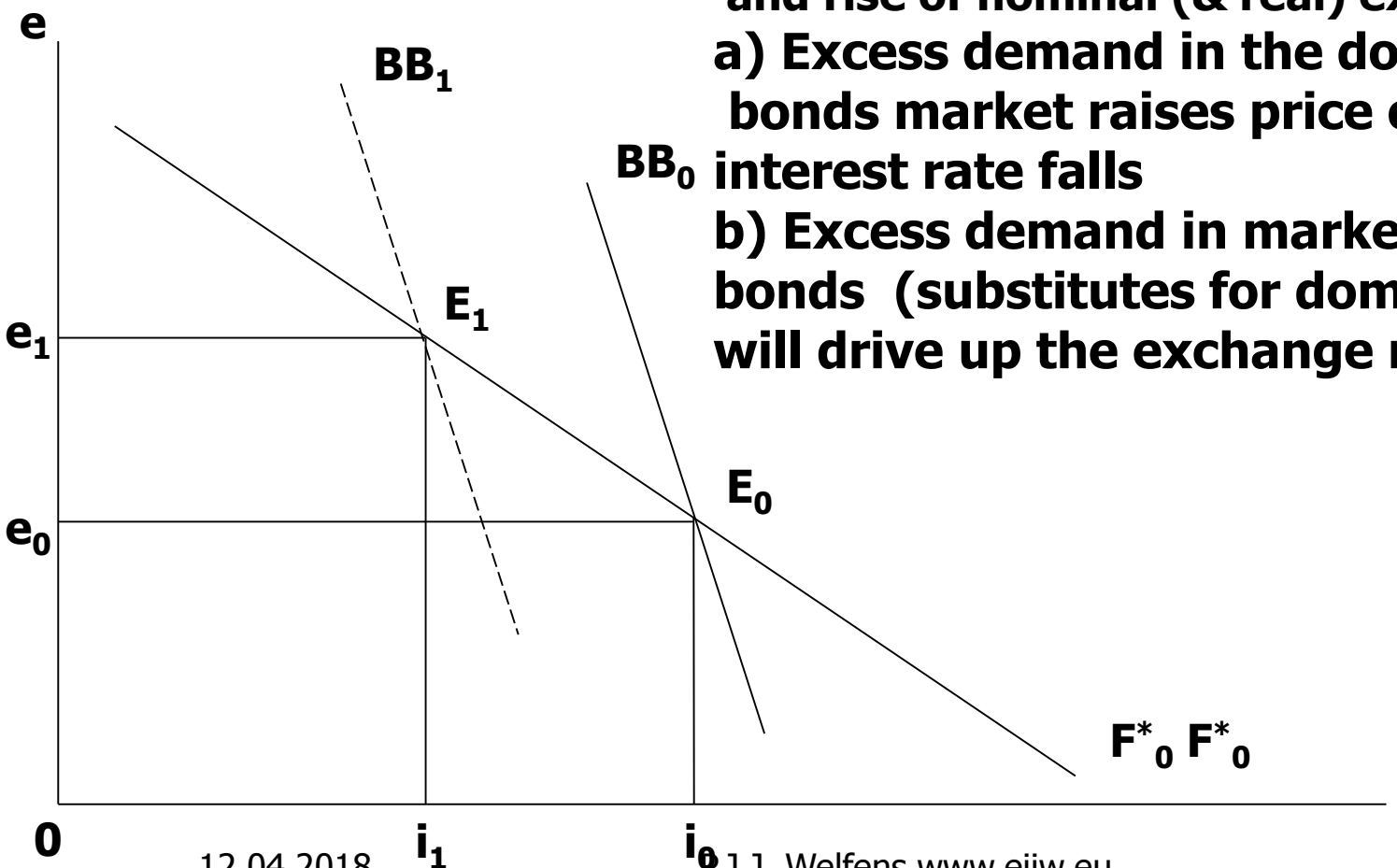
Expansionsary Open Market Policy in Branson Model

- At a given line MM the BB curve shifts to the left:
  - Nominal depreciation (and real depreciation as long as P is not rising)
  - A fall of the nominal (and real) interest rate
  - Quantiative Easing in the US and the UK 2008-2011 is massive expansionary open market policy (dM>0, dB>0: central bank buys bonds)

Portfolio Approach to the Determination of the Exchange Rate

- Only **two of the equilibrium market conditions are independent** (budget constraint!!)
- The model determines the nominal exchange rate e and the nominal interest rate
- If we have an open market policy (dM=-dB) the nominal wealth is not changing; but new equilibrium point, e and i are changing therefore!

dM>0; dB<0; **dM=-dB;** Leftward Shift of BB Curve etc.



Fall of the inominal (and real) nterest rate and rise of nominal (& real) exchange rate

a) Excess demand in the domestic bonds market raises price of bonds, interest rate falls

b) Excess demand in market for foreign bonds (substitutes for domestic bonds) will drive up the exchange rate

Fixed Exchange Rate System vs. Flexible Exchange Rate System

- UK-dominated Gold Standard was a fixed exchange rate system; countries fix exchange rate vis-à-vis gold – system ended after World War I (1914-18); price level P constant in the long run; fluctuations over time
- Bretton Woods: 1944-1973; dominated by US; US $ is reserve currency with a fixed gold parity. EU countries fix exchange rate vis-à-vis $. Money supply in EU countries endogenous!
- Flexible $ exchange rate after 1973

Monetary Integration in Europe

- Institutional steps:
  - (1) Free trade
  - (2) Free capital flows; 1+2 in EU single market
  - (3) Cooperation among central banks
  - (4) Pressure of big low inflation country on other countries in the EU **to follow low inflation policy of Germany**
    - Countries with higher inflation rate lose competitiveness = net exports will decline = output decline = adjustment pressure

Monetary Union (EMU)

- Monetary Union = fixing exchange rates once and for ever/or one currency (European Monetary Union)

Macroeconomic Perspective (2 Country Approach)

- Open Economy Perspective
  - GDP (Y) and growth of Y in country I; GNP≠GDP
  - Gross domestic product (& growth) in country II
  - Employment in country I and country II (unemployment rates; domestic equilibrium)
  - Current account deficit/surplus (country I=-country II)
  - Output price level (P) and inflation (dP/dt)/P
  - Asset prices (P‘ is stock market price index, P“ is price of oil/gas)

GDP and GNP

- GNP (Z) = GDP (Y) plus net factor income from abroad; $\underline{Z= Y(1-ß)}$ if capital stock fully owned by foreign investors and $Y=K^{ß}L^{1-ß}$
- We know that Y = rK + wL (r is real interest rate, K capital sock, w real wage rate (W/P; W is nominal wage rate), L is labor; if output is given by (1): $Y=K^{ß}L^{1-ß}$ (with $0<ß<1$) it holds under competition that profits $Y_K K= rK =\underline{ßY}$ where Y_K is the marginal product of capital = first derivative of production function (1): $\partial Y/\partial \mathbf{K=ßK^{ß-1}}L^{1-ß}$

World Economy Perspective

World Economy

- 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
- Special aspects of financial market development in South

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

Three time horizons

Short Term	Medium Term	Inflation Dynamics
• Financial markets • Asset price shocks • Positively or negatively correlated P‘ and P‘*	• Output • Employment • Nominal interest Rate i= r+π' (here π' is the expected inflation rate)	• Inflationπ • Real interest rate ex post r = i-π • Growth rate of output

Economic Integration

- Goods market integration
  - Law of one price (assuming absence of monopoly power/price differentiation)
  - Non-tradables sector is not integrated through trade, BUT COULD BE SHAPED BY FDI INFLOWS or FDI OUTLFLOWS
- Capital market integration
  - Foreign direct investment (entrepreneurial commitment)
  - Portfolio capital flows (investors emphasize yield)

Aims of Investors

- Three key aims of portfolio investors:
  - **High yield**
  - **Low risk** (low volatility of price of respective asset)
  - **High liquidity** (ability to easily sell asset at the going market price)
  - ASSETS differ: eg money is highly liquid, but yield is low; stocks often have high rate of return, but also high risk; risk of overall portfolio can be reduced via **diversification** in assets which show negative correlation of yields

Which Assets Are Important

- Domestic bonds (yield of government bonds is low in OECD countries)
- Foreign bonds (value expressed in domestic currency is eF* where F* denotes the stock of foreign bonds, expressed in foreign currency)
- Stocks (domestic/foreign; yield relatively high)
- Money (domestic money; foreign money)
- Real estate (not very liquid!)
- Gold

Some Currencies/Bonds Are Special

- Bonds denominated in $ or in € are accepted as international reserves from central banks
  - $ bonds created by US carry low yield but are considered as save asset (share in world reserves used to be 70% in the early 1990s, but has fallen to about 60% in 2008 as the role of the € has increased: roughly 25% in 2008)
  - US and Euro zone **can finance net imports** of goods and services through „paying with domestic bonds"; as long as rest of the world trusts in the stability of the $ and the €, respectively (low inflation, sound public finances, stable banks)

Stable Financial System

- Requirements
  - Low inflation rate and sustained output growth (g_Y)
  - Stable banking system (competition & prudential supervision, well organized central bank)
  - Sustainable government finances = low deficit-GDP ratio (v) & limited debt-GDP ratio d‘ [e.g. Eurozone: not exceed 60%]; DOMAR: d‘= v/g_Y
  - Low foreign indebtedness (relative to GDP)
  - Large economy is an advantage = diversification
  - Solid rating of sovereign debt

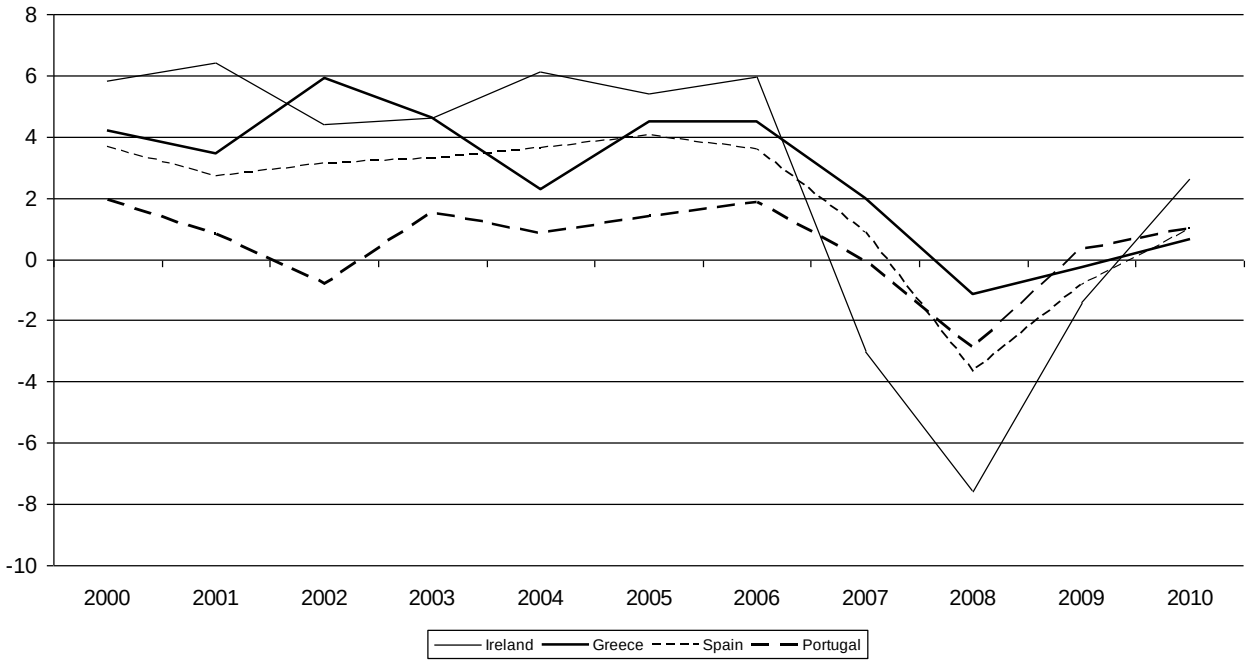
Rating (risk of default)

- Three major agencies: Moody's, S&P, Fitch
- **Top rating** for government bonds (risk free (?)); see US Treasuries as benchmark; company bonds have premium over government bonds
- Rating is signal to the capital market (AAA, B, C is junk and below investment grade = cannot be held by pension funds etc.)
- **Rating & momentum of rating** is important (sequence of notches – upwards or downwards) for the cost of capital; investment!

Greek Sovereign Debt Crisis 2010; Debt is € 300 bill., 115% of GDP in 2009. € 350 in 2011 = 150% of GDP; 170% in 2013/2014

- Greece classified among the PIIGS countries;
- Debt-GDP ratios have strongly increased in OECD countries after the banking crisis 2007/08
- Spreads ++in late 2009 for Club-Med countries
- 3 year IMF/Eurozone support programme
  - € 110 bill.; of which IMF 30, Germany 22, rest is covered by other Eurozone countries
  - regionalization syndrome (see Asian crisis 1997/98)

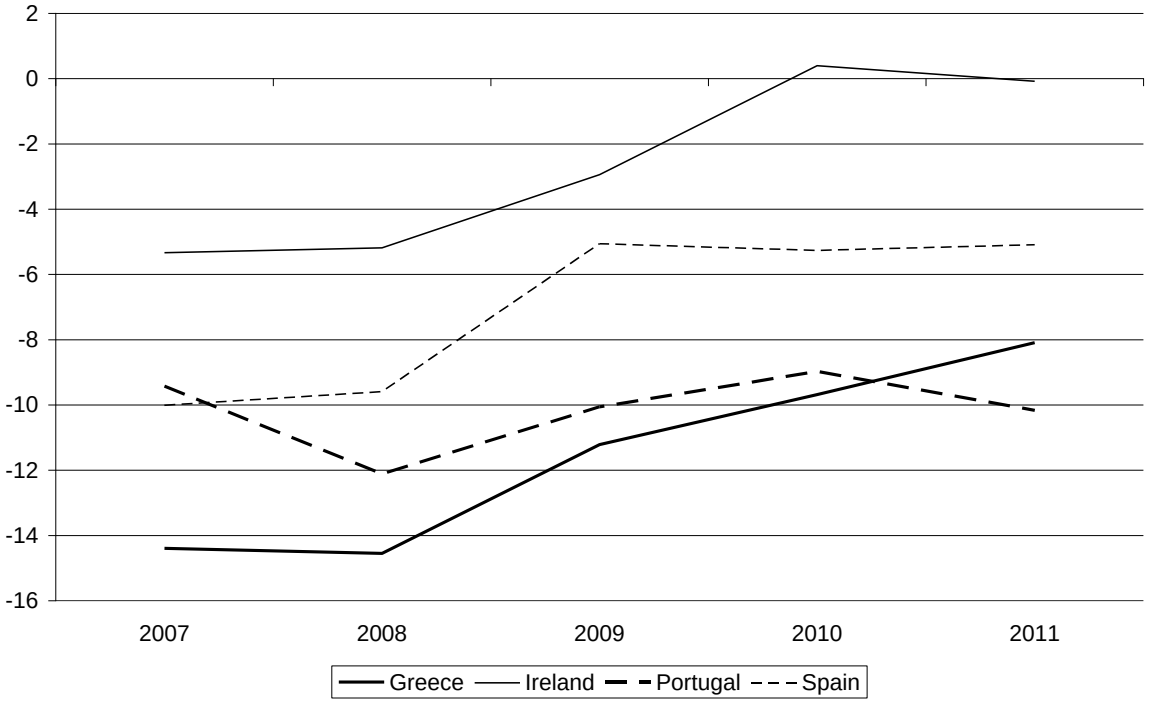
GDP growth rates



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Ireland	5.82	6.40	4.41	4.63	6.13	5.41	5.96	-3.01	-7.56	-1.39	2.66
Greece	4.18	3.45	5.92	4.63	2.27	4.50	4.48	1.98	-1.13	-0.27	0.66
Spain	3.65	2.69	3.10	3.27	3.61	4.03	3.56	0.85	-3.69	-0.84	0.98
Portugal	1.96	0.80	-0.80	1.52	0.87	1.41	1.85	-0.08	-2.88	0.31	1.01

Source: Ameco

Deficit-GDP Ratio



Current Account as Percentage of GDP

	2000	2007	2008	2009	2010	2011
Greece	-7.793	-14.397	-14.552	-11.217	-9.685	-8.09
Ireland	-0.362	-5.335	-5.189	-2.944	0.393	-0.084
Portugal	-10.241	-9.429	-12.115	-10.057	-8.976	-10.165
Spain	-3.959	-10.01	-9.592	-5.064	-5.267	-5.094

Source: IMF

Economic Dynamics; differential equations (I and II)

- (I) $dx/dt + ax = b$; parameters $a>0$, $b>0$
  - $x(t) = C_0 e^{-at} + b/a$; long run solution is $x=b/a$; „steady state solution“ (time index t approaching ∞) $x\# = b/a$
  - Determine C_0 from $t=0$; $x(0) - (b/a) = C_0$
- (II) $dx/dt = bx^{ß} - ax$; ß is parameter
  - convergence if $0<ß<1$ and $a>0$; or if $a<0$ and $ß<0$
  - solution is $x(t) = [C_0 e^{-a(1-ß)t} + (b/a)]^{1/(1-ß)}$
  - Steady state is $x\# = [b/a]^{1/(1-ß)}$; determine C_0 from $t=0$

Government Budget Constraint

- G‘ + iB‘ $-\tau$Y‘= dB‘/dt
- G is nominal government consumption (or public investment)
- i is the nominal interest rate (iB‘ is nominal interest payment)
- B‘ is nominal debt (B:=B‘/P is real debt)
- τ is the income tax rate, Y‘ is nominal debt
- dB‘/dt is nominal deficit = change in stock of government debt = increase of bonds; also: **in the bonds market we must have in equilibrium B=b(r,…)A‘** where A‘ is real wealth = B + M/P + KP‘/P; on the right-hand side we have the desired share b(…) of bonds in total real wealth; r is the real interest rate, K is the capital stock, P‘ is the stock market price index, P output price

Deficits Dynamics (e‘ is the Euler number, b‘=B‘/Y‘=B/Y); we look at debt-GDP ratio B‘/Y‘:=b‘#

Constraints of government

- Current account deficit(foreign debt=cumulated CA)remains manageable
- Budget: (1) $G‘ + iB‘ - \tau Y‘ = dB‘/dt$; **primary deficit is $G‘ - \tau Y‘$** $= [dB‘/dt - iB‘]$; $G‘ = \gamma Y‘$ $(0‹\gamma<1)$; define $b‘:=B‘/Y‘$
- (2) $dB‘/dt = (\gamma - \tau)Y‘ + iB‘$; divide by Y‘; note $g_{Y‘} = (dY‘/dt)/Y‘$
- We also use the mathematical equation: $db/dt = (dB‘/dt)/Y‘ - bg_{Y‘}$
- (3) $db/dt + (g_{Y‘} - i)b‘ = (\gamma - \tau)$; assumption is that $(\gamma - \tau)$ is constant and that $(g_{Y‘} - i)$ is constant. Assume i is smaller than growth $g_{Y‘}$
- Solution of (3) is (3.1): $b‘(t) = C_0\, e^{‘\,-(gY‘\,-\,i)t} + (\gamma - \boldsymbol{\tau})/(g_{Y‘} - i)$

Nominal growth must exceed i. Long run: (4) $b‘\# = (\gamma - \boldsymbol{\tau})/(g_{Y‘} - i)$ where it has been assumed that primary deficit ratio>0 (hence $\gamma > \boldsymbol{\tau}$)

- Unemployment rate $u<u^{critical}$; inflation rate $\pi<\pi^{critical}$

Key Insights on Debt Dynamics (recall that b:=B‘/Y‘

- Starting point: G‘ + iB‘ –τY‘= dB‘/dt
- Long run solution for B‘/Y‘ is **$b‘\#=(\gamma-\tau)/(g_{Y‘}-i)$**; alternative expression is $b‘\#=(\gamma-\tau)/(g_Y-r)$ as $i= r+ \pi$ and $g_{Y‘} = g_Y + \pi$; if primary deficit ratio is 1% and difference between growth of GDP and real interest rate is 1% the long run debt-GDP ratio will be unity = 100%
- **Government debt dynamics often linked to foreign indebtedness** (reflecting cumulated current account deficit); Current account deficit = - edF*/dt (assuming that there is an existing stock of foreign bonds F*, denominated in foreign currency); or CA deficit = d(αB)/dt where B‘ is the stock of domestic bonds and α is sthe hare of those bonds owned by foreigners; if α is growing the required yield will rise (normal i plus risk premium)

Further reflections: r=r(b‘) and government exp. on debt management

- $b'\# = (\gamma - \tau)/(g_Y - r)$
- From this steady state equation we have:
  - $db'\#/d\gamma = 1/(g_Y - r)$; if $(g_Y - r)$ is 2% a reduction of γ by one percentage point will reduce b‘ by 50 points
  - However, typical critical situation is $r > g_Y$ so that primary deficit-GDP ratio must be positive;
  - Consider formula: (5) $db/dt + [a(b') - r(b')]b' = (\gamma - \tau)$ where a is the growth rate of output which is a negative function of b‘ while r is a positive function of b‘ so that we can write (6) $db/dt = [b'^{-\beta''}]b' - [\tau b' - \gamma\eta\, b']$; $0 < \beta'' < 1$
  - $db/dt = b^{1-\beta''} - [\tau - \gamma\eta]b'$; $b\# = \{1/[\tau - \gamma\eta]\}^{1/\beta''}$

DOMAR-Analysis (AER 1944); real government debt B in growing economy: growth rate of income (a) is constant

- (1) dB/dt= d‘ Y(t); deficit is proportionate to Y!
  - let e‘ denote the Euler number; GDP: (2) $Y = Y_0 e^{‘at}$
  - (3) $dB/dt = d‘ Y_0 e^{‘at}$; assumption: d‘ is constant
  - The integral for (3) reads: (4) $B(t)=(d‘/a)\, Y_0 e^{‘at} + C‘$
  - in t=0: $B(0)=B_0$; so the constant $C‘=B_0 – (d‘/a)Y_0$
  - (5) $B(t) = B_0 +(d‘/a)Y_0[e^{‘at} -1]$
  - (6) $B(t)/Y(t) = \{B_0 +(d‘/a)Y_0\,[e^{‘at} -1]\}/Y_0 e^{‘at}$

  For the time index approaching infinity we have the *steady state ratio (equilibrium value)*: **B/Y= d‘/a**

- $d‘/a = (\gamma – \boldsymbol{\tau})/(a – r)$; $d‘= (\gamma – \boldsymbol{\tau})/[1 – (r/a)]$;

Further Reflections

- Real growth rate GDP = (1-ß‘u)(∂Y/∂K)/[I/Y] where I is net investment; u is the unemployment rate, ß is a positive parameter (0<ß‘<1); the investment-GDP ratio is a negative function of the real interest rate
- A higher debt-GDP ratio of a country normally goes along with a rise of r – not necessarily in integrated financial market (Eurozone market)

Nominal Budget Deficit (D‘); B is current nominal debt, G‘ nominal government consumption, ρ share of government debt owned by foreigners, Ω Integration

- $D‘:= B‘–B‘_{t-1}=G‘+u\alpha\, WL + iB - \tau[Y‘+iB(1-\rho)]+ \mu M;$
  - τ tax rate, Y‘ nominal GDP, γ: G‘/Y, u= U/L (ratio of unemployed U over employed L), W wage, α wage replacement ratio, M money, μ= growth rate of M; *divide equation by Y‘= YP;* Y real GDP, P price level, z: growth rate Y; b= B/Y‘
- $b–B‘_{t-1}/[(Y_{t-1}\,(1+z))(P_{t-1})(1+\pi)]\approx b–b_{t-1}(1-z)(1-\pi)=$
  $=\underline{\gamma–\tau+u\alpha(1-ß)}+ib(1-\tau\rho‘)+\mu m“\approx b–b_{t-1}(1-(z+\pi))$ m“=M/[YP]
- ρ‘=1-ρ; equilibrium money market: M V(i) = YP; M/[YP] = V(i)
- **Steady state condition:** $b_t= b_{t-1}$; and i(b,R,Ω); R is rating
  - $\tau =\gamma+u\alpha[1-ß]+[i(b,R,\Omega)-\pi-z]b[1-\tau(1-\rho)]+\mu/V(i(.))$
  - velocity $V=\sigma i$ ($\sigma>0$ parameter); $\mu=\pi+z$, $r= i-\pi$

Interest payments/GDP (%; **ib**')

Interest/GDP*100	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
European Union (27 countrie	5.17	5.21	4.73	4.38	3.81	3.64	3.48	3.19	3.02	2.84	2.76	2.67	2.71	2.73	2.74	2.98	3.20
European Union (15 countrie	5.20	5.25	4.76	4.42	3.84	3.67	3.51	3.22	3.05	2.87	2.79	2.71	2.78	2.81	2.79	3.03	3.26
Euro area (16 countries)	5.41	5.50	4.95	4.60	4.04	3.90	3.81	3.51	3.31	3.11	2.99	2.91	2.96	2.97	3.01	3.18	3.41
Euro area (12 countries)	5.43	5.52	4.97	4.61	4.05	3.91	3.81	3.51	3.32	3.12	3.00	2.92	2.97	2.99	3.03	3.21	3.43
Belgium	8.88	8.46	7.70	7.36	6.85	6.62	6.49	5.76	5.34	4.78	4.32	4.01	3.87	3.82	3.96	4.08	4.16
Bulgaria	14.10	21.08	8.27	4.26	3.78	4.05	3.33	2.28	2.03	1.80	1.68	1.40	1.03	0.84	0.81	0.87	0.91
Czech Republic	1.03	1.21	1.12	1.16	1.02	0.84	1.01	1.24	1.14	1.16	1.15	1.10	1.14	1.07	1.39	1.53	1.59
Denmark	5.88	5.66	5.00	4.54	4.09	3.66	3.38	3.14	2.83	2.53	2.05	1.74	1.57	1.39	1.47	1.47	1.44
Germany	3.49	3.48	3.38	3.36	3.14	3.15	3.05	2.92	2.97	2.82	2.79	2.82	2.77	2.69	2.75	2.79	2.86
Estonia	0.52	0.40	0.27	0.54	0.29	0.21	0.15	0.21	0.21	0.23	0.19	0.18	0.17	0.22	0.39	0.55	0.67
Ireland	5.30	4.50	3.77	3.41	2.41	1.99	1.48	1.35	1.24	1.13	1.04	0.89	0.84	1.03	2.23	3.33	4.00
Greece	11.23	10.50	9.29	8.15	7.40	7.38	6.46	5.58	4.98	4.84	4.61	4.42	4.41	4.59	5.00	5.70	6.20
Spain	5.13	5.23	4.69	4.21	3.51	3.24	3.05	2.71	2.37	2.04	1.79	1.64	1.61	1.58	1.84	2.46	2.94
France	3.47	3.59	3.47	3.34	3.02	2.92	3.05	2.96	2.83	2.78	2.67	2.58	2.69	2.80	2.77	2.88	3.02
Italy	11.59	11.52	9.29	8.18	6.64	6.37	6.33	5.67	5.17	4.79	4.69	4.63	4.98	5.12	4.70	4.73	5.14
Cyprus	2.00	2.37	2.46	3.06	3.04	3.35	3.36	3.17	3.41	3.30	3.51	3.26	3.08	2.86	2.05	2.16	2.24
Latvia	0.91	1.40	0.91	0.72	0.66	0.98	0.91	0.74	0.69	0.73	0.54	0.48	0.46	0.75	1.24	2.36	3.83
Lithuania	0.35	0.83	0.73	1.13	1.47	1.75	1.52	1.32	1.25	0.94	0.81	0.73	0.70	0.65	1.36	2.21	2.63
Luxembourg	0.43	0.41	0.41	0.41	0.32	0.34	0.33	0.26	0.22	0.17	0.16	0.18	0.24	0.29	0.60	0.61	0.65
Hungary	8.93	9.16	8.59	7.06	6.66	5.12	4.63	4.01	4.04	4.34	4.14	3.96	4.04	4.14	4.31	4.18	3.76
Malta	2.04	2.23	2.73	3.22	3.71	3.63	3.37	3.56	3.41	3.66	3.72	3.51	3.34	3.30	3.32	3.24	3.34
Netherlands	5.63	5.30	4.93	4.67	4.28	3.65	3.17	2.80	2.60	2.48	2.36	2.20	2.21	2.13	2.39	2.47	2.53
Austria	4.08	4.02	3.75	3.73	3.52	3.62	3.54	3.35	3.10	2.97	3.00	2.89	2.87	2.60	2.98	3.07	3.27
Poland	5.74	4.56	4.54	4.02	2.96	3.02	3.12	2.89	2.97	2.76	2.80	2.65	2.31	2.23	2.65	2.95	2.98
Portugal	5.79	4.97	3.90	3.23	3.04	3.06	3.03	2.89	2.77	2.67	2.57	2.77	2.88	2.98	2.92	3.09	3.48
Romania	1.67	1.87	4.46	3.94	5.05	3.94	3.43	2.46	1.60	1.43	1.10	0.82	0.76	0.76	1.60	1.80	1.97
Slovenia	2.14	2.08	2.38	2.20	2.36	2.41	2.37	2.19	1.96	1.70	1.55	1.39	1.28	1.11	1.57	1.89	2.00
Slovakia	2.37	2.54	2.40	2.54	3.39	4.06	4.00	3.55	2.51	2.18	1.72	1.46	1.39	1.24	1.31	1.34	1.36
Finland	3.94	4.17	4.18	3.51	3.00	2.80	2.64	2.09	1.89	1.76	1.69	1.54	1.48	1.47	1.42	1.47	1.54
Sweden	5.30	5.39	5.23	4.57	4.02	3.49	2.76	3.07	2.26	1.83	1.88	1.75	1.80	1.68	1.33	1.22	1.23
United Kingdom	3.57	3.57	3.56	3.47	2.83	2.71	2.33	2.00	1.98	1.96	2.10	2.06	2.22	2.29	1.88	2.58	2.98

Current Account Position (P‘ is stock market price, q*:=eP*/P real exchange rate)

- CA =Trade balance jq*Y/q*-xY*q* +capital bal.
  - **Fixed exchange rate:** nominal rate is policy instrument, but monetary policy is endogenous
  - **Flexible** exchange rate regime: monetary policy is powerful/perceived as responsible – thus inflation rate will be relatively low (seigniorage gain effect migth be neutral if growth is raised); but potential problems for trade & capital flows from volatility
- Flexible: n‘(r/(r*+dq*/dt))(P‘/eP‘*) φ =jY/(xY*q*)

Monetary Integration: a‘ is expected depreciation rate

- Markets from country I, II etc. become integrated (* denotes foreign variable)
  - Through foreign direct investment of banks
  - Liberalization of capital flows – including portfolio capital flows; high rates obtained only abroad (USA)
  - Monetary integration („more“ fixed exchange rate or even one money – case of Eurozone 1999; 11 countries started…& European Central Bank)
  - **If fully integrated:** i = i* + a‘ (with a‘=0); and if $\pi=\pi^*$**, then r=r***

Net wealth of private sector (in real terms): A‘; question about Ricardo equivalence…

- Net wealth; includes domestic gov. bonds=$T^{+?}$
- A‘ = M/P + P‘K/P + B/(iP) + eF*/(i*P)
  - M/P is real money stock
  - P‘K/P is real value of capital stock
  - B/(iP) is real value of domestic bonds – those bonds are perpetuals and carry 1 € of interest coupon; present nominal value=$1/(1+i) + 1/(1+i)^2 + \ldots 1/(1+i)^n = 1/i$ if we let n approach ∞
  - eF*/(i*P) real value of foreign bonds held

If financial markets are more integrated…

- More integrated financial markets
  - Pressure for more **product innovations** = better risk management (also reduced exchange rate variability – assuming that this is no problem: BUT see optimum currency area literature)
  - **Process innovations = cuttting costs**
  - Exploiting *scale economies* broadly = cutting costs
  - Easier access to loans for households = *fall of S/Y=s*
  - **Bigger markets = higher degree of liquidity**

Monetary Integration

- Analytically adequate is
  - **Three country perspective:** monetary union = country I (home country) and country II join monetary union = absolute fixing of nominal exchange rate or introducing a common currency; rest of the world is country III (could also be outsider EU country, eg UK)
  - Useful to take a look at currency union (within effects) and effects on outsider country

A few thoughts on link between monetary union, trade and FDI/portfolio capital flows

- Economic and monetary union (EMU)
  - Euro zone combined with EU single market
  - Creation of Euro has reduced transaction costs in financial markets = stimulus for trade = more specialization = higher output growth = more trade
  - € has reinfored price transparency = impulse for product innovation and process innovations
  - € zone has eliminated high yield bonds in EU (eg Italian Lira bonds) so that there was an incentive for portfolio investors for higher capital outflows to UK, US, Russia (high yield countries)= depreciation of €, r falls in UK…

Which countries as candidates for Euro zone?

- Monetary union = absolute fixing of the nominal exchange rate (or establishing 1 currency)
  - Logic of **purchasing power parity** (PPP) – International Law of one price in an environment of free trade plus competition: P= eP* (e is in Deutsche Mark/$; P* is US price level in $, P is price level in Germany); hence e^{PPP} = P/P*: Fixing the nominal exchange rate requires that inflation rates in home country and partner country (change of P and P* in %, respecitvely) should be roughly the same

Consider the Logic of Euro Convergence Criteria

- For countries to be considered as candidate countries 5 convergence criteria (here 1+2)
  - Inflation rates should be close together: **maximum 1.5 percentage points abve** 3 EU countries with lowest inflation rate (**corresponds to logic of PPP**)
  - Nominal interest rate i (i= real rate r + expected inflation rate) **should be not more than 2** percentage points above interest rate in 3 countries with lowest inflation rate (emphasis **on expected inflation rates**!)

More convergence criteria for € zone membership

- **Deficit ratio** (general government deficit/GDP) **should not exceed 3%** unless massive recession; medium term: balance budget
- **Debt-GDP ratio should not exceed 60%** = reflecting logic of Domar model (AER 1944) who shows that in a growing economy (with output growth rate a) the debt-GDP ratio= deficit-ratio/a; if one assumes 1.5% for a and a long run deficit ratio of 2% the debt-GDP ratio will be 1.5/2 = 0.75

More Convergence Criteria

- Politically **independent national central bank** – quite a change for many EU countries
- No devaluation of the currency two years prior to Euro zone membership (official candidacy)
- IDEA: **Euro zone should be a stability-oriented low inflation area** with countries which have common monetary policy – via politically independent European Central Bank – plus sustainable public finance; no bail-out in €zone!

Growth Perspective on Monetary Integration; A is knowledge, K capital, L labor

- Savings S = s(1-t‘)Y; t‘ is transaction costs
- dK/dt +δK = s‘Y; s‘:=s(1-t‘); A(t)=Ao $e^{‘at}$
- monetary integration=financial transaction costs t‘ will fall
- Neoclassical growth model ($Y=K^{ß}(AL)^{1-ß}$); growth rate of population is exogenous (n); growth rate of knowledge (A) is a. Note: rate „a“ could be raised in a more competitive financial market environment if venture capital more easily available; define y‘=Y/(AL): Hence y ‘#=[s(1-t‘)/(a+n+δ)]$^{ß“}$; ß“=ß/(1-ß)
- **$y:=Y/L = A_0 e^{‘at}[s(1-t‘)/(a+n+δ)]^{ß“}$; if ß=0,5: ß“=1**

Important to consider is the savings process (A‘# is real wealth target)

- Aggregate savings functions
  - S = sY(1-τ); 0<s<1; simple savings function
  - S = s‘[A‘#-At]Y(1-τ); 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)

Savings and the Current Account

- (1) Y = C + I + G + X‘ (X‘ is net exports:=CA)
  - X‘ = Y – [C(Y-T,…) + I(r) + G]; here C=C(..), I(..)
- (2) Y = C+S+T; uses side of household income
- Plugging (2) into (1) gives:
- (1‘) S + [T-G] – I =X‘; consider S=S(..), I=I(.)
  - X‘ = S(Y-T,…) + [T-G] – I(r)
  - If private savings + government budget surplus exceeds planned investment, then X‘ >0

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:=dlnA/dt; n:=dlnL/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**
  - $\ln Y = \beta \ln K + (1-\beta)\ln[AL]$
  - $d\ln Y/dt = \beta d\ln K/dt + (1-\beta)[d\ln A/dt + d\ln L/dt]$
  - Growth rate output $d\ln Y/dt = \beta d\ln K/dt + (1-\beta)[a+n]$
- Accumulation of capital stock has to be financed
  - Domestic sources; foreign sources(FDI.Portfolio inflow)
  - Progress rate a = f(a*); internatioanal spillovers?

Global imbalances (y is per capita GDP)

- **US has run large current account deficits** over many years (up to 6% 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
  - Quality of financial intermediation outside US weak! eg high Chinese savings, US banking intermediates

Role of the Monetary System; money market equilibrium (linearized equations)

- **Money market** is the mirror of all other markets (reflects payments made)
- Money market
  - 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 π); let us specify m = hY – h‘i (where h, h‘ parameters >0)
  - Money market equilibrium condition M/P= hY – h‘i

Determining price level P; b is positive parameter; Y^d aggregate demand, V velocity, M stock of money, Y output

- $(dP/dt)/P = b(Y^d - Y)$; $Y^d = v'[M/P]+v''Y$; $0<v''<1$
  - Differential equation; implication is **P#= vM/Y**
- M V(i) = P Y; for given real interest rate (r) and given output Y we have
  - P = M V(i)/ Y or (i=r+π‘; π‘ denoting expected inflation)
  - assuming V is constant and growth rate of output dlnY/dt given and $dln\Pi/dt=(\pi'-\pi)+\psi(gY^d-gY)$ we have $\pi'=\pi$ and $dln\pi/dt=0$: dlnP/dt = dlnM/dt – dlnY/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

- 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 $P = eP^*$; $e^{PPP} = P/P^*$; or devaluation rate $d\ln e/dt = d\ln P/dt - d\ln P^*/dt$ (note: the derivative of a logarithmic variable with respect to time t is a growth rate – in %)

Some Aspects of Optimum Currency Areas

- Recall: Creation of the euro zone in 1999 considers several convergence criteria
  - Inflation rate of candidate countries should not be above the inflation rate of the three lowest inflation rate countries by more than 1.5 percentage points (implicit reference to PPP: P=eP*; e = P/P*!!!)
  - Interest rate criterion: 3% deficit etc.
  - **Which other criteria are know from the literature?** Influential optimum currency area approaches which ask which countries could forego the policy instrument of a nominal depreciation (or appreciation)

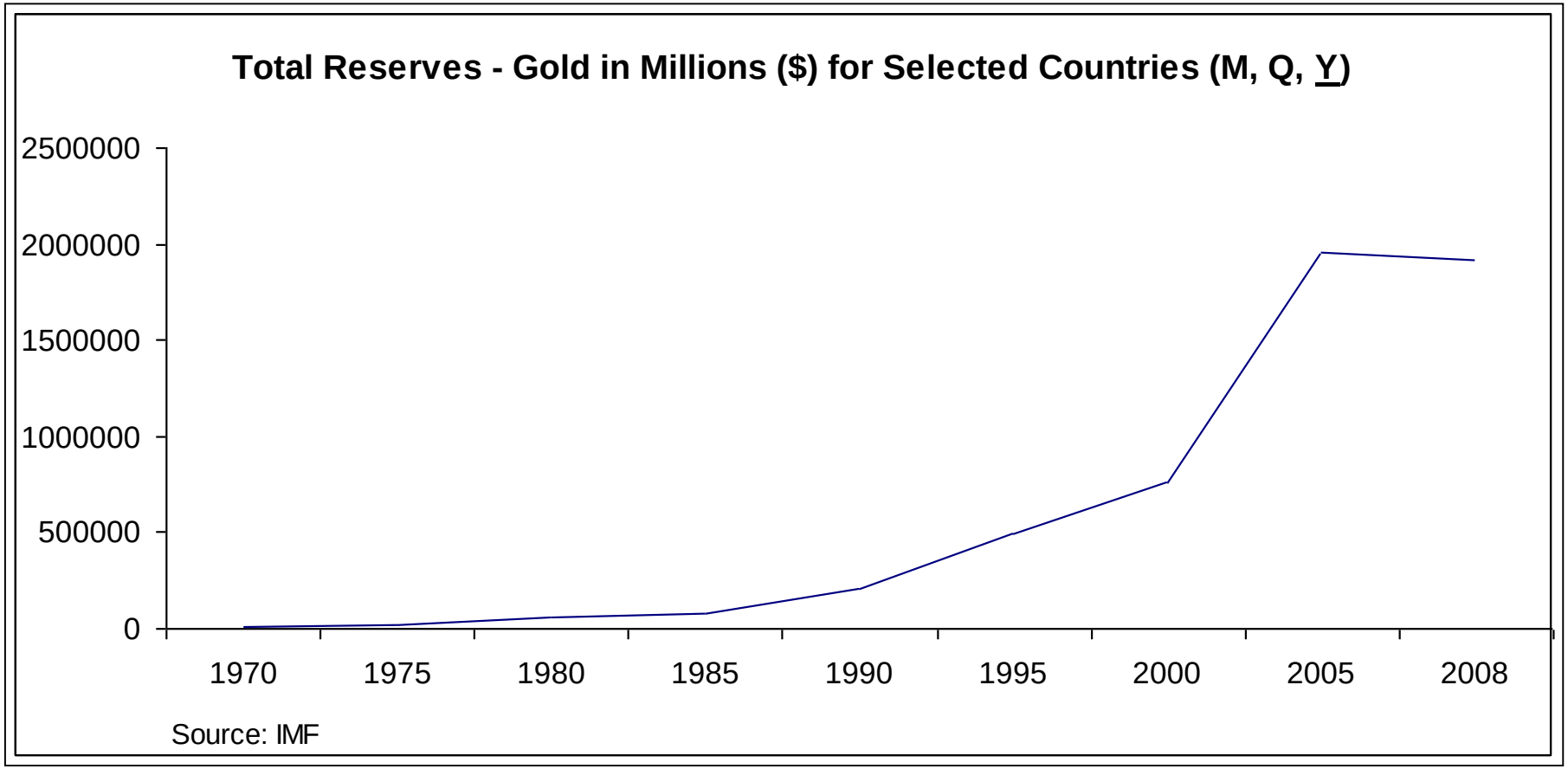
Is the Euro zone an optimum currency area? = question which countries should have fixed rate: *stabilization policy aspects!*

- **Mundell: if** labor market mobility high…
- **McKinnon criterion**: high share of tradables = depreciation translates strongly into rise of P; trade unions will raise wages = rise of P so that nominal depreciation does not help. So one may renounce option of devaluation = argument for accepting monetary union
- **Kenen criterion:** highly diversified exports = external shocks cancel out each other; thus…

Historical Perspective: 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 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)



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**
- 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_o to chose?**
- Real exchange rate: q*= eP*/P; **<u>is international relative price</u>**; how many units of the domestic (export) good one has to give in order to obain 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 price level, * for foreign variables)*
  - Based on logic of international arbitrage (Gustav Cassel): $P = eP^*$; $e_{PPP} = P/P^*$; nominal depreciation if $d\ln P/dt > d\ln P^*/dt$; **monetary policies** (!) matter
  - Interest rate parity: $i = i^* + a$‘ (a‘ expected devaluation rate; since nominal interest rate i=real interest rate + expected inflation rate π’
- 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 $M^d/P = m^d(Y, i)$;
  - Simple specification $m^d = hY - h'i$, parameters $h, h'>0$
  - (Cagan-type demand): $m^d = Y^{\theta} e^{' -\lambda i}$ (e' Euler number, λ semi-elasticity of the real demand for money; θ 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 + expected inflation rate π' (in the long run actual inflation rate $\pi = \pi'$)
- Short term bond rate: $i = (\theta \ln Y - \ln m)/\lambda$

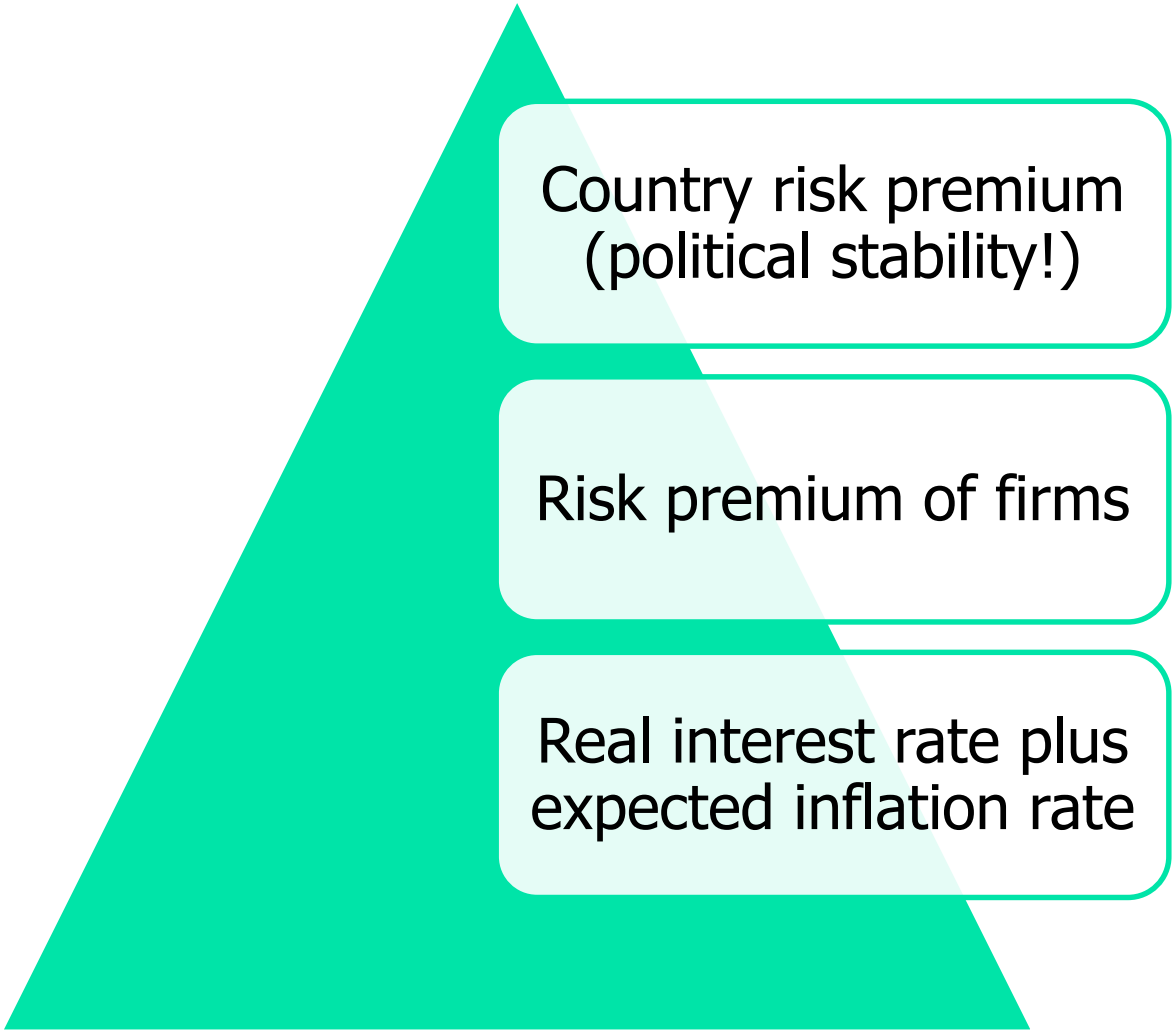
Money Market Equilibrium; and further reflections (μ:=dlnM/dt; growth rate of M)

- Money market equilibrium lnM - lnP = lnm^d
  - dlnP/dt= dlnM/dt –θdlnY/dt + λdlni/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)*
  - ßY/K =r; if additionally inflation rate is constant we have
  - dlnP/dt = dlnM/dt - θdlnY/dt + λ[dlnY/dt – dlnK/dt]
  - dlnP/dt = μ – (θ-λ)dlnY/dt - λdlnK/dt; hence inflation rate is proportionate to μ, might fall if dlnY/dt>0, falls if dlnK/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

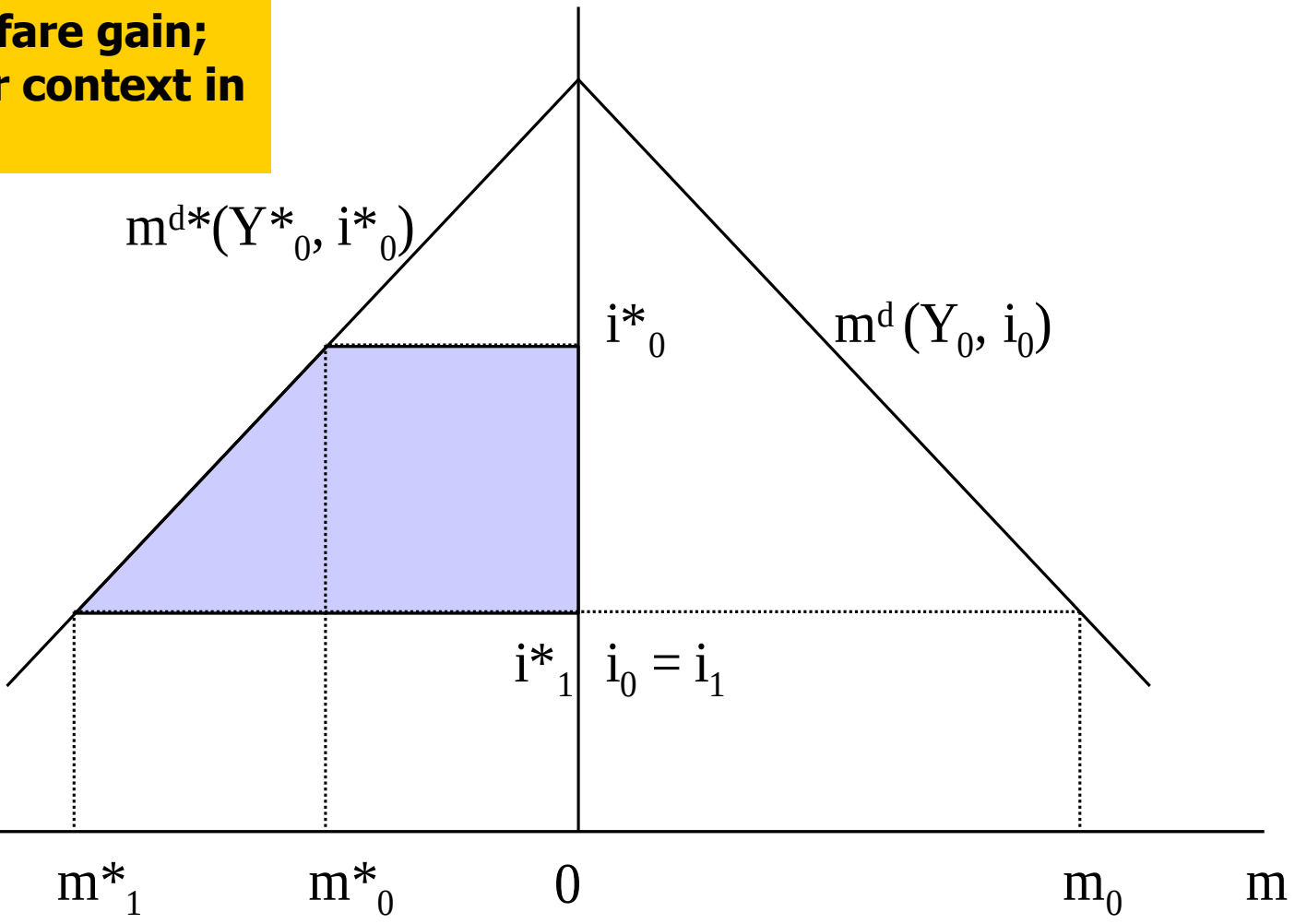
Nominal interest rate: at given maturity (note: i rises with maturity)



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 benefits welfare gain; applies in a broader context in world economy

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



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‘-i normally is positive = risk premium since corporate bonds is 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 + Ωσ (Ω price of risk; σ is volatility (risk proxy), approximated by variance of stock price index

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‘ (a‘ is expected devaluation rate, i* foreign variable); if PPP holds we have in the long run a‘= $\pi - \pi^*$; 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.

Considering the Role of Banks; note: tr:=TR/(D1+D2) *reserve coefficient* *rf:= RF/(D1+D2) refinancing coeff.*

- Consolidated Balance Sheet: Asset Side
  - Assets (Loans to Non-Banks) KR
  - Deposits with Central Banks (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 V = P 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":= Cash B^P+ net reserves of banks (TR-RF); TR is deposits with central bank, RF= 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) $tr_i<0$; d is discount rate; rf= rf(d,i,rr), $rf_d<0$; i interest rate

- Nominal credit volume is linked to nominal output; real credit Q/P to real output Y
- $Qs = b"(i, d, rr, i_t, Y_K)\ B"$; $b"_d, b"_{rr}, b"_{YK}<0$
- $M1^s = n"(i,d,rr,i_t,Y_K)\ B"$; 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 sight 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 b‟ (see {…})

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

- $Qs = \{(1+t‘)(1-(tr-rf))/[bk + (tr-rf)(1+t]\}B‟$
- Apply the above formula to the crisis 2007/08
  - The cash ratio bk will rise in a financial market crisis; multiplier for the exogenous monetary basis thus will fall! Risk that monetary policy undermines growth of credits and brings about recession…
  - The ratio $Qs/M1 = (1-t‘)(1-(tr-rf))/(1+bk)$ so that the ratio will fall as bk is rising during crisis; $t‘=t‘(i_t, Y_K)$; $t‘_{Y_K}<0$

International Financial Markets and Banking

- 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(..)
  - 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)

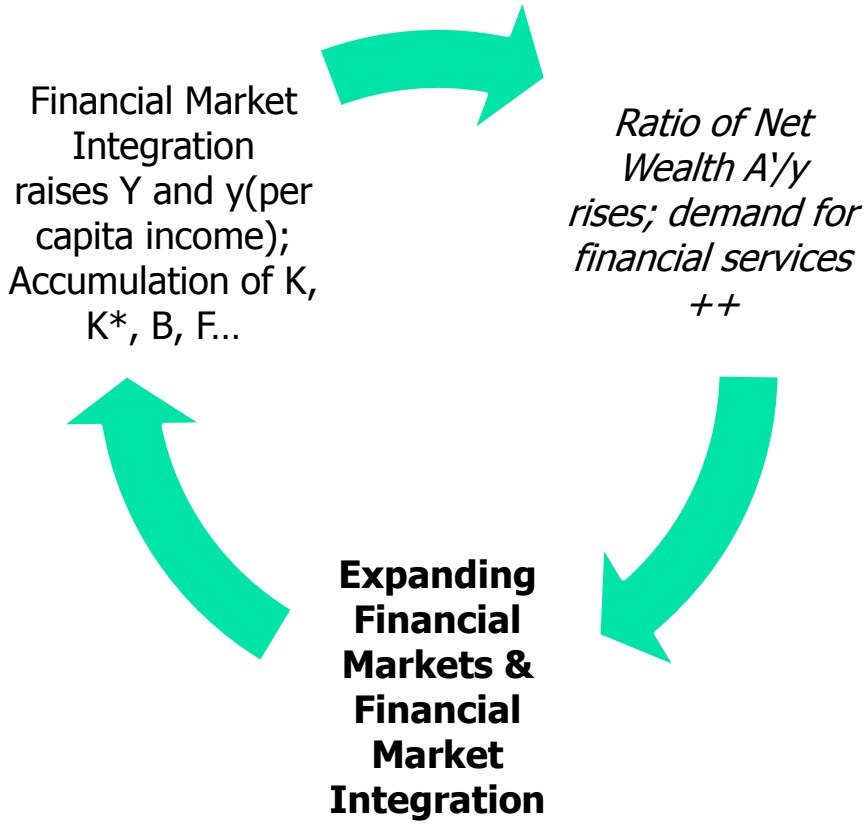
- Crisis = *rapid* decline of economy/destabilization
  - Confidence crisis in markets, induced market failure
  - High instability of asset prices – includes periods of strongly falling asset prices
  - Negative real interest rate (generates overindebtedness)
  - Primary goods inflation bubble (in the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

1. Introduction

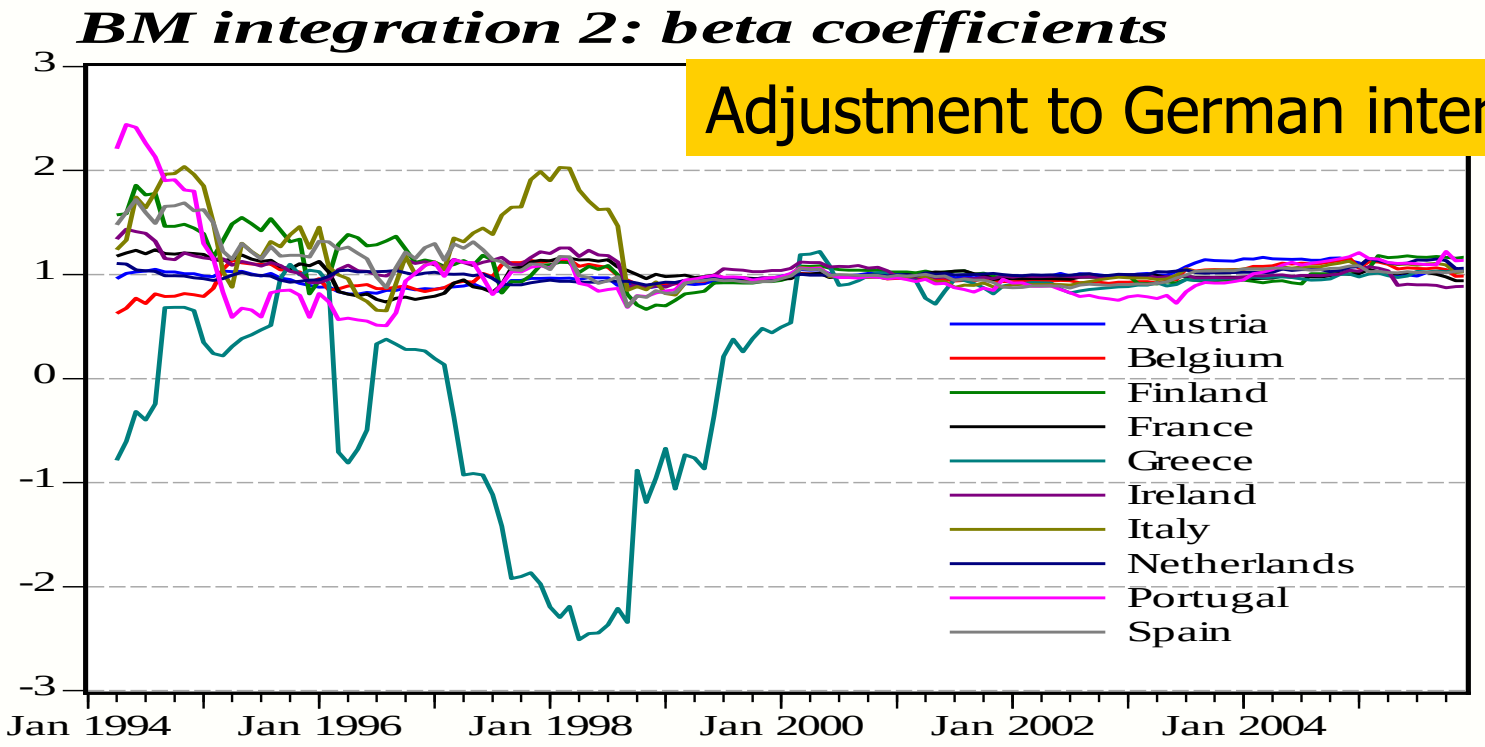
Financial market integration basically refers to

- **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

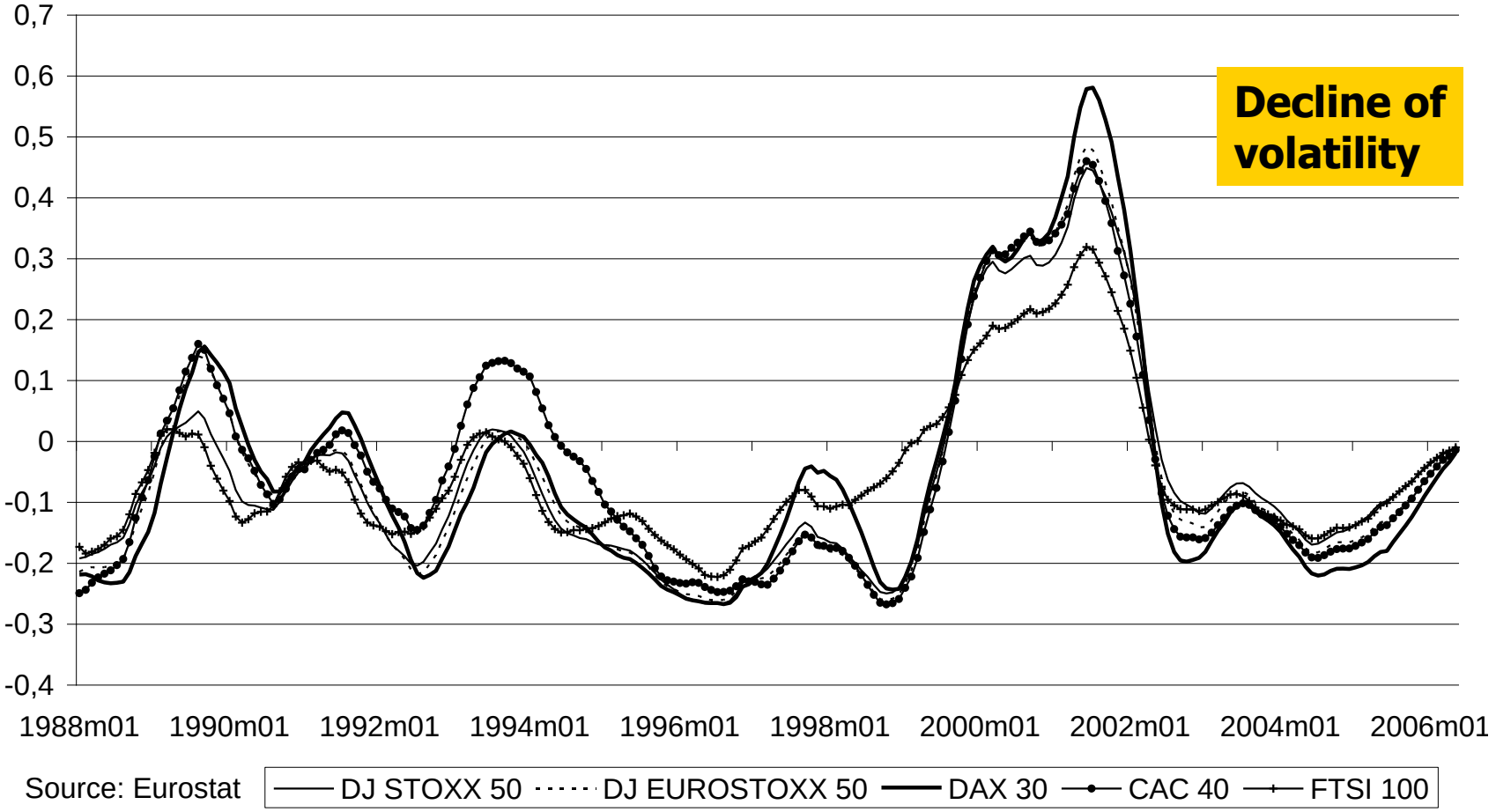


Note: Based on results for 18-month rolling regressions of national 10-year government bond yield changes on changes of benchmark German 10-year government bond yields.

Quelle: KOTZ (2007) in Tilly/Heise/Welfens (2007)

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

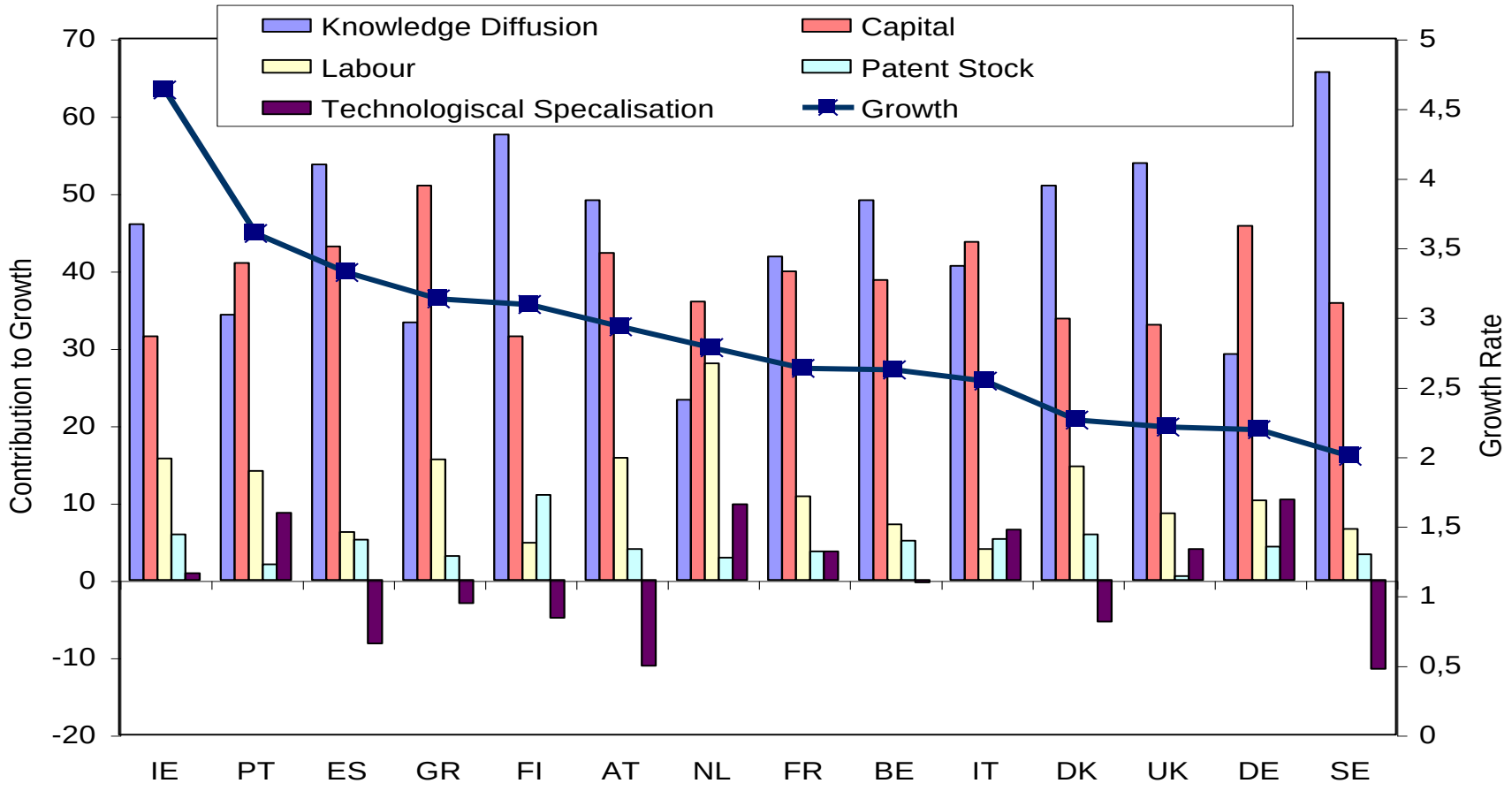


(Financial Market) Integration and Economic Expansion

- Y expansion stimulates financial markets/services
  - As per capita income y=:Y/L is rising the ratio of net wealth A‘ 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 (eg 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?*

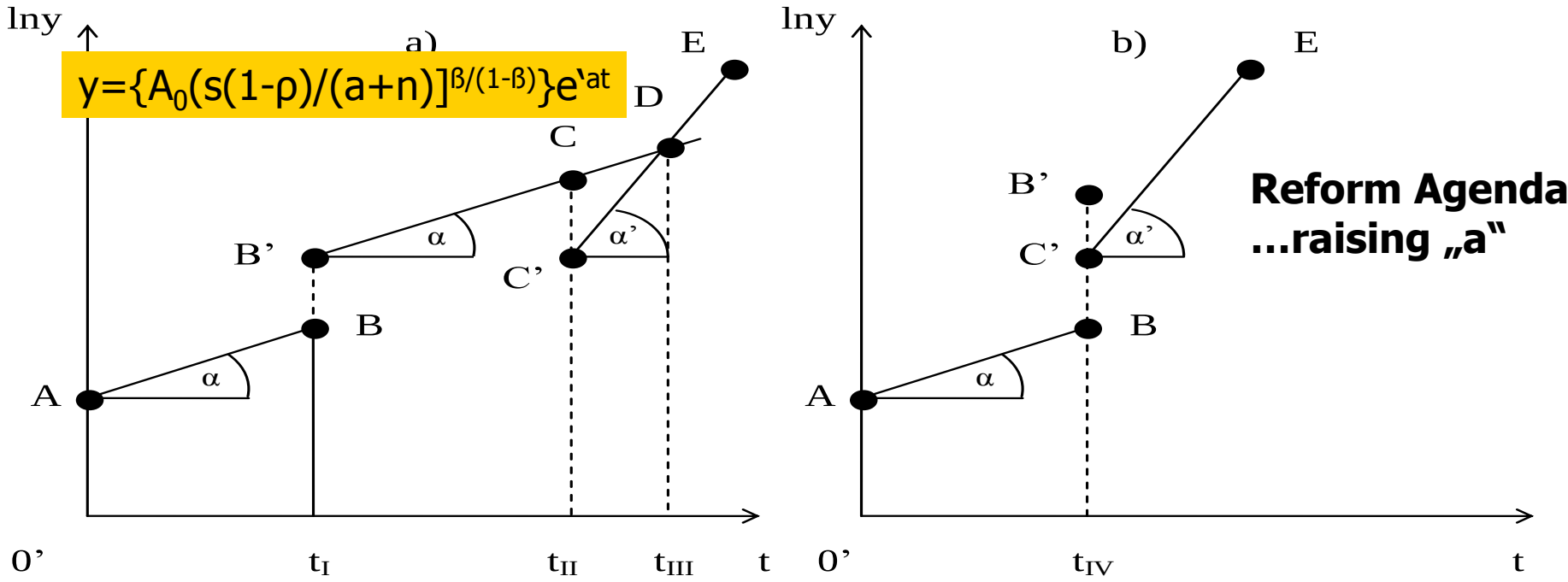


Source: JUNGMITTAG (2006)

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!***

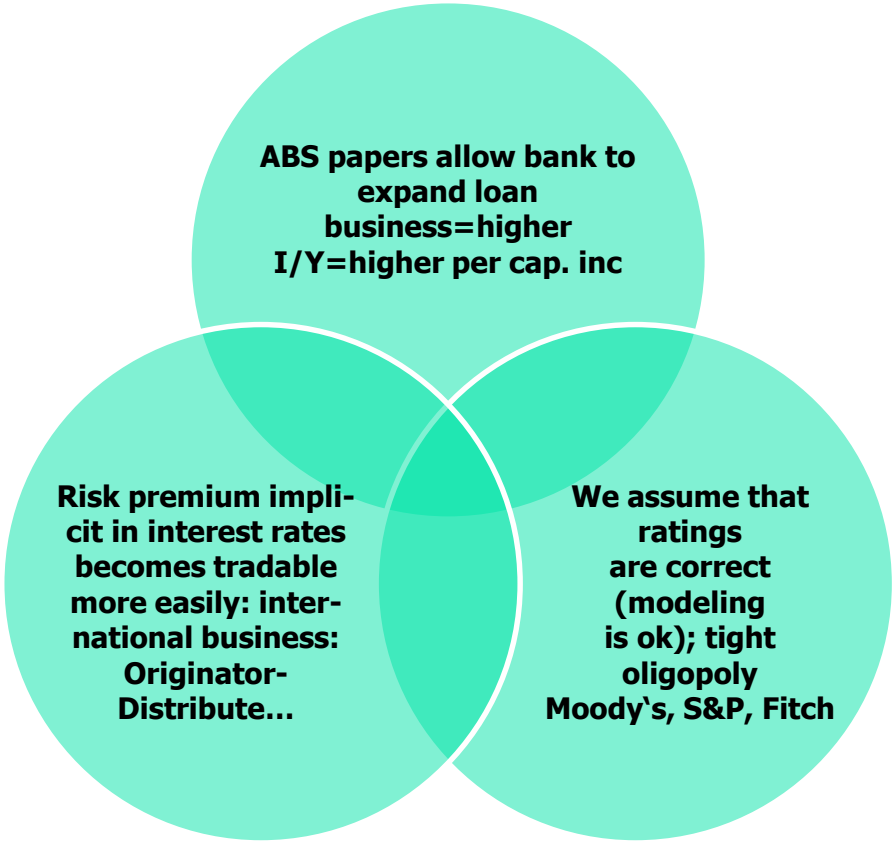


$S=s(1-\rho)Y$; $dK/dt=S$; $\mathbf{Y=K^{\beta}(AL)^{1-\beta}}$; $dlnL/dt=n$; $dlnA/dt=a$; $y=:Y/L= A_0[s/(a+n)]^{\beta/1-\beta}\, e^{\lambda at}$; ρ (ín [0,1]) is parameter indicating transaction costs in financial markets; integration means fall of ρ so that we get higher level of the growth path in t_I; rise of a in t_{II}...
How is financial market integration affecting s; & financing growth rate of knowledge: a

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)

Financial Market Innovation



Bank needs for business deposits and confidence …

- 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 houseowners 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 nea-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 to SIVs in spring 2007 as refinancing became impossible – ABS commercial paper market collapsed in US
- Northern Rock faced refinancing crisis in summer 2007 and suffered bank run…
- 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 goverment 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
  - $R = \alpha E + (1-\alpha)i$
  - α is the share of equity capital *(equity/overall capital)*
- Bankers want a high rate of return on equity
  - Overall Rate of Return
  - $E = (1/\alpha)R - [(1-\alpha)/\alpha]\, i$
  - $E = (1/\alpha)R + [1-(1/\alpha)]\, i$
  - $E = i + (1/\alpha)(R-i)$: 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**

Perfect Capital Market

- $E = i + (1/\alpha)(R-i)$
- $E/i = 1 + (1/\alpha)(R-i)/i$

  $\ln(E/i) \approx (1/\alpha)(R/i - 1)$
- If $i=f(\alpha)$ – with $di/d\alpha<0$ - we have
- $\ln E \approx \ln f(\alpha) + (1/\alpha)(R/f(\alpha) - 1)$
- **$d\ln(E)/d\alpha \approx$**
- **Therefore $d\ln(E)/d\alpha = 0$ if**
- **Second derivative <0! if fullfilled if…**

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 buble 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 C02 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?

Financial Market Crisis and Government Financing Crisis (Euro Crisis)

- Links between the two crises
- Problem (?) that government bonds are in the balance sheet of banks
- Banking Union in the EU/Euro Zone (2014)
- Contigent Convertible Bonds as part of package stabilizing banks (in case of equity-ratio of bank below critical threshold Coco bonds becomes equity;
- What should happen with asset-backed sec?

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?

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Insufficient International Risk Management in BREXIT?

Preliminary

EIIW
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FO.00.01
02/03/2018

Outline

1. **Introduction**
2. **Theoretical Aspects of BREXIT Disintegration**
3. **BREXIT: Risk for EU28 Banking Stability**
4. **Risk Management Analysis and Perspectives in EU28**
5. **Policy Conclusions**

1. Introduction

- **Narrow BREXIT-majority in UK referendum of 2016** means exit from EU is a historical step for the UK and EU
- Possible UK-US "mini-TTIP";
- **UK & US with a policy focus on joint banking deregulation** wave may have spillover effects
- **Cost of BREXIT will ultimately depend on type of deal achieved in**

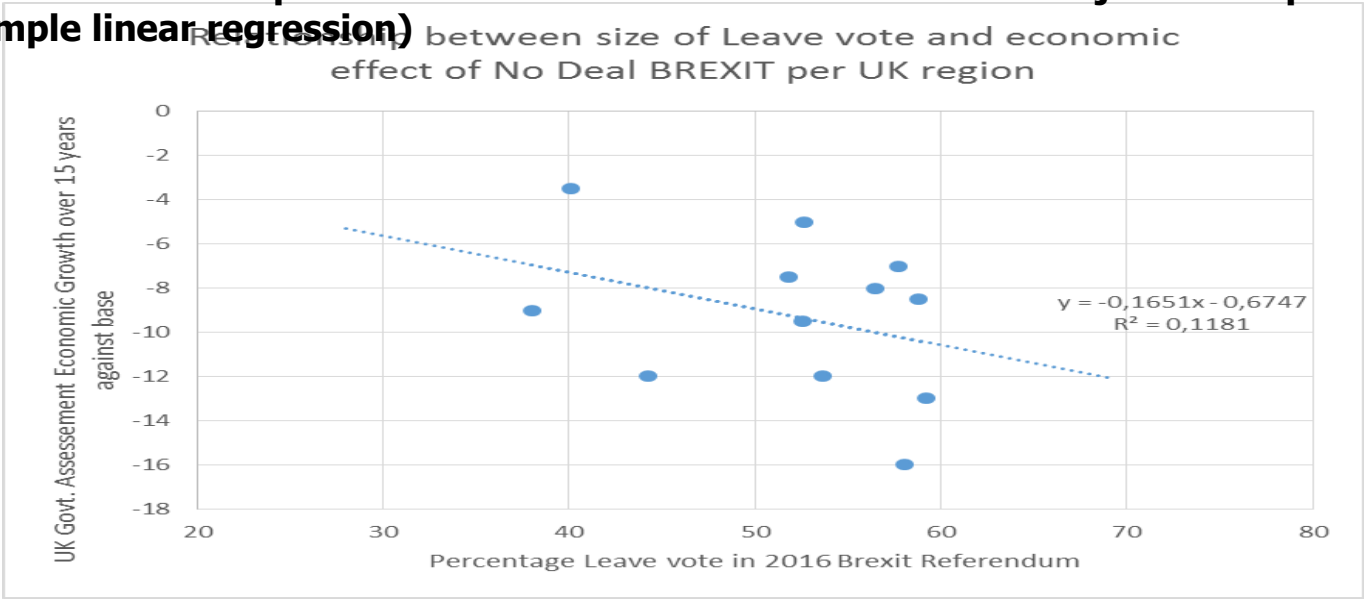
1. Introduction

- Position of London after March 29, 2019, raises **specific regulatory problems** for EU

- The responsible regulator of the EU's wholesale banking market will be the **Bank of England** and no longer the EU which has a framework competence for banking regulation in the European

BREXIT-related output loss were above average BREXITsupporters in British EUref 2016 (leaked gov. paper on reg. output effects)

Fig. 1: Relationship Between the Size of the Leave Vote and Projected Output Losses (simple linear regression)

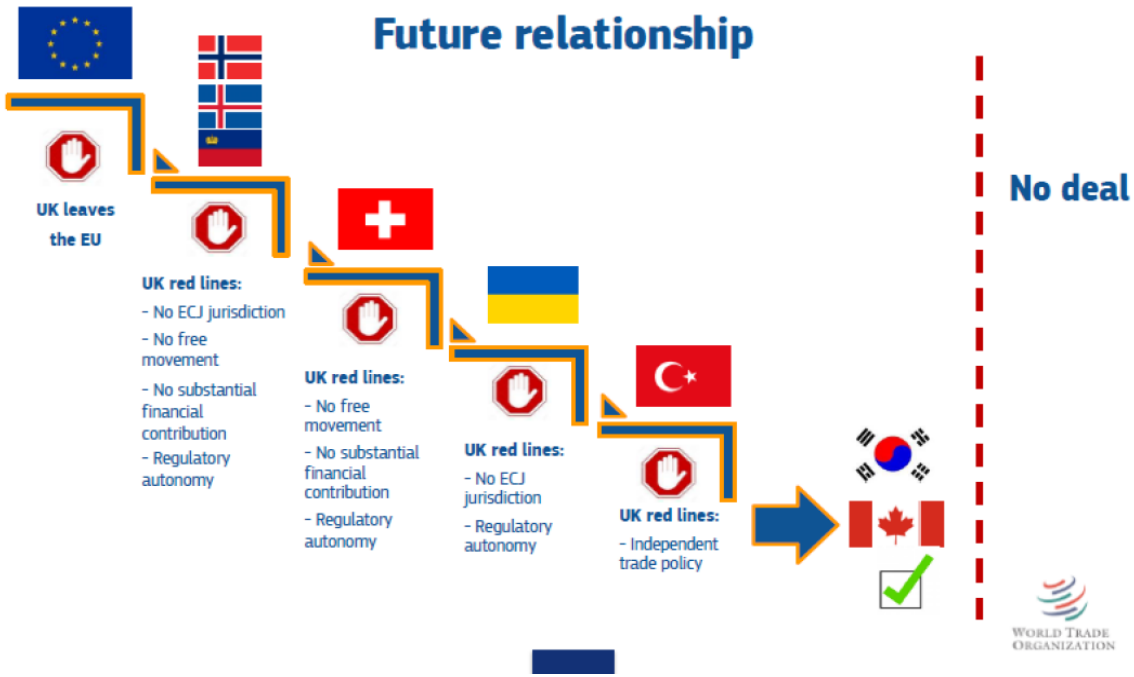


Source: EIIW calculations based on data projected output losses available from the leaked government figures and data on the regional Brexit vote available from the Electoral Commission www.electoralcommission.org.uk

The contradiction that biggest economic disappointment likely to occur in regions with high BREXIT voter share= *potential impulse for pol. UK instability*

Presentation of Chief EU Negotiator Michel Barnier to the European Commission

Fig. 15



Source: European Commission (2017).
https://ec.europa.eu/commission/sites/beta-political/files/slide_presented_by_barnier_at_euco_15-12-2017.pdf

1. Introduction

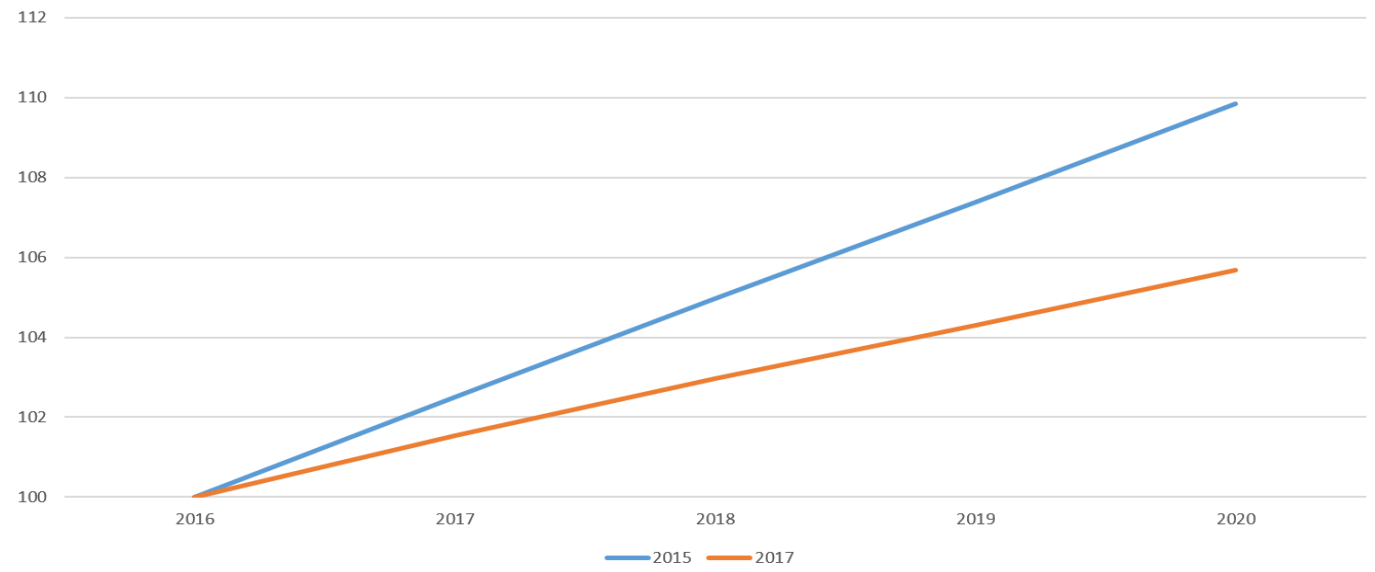
- Several studies have looked into the potential effects as regards the pressure regarding the relocation of banks and investment funds (e.g. Cambridge Econometrics (2018); OLIVER WYMAN (2016). Issue of whether or not **risk premia in various forms could slow down UK or EU investment (IMK, 2016)**

Perspectives on Increased Financial Market Volatility?

- 1) Transition of benchmark – e.g. LIBOR replaced by New Benchmark
- 2) Contract continuity problems
- 3) How good is macroprudential supervision prior to and in the critical transition stage
- 4) Which role of FSAPs, stress tests etc. as info basis
- 5) Cooperation EU27-UK post-BREXIT?
- 6) Quality of national and EU regulation in EU27 – important not least in the context of relocation of London City financial service providers to EU27
- 7) Which course of regulation in the UK – and in the US; and how are the linkages UK/US and EU27?
- 8) How much political instability in UK and EU27? How is the UK Gov information policy on BREXIT policy – affecting e.g. exchange rate dyanmics
- 9) Role of the global environment (e.g. US interest rates) for BREXIT process

Appendix 2: Implied Economic Effects of BREXIT – Forecast Revisions

Fig. 8: Impact of Revised Office for Budget Responsibility Forecasts for UK Real GDP



Source: Welfens (2017), The True Cost of BREXIT for the UK: A Research Note, EIIW Discussion Paper No. 234, www.eiiw.eu (Base year 2016=100)

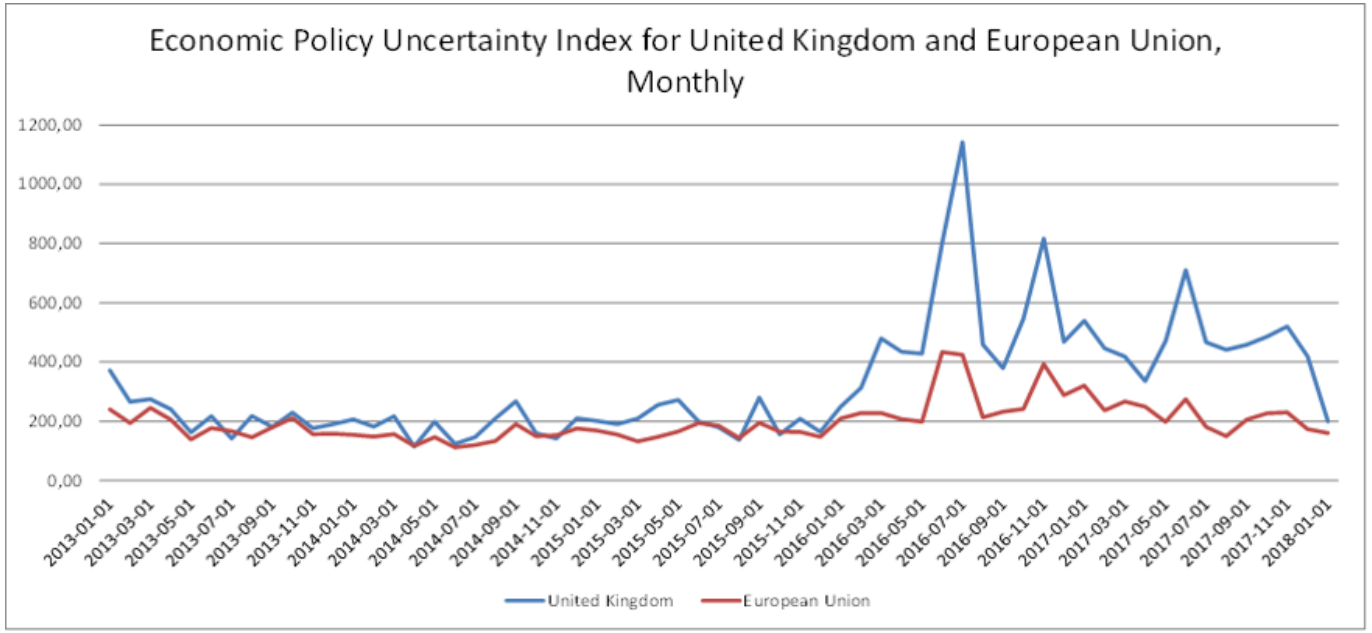
BREXIT Affecting Markets – ECB Composite Indicator of Systemic Risk

Fig. 2: ECB Composite Indicator of Systemic Stress (CISS)

Source: European Central Bank (2018), Statistical Data Warehouse

Uncertainty Index for the UK and the EU, Jan. 2013- Jan. 2018

Fig 3: Uncertainty Index for the UK and the EU, 2013-2018, Jan.



Source: https://fred.stlouisfed.org/

Contract Continuity Issues BREXIT Could Create Big Problems(No-Deal Case...)

As regards contract continuity BREXIT poses difficult problems that had not been solved in early 2018 although this should be a natural priority of policymakers in London and Brussels:

- *2 trillion GBP derivatives contract could be void on March 29, 2019; and the*

2. Theoretical Aspects of BREXIT Disintegration

- **BREXIT means regime change in economic and political terms** where financial market dynamics are part of both the short- and medium-term dynamics – and policy impulses come on top of this.
- One may assume an EU-UK free trade agreement in goods, but not financial services

2. Theoretical Aspects of BREXIT Disintegration

- BREXIT means that in the short term, interest rates, exchange rates and stock market prices will react while in the medium term, output, price level, employment and budget effects, as well as effects on the current account, will be of particular interest.
- If the short-term **BREXIT effect is a worsening of the current account,** the standard BRANSON model (e is the nominal exchange rate in price notation and i is the nominal interest rate) leads one to expect that there will be a devaluation of the Pound and an increase of the interest rate

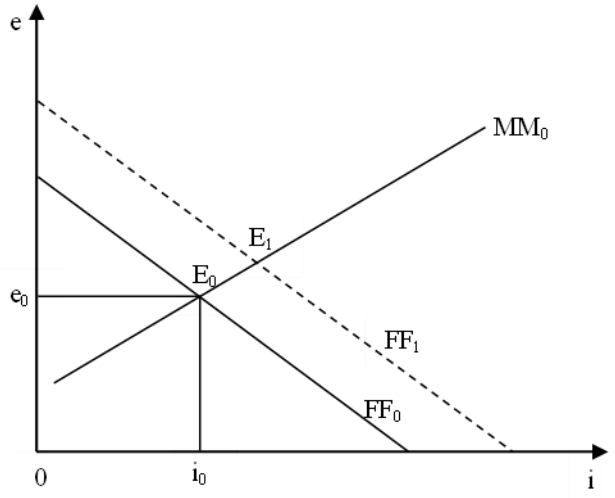


Fig. 5: BRANSON Model and BREXIT: Perspectives with a Worsening Current Account (FF is the equilibrium line for the foreign bonds market, MM is the equilibrium line for the money market)

Effect of BREXIT on the Long Run Equilibrium Price Level

Considering

- an enhanced (monetary) growth mode with the **savings function (1): $S = s(1-\tau)Y - c'M/P$**; $0<c'<1$; $s=1-c$;
- **Macro production function $Y= K^{\beta}(AL)^{1-\beta}$**; hence (with $y':=Y/(AL)$; $k':=K/(AL)$): $y'= k'^{\beta}$
  - Hence one can determine equilibrium steady-state capital intensity $k'^{\#}$ and $y'^{\#}$. Alternative macro production function $y'= m'^{\beta} k'^{\beta}$;$0<\beta'<1$
- **Money market equilibrium condition (2): $(M/P)/(AL) = hy'/(h'r)$;** it is assumed 0 inflation; hence it holds i=r; $y':=Y/(AL)$.
- The macro production f. considered is **(3)**: $y'= k'^{\beta}$; $(0<\beta<1$; $k':=K/(AL))$
- **dP/dt = f(excess demand in the goods market)P**; f(demand – $y'^{\#}$)
- gives us P#; one then can consider the BREXIT-induced changes of parameters and implications on long run price level P#; **monetary policy variable is M/(AL):= m**. Yields

- **(6)** $y'\# = \{[s(1-\alpha*\beta)(1-\tau) - (c'h''/r)]/(a+n+\delta)\}^{\beta/(1-\beta)}$

- It is assumed that the equilibrium price level P# is determined from the excess demand in the goods market (V'>0 v'>0); m':= (M/P)/(AL); m'':= M/(AL)
- BREXIT will affect e.g. trade degree openness, but also the savings rate as well as other parameters in an enhanced growth model; one also may consider the case of a macro production function $y' = (....)m'^{\beta'}k'^{\beta}$ where $0<\beta'<1$. Should be useful for the case of the UK; money is assumed to enter the production function of firms in the form of a spillover effect of households' holdings of real money balances (see Welfens, 2011).

Markets; and Steady State Solution P#; savings rate with ambiguous effect on P#

(7) $dP/dt = V'(c(1-\alpha*ß)(1-\tau)y\#' + c'm' + V''y\#' - y'\#)P$

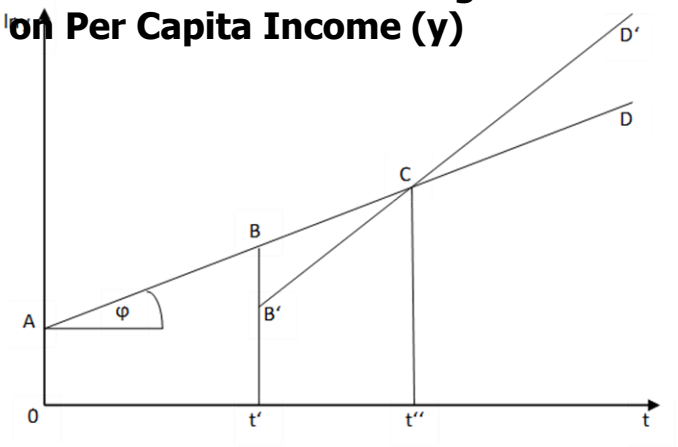
(8) $dP/dt + V'[1-(c(1-\alpha*ß)(1-\tau) + V'']y'\#P = V'c'm''$; [...]>0

Hence the steady state solution – taking into account the solution for y'# - is given by

(9) $P\# = c'm''\{(1+\lambda j)^{v}(1+\lambda'x)^{v'}[s(1-\alpha*ß)(1-\tau) - (c'h''/r)]/(a+n+\delta)\}^{-ß/(1-ß)}/[1-(c(1-\alpha*ß)(1-\tau) + V'']$

Long Run Price Level Dynamics – and BREXIT Effects (e.g. fall of a)

Fig. 5: Enhanced Growth Model: Effect of a Rise of the Growth Rate of Knowledge on Per Capita Income (y)



A rise of the growth rate of knowledge(a) **as well as a higher growth rate of the population and a higher capital deprecation rate will – paradoxically at first sight – raise the price level. However, this is not really surprising since a rise of a or n or δ will reduce the level of the growth path in the steady state (see Fig. 5; if n is reduced by BREXIT, a likely outcome, the long run price level is reduced). This implies that a fall of the growth rate of knowledge – to be expected in the context of BREXIT as a consequence of reduced foreign direct investment in the form of greenfield investment – will go along with a fall of the steady state price level; note that this holds only if the nominal exchange rate is constant**

2. Theoretical Aspects of BREXIT Disintegration

- **Leading banks from London will relocate to EU27 countries = host countries of higher FDI inflows** in banking can be expected to improve their ability in the field of product innovations in banking and financial services
- **Minimum lead time for the relocation of banks which want to be operational in the EU27 as of**

Consequences of No-Deal BREXIT

1) Big banks in London will come under strong pressure to relocate activities from London to the EU27 countries which means a loss of highly remunerated jobs in banking and finance plus supporting services; the EU27 countries in turn will gain additional foreign direct investment, jobs and tax revenues.

Stress Tests

- **European Banking Authority (EBA) will impose a BREXIT-related stress test on the biggest EU28 banks in November 2018** that assumes a strong decline of real GDP by 8.3%
- **EBA stress test is that November 2018 is much too late** – financial markets could already be in turmoil by early autumn 2018 when the final round

Institutional Setting

- Overall institutional setting for prudential supervision and macro-prudential supervision is very complex: includes global International Organizations such as the **IMF and the Bank for International Settlements (BIS) as well as EU institutions (ESRB, EBA, EIOPA, ESMA) plus national agencies.**

International Institutional Setup of Prudential Supervision in EU28 in BREXIT Context

Tab. 1: International Institutional Setup of Prudential Supervision in EU28 in BREXIT Context

IMF FSAP	BIS Basel III Rules	ESRB (European Systemic Risk Board; head from ECB; first Vice-Chair.= Bank of England until March 28, 2019) EU28 plus Norway & Iceland as observers	EBA (European Banking Authority)	EIOPA (European Insurance and Occupational Pensions Authority) Problem with insurance companies that have heavily invested in UK bonds	ESMA (European Securities and Markets Authority)	National Super-visors
Monitor-ing & reg-ulations	Capital Require-ments etc.	Analysis of the macro-prudential EU28 risk situation	Ordered stress test for banks with respect to BREXIT: Nov. 2018	BREXIT-related studies	BREXIT-related studies; pressure on UK investment funds to relocate to EU27	Bank of England (BoE) with special role: BREXIT country
		ESRB will lose UK members on March 29, 2019; not clear how EU28 macro-prudential analysis could be obtained				EU27 wholesale banking market mainly regulated by BoE after March 29, 2019

3. BREXIT: Risk for EU28 Banking Stability

- **Politico-economic environment surrounding the British exit threatens** a new and complicated situation
- **No-Deal BREXIT on financial services = EU banking system would, in effect, become dominated by British regulatory standards** (at the very least in the crucial wholesale market where

3. BREXIT: Risk for EU28 Banking Stability

- **SAPIR/SCHOENMAKER/VÉRON, 2017:** circa 35% of the to date dominant London-based institutional commercial banking from the EU27 will be transferred to the EU following BREXIT (to Frankfurt, Paris, Dublin, Luxembourg, Amsterdam)

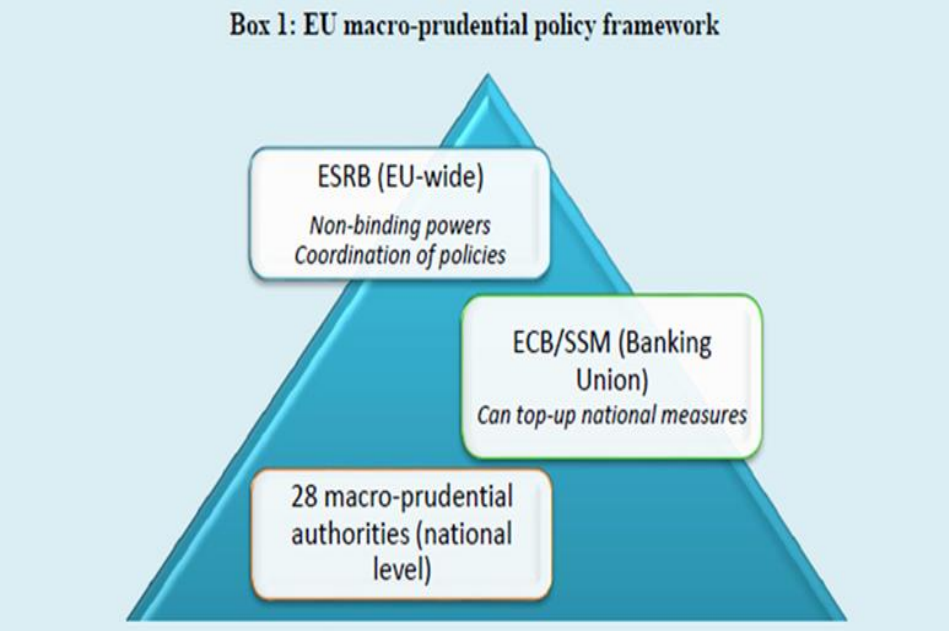
→ banking and financial center of the Eurozone and EU, respectively, would in future still be situated *outside* of the

BREXIT-related risks

- In the **Eurozone, and more broadly in the EU, the ECB** exercises banking supervision over the largest banks;
- as a **consequence of the UK's exit from the EU, the EU wholesale market, and also part of the EU interbank market, will in effect be primarily regulated by the Bank of England**.
- **The BoE may take a different**

Appendix 6: EU Macroprudential Policy Framework

Fig. 16: Macroprudential Policy Framework



Source: European Parliament (2017), The EU macro-prudential policy framework, IPOL/EGOV

Appendix 6: EU Macroprudential Policy Framework

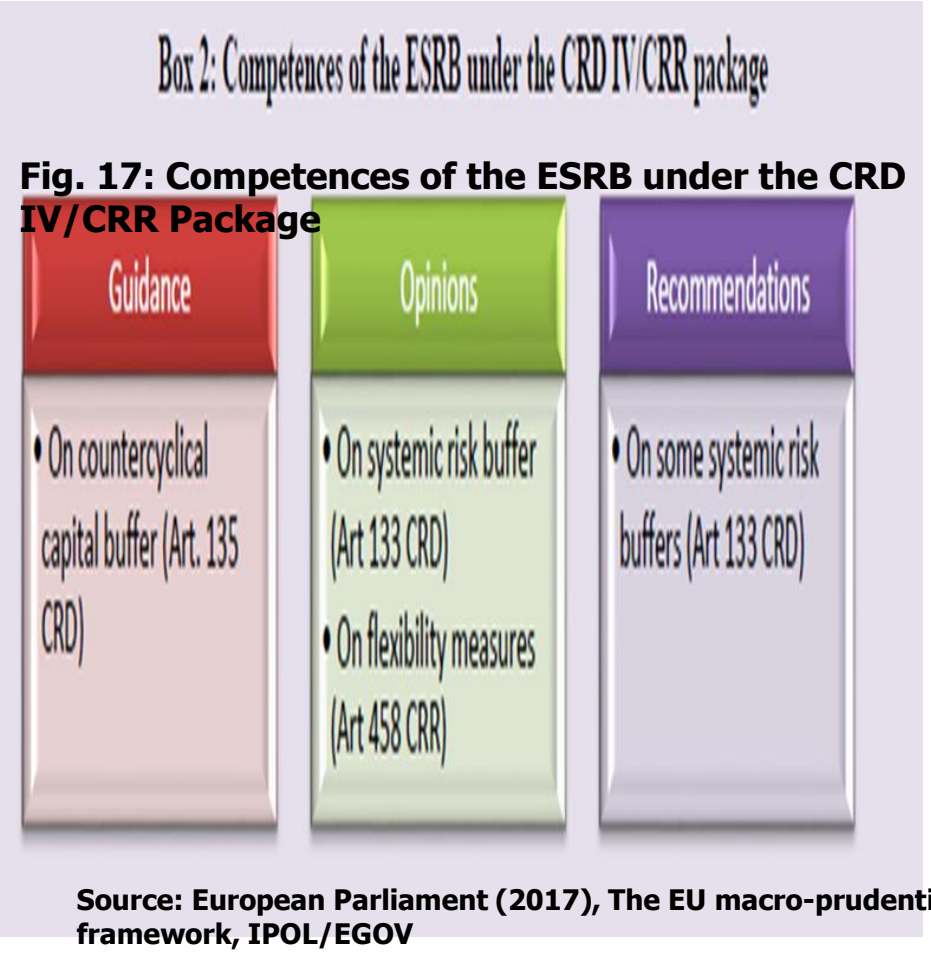


Fig. 17: Competences of the ESRB under the CRD IV/CRR Package

Source: European Parliament (2017), The EU macro-prudential policy framework, IPOL/EGOV

***CRD IV/CRR: Capital Requirements Directive IV/Capital Requirements Regulation**

****The banking regulation, i.e. the 'CRDIV/CRR' package, which entered into force in January 2014, foresees new macro-prudential instruments that can be activated at national level with varying procedures for consultation at the EU level. CRD IV/CRR has entrusted the ESRB with a new coordination role in the activation of some of these new macro-prudential**

(Position of London, % of Market) and Banking Integration Scenario

Fig. 6: Banking Current Situation (Position of London, % of Market)

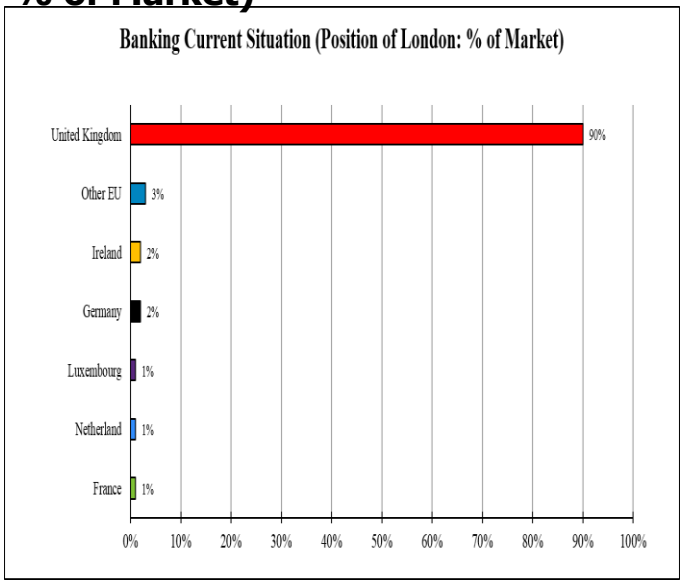
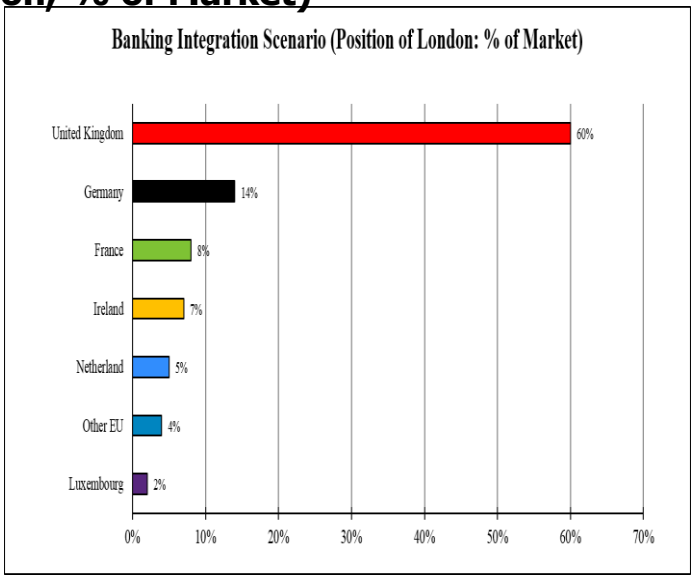


Fig. 7: Banking Integration Scenario (Position of London, % of Market)



Source: EIIW adaptation of data available in Sapir, A.; Schoenmaker, D.; Véron, N. (2017), Making the best of Brexit for the EU27 financial system, POLICYBRIEF Issue 1, February 2017 (Tab. 3, P. 5). http://bruegel.org/wp-content/uploads/2017/02/Bruegel_Policy_Brief-2017_01-060217.pdf
Note: Market shares as a percentage of the total European wholesale markets.

Wholesale Banking in London at end 2014

Wholesale banking in London (end-2014)

Tab. 2: Wholesale Banking in London (at end of 2014)

Bank types	Total assets		Wholesale banking in London		Relocation potential Wholesale banking for EU27 clients		
	Assets (€ billions)	% of total UK banks	Assets (€ billions)	% of total assets	Assets (€ billions)	% of wholesale	% of total assets
Major UK international banks	4,583	45%	1,375	30%	275	20%	6%
Major UK domestic banks	1,489	15%	0	0%	0	-	0%
Other UK banks	321	3%	0	0%	0	-	0%
Rest of the world investment banks	2,221	22%	2,221	100%	777	35%	35%
Rest of the world other banks	591	6%	591	100%	207	35%	35%
Branches of EU banks	1,018	10%	1,018	100%	509	50%	50%
Total UK banking system	10,223	100%	5,205	51%	1,768	34%	17%

Source: Adapted from Sapir, A.; Schoenmaker, D.; Véron, N. (2017), Making the best of Brexit for the EU27 financial system, POLICYBRIEF Issue 1, February 2017 (Tab. 3, P. 5). http://bruegel.org/wp-content/uploads/2017/02/Bruegel_Policy_Brief-2017_01-060217.pdf

4. Risk Management Analysis and Perspectives in EU28

- **One may expect EU28 countries to also take a critical look** at the field of financial markets and banking which obviously are critical with regard to the economic stability of EU28 and indeed OECD countries in 2018/2019**. Is this happening??**

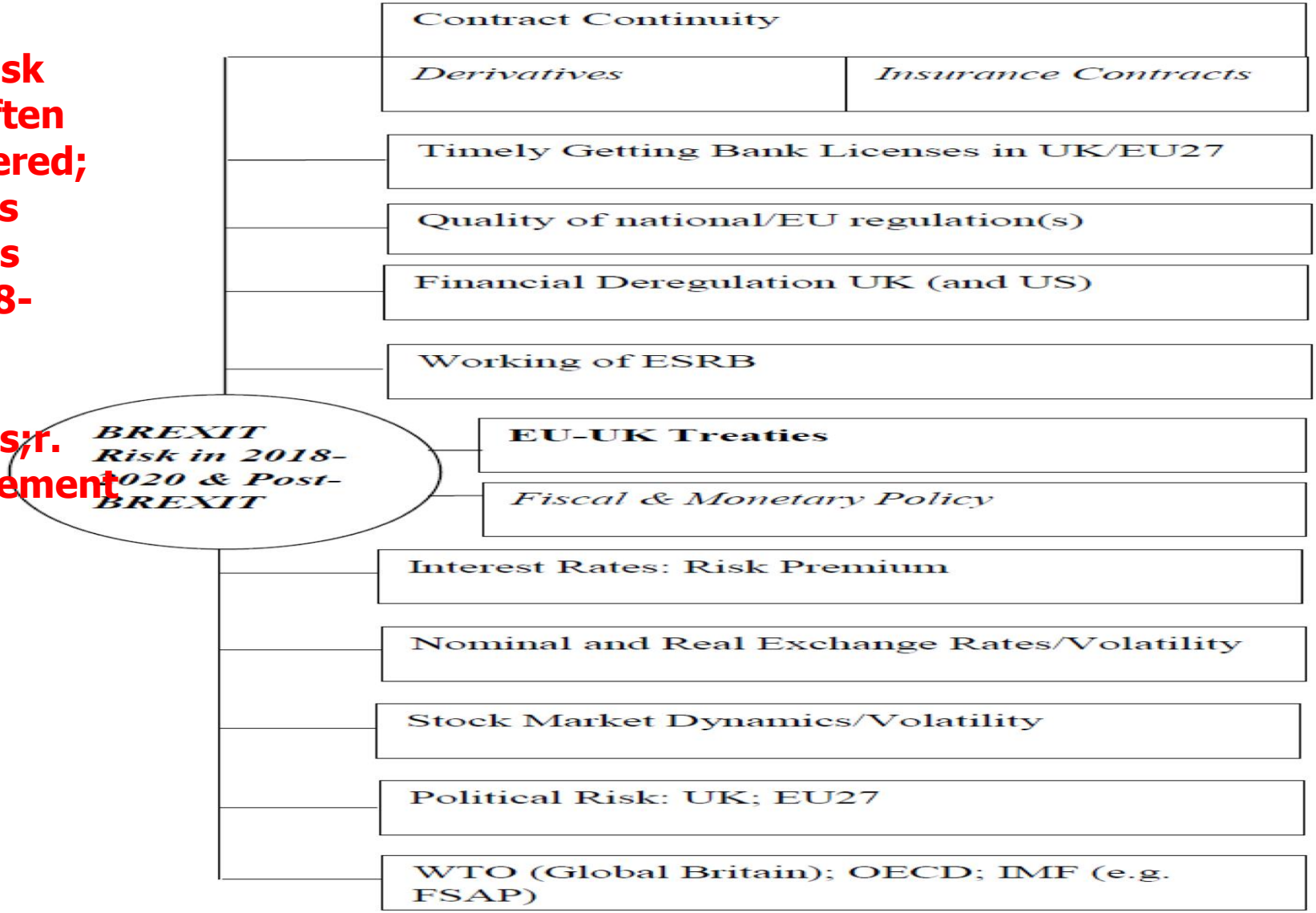
→ **No! The Bank of England is partially blocking adequate analysis at the European Systemic**

Macroprudential analysis: Splitting supervision between ECB and Bank of England inadequate

- (1) **The ESRB has 28 member countries and is not the sum of the UK plus 19 Eurozone countries,** the **macro-prudential perspective for all the EU28 countries** is crucial.
- (2) **An adequate macro-prudential supervision at the ESRB will only occur if there is full cooperation between the Bank of England and the other EU27 countries** – not least since

Risk Perspectives on BREXIT

More risk than often considered; nervous Markets In 2018-2020; Risk analysis;r. management ?



5. Policy Conclusion

- BREXIT economic dynamics are associated with **considerable risk, such as credit risk, market risk and operational risk**
- EU not eager to offer a free trade agreement on financial services
- **Right of Bank of England to stop ESRB carrying out its task..?**
- **Strange and dangerous idea to**

BREXIT-related BREXIT Risks

BREXIT-related risks to be anticipated and requiring policy actions are as follows:

- *Increased volatility of UK interest rates*
- *Increased volatility of British Pound exchange rate – this could reduce UK FDI inflows;*
- *Political instability in the UK and associated with this a worsening of UK credit rating*

Not Only An FTA EU27-UK Is Crucial

A serious UK-EU aleniation could be avoided by a strategy of the European Union which **goes beyond** an offer for a free trade agreement plus cooperation in security and science:

- **One should consider a combination of a (limited) Free Trade Agreement between the EU and the UK with an international investment treaty** between the EU

Contract Continuity

- *The problems of contract continuity should be solved in the EU-UK negotiations, if this would not be achieved there would be additional risks in financial markets and in the real economy of EU28 countries. As regards financial regulations post-BREXIT one should consider two key policy options:*
- ***there could be the creation of a joint EU-UK regulatory committee on banking and financial markets***

IMF and other institutions

Suggested Reform Initiative at the IMF

- *The IMF should consider changing its FSAP framework; for countries* ***with expected considerable international spillover effects the FSAP analysis should be modified in the sense that not only national financial sector stability aspects are considered.***
- ***The board of directors of the IMF should approve national FSAP update reports on internationally systemically relevant countries – analytically this includes the Eurozone - only***

THANK YOU FOR YOUR ATTENTION

References

- Cambridge Econometrics (2018), Preparing for Brexit, Final Report for the Greater London Authority, January 2018
- Caporale, G.M.; Gil-Alana, L.; Trani, T. (2018), Brexit and Uncertainty in Financial Markets, Deutsches Institut für Wirtschaftsforschung Berlin, Berlin, Discussion Paper 1719.
- Council of Economic Advisors (2017), Economic Report of the President, available at https://obamawhitehouse.archives.gov/administration/eop/cea/economic-report-of-the-President/2017 (accessed 21.02.2018)
- Froot, K.; Stein, J. (1991), Exchange Rates and Foreign Direct Investments; *Quarterly Journal of Economics*, 1191-1217
- Hendry, D.; Muellbauer (2017) "The future of macroeconomics: Macro theory and models at the Bank of England", Oxford Review of Economic Policy, Volume 34, Numbers 1–2, 2018, pp. 287–328
- IMK (2016), Brexit lähmt Konjunktur, IMK Report 115, June 2016, IMK/Hans-Böckler-Stiftung: Düsseldorf
- Oliver Wyman (2016), "The Impact of the UK's Exit from the EU on the UK-based Financial Services Sector." Available at: http://www.oliverwyman.com/our-expertise/insights/2016/oct/The-impact-of-Brexit-on-the-UK-based-Financial-Services-sector.html
- Sampson, T. (2018), Brexit: The Economics of International Disintegration, *Journal of Economic Perspectives*, Vol. 13, No. 4, pp. 163-184
- Sapir, A.; Schoenmaker, D.; Véron, N. (2017), Making the best of Brexit for the EU27 financial system, POLICYBRIEF Issue 1, February 2017. http://bruegel.org/wp-content/uploads/2017/02/Bruegel_Policy_Brief-2017_01-060217.pdf
- Welfens, P.J.J. (2017a), An Accidental Brexit, Palgrave Macmillan: London
- Welfens, P.J.J. (2017b), The True Cost of BREXIT for the UK: A Research Note, EIIW Discussion Paper No. 234. http://www.eiiw.eu/fileadmin/eiiw/Daten/Publikationen/Gelbe_Reihe/disbei234.pdf
- Welfens, P.J.J. (2017c), Foreign Financial Deregulation under Flexible and Fixed Exchange Rates: A New Trilemma, EIIW Discussion Paper No. 238. http://www.eiiw.eu/fileadmin/eiiw/Daten/Publikationen/Gelbe_Reihe/Jourderegulationdisbei238.pdf
- Welfens, P.J.J.; Baier, F. (2018), BREXIT and FDI: Key Issues and New Empirical Findings, EIIW Discussion Paper No. 241. http://www.eiiw.eu/fileadmin/eiiw/Daten/Publikationen/Gelbe_Reihe/disbei241.pdf
- Welfens, P.J.J.; Hanrahan, D. (2018), BREXIT: Key Analytical Issues and Insights from Revised Economic Forecasts, EIIW Discussion Paper No. 235. http://www.eiiw.eu/fileadmin/eiiw/Daten/Publikationen/Gelbe_Reihe/disbei235.pdf

Macro Analysis of the Goods Market Equilibrium in the Context of an Asymmetric FDI

- The impact of BREXIT on the UK is crucial, but there is also the question of to what extent the EU27 or the Eurozone will be affected by the UK's leaving of the EU. Consider a simple macro model (without government expenditures, but with cumulated FDI inflows) where one can write the goods market equilibrium condition for the medium term as (with positive parameters c, x, j – the three parameters are in the range of 0,1 - and q* denoting the real exchange rate eP*/P:=q* and τ is the income tax rate; Y is real gross domestic product, I is real investment, exports X are proportionate to foreign real gross national income (* for foreign variable, α is the share of country-1 investors in the foreign capital stock of country 2, ß* is the share of profits in foreign gross domestic product) Z*:=Y*(1-αß*) and also a positive function of q* (by assumption with an elasticity of one); hence X= xq*Z* Import volume J is assumed to be proportionate to disposable national income (J=j(…)Y) and to be a negative function of q* (with an elasticity of imports with respect to q* of -1), real imports expressed in domestic goods units are q*jZ so that we can write (with consumption being proportionate to disposable national income Z:= (Y+αß*q*Y*)) in a stochastic context with a white noise error term ε:

(1) $Y = c(1-\tau)(Y+\alpha ß^*q^*Y^*) + I + xY^*(1-\alpha ß^*)q^* - j(1-\tau)((Y+\alpha ß^*q^*Y^*) + \varepsilon$

(2) Hence $Y = I/s' + [(xq^*/s' + ((c-j)/s')(1-\tau)\alpha ß^*q^*]Y^* + \varepsilon$; where $s' := 1 - c(1-\tau) + j$

- The expectation value E(Y) therefore is

(3) $E(Y)=(1/s')E(I) + [(xq^*/s' + ((c-j)/s')(1-\tau)\alpha ß^*q^*]E(Y^*)$

- Moreover, with $s'' := 1/s'$ – we have for the variance

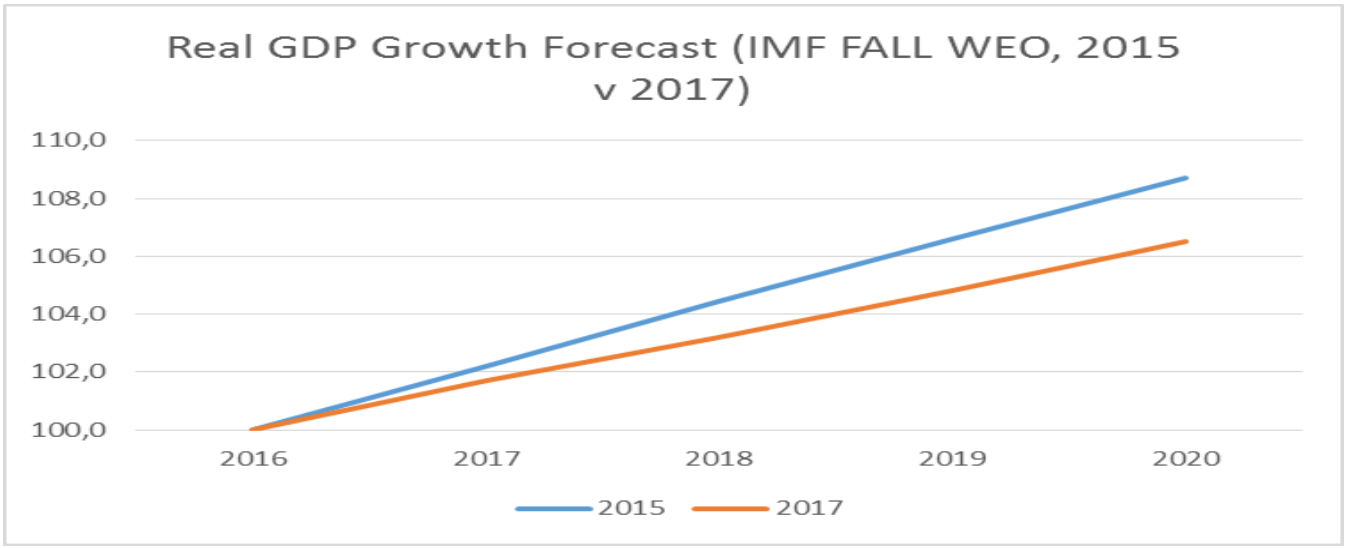
(4) $V(Y)= s''^2V(I) + [(xq^* + (c-j))(1-\tau)\alpha ß^*q^*]^2 s''^2 V(Y^*) + 2[((xq^* + (c-j))(1-\tau)\alpha ß^*q^*]^2 s''^4 cov(I,Y^*);$

Macro Analysis of the Goods Market Equilibrium in the Context of an Asymmetric FDI

- The country's investment will be proportionate to the foreign country's GDP. The share of cumulated ownership abroad (·) contributes to a higher variance of Y. A necessary and sufficient condition for this is a positive covariance. Here it is assumed that the higher the export-GDP share, the higher should be the covariance cov(I,Y*); from a Eurozone country perspective – with UK being the foreign country – the output variance V(Y) is raised in a double way through the UK's BREXIT. The variance of the UK's output will increase which, in turn, will raise the variance of the Eurozone country's output.
- Moreover, the covariance cov(I,Y*) could increase as investment in the Eurozone country will be correlated positively with Y*. If the Eurozone country is itself a strong producer of capital equipment, the implication should be that the rate of return of equipment producers is reduced so that stock market values of that sector will fall. There is a caveat to this view since import tariffs in some sectors of EU countries will indirectly stimulate British tariff jumping investment in Eurozone countries. This in turn should stimulate production of capital equipment in major capital equipment producer countries. If exports to the UK are replaced in the medium term and long term by outward foreign direct investment and UK production, respectively, the covariance cov(I,Y*) should fall. Hence the output variance in Eurozone countries should increase temporarily. To the extent that BREXIT has negative output effects on the EU27 – here the link should be (following standard QUEST results from the EU Commission's macro model) roughly that 6% income reduction in the UK will bring about 1% GDP reduction in the EU27 – there will be a negative repercussion effect on UK output. Part of negative output effects in EU27 countries could be linked to slightly higher financing and hedging costs that are associated with a relocation of banking activities from the "City of London", usually considered to represent big economies of scale effects, to EU27 countries. If there is a hard BREXIT, in the sense that there is not EU-UK treaty on BREXIT, there could be large financial shocks in the UK and the EU27 countries whose main banking wholesale market is in London.

Appendix 2: Implied Economic Effects of BREXIT – Forecast Revisions

Fig. 9: Impact of Revised IMF Forecasts for UK Real GDP

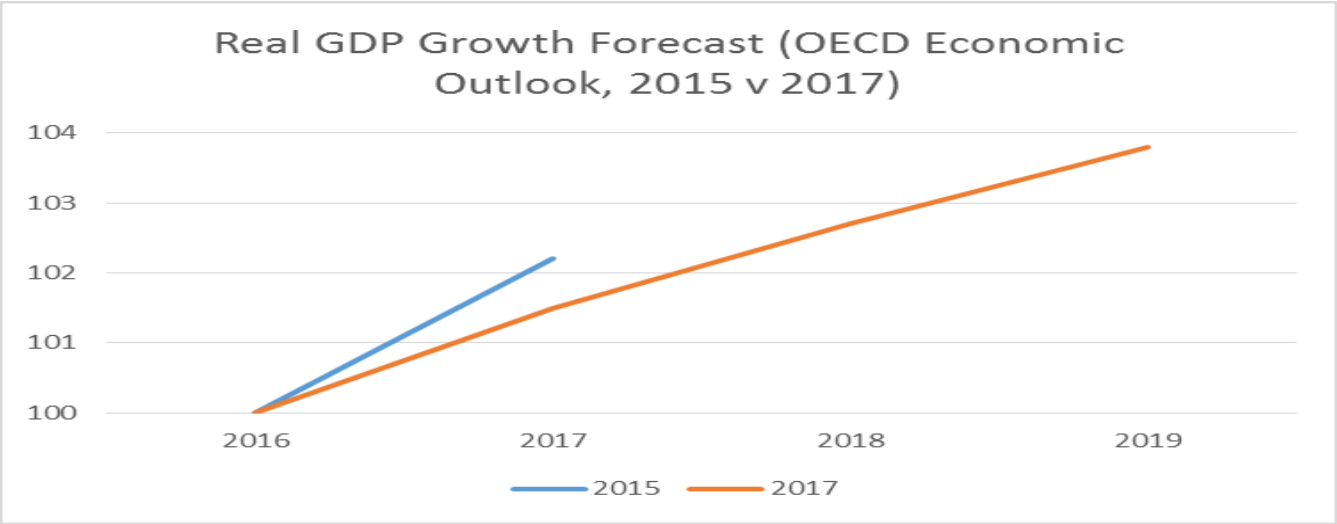


IMF, World Economic Outlook Database, October 2015 and 2017, own calculations, (Base year 2016=100)

Source: WELFENS/HANRAHAN (2018), BREXIT: Key Analytical Issues and Insights from Revised Economic Forecasts, EIIW Discussion Paper No. 235.

Appendix 2: Implied Economic Effects of BREXIT – Forecast Revisions

Fig. 10: Impact of Revised OECD Forecasts for UK Real GDP

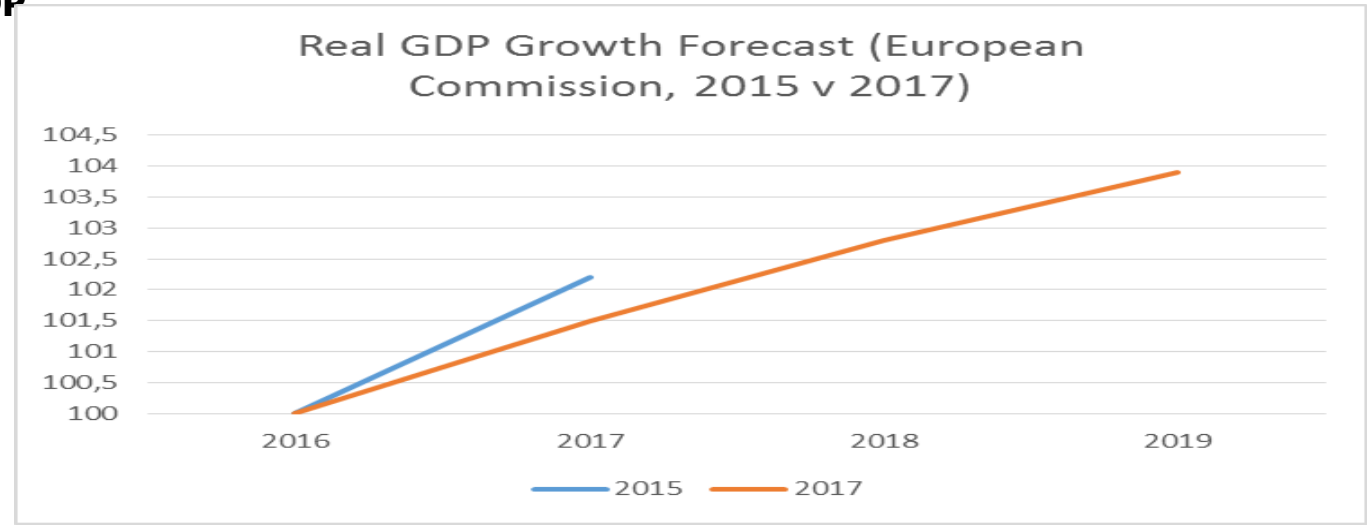


OECD Economic Outlook, 2017 Issue 2 and 2015 Issue 2, own calculations (Base year 2016=100)

Source: WELFENS/HANRAHAN (2018), BREXIT: Key Analytical Issues and Insights from Revised Economic Forecasts, EIIW Discussion Paper No. 235.

Appendix 2: Implied Economic Effects of BREXIT – Forecast Revisions

Fig. 11: Impact of Revised European Commission Forecasts for UK Real GDP

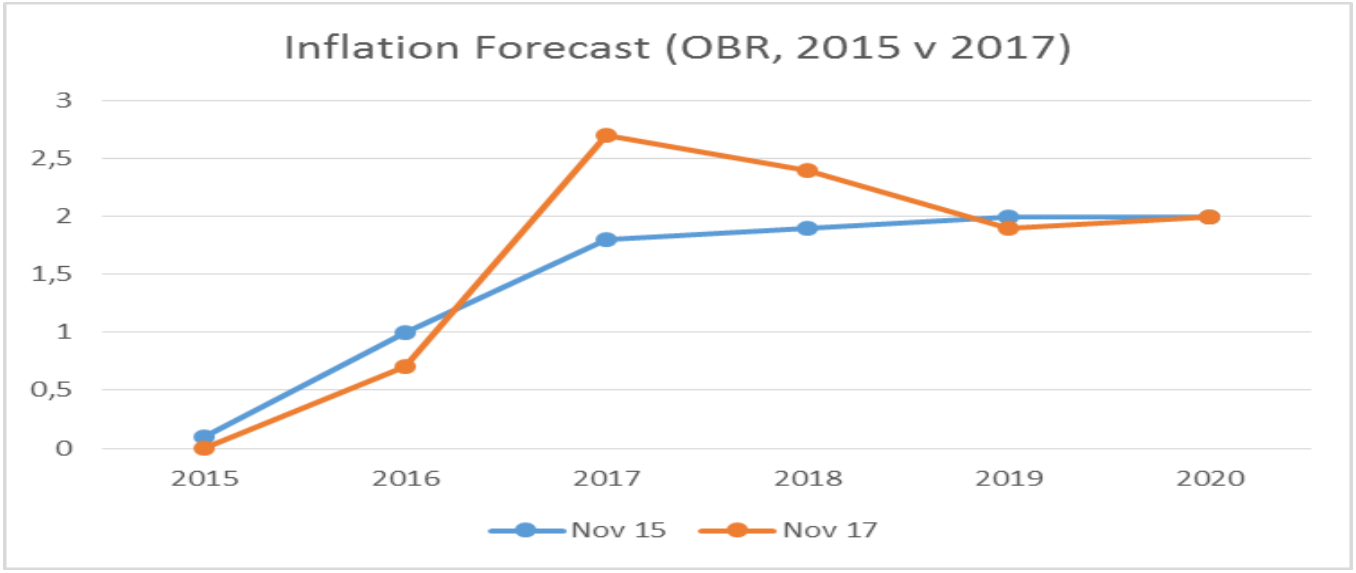


European Commission, European Economic Forecast, Autumn 2015 and Autumn 2017 (Base year 2016=100)

Source: WELFENS/HANRAHAN (2018), BREXIT: Key Analytical Issues and Insights from Revised Economic Forecasts, EIIW Discussion Paper No. 235.

Appendix 2: Implied Economic Effects of BREXIT – Forecast Revisions

Fig. 12: Impact of Revised OBR Forecasts for UK Inflation

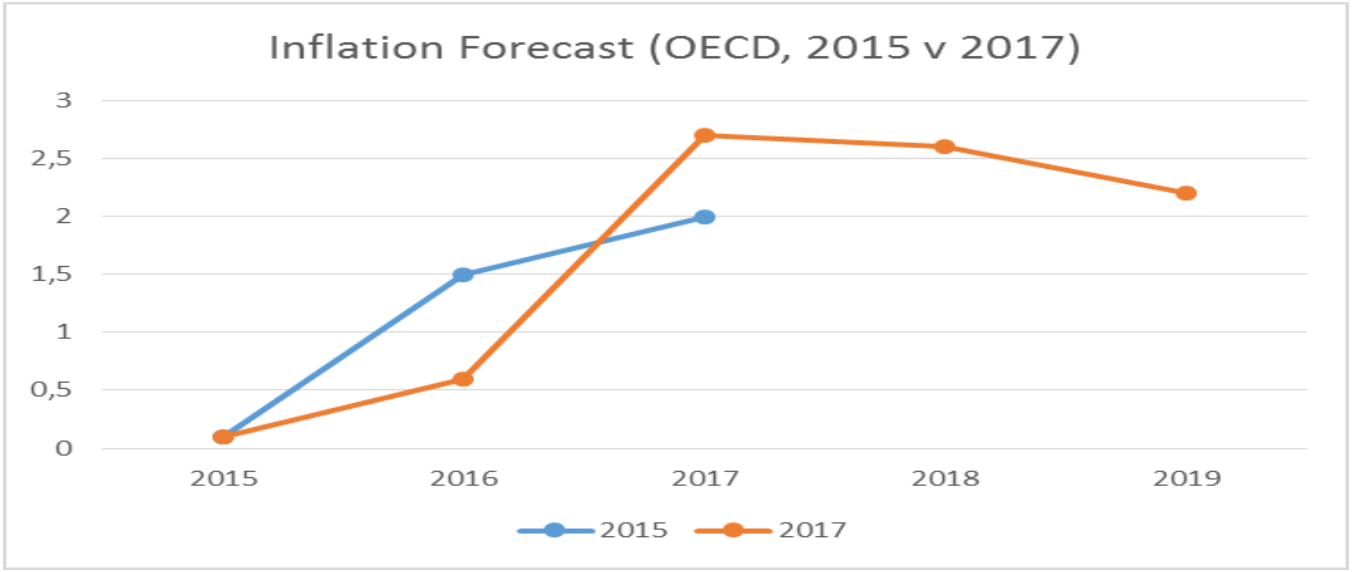


OBR, Historical Official Forecast Database, http://budgetresponsibility.org.uk/data/

Source: WELFENS/HANRAHAN (2018), BREXIT: Key Analytical Issues and Insights from Revised Economic Forecasts, EIIW Discussion Paper No. 235.

Appendix 2: Implied Economic Effects of BREXIT – Forecast Revisions

Fig. 13: Impact of Revised OECD Forecasts for UK Inflation



OECD Economic Outlook, 2017 Issue 2 and 2015 Issue 2

Source: WELFENS/HANRAHAN (2018), BREXIT: Key Analytical Issues and Insights from Revised Economic Forecasts, EIIW Discussion Paper No. 235.

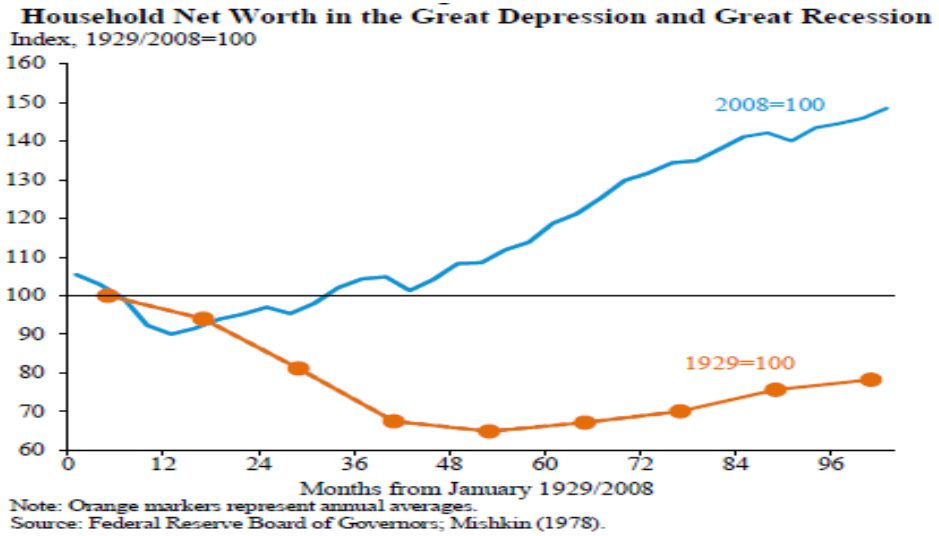
sectors). Countries ranked based on column 1 "Total" in order from lowest to highest.

Table 3: OECD FDI Regulatory Restrictiveness Index (Note: only those countries above OECD avergage in "Total" shown here)

OECD FDI Regulatory Restrictiveness Index 2016					
	Total	Banking & Insurance	Financial Services	BI / Total	FS / Total
Luxembourg	0.0040	0.0000	0.0020	1.1130137	0.9109589
Portugal	0.0070	0.0230	0.0020	0	0.68867925
Slovenia	0.0070	0.0000	0.0020	0.575	0.425
Czech Rep.	0.0100	0.0000	0.0020	0.36144578	0.06024096
Netherlands	0.0150	0.0000	0.0670	0	0.03508772
Estonia	0.0180	0.0000	0.0540	0	0.2
Finland	0.0190	0.0090	0.0050	0	0.33333333
Spain	0.0210	0.0000	0.0670	0	3
Germany	0.0230	0.0600	0.0050	0.47368421	0.26315789
Latvia	0.0260	0.0090	0.1330	1.25555556	0.44444444
Hungary	0.0290	0.0000	0.0090	2.60869565	0.2173913
Greece	0.0320	0.0280	0.1190	0.875	3.71875
Denmark	0.0330	0.0000	0.0110	0	0.31034483
Belgium	0.0400	0.0230	0.0170	0.73053892	0.22155689
United Kingdom	0.0400	0.0000	0.0330	0.26744186	0.41860465
Ireland	0.0430	0.0115	0.0180	0.16949153	0
France	0.0450	0.0565	0.0200	0	0.96153846
Slovak Rep.	0.0490	0.0000	0.0020	0	0.21153846
Italy	0.0520	0.0000	0.0500	0	0.01481481
Japan	0.0520	0.0000	0.0110	0.34615385	5.11538462
Chile	0.0570	0.0000	0.0020	0	0.5
Sweden	0.0590	0.0000	0.0000	0.77720207	1.20725389
Turkey	0.0590	0.0000	0.0420	0	4.46666667
OECD - Average	0.0670	0.0300	0.0330	1.04166667	0.0125

Appendix 4: Household Net Worth in the Great Depression and the Great Recession

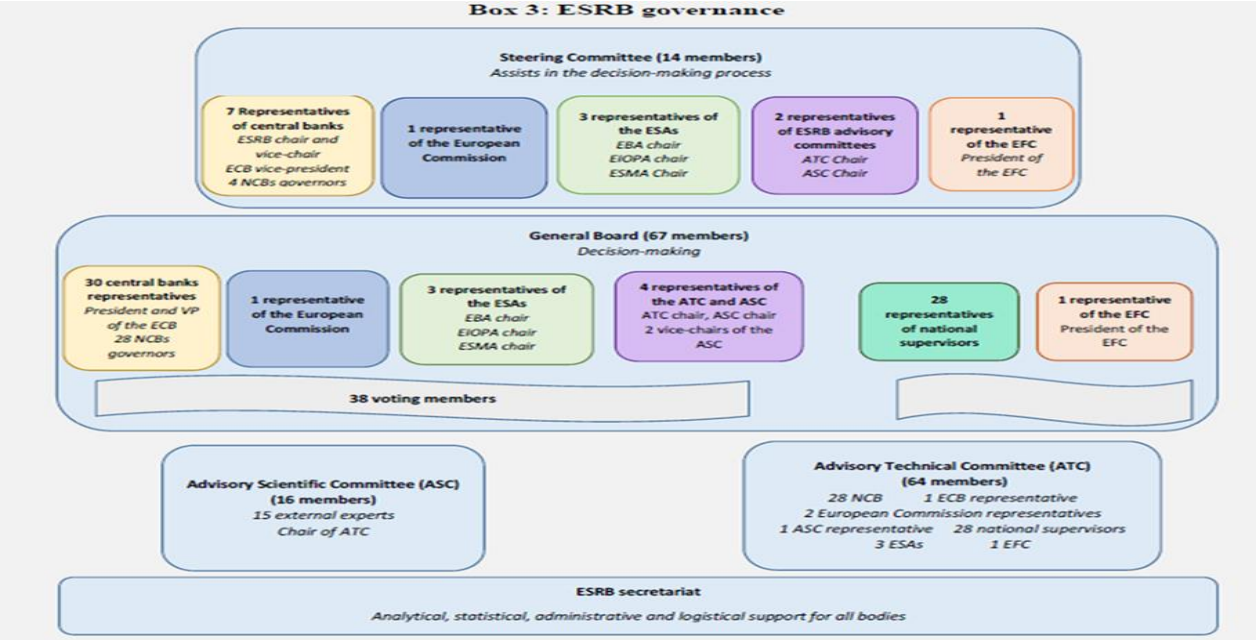
Fig. 14: Comparing US Output Loss in the Great depression and During the Great recession (2008 onwards)



Source: Council of Economic Advisers (2017). Economic Report of the President. p. 29

Appendix 6: EU Macroprudential Policy Framework

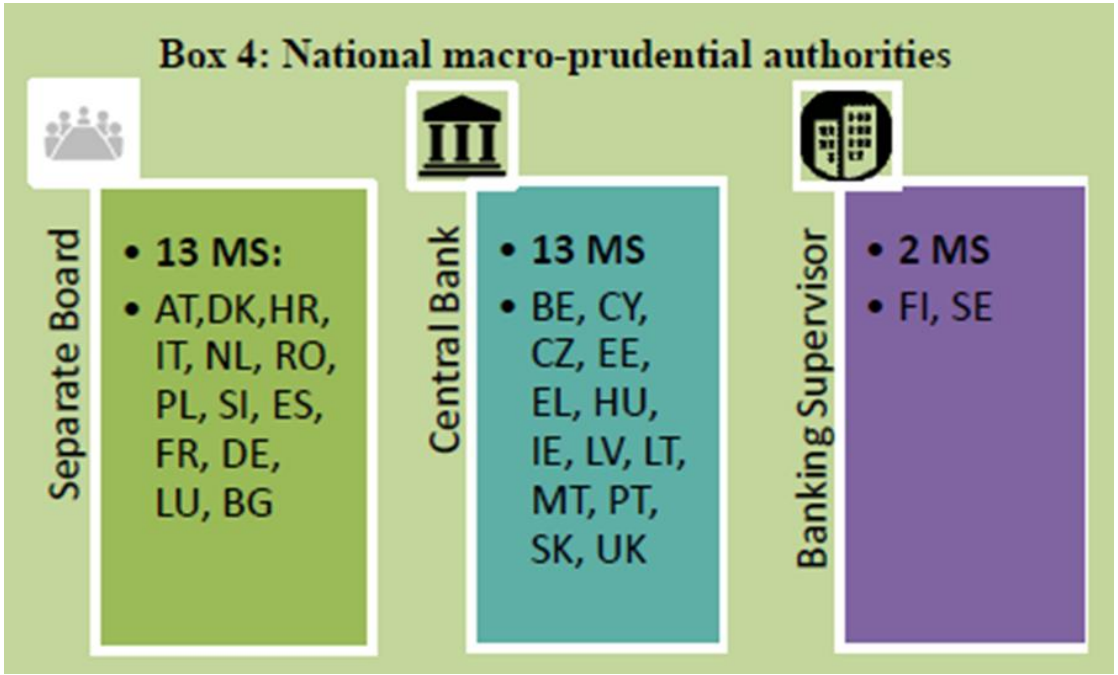
Fig. 18: ESRB Governance Structures



Source: European Parliament (2017), The EU macro-prudential policy framework, IPOL/EGOV

Appendix 6: EU Macroprudential Policy Framework

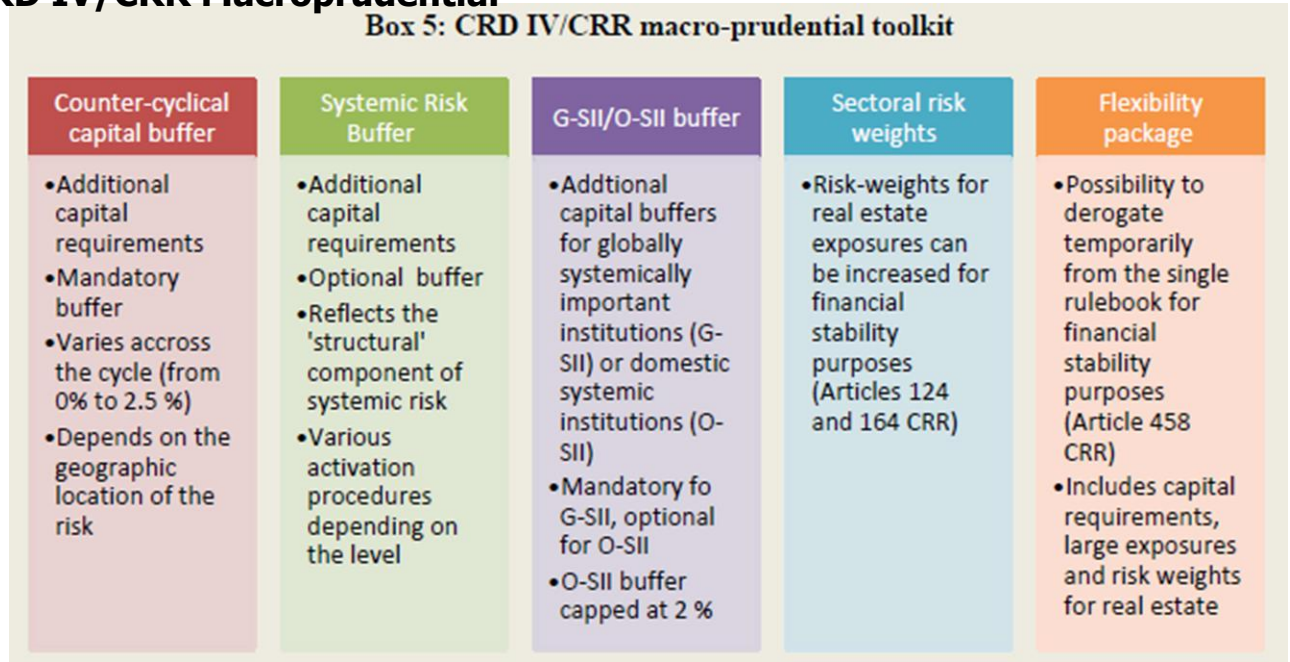
Fig. 19: National Macroprudential Authorities



Source: European Parliament (2017), The EU macro-prudential policy framework, IPOL/EGOV

Appendix 6: EU Macroprudential Policy Framework

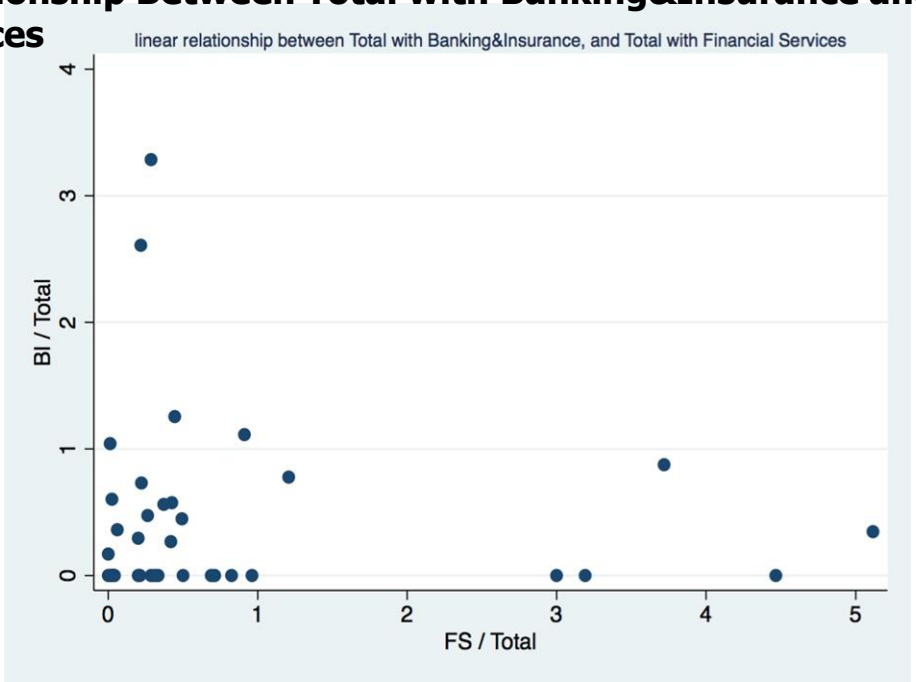
Fig. 20: CRD IV/CRR Macroprudential Toolkit



Source: European Parliament (2017), The EU macro-prudential policy framework, IPOL/EGOV

Appendix 7: OECD FDI Regulatory Restrictiveness Analysis

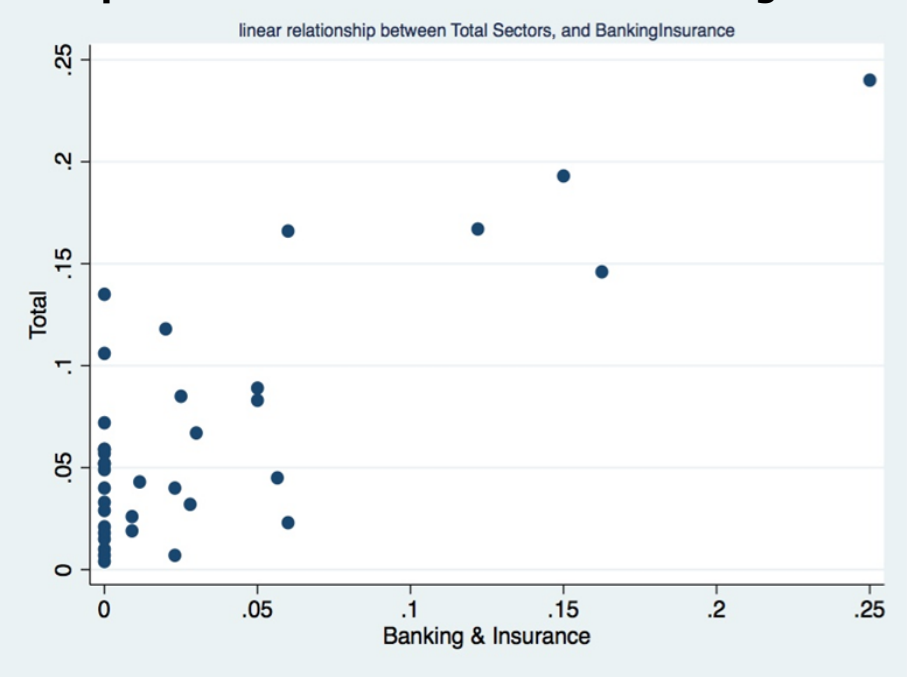
Fig. 21: Linear Relationship Between Total with Banking&Insurance and Total with Financial Services



Source: EIIW calculations

Appendix 7: OECD FDI Regulatory Restrictiveness Analysis

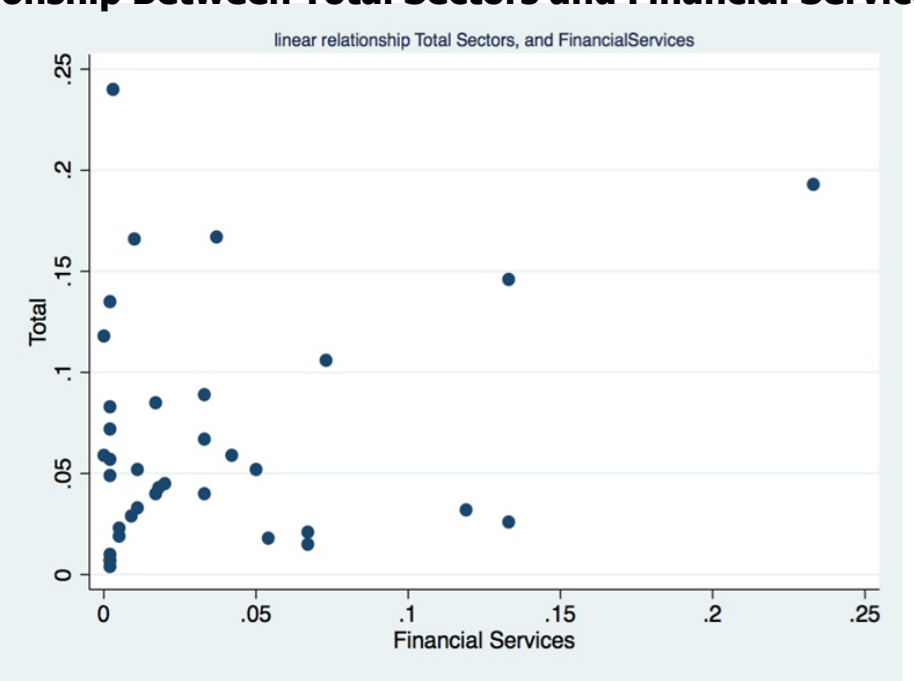
Fig. 22: Linear Relationship Between Total Sectors and Banking&Insurance



Source: EIIW calculations

Appendix 7: OECD FDI Regulatory Restrictiveness Analysis

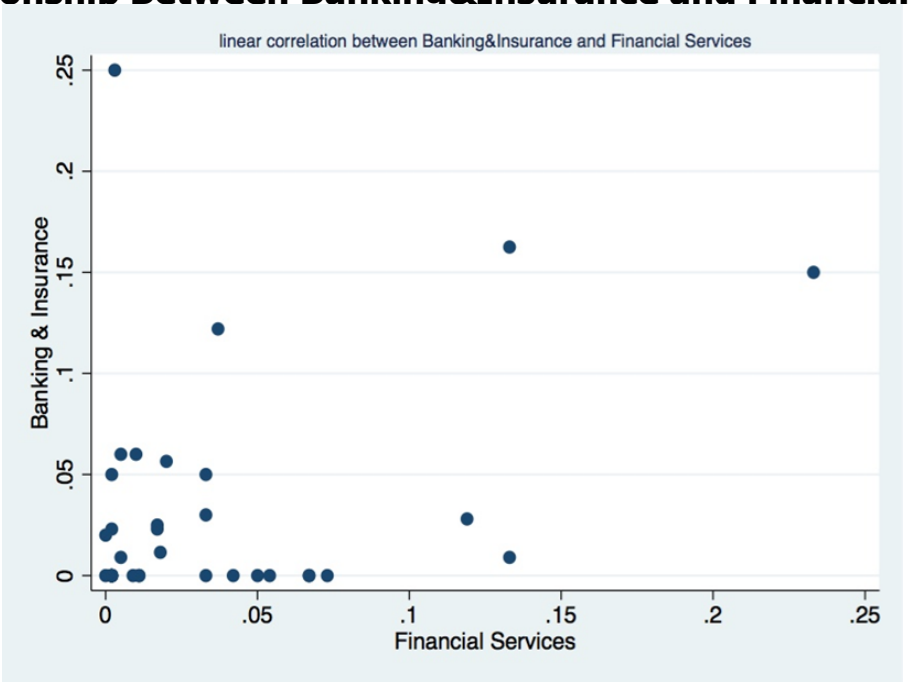
Fig. 23: Linear Relationship Between Total Sectors and Financial Services



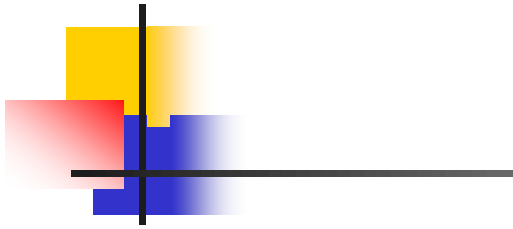
Source: EIIW calculations

Appendix 7: OECD FDI Regulatory Restrictiveness Analysis

Fig. 24: Linear Relationship Between Banking&Insurance and Financial Services

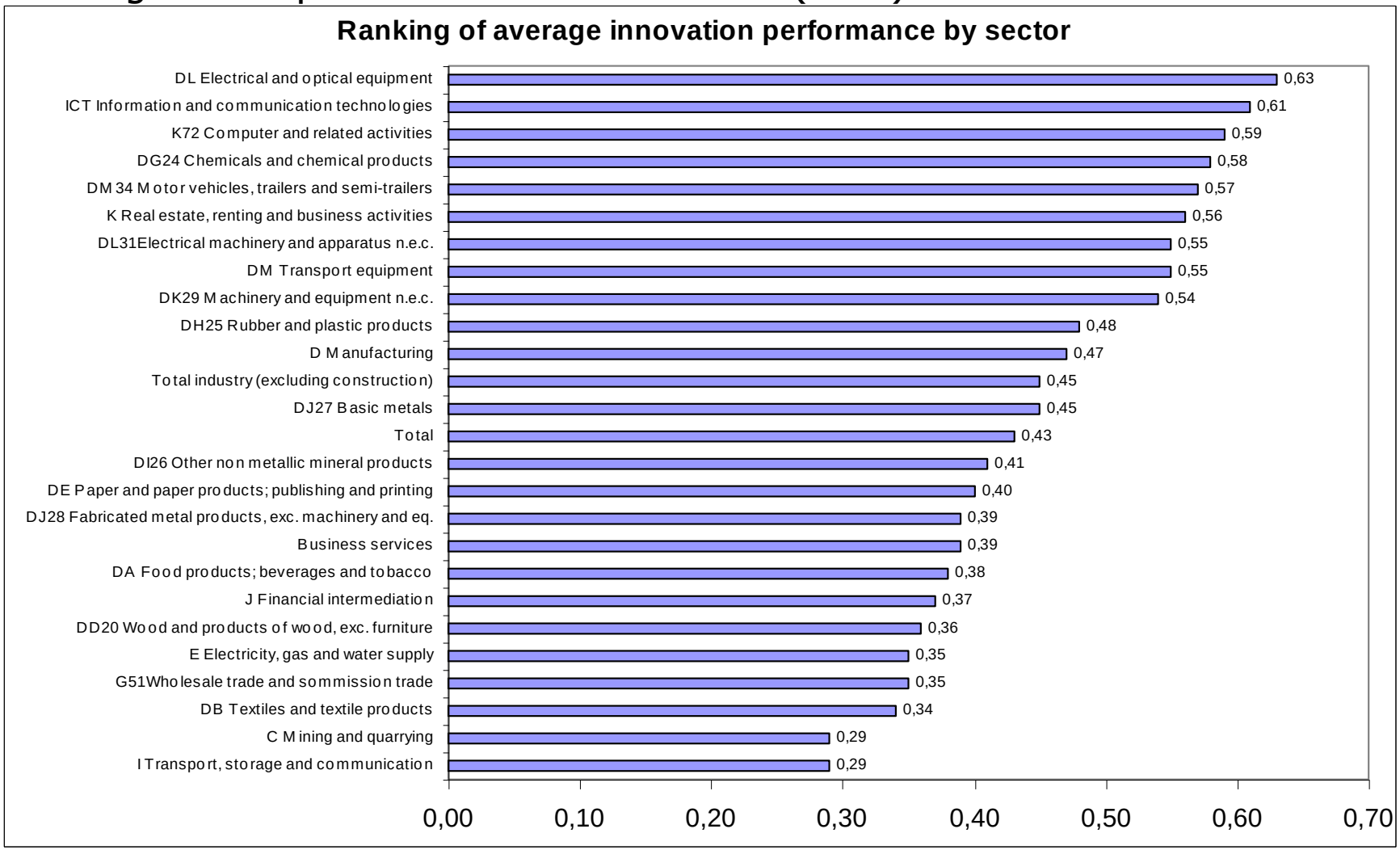


Source: EIIW calculations

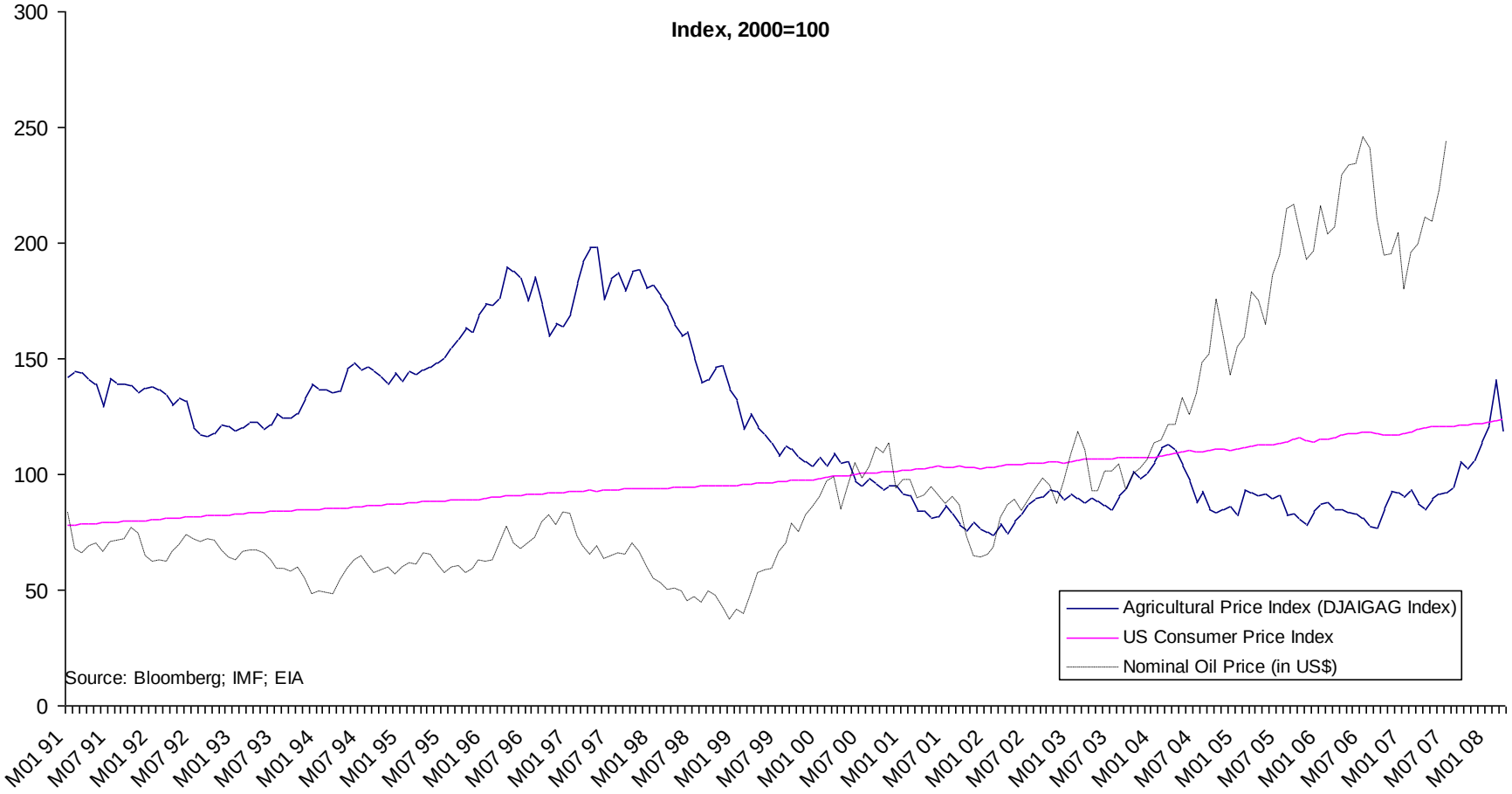


3. Innovation EU: R&D & Cap. Flows

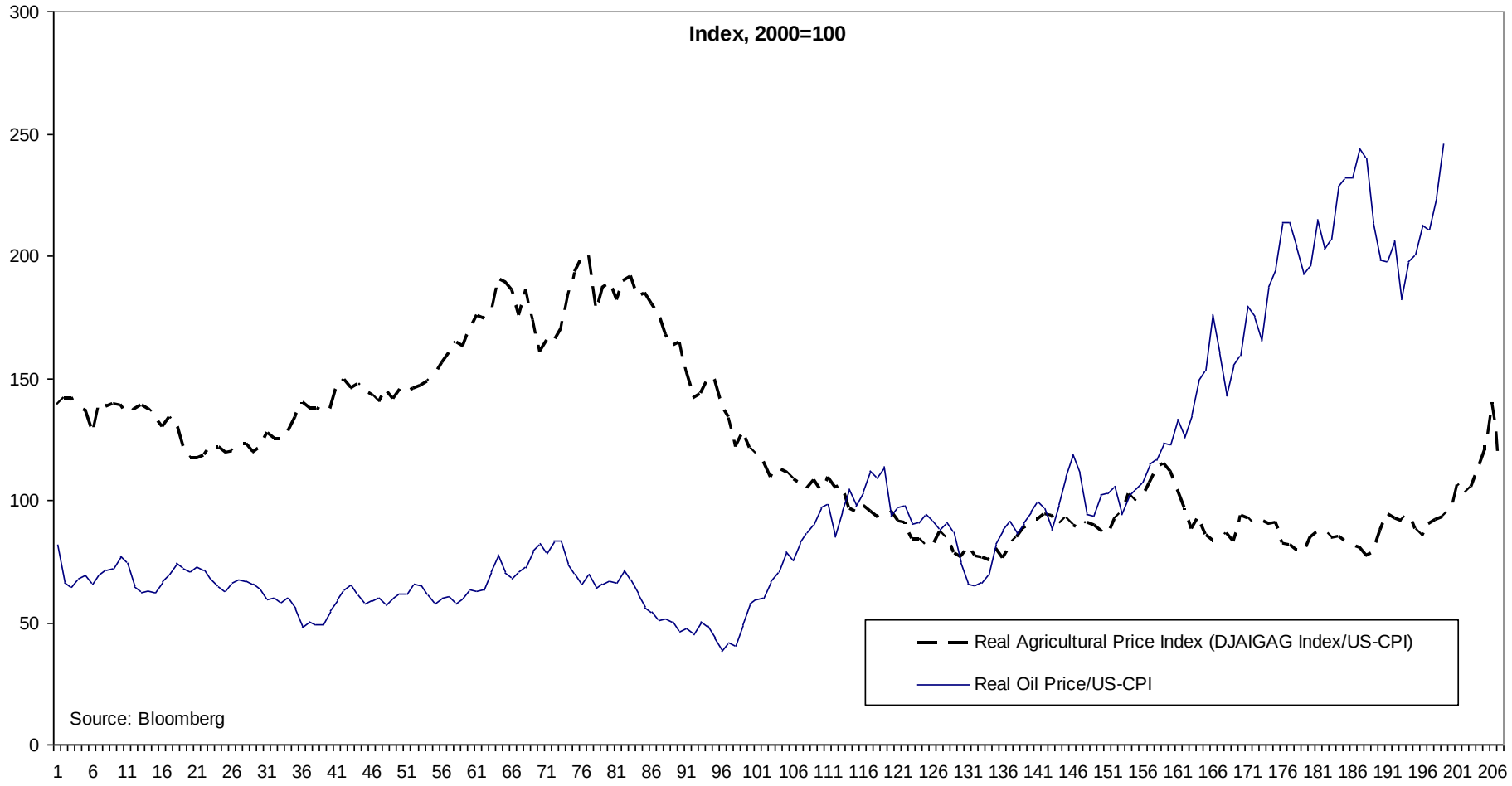
Fig.8 - European Innovation Scoreboard (2005)



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



Real Agricultural Price Index



Oil Price Dynamics

Financial Market Stability and Economic Growth: Issues & Policy Options (Prof. Dr. PJJ Welfens)

- 2010:
  - after the **Transatlantic Banking Crisis** which started in the US with the Subprime Crisis 2007/08 (real estate market for low income households/households with weak credit record)
  - after the **global recession of 2009**: -1% GDP shrinkage instead of about 4% global growth GDP
  - 2010, spring: **beginning of the Greek Crisis/Euroland crisis** which started in spring

Greek Crisis/Euro Zone Crisis

- In October 2010: anticipation of Greek Crisis/ € Zone Crisis (**book Welfens, Transatlantische Bankenkrise**); English version forthcoming
- Economic analysis often difficult and doubtful conclusions in some cases (eg IMF in October
- 2008, IMF World Economic Outlook: No recession in Euro zone…, ***New uncertainty*** = **less investment = lower economic growth**
- Banking crisis is shocking experience for ordinary people/business community (real sector)

Links betweein Finance and Growth

- Financing
  - investment
  - innovation
  - international trade

- Financing is based on banks, insurance companies, hedge funds which
  - collect savings (short, medium, long term)
  - for medium term or long term investment (maturity transformation; also currencies might differ!)

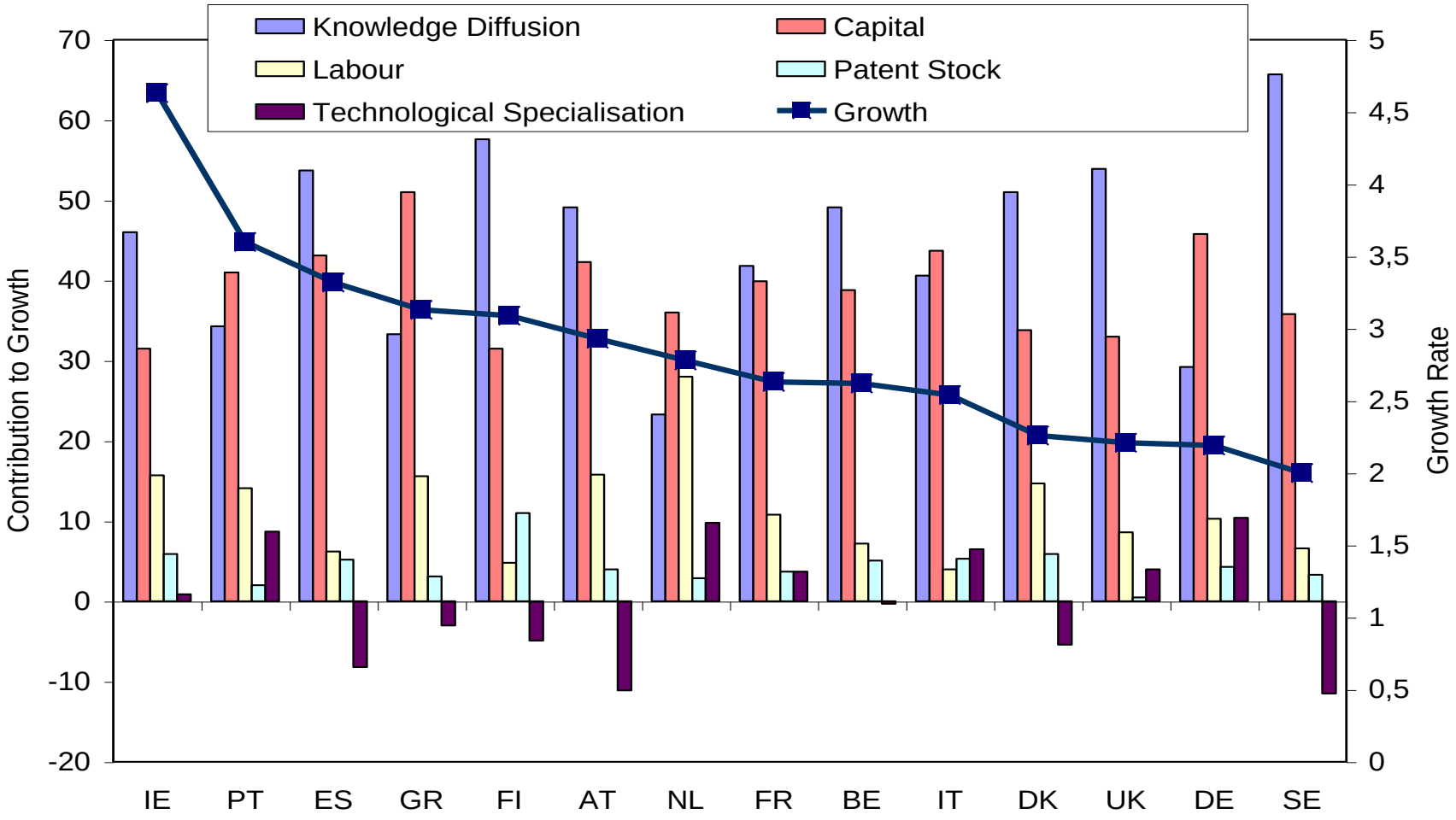
Two Perspectives on Economic Growth (C is consumption, I is investment, G government consumption, X exports, J imports, q* real exchange rate)

- **Demand side** perspective *(unemployment)*
  - Y = C(…) + I(…) + G(…) + X(…) -q*J(…)
- Supply side perspective: **Macroeconomic production function**
  - Y= F(K, A, L); K is capital, A is knowledge, L is labor; note that K/L:= k (capital intensity); y:=Y/L
  - Growth rate (g): $g_Y = ßg_K + ß'g_A + (1-ß-ß')g_L$
  - $g_y = ßg_k + ß'a + n$ $(n:=g_L; a:= g_A)$

Broader View in Open Economy

- Economic growth is determined by
  - **Capital accumulation**
  - **Patent knowledge** (accumulation)
  - **High-technology specialization** (related to ICT = information & communication technology)
  - **Economic catching-up dynamics** (knowledge diffusion)
  - **Labor** (demographical dynamics)

Decomposition of Output Growth: EU Countries



Financial Markets Needed…

- Reliable financing of investment, innovation, trade is important requirement for the real economy and economic expansion, respectively;
  - The higher the risk of financing and investment, respectively, the higher risk premium/cost of capital
  - Central bank is ultimate lender to banks…
- Instabilities occur in all market economies
  - partly cyclical
  - partly structural
  - should be transitory

Stability in a Market Economy

- **Business cycles** as a standard problem: counter-cyclical fiscal policy or monetary policy
- Financial **market crisis** – based on the interaction of banks, firms, households (**requires confidence** among market actors)
  - pure financial market instability/
  - spillover of the crisis into the real economy
- **Sovereign debt crisis** (e.g. Greece 2010-2015?)
- **International price shocks** (e.g. oil price shocks)

Analytical Links

Subprime Crisis: US

(Real estate loans;

repackaged as capital market instruments)

Banking Crisis US

(via special purpose vehicles engaged in subprime products: CDOs = sucuritization)

Banking Crisis EU

(many EU banks have invested in US; interbank market crisis in OECD 08/09

Sove-reign Debt Crisis

Governments have to step in: recapitalize banks („too big to fail problem); adopt expansionary fiscal policy

Develop new **rules/better regulation** in order to avoid new international banking crisis

Fiscal Costs of Transatlantic Banking Crisis

- Recapitalization of private and state-owned banks
- Guarantees for bank loans (no cost for taxpayer short-term)

- OECD countries: 2009/10: **Raising government expenditures**; Keynesian policy in order to fight **recession = rise of debt-GDP ratio (Y falls)**

- High deficit-GDP ratio (10% in many countries) = rise of debt-GDP ratio
- Rating in some countries weakening in 2010: interest rates rise steeply

Growth of Economy: Simple Approach

- Economic growth rate is based on
  - **Investment output ratio** (in closed economy equal to savings-income ratio)
    - **Investment of domestic firms**
    - **Foreign direct investment inflows:** How attractive are the respective countries (EU27 etc)
  - **Marginal product of capital** (extra output of one unit of investment ≈ productivity of capital)
  - **International economic catching-up**

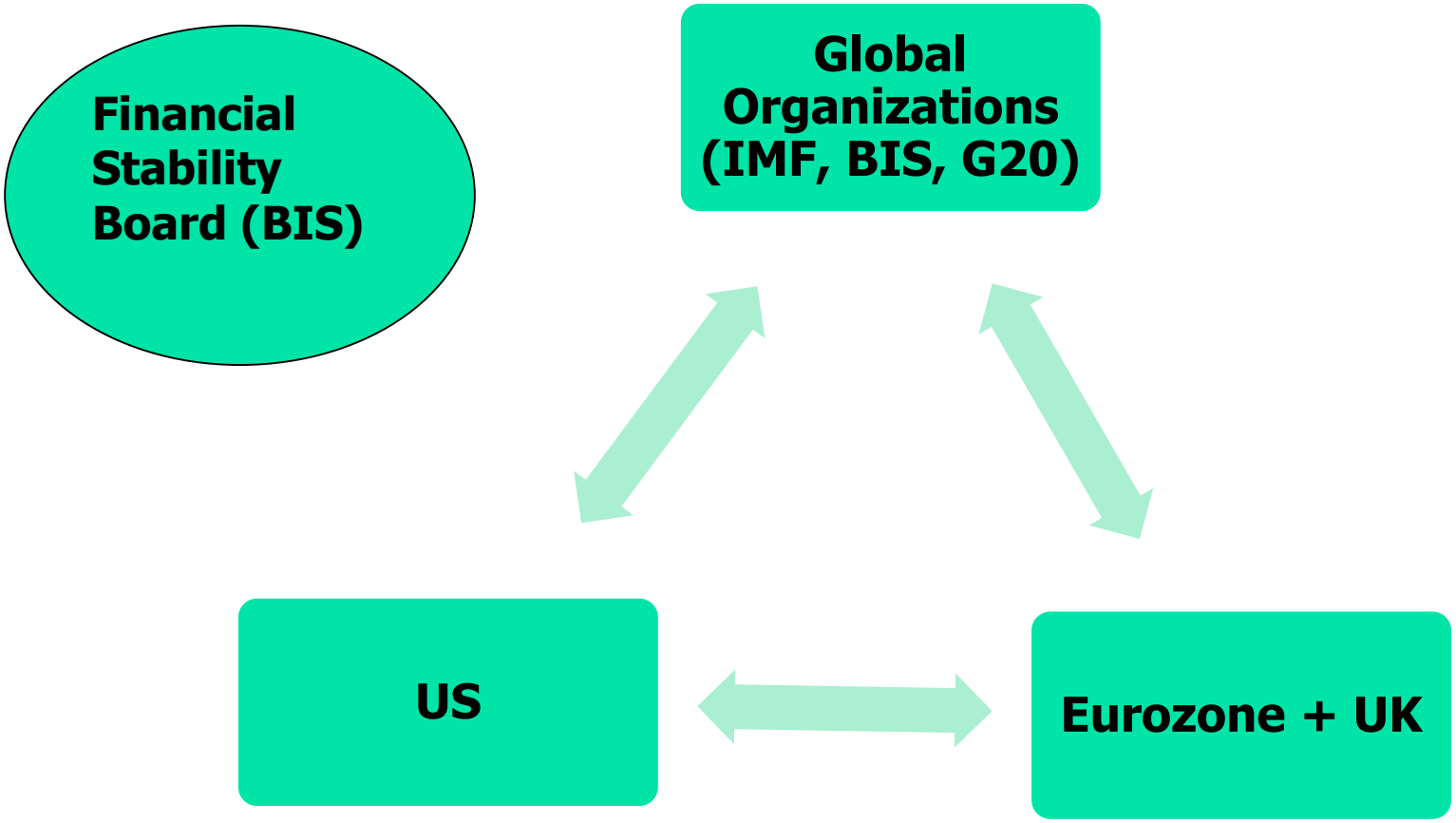
Debt-GDP ratio (in %); source: AMECO databank

Country	2005	2006	2007	2008	2009	2010
EU (27 countries)	62,7	61,4	58,8	61,6	73,6	79,6
Belgium	92,1	88,1	84,2	89,8	96,7	99,0
Bulgaria	29,2	22,7	18,2	14,1	14,8	17,4
Czech Republic	29,7	29,4	29,0	30,0	35,4	39,8
Denmark	37,1	32,1	27,4	34,2	41,6	46,0
Germany	68,0	67,6	65,0	66,0	73,2	78,8
Estonia	4,6	4,5	3,8	4,6	7,2	9,6
Ireland	27,6	24,9	25,0	43,9	64,0	77,3
Greece	100,0	97,8	95,7	99,2	115,1	124,9
Spain	43,0	39,6	36,2	39,7	53,2	64,9
France	66,4	63,7	63,8	67,5	77,6	83,6
Italy	105,8	106,5	103,5	106,1	115,8	118,2
Cyprus	69,1	64,6	58,3	48,4	56,2	62,3
Latvia	12,4	10,7	9,0	19,5	36,1	48,5
Lithuania	18,4	18,0	16,9	15,6	29,3	38,6
Luxembourg	6,1	6,5	6,7	13,7	14,5	19,0
Hungary	61,8	65,6	65,9	72,9	78,3	78,9
Malta	70,1	63,7	61,9	63,7	69,1	71,5
Netherlands	51,8	47,4	45,5	58,2	60,9	66,3
Austria	63,9	62,2	59,5	62,6	66,5	70,2
Poland	47,1	47,7	45,0	47,2	51,0	53,9
Portugal	63,6	64,7	63,6	66,3	76,8	85,8
Romania	15,8	12,4	12,6	13,3	23,7	30,5
Slovenia	27,0	26,7	23,4	22,6	35,9	41,6
Slovakia	34,2	30,5	29,3	27,7	35,7	40,8
Finland	41,7	39,7	35,2	34,2	44,0	50,5
Sweden	50,8	45,7	40,8	38,3	42,3	42,6
UK	42,2	43,5	44,7	52,0	68,1	79,1

Problems of Small Open Economies

- High debt-GDP ratio of government
  - Typically result of high deficit-GDP ratios in the past AND
  - result of high current account deficit-GDP ratio = financing net imports of goods and services by foreign capital inflows (not so much a problem if mainly foreign direct investment inflows);
  - In periods of crisis foreign portfolio capital flows quickly flows out = interest rates up ++

Organizing a Global Stability Framework



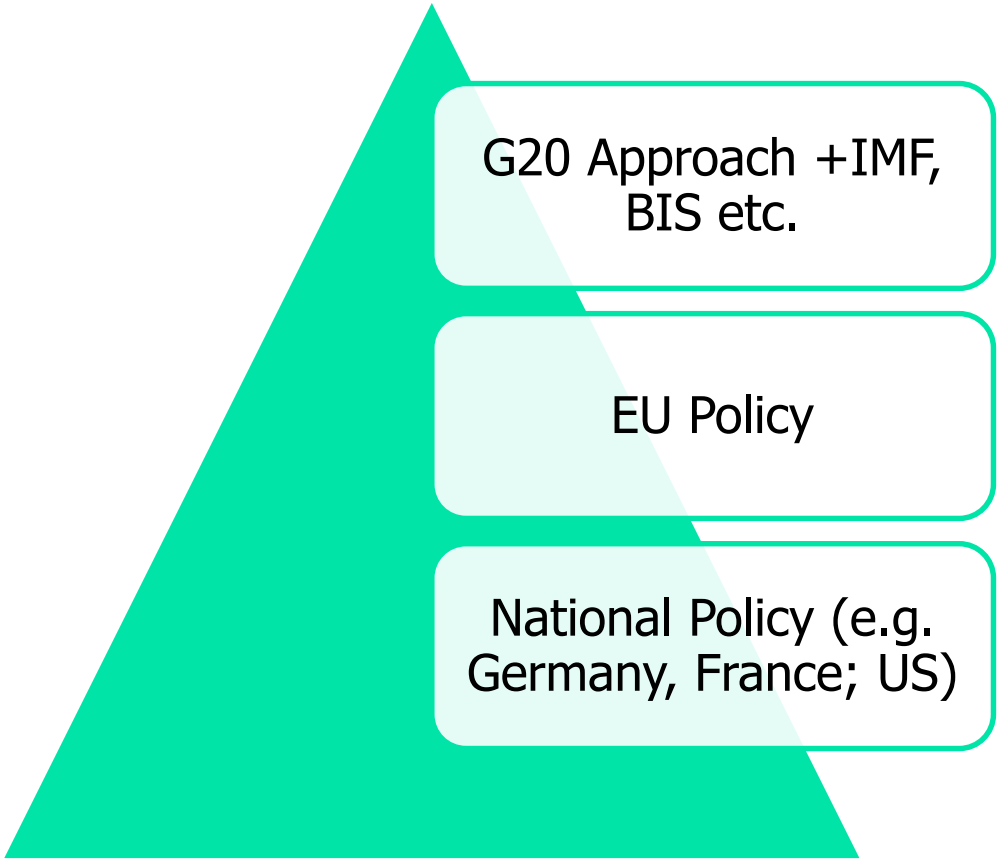
G20 Meeting

Washington G20 Meeting Nov. 2008

London and Pittsburgh 2009

Toronto 2010 (later Seoul, Paris)

Policy Layers: How to Achieve Consistent Approach



Growth Drivers in the World Economy (ICT = Information and Communication Technology)

ICT

- US=1% GDP growth
- EU countries = 1/3 only; could grow faster

Trade, FDI & Technology Transfers

- Globalization
- Expansion of China; BRICS
- Expansion of OECD countries

Debt-GDP Ratio: Adjustment Pressure

- China's public debt-GDP ratio = 20% in 2010
- Probably 80% in 2016, total 280%?
- USA, UK, Eurozone close to 100% in 211; in Eurozone (90%) strong pressure to move back to about 70%
- Japan's debt-GDP ratio around 200%
  - Japan has small external indebteness
  - Japan might face problems once interest rates increase

www.eiiw.eu; see also www.econ-international.net

Macroeconomics and Global Financial Markets

- 1. International Macroeconomic Perspective
- 2. Financial Markets
- 3. Economic Globalization and Financial Market Globalization
- 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 €

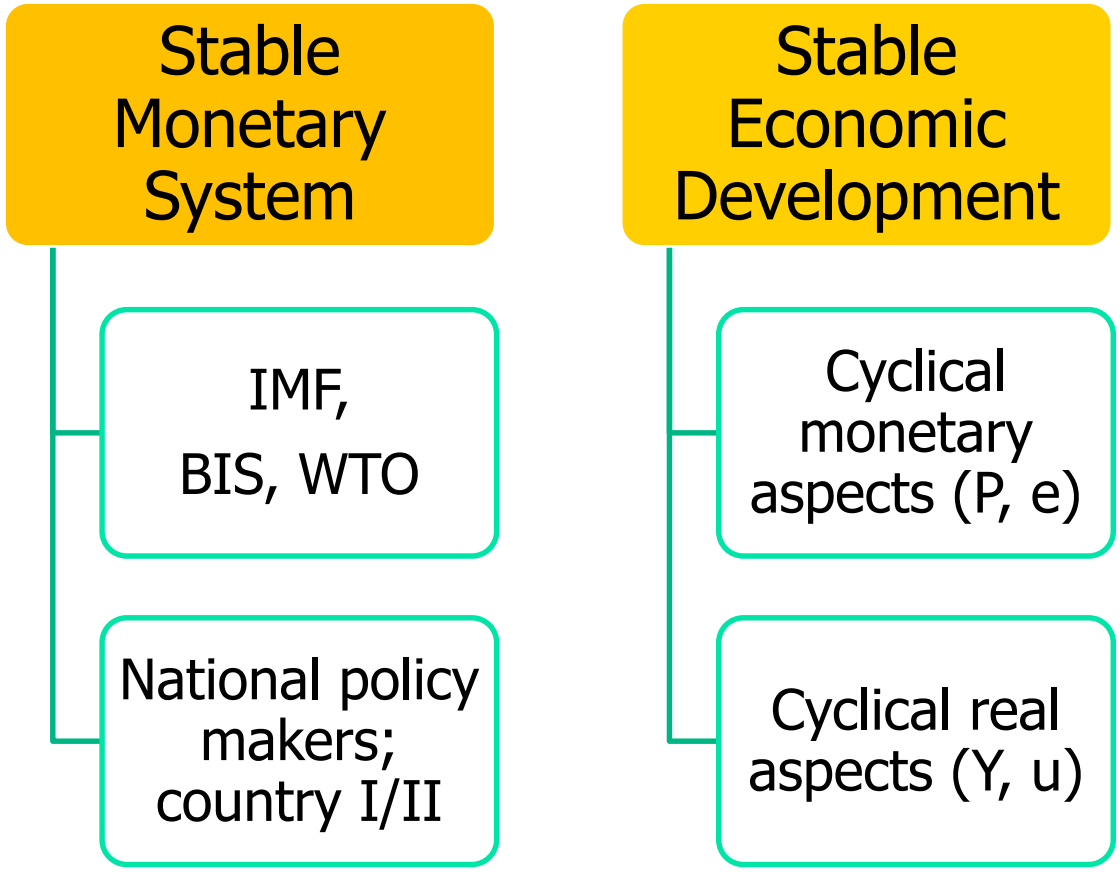
International Macroeconomic Perspective (e in €/$ nominal exchange rate, * foreign variable; A‘ real wealth, P‘ stock price index, P output price index)

- 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 [supply Y= Kexpß(AL)exp1-ß]; demand side of economy Yd =C(…)+I(..)+G+ Xnet(..)
- **Enhance economic growth** in country 1 & 2
  - Accumulation has to be financed (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



Savings and Financial Markets

Capital Accumulation

- Role of Banks
- Other intermediaries

Capital Inflows

Capital Outflows

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

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 foreever; 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); r***educing*** **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<ß<1; 0<ß‘<1)

- Simple approach is **monetary growth model**
  - Stock of real money balances in savings function (consumption function); S=S(Y, M/P) or S(Y, A‘# - A‘$_0$), where A‘ is exogenous wealth target
  - More direct approach (WELFENS, 2007b) is Y= (M/P)expßKexpß‘Lexp1-ß-ß‘; real money balance raises labor productivity Y/L:= y = $\{[M/P]/L\}^{ß}$ $k^{ß‘}$
  - Basic question: what determines (M/P)/L or Y/(M/P) where the latter is average productivity of real money?

M is the stock of money

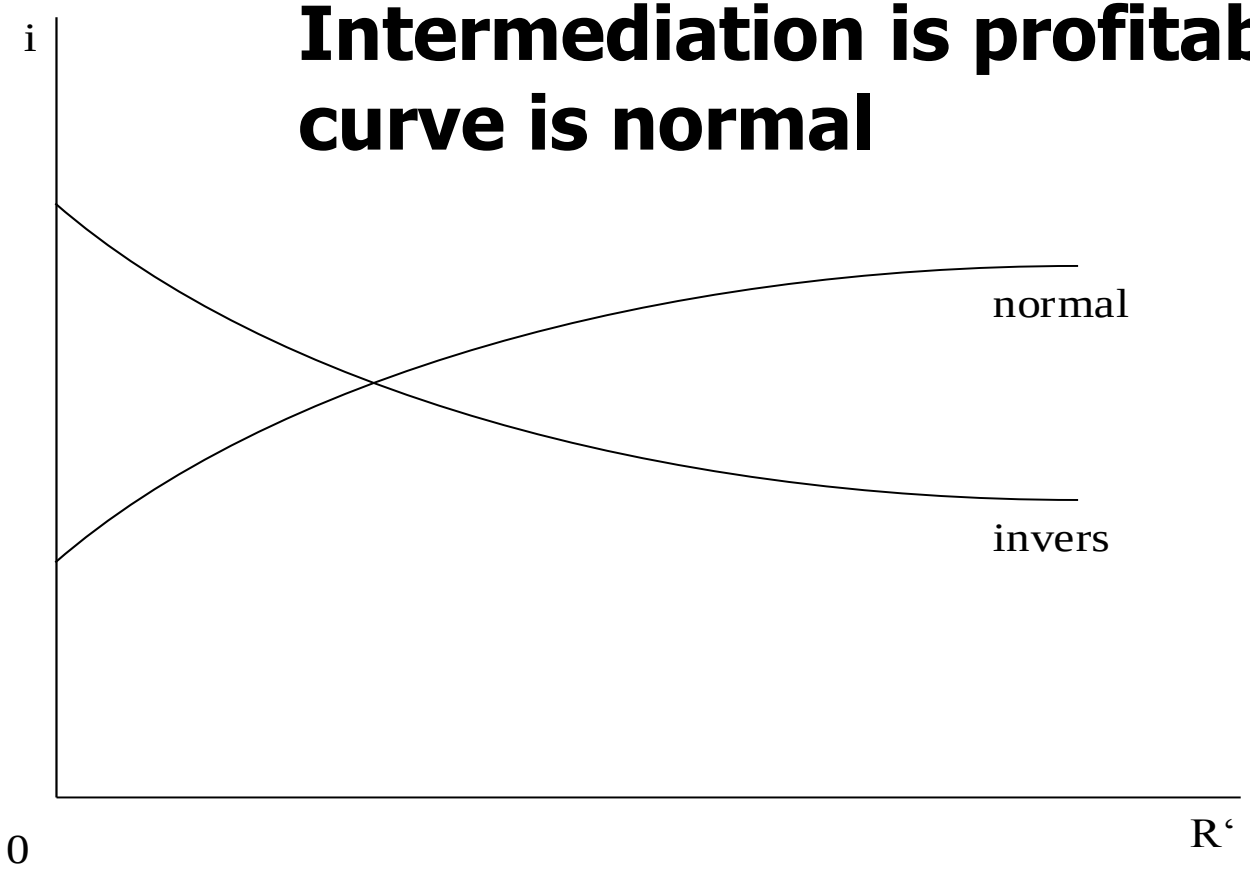
- **Financial system** consists basically of central bank and private banks
- Banks aim at **making profits** through **intermediation** (transforming short term savings into long term investment financing) and provision of many financial services
- M could be defined as
  - A vista deposits plus cash (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 curreny, 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

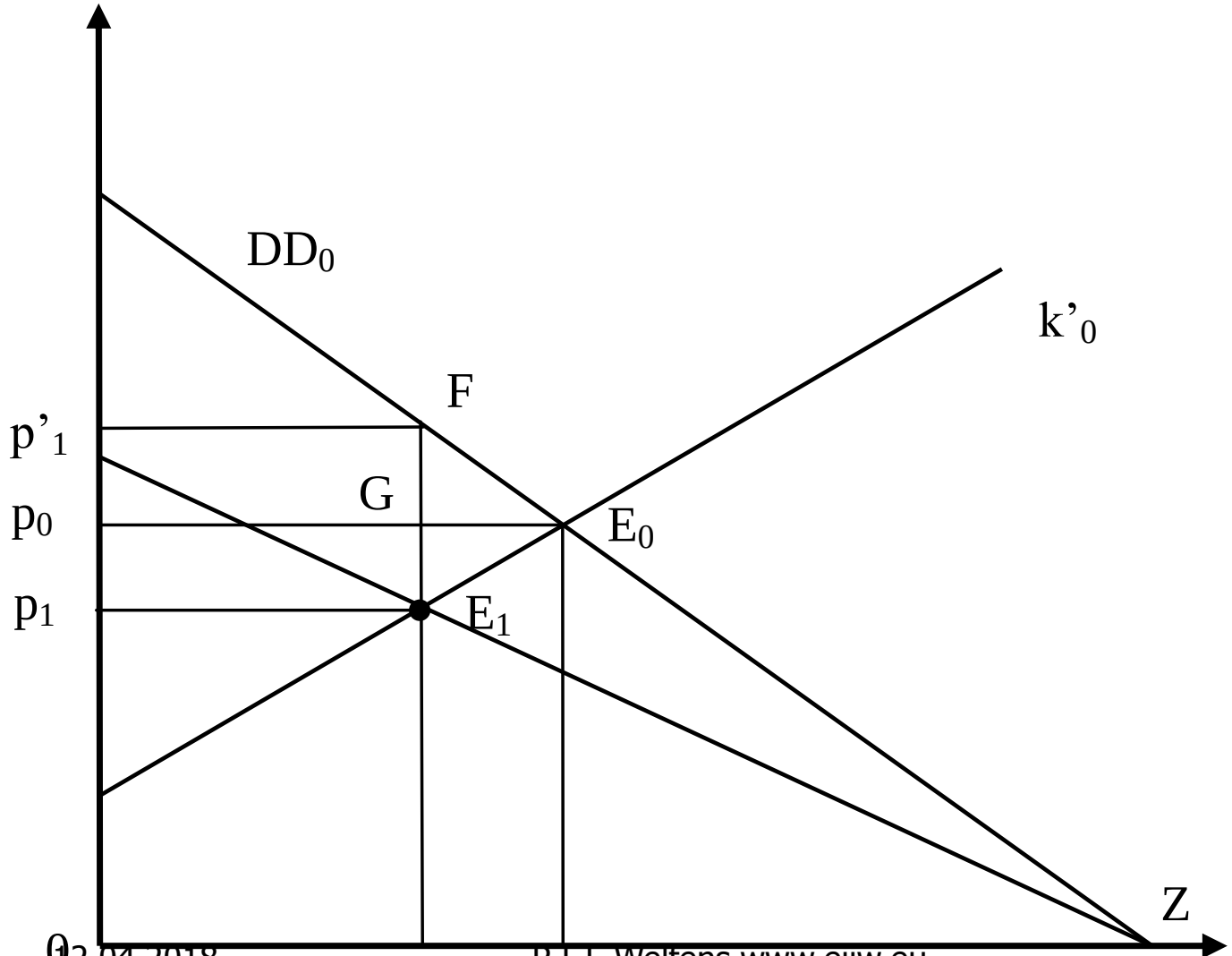
Intermediation is profitable if yield curve is normal



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 avaible 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

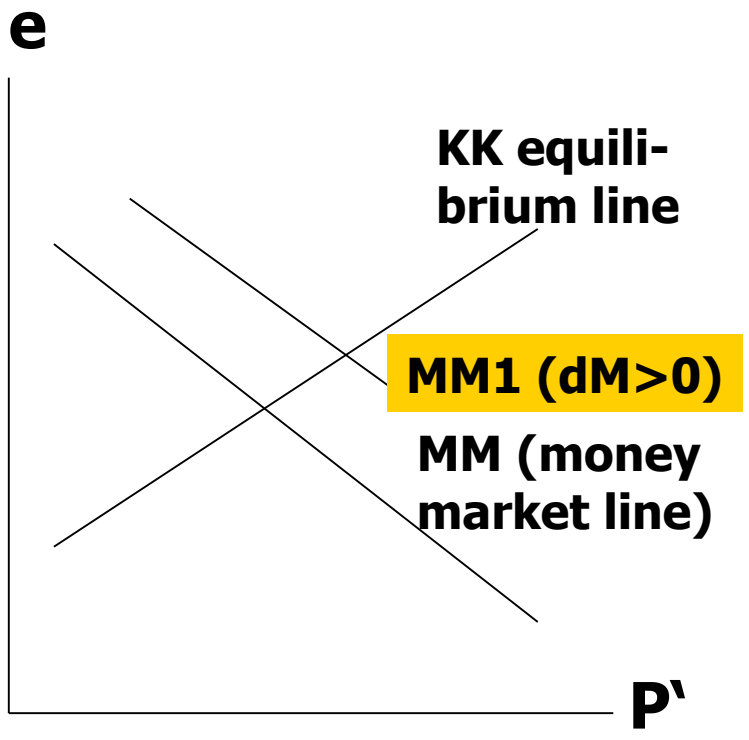
- Equilibrium in money market of **reserve currency is specific (Welfens, 2009b)**:
  - M/P = m(...) + m‘(...)
  - Here m‘ is the dollar demand in country II which basically stems from central bank, possibly also private sector
  - Seigniorage gain for C1

Seigniorage gain is from „printing money“

- Government budget constraint
  - G-T = (dM/dt)/P and hence G-T = μM/P; here μ:= (dM/dt)/M
  - If Fisher equation/quantity equation is holding, then in steady state μ = [a + n] + π; 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

Modified Branson Model (Welfens 2007; 2008; Innovations in Macroeconomics); P‘ is stock market price index, z marginal product of capital

- M/P=h(i,i*+a‘,z)A‘
- eF*/P =f(i,i*+a‘,z)A‘
- P‘K/P=v(i,i*+a‘,z)A‘
- A‘=M/P+eF*/P+P‘K/P
  - $n_i<0$; $n_i‘*<0$; $n_z<0$; i‘*=:i*+a‘
  - $f_i<0$; $f_i‘*>0$, $f_z<0$
  - $h_i<0$; $h_i‘*$; $h_z>0$



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 endoge-neous); 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)
  - Y = C(Y-T) + I(r,Y/Y*) + G + X(Y*,q*) – q*J(Y,q*) IS curve
  - M/P = m(Y,i) LM curve
  - Q(i,i*,a‘)+Q‘(Y/Y*)= q*J - X(Y*,q*) ZZ curve; note here that Q is net portfolio inflows, Q‘ net FDI inflows
- Basic refinement here is to make explicit distinction between portfolio inflows and FDI;
  - a‘ is exogenous expeted depreciation rate
  - FDI inflow is positive function of Y/Y* (for given K, K*); more strictly with ratio [ßY/K]/[ß*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(US interest rates i**, short term foreign debt D‘ 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 intermedition costs), product innovations (eg venture capital)

- S = s(1-z“)Y; 0<z“<1
- z“ can be reduced through efficiency gains in the intermediation process = rise of the *level of the growth path* of y (neocl. 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

Policy Issues in NICs and LDCs

- Asian Countries
  - ASEAN: How to promote financial market integration? (ASEAN or other framework)
  - How to organize global financial market integration
  - Promoting economic growth and modernization
- Latin America
  - MERCOSUR: How to promote financial market integration (also Central America)
  - How to organize „fiscal stability"; problems of foreign indebtness, short-term capital inflows...

Fiscal Policy and Monetary Policy in NICs and LDCs

- Fiscal Policy
  - Limiting deficit-GDP ratios
  - Maintaining confidence of foreign investors
  - Efficient Taxing Systems
  - Political Stability
- Monetary Policy
  - Exchange rate regime
  - Dollarization?
  - If fixing the exchange rate: is monetary policy stability-oriented

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EU Eastern Enlargement Perspectives for 2015

preliminary © Welfens,
Presented at ***Gustav Stresemann Institute***, Bonn
September 5, 2009

EU Economic Perspectives (ICT= information & communication technology)

- **Trade** networks, volume, structure
- **Foreign direct investment** (multinational companies invest abroad)
- **Digital EU integration** (internet & ICT)
- *Role of EU in the world economy* (globalization)
- **Per capita income growth**
  - Economic catching up of EU accession countries
  - Sustained growth, structural change

Basic Mechanisms for Economic Catching up

- **Trade**; *more trade = more traffic* (high growth of truck volume expected until 2030: doubling compared to today in EU27)
- **Investment**, including foreign direct investment (capital accumulation); also portfolio inv.
- **ICT infrastructure** (partly EU funds)
- **Infrastructure investment**
- **Innovation:** product innovation, process innovation

2008/09: Short term Economic Dynamics

- **International banking crisis** (US subprime crisis); NEW UNCERTAINTIES, *risk premia up*
- **Global recession in 2009**, strong recession in Germany = main trading partner of EU accession countries in eastern Europe; world output falls, world trade falls even more strongly, EU accession countries suffer; Baltics also strongly exposed to banking problems

Medium Term and Long Term Challenges

- **Economic globalization**
- **Rise of China and Asia (60% of world population)**
- **Instabilities in world energy prices** and problems with energy security for EU, particularly eastern Europe
- **Global warming:** 2008 first time that non-OECD countries have accounted for more than 50% of global emissions; those might grow if global GDP +

Why Intra-EU Economic Convergence (Catching-up of Eastern Europe) is Important

- **Expectations in Eastern Europe critical**
- **Migration pressure is function of y/y***
- The larger the discrepancies in terms of per capita income (y, y*; * for foreign country) the *more difficult it is to achieve political consensus*
  - If y=y*, then home country/foreign country have similar policy preferences = *one voice in the world!*
  - If y<<y*, then pressure for EU redistribution = budget problems and political conflicts (Germany, France, Netherl.)

Economic Convergence/ Economic Welfare

- International economic convergence
  - typically driven by trade and the associated economic specialization etc; supported by EU
  - Rising per capita income does not automatically go along with declining income disparities at the national level – in some countries, the contrary is observed
  - Official income figures ignore shadow economy (big in Eastern Europe, about 15% of official GDP in Germany; see F. SCHNEIDER, University of Linz

GDP per capita, PPP (constant 2005 international $)

PPP means that international differences in non-tradables are taken into account (price of non-tradables in poor countries lower than in rich countries); nominal GDP per capita figures >PPP)

	1995	2000	2007
Luxembourg	47614,58	59942,97	72783,16
Ireland	21566,90	32146,05	41036,31
Netherlands	28365,09	33575,83	36956,15
Austria	28020,53	32148,53	35536,50
Denmark	28132,12	31721,09	34904,72
Sweden	24702,17	28985,99	34090,24
United Kingdom	25276,03	29171,85	33716,83
Belgium	26785,92	30265,79	33399,09
Finland	22045,42	27462,74	33324,13
Germany	27908,45	30611,43	33180,62
France	25909,17	29224,76	31624,81
Italy	25274,68	27720,41	28681,82
Spain	20998,04	25118,66	28536,44
Greece	17828,86	20574,47	26928,23
Slovenia	15922,43	19717,52	26293,87
Cyprus	17903,34	20071,44	23498,80
Czech Republic	15598,88	16885,67	22953,06
Malta	17135,47	20705,95	22045,93
Portugal	17032,98	20402,15	21168,91
Slovakia	10572,19	12722,10	19341,54
Estonia	7856,65	11053,13	19327,15
Hungery	11039,23	13597,43	17894,38
Lithuania	7419,56	9416,81	16658,91
Latvia	6108,67	8533,10	16317,34
Poland	8991,45	11742,92	15633,97
Romania	7213,64	6837,99	10750,47
Bulgaria	6857,62	6854,36	10528,89
EU27 Average	19262,22	22859,37	27670,83
Poland/EU27 Average	0,47	0,51	0,56

Bulgaria's per capita GDP relative to EU average (Germany) ≈ 30%

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
  - Rule of law
  - 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 invests abroad; free labor movement
- Trade is powerful engine of structural change; but affects only tradables sector. FDI also affecs 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 prodution 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 (number of people), A technology; rise of aggregate Y/L desired
- Macro = aggregate firms; GDP is Y(K, L, A)
  - $0<ß<1$; consider $Y=K^{ß}(AL)^{1-ß}$
  - FDI affect dK/dt and hence K; also 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 Sytem
  - 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 internatioanl 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)

International Competitiveness and Economic Catching-up

- Firms from eastern Europe increase market share in EU single market
  - Product innovations = share of more sophistated products is rising over time; **export unit value (average export price) will increase**
  - Process innovations (raises profitability)
- We make a disction among sectors
  - Labor intensive = not very technology-intensive = labor cost advantage
  - Resource intensive sectors
  - Science intensive sectors = share should increase over time

Innovation and Structural Change: **RCA ≡ revealed comparative advantage**

- **Inte rnational competitiveness** of a specific sector (i)
  - Export-import ratio of that sector i better than aggregate (average) export-import ratio = Balassa-Samuelson Revealed comparative advantage
  - Modified **RCA**: Export share of firms in EU single market (EU15) relative to export share of competitors
- International competitiveness
  - Based on competition (policy)
  - Based on foreign direct investment
  - Based on intelligent import of intermediate products
  - Based on national R&D (research & development)

Modified RCA as indicator of industrial specialization

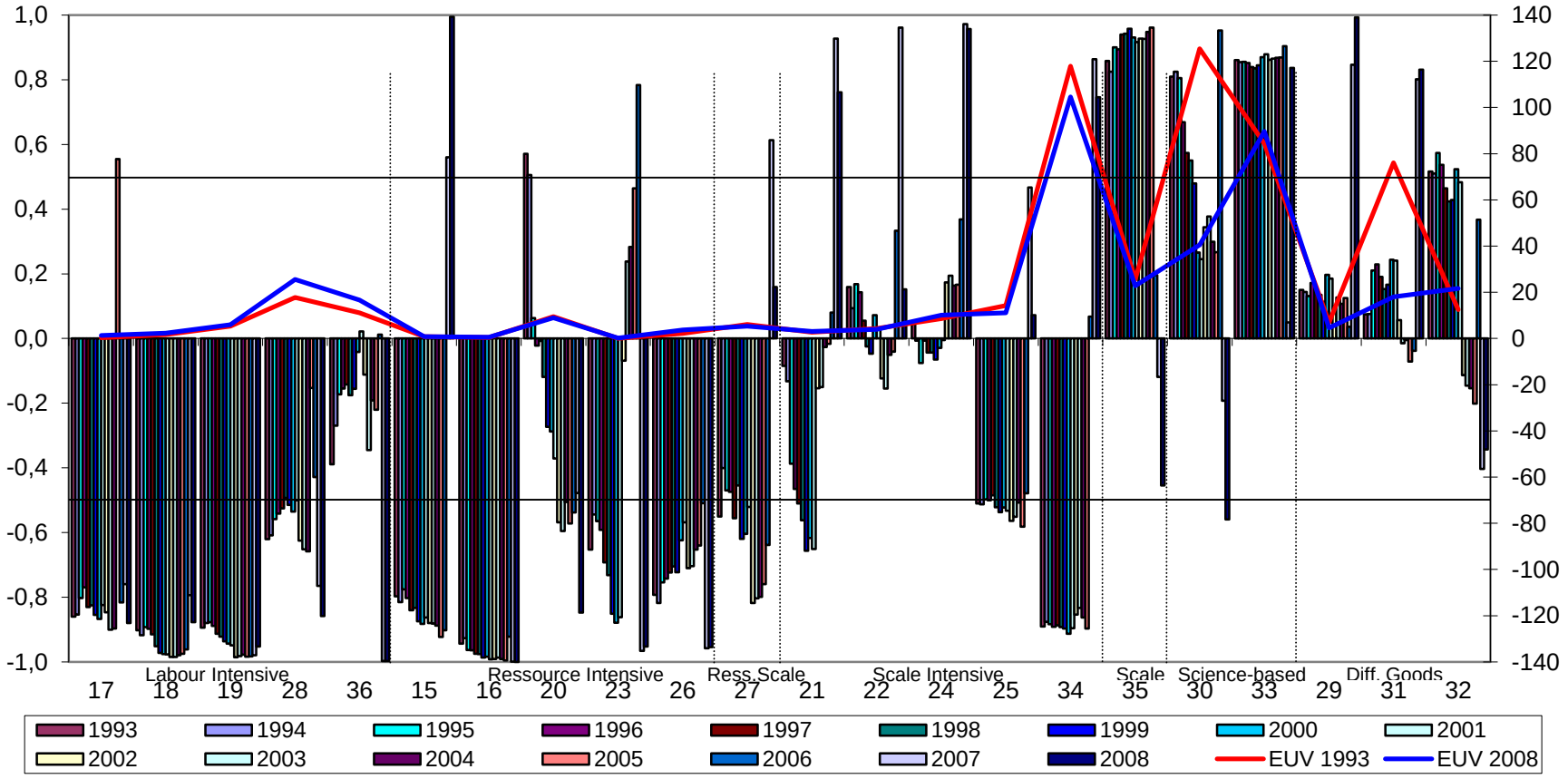
- Germany, Austria and other EU15 countries
- China as new Asian benchmark
- Russia
- Selected EU accession countries (Eastern E.)

- Indicator RCA; EUV
  - **If positive** = sector i of country considered has comparative advantage (eg countries with relatively low wages should have positive RCA in labor intensive sectors)
  - **Export unit value should increases** if national reforms/policy measures + EU reforms interact

Focus of the following indicators is on industry

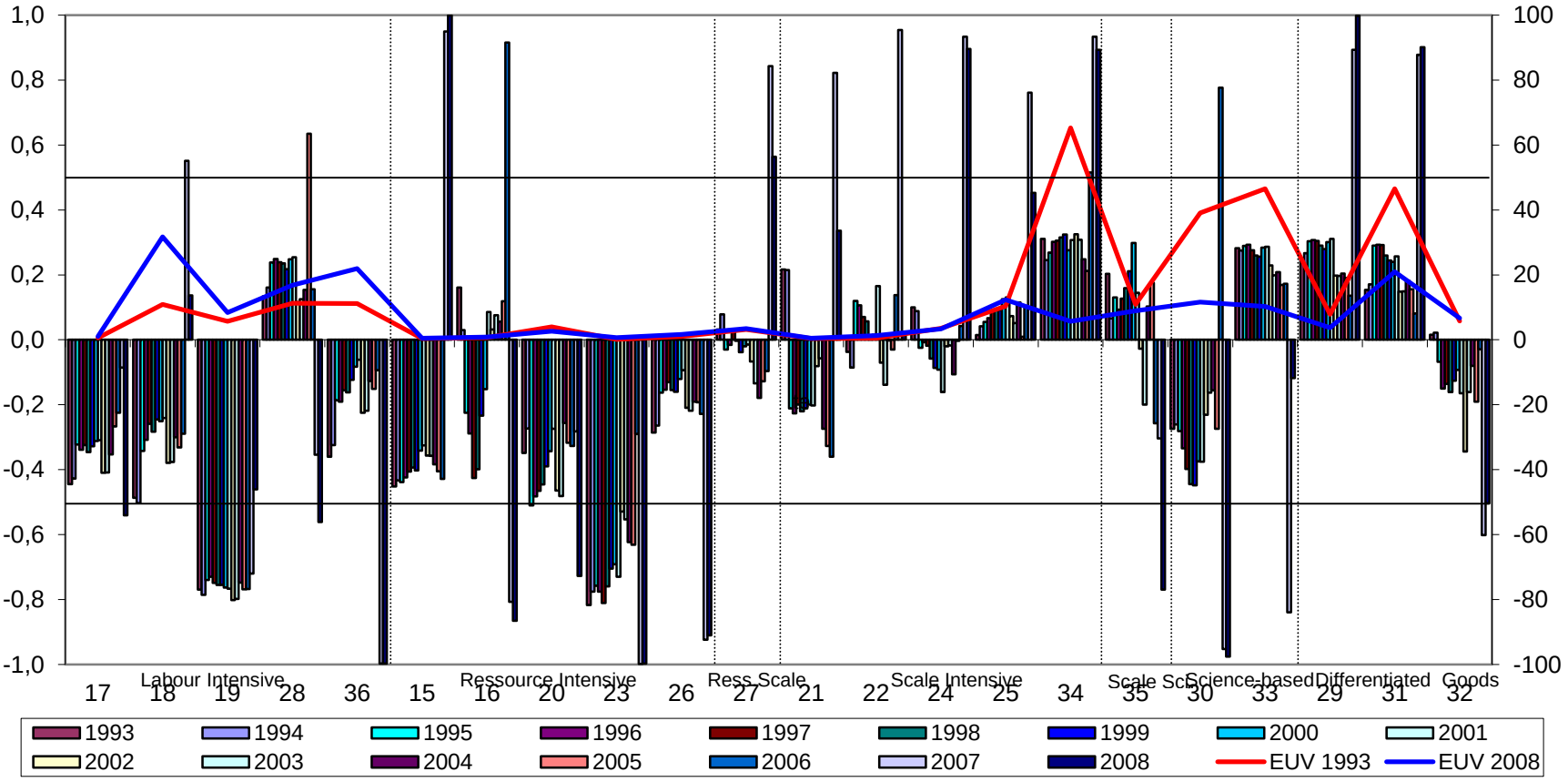
- We expect
  - low wage countries to have comparative advantage in labor-intensive industries (left part of following diagramme)
  - high wage countries – with good education system – to be specialized mainly in knowledge-intensive/science-intensive differentiated goods
- We expect
  - Upgrading of export assortment over time and hence rise of export unit value (average world market price) – unless country is big (case of China) so that rising exports drive down world market price; or that economies of scale are strong

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



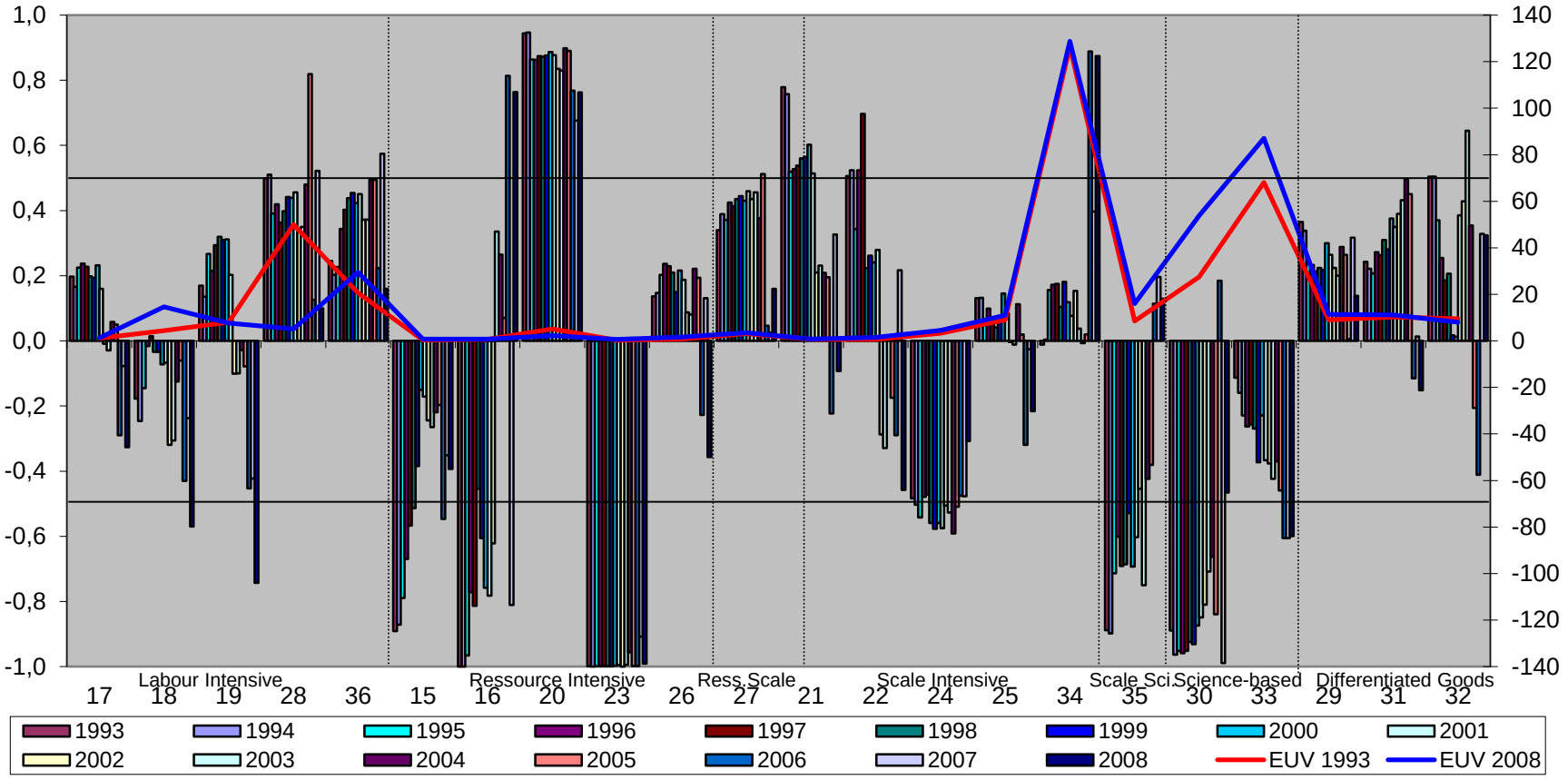
Source: Comext-Database and own calculations

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



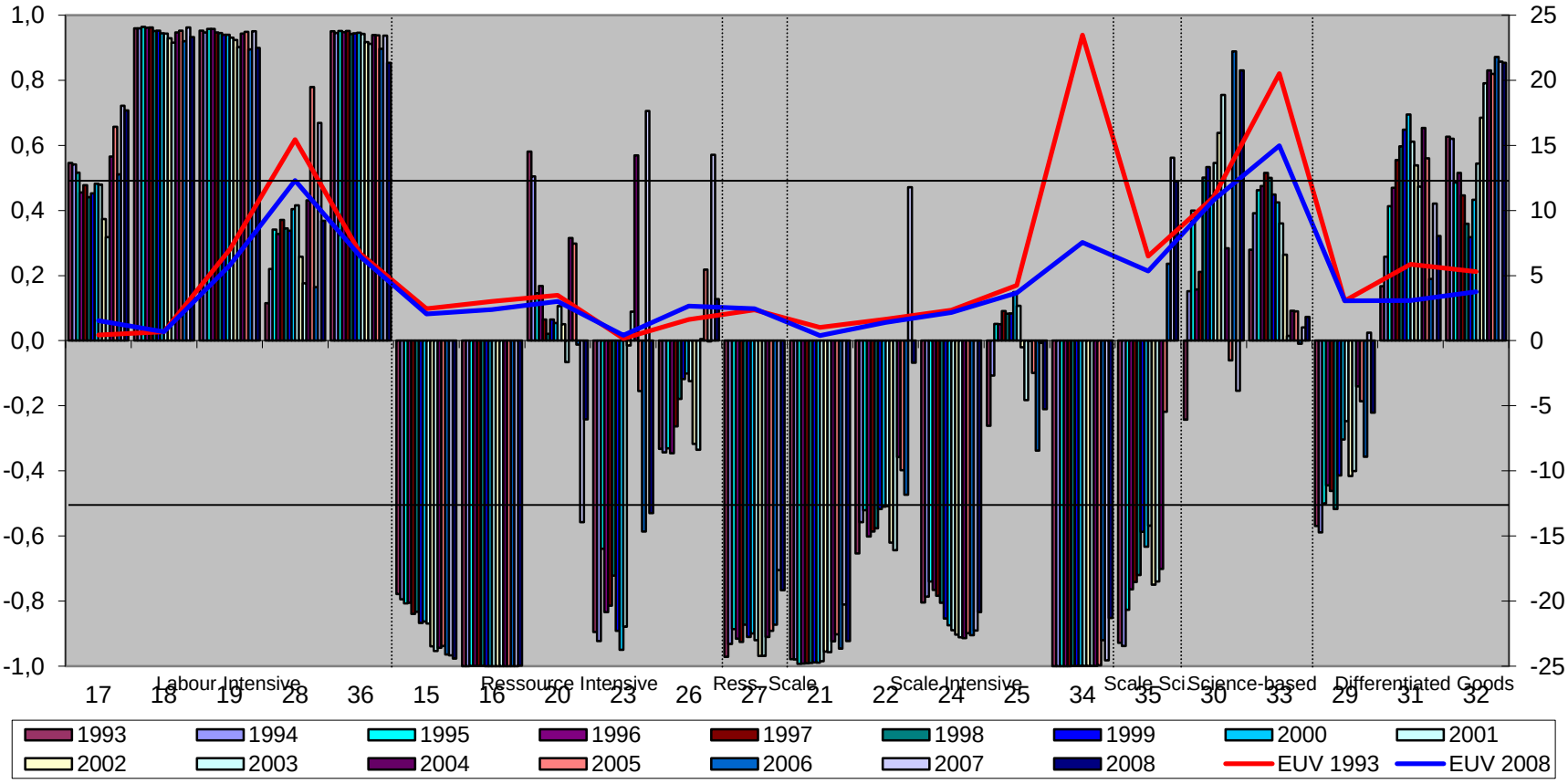
Source: Comext-Database and own calculations

Modified RCA 1993-2008 and Export Unit Values 1993 + 2008, Austria



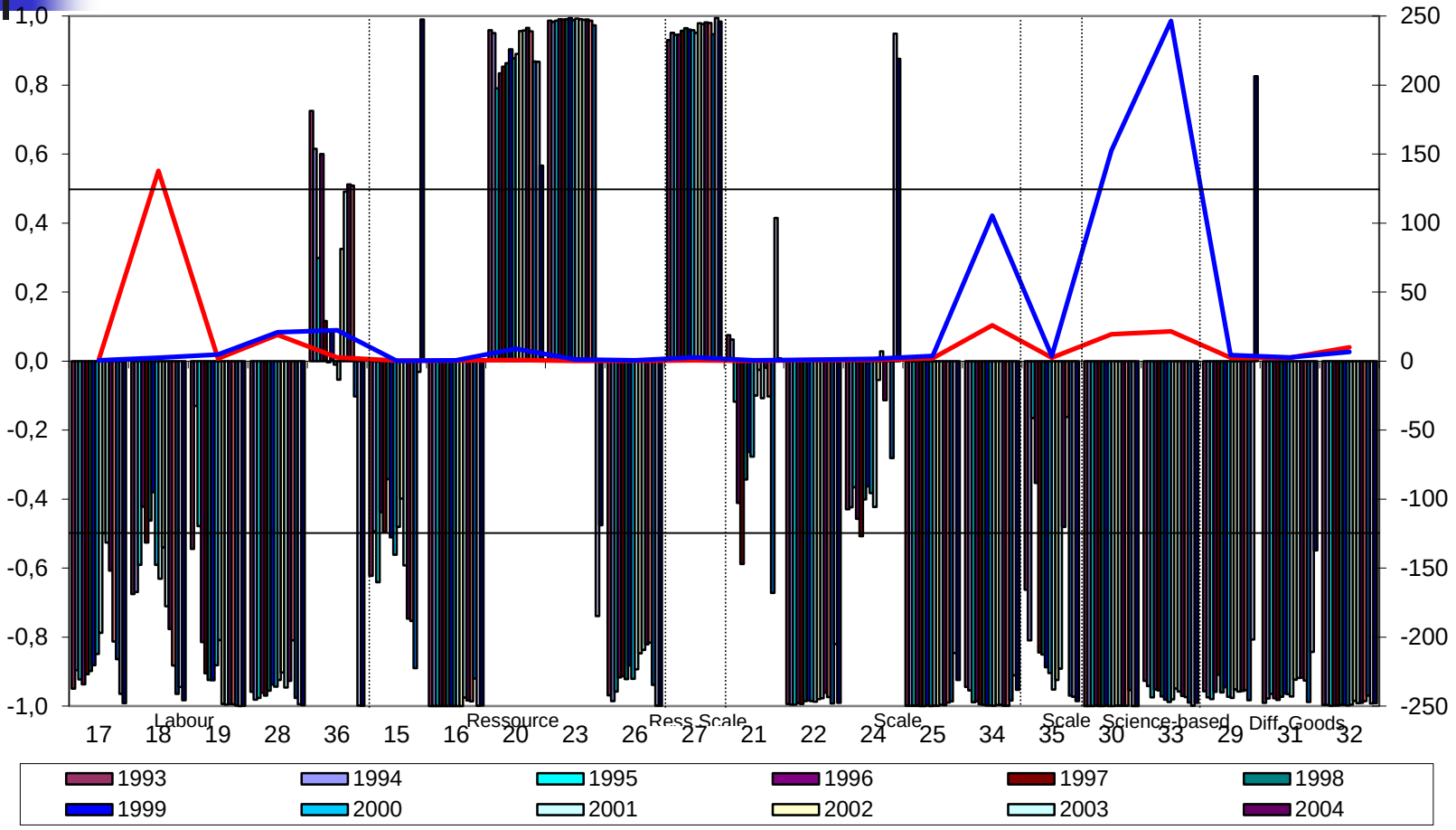
Source: Comext-Database and own calculations

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



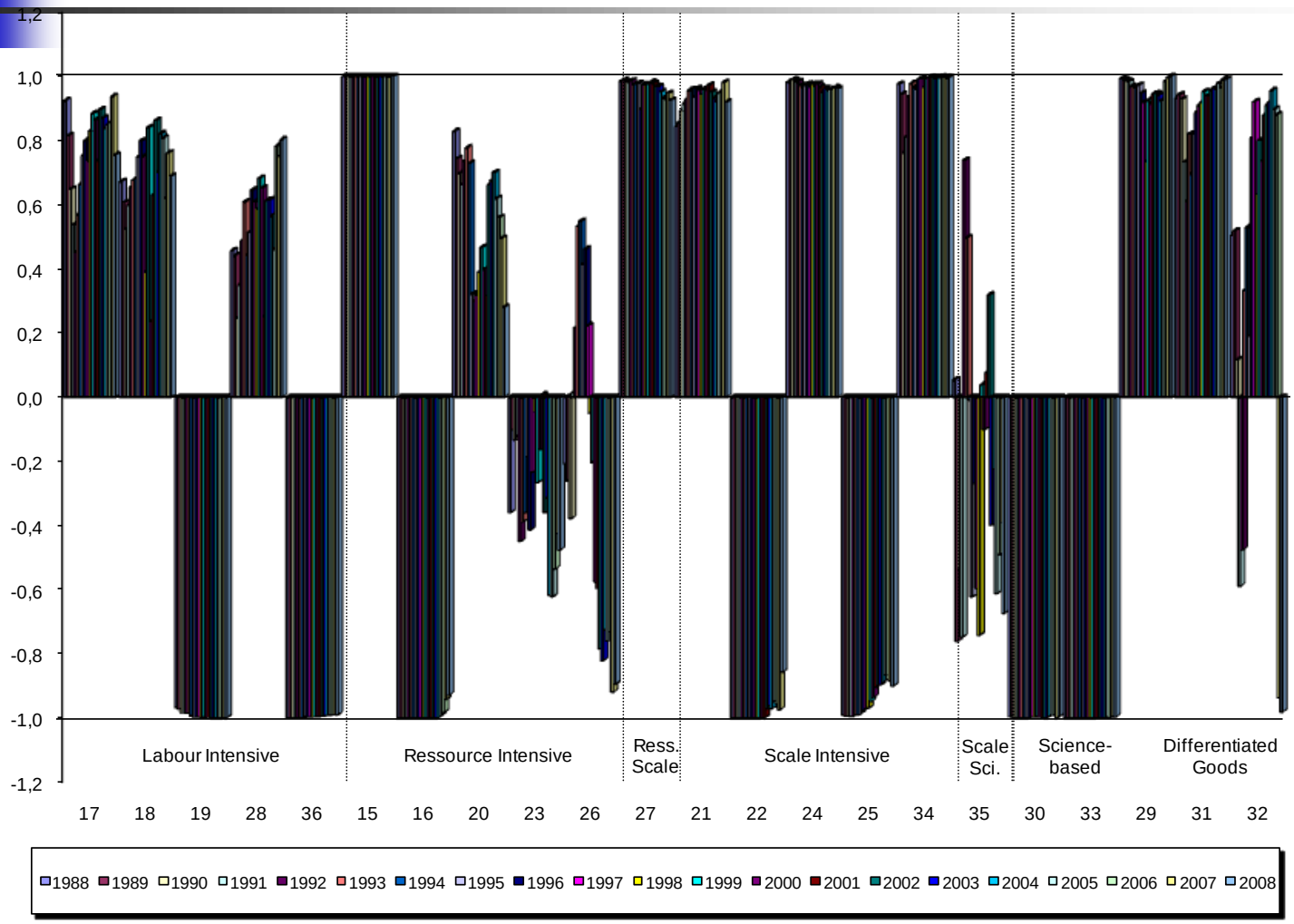
Source: Comext-Database and own calculations

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



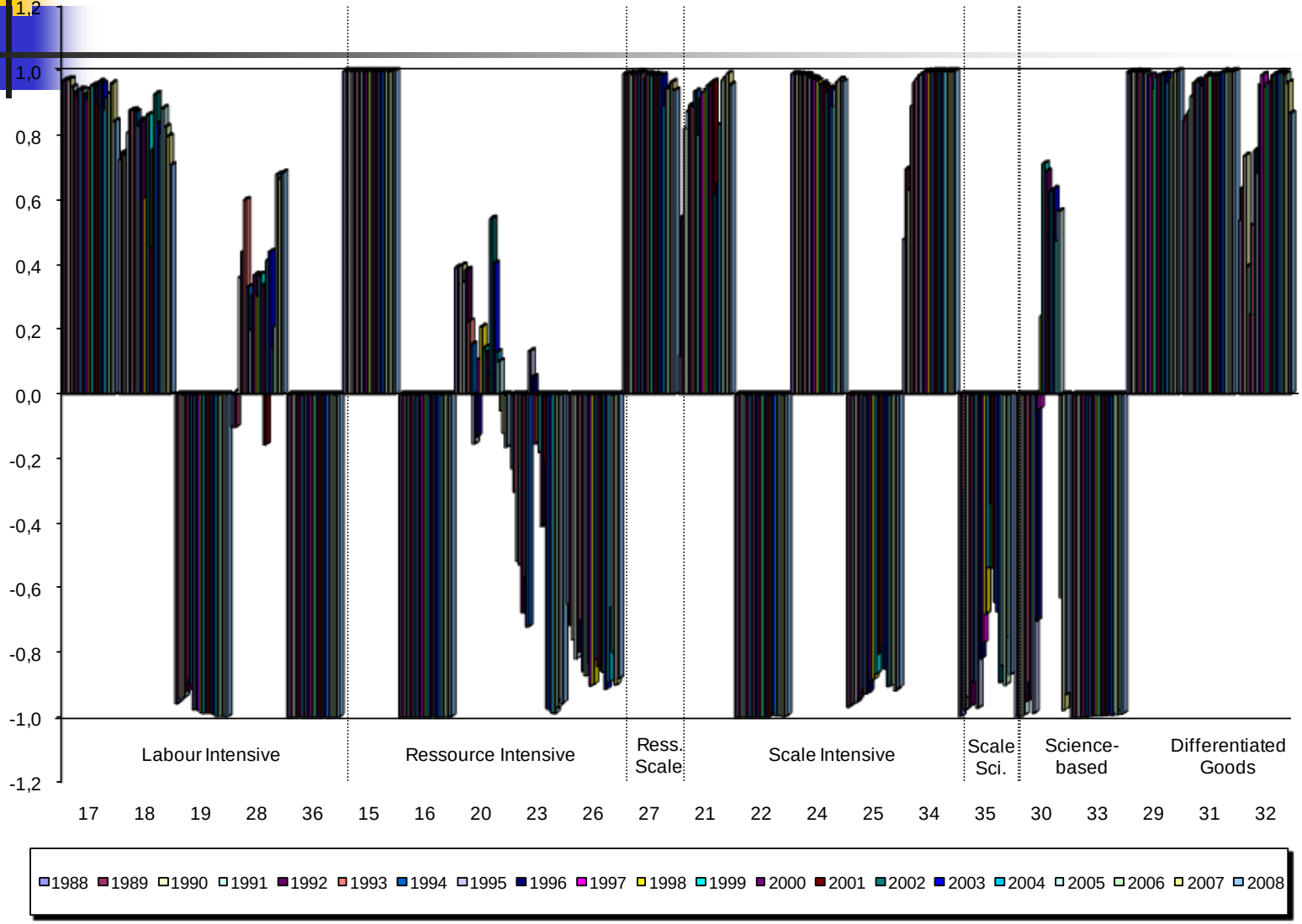
Source: Comext-Database and own calculations

Modified RCA of Exports 1993-2008, Poland



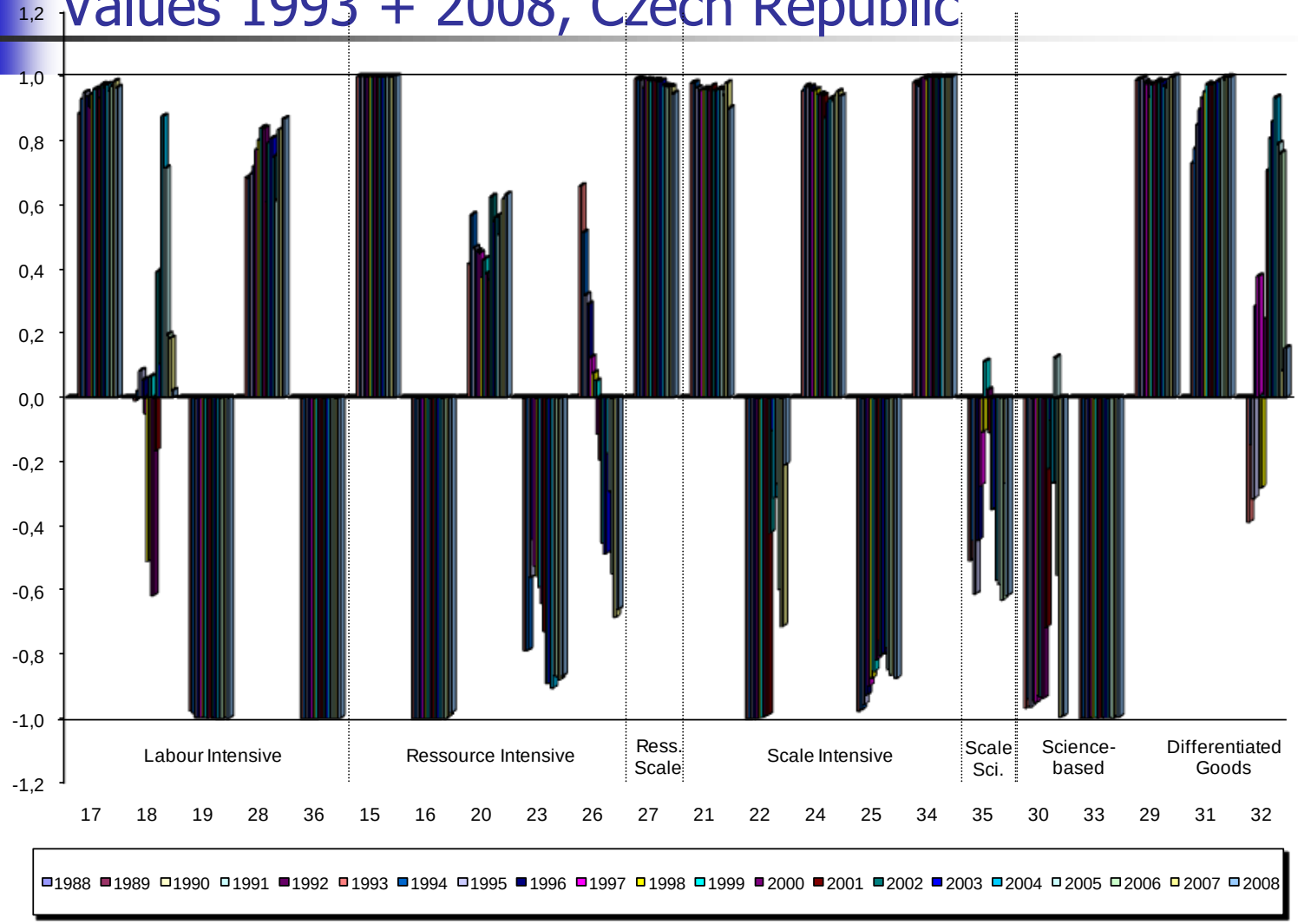
Source: Comext-Database and own calculations

Modified RCA of Exports 1993-2008, Ungary



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

Economic Perspectives for 2015

- Economic recovery in 2010 in EU, worldwide
- Trade will recover, grow strongly; intra-EU, global = positive economic specialization effect = per capita income rising
- FDI inflows into Eastern Europa could slow down as firms in EU15, US, Japan, Korea face problems of low profitability = **slower growth dynamics in Eastern Europe, migration+**
- Role of EU, IMF, EBRD, EIB; New Lisbon Agenda (2010+)

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?

Problems for EU

- **Energy security problems** (concerning particularly EU accession countries)
- **Banking system remains fragile** in OECD countries/EU = risks for growth, € zone enlargement??, convergence criteria
- Political instability in eastern Europe, **new nationalism**
- Globalization continues, role of EU might decline – despite more member countries
- Climate policy problems, but also new field for international cooperation (majority of C02 emissions outside OECD)

More for Discussion

- EU28 and Russia
- EU and China
- EU and ASEAN
- Imperial overstrech 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.)

EU eastern enlargement 2015

- Countries on the **balkans are difficult challenge** for new enlargement
- Euro zone enlargement 2015: yes; UK still no?
- Turkey remains on the agenda: Verheugen Report rather incomplete (did not take into account population dynamics of Turkey)
- Experiences of southern enlargement partly encouraging
- EU eastern enlargement I (2004) and II (2007):
  - 2004 round difficult, but works (for the big group)
  - 2007 catching up II/I by 2015 to be expected
  - Membership of Turkey after 2020…

Role of EU in Global Organizations?

- Wonderful to have IMF, WTO because they nurture globaliation = benefitting EU
  - EU still represented in a fragmented way in international organizations: IMF, WB
  - No joint EU representation except in WTO
  - EU weak in Global Summit on Information Society
- Banking crisis shows that EU has not one voice; new rules for financial sector required
  - Eurozone countries vs. UK etc. = PROBLEM
  - Option: **Concluding a treaty among central banks of Eurozone countries** (see problem with Lisbon Treaty)

We should be aware of problems, create new EU opportunities

- No longer old EU alive – where common fear of Soviet Union was a glue among member countries
- It must be shown that in economic terms EU is useful for all countries and major strata; sustained economic convergence within EU is needed
- For supranational and national policy layer: Defining policy assigments – taking also account of subsidiarity – adequately
- Link EU with ASEAN & MERCOSUR
- Build digital EU
- Leadership in climate policy; and banking reform

Thank you for your attention

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