Trade Theory, International Economic Relations and EU Policy Issues

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Wuppertal University and Sciences Po, Paris 2008/2009

Updated 2011
What are International Economic Relations (IER)?

- International economic relations refer to trade in
  - goods/services
  - assets (capital flows; long term vs. short term; FOREX markets)
  - and information exchange and communication (internet) as well as
  - international migration and

- common multi-country interests in the provision of international public goods (a pathologic case of international economic relations is war).

- Ultimately IER is about dependency and interdependency concerning prices and quantities; & about INSTITUTIONS...

- IER is about cooperation & conflicts in key policy fields and the organisation of crisis management through (joint) intervention
International Economic Relations

- **Trade**, **Capital Flows** (and technology trade)
- **Internet**
- **International Emissions** (Emission Certificate Trading; fight global warming...CO2)

- **Potential conflicts**, eg due to protectionism, discrimination, negative international external effects: Challenge to solve conflict
- **Opportunities for international cooperation** – how should this be organized?

**Provision of International Public Good**, e.g. Free Trade = all countries can benefit; but incentive for free-riding is high; unclear preference signalling also..

- (International) Public Good = all countries/people can share benefits; **Problem of Market Failure (due to ...)**
- No rivalry of consumption
- **Exclusion principle cannot be applied**
Trade: Characteristics

- Trade in goods – including intermediate products;
  - Interindustrial trade (goods i exported, good j – different sector – imported); typical 19th century
  - Intraindustrial trade (i1 exported, i2 imported) typical for OECD countries since late 20th century
- Trade in services (only 1/5 of world trade); requires mobility of provider; or mobility of user; internet reinforces tradeability of service
- Special issues in the field of trade in energy
Some Aspects of Trade

- If economy opens up for trade
  - Specialization gains for both countries involved (in 2 country model of world economy)
  - International exports generate revenue in foreign currency units; how big are export proceeds in domestic currency units depends upon the foreign exchange rate (hence the foreign exchange market matters)
  - International imports have to be paid in foreign currency
Trade of various types of goods

- There are certain goods and services which cannot be traded; services largely considered as non-tradables

Trade

- Final (industrial) goods
- Intermediate goods
- Natural resources: renewables and non-renewables; oil is an example of non-renewables
Energy Trade

- High concentration – with respect to oil and gas - of energy supply (fossil fuels)
  - Regional concentration oil; OPEC. **Global supply through shipping = law of one price**
  - Region concentration gas = Russia, Iran, Algeria, Arab OPEC countries; supply via **pipelines**, LNG

- High sensitivity of energy inputs for
  - Production and consumption (e.g., heating);
  - Transportation; and military defence
Supply of Non-renewables (oil or gas); $P''$ is price of oil

- Nonrenewables are specific (but renewables, eg wind or water, are weak substitutes)

- **Hotelling rule** ($k'$ marginal cost, $Q$ quantity, $i$ nominal interest rate)
  - Consider alternative 1 of leaving one unit of oil in the ground: *expected* ($dP''/dt$) is the rate of return
  - Alternative 2: sell at the going price $P''$ which gives cash flow [$P''-k'(Q)$]; at the bank it gives yield $i$;
  - Profit maximization requires that owner of natural resource site is indifferent between alternative 1, 2!
Hotelling Rule and Modified Hotelling Rule

- Assume that \( k' = bQ \) so that marginal costs is a positive function of quantity produced (Q); \( b > 0 \)

- **In equilibrium** owner of oil site is indifferent at the margin between producing 1 additional unit now or leaving it in the ground:

  **Equilibrium condition**  
  \[
  [P'' - bQ]i = dP''/dt \tag{1}
  \]

- Divide (1) by \( P'' \):  
  \[
  [1 - (b/P'')Q]i = (dP''/dt)/P'';
  \]
  - if \( b \) zero: \( i = \pi'' \) with \( \pi'' := (dP''/dt)/P'' \) (oil inflation rate)
  - Hotelling rule: (expected) oil inflation rate = interest rate
World with Non-renewable Resources

\( P' \) is price of non-oil goods

- \( P'' \) is oil price. As the price level \( P = P'\alpha P''^{1-\alpha} \) – with \( \alpha \) denoting the weight of non-oil goods \((0<\alpha<1)\) we can take logarithm in order to calculate \( \ln P \):

  - \( \ln P(t) = \alpha \ln P'(t) + [1-\alpha] \ln P''(t); \) \( t \) is time index
  - \( \frac{d\ln P}{dt} = \alpha \frac{d\ln P'}{dt} + [1-\alpha] \frac{d\ln P''}{dt} \)
  - The change of \( \ln P \) per unit of time \( t \) simply is the inflation rate \( \pi = \frac{d\ln P}{dt}; \) note that \( \frac{d\ln P}{dt} = (\frac{dP}{dt})/P \)
  - Inflation rate is \( \pi = \alpha \pi' + (1-\alpha)\pi'' \);
Modified Hotelling Rule
(Welfens, 2008)

- Taking logarithm: Remember that \( \ln(ab) = \ln a + \ln b; \ln(a/b) = \ln a - \ln b; \) and consider that \( \ln(1+z) \approx z \) if \( z \) is close to zero; \( \ln x \) is defined only for \( x > 0 \)
- \([1 - (b/P^*)Q]i = \pi\)
- Assume that \((b/P^*)Q\) is small (close to zero); taking logarithm gives
  - \(- (b/P^*)Q + \ln P^* + \ln i = \ln \pi\); assume \(0 < i < 1; 0 < \pi^* < 1\)
- Supply \( Q \approx (P^*/b)[-\ln(\pi^*/i)] > 0; \) assume: \(0 < \pi^*/i < 1\)
  - \(Q \) is positive function of \(P^*\) and \(i\); negative function of \(\pi^*\)
  - Note: \(i = \)real interest rate \(r + \pi = r + \alpha\pi^* + (1-\alpha)\pi^* = r + \pi^* + \alpha(\pi^* - \pi^*)\)
Quantity of oil supply (disregarding OPEC)

Oil supply (quantity offered)

- negative function of the expected oil inflation rate (a higher expected oil inflation rate makes leaving option to leave oil in the ground more attractive)
- positive function of the nominal interest rate (producing and selling oil now=more attractive the higher i)
- negative function of the ratio of cost parameter expressed in oil units (b/P")
Role of EU in the World Economy

**Policy Fields**
- Single Market (4 freedoms: free trade in goods & services, free capital flows, labor mobility); **external** trade policy
- Lisbon Agenda 2010 and growth in digital economy & networked knowledge society; e-communications
- EU eastern enlargement
- EU-US-China-Russia
- Energy policy and global warming

**Policy Options**
- Supranational policy issues
- Activities of member countries (and regions)
- Activities through international organizations (WTO etc.)
Economics is concerned with certain phenomena; using certain research methodology

- **Overcoming scarcity**; and **describing** economic phenomena such as real income $Y$ (output), the unemployment rate $u$, the price level $P$ and its rate of change: inflation rate $\pi$; also the nominal interest rate $i$ (what you get at the bank), the dynamics of trade, capital flows, migration, asset prices, business cycles, long term growth, innovativeness, consumption/capita etc.

- **Explaining** economic phenomena; hypothesis+empirical testing

- Suggesting to **policymakers** convincing approaches for coping with problems: **goals, principles, institutions, means** guiding policymakers; **IER**: 2 countries (export I=import II...)
Types of Relations in World Economy: I/II interaction ≠ II/III

<table>
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<tr>
<th>Small Country I</th>
<th>Country II (Large)</th>
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<td><em>(dependent on countries II and III)</em></td>
<td><em>Interdependency with III; negotiations required (game theory)</em></td>
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<tr>
<td>Small Country IV</td>
<td>Country III (large)</td>
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<td><em>Interdependency with II</em></td>
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International Economic Relations

Types of Countries

- **Small open economy**: Price taker in world markets; whatever government policy is, no effect on country II; if country II is large (eg US; €land) its policy affects II and I

- **Large economies** (countries II and III): Policy of II has effect on III; say $Y^*$ in country III (* for foreign variable) is rising as country II pursues expansionary fiscal policy (=boom?). Repercussion effect on country II!
Two Country Perspective/or 3...

Country I (Germany)

Country II (France)  Rest of the World(III)
Import Market (Partial Equilibrium)
Impact of Subsidy on Production (Export Production)

\[ \begin{align*}
    & q_0, q_1, q_2 \\
    & k'_0, k'_1(1-\alpha) \\
    & DD_0 \\
    & D, D', F, G, G' \\
 \end{align*} \]
Institutions Matter

- Institutions plus rules (including informal rule) stand for politico-economic order
  - Facilitates **formation of expectations** and therefore intelligent personal and social behavior/problem solving
  - Reduces **information and transaction costs** so that resources can be used for increased production of goods
International Public Good (eg Free Trade; Peace...)

- (international) Public goods are goods =where many users/countries can share benefits simultaneously; e.g. free trade, peace. Problems exist as there will be no - international – functional market since
  - Incentive to reveal preferences are distorted: everybody wants to enjoy benefits but hardly anybody is willing to contribute to financing costs – there will be less revealed desire for provision of the good than actually. Free-rider problem: principle of exclusivity of use (only those who pay get access to the good) cannot be applied, no rivalry in the use of the good
  - Consequence is that the good will be provided on the basis of political decisions – international political cooperation required= often difficult game-type situation
International Economic Relations: Contribute to Prosperity & Complexity

- Relations with other countries in the fields of
  - Trade (inter-industrial or intra-industrial)
  - Capital Flows (FDI and portfolio capital flows)
  - Migration (potential problem is brain drain/relevance...)
  - etc. can lead to
  - Dependence or interdependence (interest in cooperation)
  - CONFLICTS which have to be solved peacefully, ideally on the basis of rules and institutions; protectionism typically is reinforced in periods of recessions = cyclical phenomenon of market economies
  - Special problem of international crisis or crisis in leading economy!
Fig. 1: Links between Domestic and Foreign Economy

**Factor Movements**
- Outflow (inflow) of foreign direct investment and portfolio investment
- Emigration (immigration)
- Technology transfer
- Cooperation, international organizations
- Made (received) payments of interest, transfers
- Import / export of services
- Import of intermediate products
- Trade of goods
- Includes trade in energy
- Provision of international public goods

Includes e-services

Some key questions/fears at the beginning of 21st century

- Will high current account deficits (US) lead to new protectionism?
- Effect of EU eastern enlargement on Western Europe and Rest of the World
- What is implication of China’s WTO membership for China/ROW
- Will there be another Asian crisis (1997) or Great Depression?
- What is North-South perspective after the end of the Cold War?
- Which role for multinational companies in world economy/=drivers&sinners?
- Is there long term economic convergence (y=y*) in the world?
- Role of (IMF, WTO...)International Organizations in economic relations?
- Will the EU survive the next 50 years?
- Will the Social Market Economy survive globalization & ageing?
- Will oil prices continue to rise?/destabilize the world economy?
- What about global warming?
- Which dynamics in a multipolar world: US-China-EU...
- Can financial globalization be sustained; is it useful (Banking Crisis 2007-10)
World Economy has some problems some time

problems are hard; but you & 6.5 bill. people (+science) can contribute to solving problems

Distinction: normal problems (solving) vs. quick crisis management

structure/dynamics/opportunities in international economic relations in 21st c.?
Important Distinction

- **Private goods**
  - Only those who pay get the good (say: bread, cheese, milk) so that people have incentive to fully reveal their preferences – indicate how much the respective person wants at which price; exclusion principle can be applied.
  - Markets can work and will work efficiently if there is competition; assumption also: Profit maximiza.

- **Public goods**: many/all (countries) can share benefits; hence there is free rider problem and unclear whether preferences revealed are correct or biased through strategic behavior: market failure; hence political decisions – are those efficient and welfare-maximizing?
  - Free trade=internat. pub.good
Basic Approach in Economics, including New Political Economy

- Assumptions about behavior
  - Individual utility maximization $U(q_i, q_j)$, $q$ is quantity of good $i, j$
  - Long term decision-making (...modelled with infinite horizon)

- New Political Economy (Adam Smith; David Ricardo: thought that free trade would create benefits for all countries and contribute to peace; 20th century: Anthony Downs, Mancur Olson, James Buchanan, Gordon Tullock, B.S. Frey)

- Median voter model of Downs (2 party model). This voter is decisive...; Logic of collective action (Olson etc.) and benefits of collective/public goods – many users can share benefits and there is no rivalry in consumption; in contrast to private goods. Free rider problem causes market failure. Political system needed, but political system has inefficiencies; incl. democracy.
Economic Behavior (Assumptions)

- One key **assumption about firms**: they **maximize profits** which – under competition is equivalent – to **minimizing costs** (optimum use of resources which effectively is pro-ecological behavior)

- Firms employ capital K and labor L (often for simplicity L is considered as identical with population); profit maximization yields optimum K/L = f(w/r); w is real wage rate: \( w = W/P \) where W is nominal wage rate (€ per hour of work) and P is the price level (say € per kg of bread); r is the real interest rate = nominal rate i (see loan contract) minus inflation rate π. **If \( w/r \) rises the capital intensity K/L will increase** (reality a bit more complex with technological progress)

- Certain assumptions with respect to **risk** (and uncertainty): risk-averse investors want high portfolio yield, but also want to minimize risk
International economic relations: an internal politics view

- 2 country model; governments must deliver
  - economic stability
  - social stability as a basis for ongoing consensus about reform required in dynamics national/internat. sys.;
  - ecological constraint
  - gov. budget constraint
  - current account constr.
  - democratic constraint
  - rule of law constraint
Basic Elements of Economic Analysis; Market Demand Reflects Marginal Benefits. Supply Curve Reflects Marginal Costs (k′)

- Private Good: Market Equilibrium
  Solution: \( D(p, y_0); S(p, A_0); y \) is per capita income, \( A \) is level of technology. Supply curve reflects marginal costs \( k'(\text{extra cost of producing 1 more unit of output}) \)

- Shift of Demand Curve (rise of per capita income \( y \); \( A \) unchanged, \( A \): level of technology): New Equilibrium: if rise of \( y \)!
Price Elasticity and other Elasticities (eg income elasticity)

- Price elasticity \( \frac{dq}{q} / \frac{dp}{p} \) of demand indicates the percentage change in demand as price falls by 1% (or rises by 1%): Elasticity is negative; in absolute terms the elasticity high if there are many alternatives (for DD\(_2\) higher than for case of steeper DD\(_0\))

The more elastic the curve is, the larger the reaction of quantity q for a given change of p
Why elasticites matter (price elasticity; income elasticity of demand which indicates percent change of q if y (or Y) rises by 1%; income elasticity is positive

- If country’s firms are mainly specialized in goods with low price elasticity: price may be raised without strong reduction of quantity#
- If firms are specialized in goods which face high income elasticity this is nice if there is global economic upswing: y will rise, demand for the firms‘ good will increase; but cyclical downswing is a problem...
Welfare Aspects of Market: social welfare = consumer surplus \((AE_0P_0)\) + producer surplus \((E_0BP_0)\); area under \(k'\)-curve \(OBE_0D\)=cost: because \(k'\) stands for derivative of cost function (area means Integral!)

Under competition all consumers pay \(p_0\); some willing to pay more (see A...)

With FDI inflow % producer surplus goes abroad
Some Aspects of Taxation in Open Economy (everybody interested in taxation!)

- Income taxation partly difficult (mobile investors; transfer pricing in MNCs)
- Ecological taxes could be useful sometimes, eg as incentive to save more energy – but national tax policy difficult in open economy (tax harmonization in EU27, OECD; how much?)
- Value-added taxes: easy to apply (except internet), has impact on demand, output, trade
Which welfare etc. effects has a value-added tax (partial equilibrium view on i-market)

Output falls \( (q_1) \); gross price is \( p'_1 \), net price obtained by firms is \( p_1 \). Tax revenue is \( FGp_1p'_1 \); not considered as welfare loss (\( dG>0 \))

Welfare loss is \( FGE=FHE+HEG \); here partial equilibrium view: net welfare effect in 2 market setup (Gen. Equ.) if tax revenue is used to finance subsidy on R&D/innovations in j-market?
Tariffs Have Effects on Trade, but Taxation (VAT) Also!

- VAT imposed in country I: market price is raised, domestic demand falls; if domestic production is given, exports will increase.
- VAT is imposed on domestic good and imported foreign goods: hence imports will reduce.
- The effect on the current account (exports minus imports of goods and services: improvement of position towards +net exports.
Export Market: a) Standard Case; b) Effect of VAT in Home Country

As domestic demand falls export is rising as consequence of VAT
Import Market: a) Standard Case and b) Introduction of VAT

![Graph showing the import market with and without VAT introduction.](image-url)
Foreign Exchange Market: Distinguish between Fixed Exchange Rate System (parity $e_0$) vs. Flexible exchange rates

- Supply curve: export process (selling goods and services abroad, $f(Y*,e,..)$, capital imports (eg foreigners buy country I bonds)
- Demand curve: import ($f(Y,e,..)$ of goods & services [includes dividends paid to foreign MNCs], export of capital ($€$ citizens buys US $ dollars bonds)
- Fixed exch. rate: Excess supply of $ bought by central bank= money supply will rise so that inflation can be imported from abroad (monetary approach to Balance of Payments; Mundell; HG Johnson)
- Flex. exc. rates: only here monetary policy is autonomous= responsible for inflation = lower inflation globally!?
Import Tariff and Foreign Exchange Market

- Import Tariff
  - Reduces quantity imported = reduction of import bill
  - Demand for foreign exchange will fall

- Foreign Exchange Market
  - Under flexible exchange rates lower demand for foreign exchange = leftward shift of demand curve = appreciation of currency = import of goods rises!
Private Goods vs Public Goods (some examples)

- Private goods: Individual consumption, payed in the market
  - Bread
  - Book
  - Milk

- Public good: market failure – political decision or collective action; payed often through taxation
  - Lighthouse
  - Firework
  - Free trade
  - Peace
  - Absence of global warming
Market Demand Curve: Horizontal Aggregation in Case of Private Good vs. Vertical Aggregation for Public Good

- Two Demanders (I and II)
- Two Demanders (I, II) in Market for Private Good

Diagram:

- Graph with demand curves DD_I and DD_II
- Points A', A, B, E, Z, Z', Z''
- Equations:
  a) $DD_{I+II} = A'BZ''$
  b) $DD_{I+II} = A''VZ'$

Markets often bring efficient outcome, but problems of market failure in case of external effects

- The demand curve indicates individuals’ willingness to pay; and marginal cost curve (k’) – the supply curve – inform about marginal costs. If chemical plant discharges effluents/waste into river the lower located brewery – normally taking water from the river – will face extra costs for purification: thus marginal social costs exceed private costs – those considered by chemical plant; how can we achieve allocation that internalizes external effects? **Impose adequate Pigou tax**

- If there are *positive external effects* the demand curve in the market is not fully indicating the benefits: In this case government can *internalize external effects* through an adequate subsidy (shifting down the marginal cost curve/supply curve so that the optimum quantity is realized; **optimum** always means: social costs = social benefits;)

- If externality is small, no policy intervention, as internalization is costly!
What is an economic optimum? Marginal social costs = marginal social benefits (maximization of economic welfare or utility)

- Market Equilibrium with Negative External Effects (air or water pollution)
- Positive External Effects (R&D service): welfare gain $AA'E_1E_2 + BB'E_2E_1$

Pigou tax brings $q_1$

Welfare gain is $BCFE_0$

Subsidy brings $q_1$

Example of Negative or Positive International External Effect

- Environmental pollution in country I leading to mass emigration to country II; QUESTION is whether country II effectively could tax polluting industry in country I – difficult!!

- Research and development efforts of firms in country I: spillover effects for country II; could those firms who benefit in II encourage government to pay subsidy to country I firms?
Role of Expectations in Economics: Expectations are Important!!

- **Rise of Expected Price:**
  - Consumers want to avoid future (t+1) expected price increase so that demand increases now (t); demand curve shifts upwards. Supply side will want to hold back supply and rather sell more in t+1 so that in t the supply curve shifts to the left: Result is higher price in t!!
Nominal income $Y'$ (dimension is Euro) and real income $Y$

- $Y' = pq + p'Q$; $q$ is bread; $p$ has dimension € per kg bread; $Q$ is milk, $p'$ has dimension € per l of milk. Divide equation by $p$ and we get real income in terms of kg bread:
  - $Y = q + (p'/p)Q$
- "real" means in quantitative terms; or measured in constant prices (price of a base year) – if income is € 1000, 1100, 1210 in years $t_1$, $t_2$, $t_3$ the real income has not changed if the initial price level was 1 and then increased with inflation rate of 10% (Price index $P$ is 1; 1,1; 1,21).
- Dividing $Y'/\text{Preisindex (P)}$ is equal to $Y$; $P = p^\theta p'^{1-\theta}; 0<\theta<1$
- Inflation rate $\pi = (dP/dt)/P$; eg $(110-100)/100 = 10\%$
Partial Equilibrium Analysis is Not the Same as General Equilibrium: In a 2 or n-market analysis: what is the overall output result of intervention? (Y=q + [p'/p]Q will rise?)

- Raising supply through subsidies in sector i (shifts supply curve downward, so q increases in equilibrium)
- Necessary rise of income tax – to finance subsidy – will reduce demand in j-market (or j+i)

![Diagram showing partial equilibrium analysis](image)
About the interest rate

- Nominal rate $i$ (say 10%) is what you get on a long term banking account; the real rate is defined as $r = i - \text{inflation rate } \pi$. The rate $i$ is opportunity cost of holding money [cash].

- What is the present value of 100€ you get in one year from now: $100€/(1+i) = 90$; 100€ which will be obtained 2 years from now: present value is $100/(1+i)^2$. If you get 100 € for ever, present value is $100€/i=1000€$. **If interest rates = 5%, value is now 2000€! A fall of the interest rate raises asset price!**

- Important for solvency of firms, government, country
Production Function; Key Insights and Relevance for Lisbon Agenda

- $Y = K^\beta (AL)^{1-\beta}$
- $\beta$ is the output elasticity of capital $K$, indicates by how many % $Y$ will rise if $K$ is raised by 1%
- reality $\beta \approx 0.33$
- If $\beta = 0.5$: $Y = \sqrt{KAL}$

Rules/Institutions for Investment (dK/dt>0); taxes

Labor Force; Working Hours

Education

EU integration affects capital accumulation via FDI; FDI also important for internat. technology transfer

Technology (research & Investment) knowledge society

Two Important Macroeconomic (aggregate) Equations and the Aggregate Production Function

- Uses side of income (System National Accounts): demand perspective
  - (1) \( Y = C + I + G + X - q^*J \);
  - Consumption \( C = C(Y) \), say \( C = cY \);
  - Investment \( I = I(r) = b/r \);
  - Government consumption \( G \);
  - Exports \( X \);
  - Imports \( J \);
  - Nominal exchange rate \( e \);
  - Price notation: \( q^* = eP^*/P \);
  - \( I = dK/dt \) (net investment) + depreciation \( \delta K \)

- Fisher Equation (\( M \) is money stock; \( V \) is velocity of money, \( g \) growth rate)
  - (2) \( MV = PY = Y' \); *if \( M \) rises...*
  - (3) \( g_M + g_V = g_P + g_Y = g_Y \) (rule!!! \( g_P = n \))

In underemployed economy: aggregate demand \( C(\ldots) + I(\ldots) + G + (\ldots) - q^*J(\ldots) \) will determine \( Y \)

Long run: *supply side,* consider aggregate production function

\[ Y = K^\beta (AL)^{1-\beta} \]

- \( K \) is capital stock, \( A \) is level of technology, \( L \) is labor input; \( 0 < \beta < 1 \).

If net investment > 0: \( K \) rises!
Logic of Fisher Equation:

\[ MV = PY; \text{ say } PY = 2000, M = 1000, V = 2; \text{ strictly speaking: } V \text{ not constant, rather } V = V(i); \frac{\partial V}{\partial i} > 0 \]

Private households (will pay via cash..M)

Firms using input factors to produce (Y) goods; sold in markets at market prices (P)

Input factors (labor, capital..) = real flow from households to firms. Which transform inputs into production of goods & services. In opposite direction monetary flows: income for households, revenues for firms selling newly produced goods in markets.
Theory of Trade

- **Ricardo Approach**: *Productivity differences* across countries; such differences give rise to trade as countries specialize according to comparative advantage.

- **Heckschler-Ohlin-Samuelson** (assume: no international factor mobility, identical technology): factor endowment matters; *capital intensity* $K/L = k$ compared to $k^*$. Country (EU15) with relatively high capital intensity will specialize on capital intensive products and also exports such products; imports labor-intensive goods from country with relatively low capital intensity (China). Free trade will lead to convergence of factor prices $W = eW^*$ ($W$ is wage) and $r = r^*$ ($r$ is real interest rate).

- **Differentiated products**: with per capita income ($y$) demand for differentiated products is rising = rising trade in diff. products.
Product Cycle Trade: I=Innovations Stage; II= Expansion Stage; III Saturation; current-account position

Link between innovation dynamics, trade and the current Account: In high income country there is high product innovation dynamics and high demand for differentiated products.
Trade diversion and trade creation (Viner)

- We consider a partial equilibrium model in a three country setup;
- Initially country A and B (say, Germany and France) import from country C (Corea); we consider integration from perspective of A which initially imposes uniform external import tariff on exporters from B and C
- After customs union A+B (both have common external tariff; free trade between A and B) the firms from B =new advantage: no tariff, but C face tariff
Fig 24: Analysis of Customs Union: Trade Creation and Trade Diversion – Net Welfare Effects Unclear (Viner)

a) Initially, A imports from country C, but customs union A+B implies that A imports from country B (marginal costs $k^c_0$);
Trade creation effect: rise of imports $J$ (welfare gain CC'B)

Initially, tariff revenue = DCGF; with A+B zero tariff revenue, but + welfare effect DCBE
Recall HOS which is based on free trade, competition and equal technologies across countries

- \( w/r \) and \( w^*/r^* \) will converge (HOS: trade effect!);
- This implies end of trade growth as both countries will also have equal capital intensities \( (k=k^*) \); profit maximizing choice of \( k=k(w/r) \) and if production functions are identical in both countries we will have equality of capital intensities
- Neoclassical growth theory is different and determines steady state ("long run equilibrium") capital intensity in different way
Neoclassical Growth Theory: Poor Countries/Rich Countries; C is consumption (0<c<1); e` Euler number

- **Ingredients:**
  - $Y(K,A,L)$ production on the basis of inputs capital $K$, knowledge $A$, labor $L$
  - Goods market **equilibrium condition** savings $S=$ gross Investment $dK/dt + \delta K$ ($\delta$ rate of capital depreciation)
  - Savings $S=sY$ ($C=cY$; $c=:1-s$)
  - Growth rate of population $d\ln L/dt=:(dL/dt)/L=:g_L=n$
  - Growth rate of knowledge $d\ln A/dt=:(dA/dt)/A=:g_A=a$

- With $Y/(AL)=:y'$ and $k'=K/(AL)$ we use $y'=k^\beta$ ($0<\beta<1$)
  - $Y = C + I$; definition $I=: dK/dt + \delta K$
  - $Y/L=:y = [C/L] + [I/L]$ per capita income $y$ is the sum of per capita consumption $C/L$ and per capita investment $I/L$
  - $y = k^\beta A_0 e^{at}$
  - What is **equilibrium value of $k'$**?
  - Steady state (#)=long run equilibrium value $k'#$ for $t\to\infty$ is $k'#$ $=[s/(a+n+\delta)]^{1-\beta}$
  - $y# =\{[s/(a+n+\delta)]^{\beta(1-\beta)}A_0\}e^{at}$
Basic result of growth theory (\( \delta \) is depreciation rate on capital, \( n \) is growth rate of population) for long run steady state (#); \( y' = Y/[AL] \), \( k' = K/[AL] \)

- Production function \( Y = K^\beta (AL)^{1-\beta} \); that is \( y' = k'^\beta \)
- Exogenous technological progress rate \( d\ln A/dt = a \) or \( A(t) = A_0 e^{at} \) (\( e^a \) is Euler number)
- Goods market equilibrium condition given by savings \( S = \) gross investment: \( sY = dK/dt + \delta K \)
- \( S = sY \ (0 < s < 1) \); exogenous \( L(t) = L_0 e^{nt} \)
- We get steady state result: \( k'# = [s/(n+a)]^{1/1-\beta} \)
- \( k# = K/L = [s/(n+a)]^{1/1-\beta} e^{at} \); \( y# = [s/(n+a)]^{\beta/1-\beta} e^{at} \)
Neoclassical growth model

- Growth of per capita income in neoclassical model is exogenous (rate a; like manna from heaven)

- **If** two countries have same technology ($\beta=\beta^*$) and if $s$, $n$, $\delta$ are the same then $y#=y#^*$: wonderful story in world economy! And as trade with differentiated products $=f(y,y^*)$ global trade will grow over time!(?)

- **Endogenous growth theory** (Romer, ...) explains progress rate $a$ – through R&D investment as in ROMER model; hence if Israel, Schweden, Finland, Japan, USA, Germany, France spend on R&D/Y, they have growth. What in China/Asia, Africa etc.?

- Implications for **international economic relations**...
Interests within Every Society

Economic Interests in Open Economy Concerns Domestic System & Country II:
High real GDP (Y) desired; as is high per capita income y:=Y/L; & low inflation

Military Interests (geopolitical aspects):
You cannot chose your neighbors...

Social Interests: Issues of Social Policy and Income/Wealth Distribution
When people compete on the basis of limited resources there can be conflicts
Structure of International Economic Relations

International Institutions; Leading Countries in the World

Regional Breakdown of Trade

Intensity of Trade Relations & FDI etc. Links
International Economic Relations

- Bilateral relations
- Bilateral relations in the context of dominant power; or dominant powers (e.g., Cold War)
- Multilateral relations on the basis of shared principles and rule of international organizations
Basically Three International Economic Relations

Dynamics shaped by private firms

Dynamics shaped by governments and international organizations

Perceived International Economic Relations: The View of the Media (TV, Press, Internet, Think Tanks)
International Economic Relations from a Government Perspective

- Find (military) **allies** with prosperous economy
- Find **foreign markets** (includes selling arms)
- Find **foreign investment opportunities** for firms (private or state-owned)
- Find new and cheaper sources to finance budget deficit or overall stock of government debt (or net indebtedness of the country): look for **capital imports**
- „**Find new territory**“ (period of colonialism; North pole in 21st century – as ice melts 5 countries’ quest for the pole, including USA, Canada, Russia, Denmark)
Leading Countries Shaping International Economic Relations

- Arabian expansion in 12th century/conflicts in Spain
- Rise of Spain – with Columbus' discovery of America in 1492, Portugal, Netherl., UK; motive for Spanish interest to sail to India on Western route was collapse of Mongolian rule in Europe + expansion of Ottoman empire which imposed additional taxes on land-based trade with India and China.
- Portugal: strong expansion in the Indian Ocean 1498-1620; around 1450 considerable trade already in this region – lingua franca of the region was Malayian dialect, main port city Malakka; Portuguese conquered port cities in India, Indonesia, China (Macao) and also established port (Nanking) in Japan; P. tried to monopolize trade with pepper/spices, later switching more to a regime which tried to stimulate trade; & get benefit through trade taxes. China gave up sailing the seas in 1433!...
1600-2050

- Spanish fleet - attacking England – was destroyed in 1688; rise of England and France; central Europe devasted through 30 Years War (catholic rules against protestant rulers) ending in 1648 when the Netherlands became independent of Spain
- Austria (multinational) powerful, but not a naval power
- Around 1900 US gets much of rest of Spanish colonial empire; **US becomes naval power** – forces Japan to open up. Germany becomes naval power and rival to UK and France; Russia defeated in 05 by Japan in naval battle. China suppressed by colonial rule. Ottoman empire collapsed
- UK dominant 1814-1913; France strong in 18th century;
- US and Soviet economic and political dominance after WWII
19th century

- 1776 US Declaration of Independence;
  - Adam Smith (UK) publishes „Wealth of Nations“ – pro liberalization arguments; in favor of private enterprise, competition, government only in defence, education, infrastructure, legal system (private property); UK leading economy

- 1814/15 Vienna Congress; 1848 France republic
- Nationalism & Industrialization; new countries
- Emigration from Europe; Imperialism
1950-1991: Cold War

- Cold War with two opposing ideologies; creates basically two international camps – and for some time the non-aligned movement as a response
- Communist ideology is totalitarian, but non-religious!
- After the collapse of Cold War there is revival of religious zeal in the US, Russia+Eastern Europe, Africa and Asia – long term development which could complicate international economic relations (if divergent religious ideas and rules should rule trade)
Collapse of Wonderful Socialist Systems in Eastern Europe/USSR...

Socialist system’s double crisis: economic, political

Caused transitory chaos in eastern Europe and USSR; opened ex-CMEA to World Economy

Systemic Transformation: Changes in Institutions (Economic System) + New Economic Policy Design; + new consensus (democracy) & communication style

Internationalization of Market; Convertibility of Currency; Inflow of Foreign Direct Investment; Membership in International Organizations
Which Rules/Institutions for Whom...

- 21st century is era of
  - **Regional integration** (EU, ASEAN etc.) = more common regional rules!
  - Globalization (truly global trade in sectors...) = more **interdependence**

- 21st century: **US leadership**, EU rather strong – but together with Japan the EU faces problem of ageing and declining population; US population growing. EU pop. slightly growing.
  - US leadership remains strong (politically, economically, militarily); US is leader in information & communication technology (ICT) = No. 1 techn.
  - China – expected to be trading country No. 1 around 2010 – will be challenger for EU and US...; India could play with delay similar role.

- **Big Issues**: Security Issue (Anti-terror fight); role of global institutions (IMF, WTO etc.), Energy Issues/Global Warming
Three Basic Approaches in International Economic Relations:

- Dominance
- Regional Cooperation (EU, ASEAN, NAFTA...)
- Competition

Attitudes of people – elites as well business people and tourists and migrant workers – matter: culture shapes identities...
Intellectual Links Across Countries

- Through **mobile culture** (e.g., literature, movies) = changing attitudes, aspirations
- Through **migrants and foreign investors** which bring new ideas
- Through new **imported products** which invite imitation by domestic firms, individuals
- Though **tourism** = consumption abroad
- Through the **internet/news** other channels
Possible Attitudes Among Neighbors

- Friendship
- Friendly Rivalry
- Envy and Rivalry
- Hostility and War

Critical I: border areas, including natural resources sites;
Critical II: divergent value sets of people (ideologies; partly f(y));
Critical III: domestic economic disasters (social instability, divergence);
Critical IV: political and economic instability; plus radicalization – rather problematic are autocratic regimes with internal problems (war...)

Five Key Economic Links between Countries

- **Trade** in goods and services (tradables in a competitive world vs. nontradables)
- **Capital flows** (portfolio capital flows vs. direct investment = MNCs invest abroad)
- **Migration** (immigration and emigration)
- **Exchange of information** (*Internet*)/ **Technology**
- Implicitly: global public good *international environment*, avoid global warming = intern. public good
Imperfections in Technology Trade
(very asymmetric across countries; mainly intra-OECD!)

- Trade in technology also plays a role, but is mainly in the form of embodied technology.
- Or: in the form of intra-MNC-licensing and cross-licensing among MNCs.
- MNCs crucial for technology transfer!
- MAIN PROBLEM: imperfections in information markets, eg seller has to reveal part of info for free, licensee might illegally appropriate new technology and become new rival.
Underemployed Economy: Crucial Link Between Real Income Y and Net Exports; \textit{if } X - q^*J \textit{ rise, } Y \textit{ rises}

\begin{itemize}
  \item Y = C + I + G + [X – q^*J]; where C, I, G, X and J are private consumption, investment, government consumption, exports, imports (quantity...). Consumption function C=cY[1-\tau]; \tau is income tax rate; I=I(r); r is real interest rate which is nominal rate i minus inflation rate; specify I=b/r (b positive parameter)
  \item Typical export function is X=x(q^*)Y*; where * is for foreign variable, q^* (e in €/$) is the real (nominal) exchange rate \([eP^*/P]\); P is price level, * foreign variable
  \item Imports: J =j(q^*)Y; multiply J by q^*=:1/q to obtain imports in units of domestic output \((q \text{ is not quantity!})\)
\end{itemize}
Two Country Model of World Economy: CA surplus = CA* deficit

- Home Y = cY[1-\tau] + G + b/r + X'; here b/r=I;
  X'=X(q*,Y*) -q*J(q*,Y) is net export of goods & services: current account (incl. unilateral transfers)

- Foreign country Y* = c*Y*[1-\tau*]+G* +b*/r* +[J-X/q*]

- If home country has CA deficit the country effectively takes – on a net balance - a loan abroad: foreigners buy bonds of country 1; if this continues country 1 becomes indebted abroad. How long can this continue? As long as foreign indebtedness is not critical and remains manageable...
Structure of Foreign Indebtness (in the absence of high inflation)

- Currency composition (mostly $)
- In a multi-country world: Which country holds – say– US government bonds? (expectations:e)
- Maturity (long term or short term)
- Nominal foreign debt $B_t=B_{t-1} + D'_t$ ($D'$=deficit)
  - Divide by (with $g$=growth rate) $Y_{nominal}$: $b_t=[1/(1+g)]b_{t-1} + d_t$
  - Stabilize ratio $B/Y=b$ so that $b_t=b_{t-1}$: $g/(1+g)=d/b$; $d=:D'/Y'$
  - If nominal GDP growth rate $g$ is 5%, $b=0,2$: gives d
Current Account (CA) Imbalances; note C+I+G is dubbed absorption

- CA deficits can create political problems; country with deficit could try to solve problem by real currency depreciation (reduces import demand, stimulates exports...)

- As net exports $X' = Y - (C+I+G)$ government can improve net export position by cutting domestic absorption $(C+I+G)$; e.g. through reduced G or higher taxes to reduce C or I (also via $dr>0$)

- As CA deficit of country I is reflecting net exports of II alternative is that II should stimulate $Y^*$ so that $X'$ will rise; this requires international cooperation.
 Trade, Specialization, Innovation, Structural Change

- **Economic Opening** up for trade and capital flows (FDI plus – later? – portfolio capital flows): **Stage I** means $X/Y$ and $J/Y$ up, **elasticities increase** (greater choice), trade stimulates specialization, income gains – mainly related to specialization in **technology intensive** goods and in scale intensive goods

- **Stage II**: HOS-consistent specialization in poor – low wage - countries; producing & exporting more labor intensive goods. Also: Increasing specialization makes **demand less price** sensititve, rising per capita income and higher real wage sti- mulates firms to upgrade products (product innovations); mo- ve towards skill-intensive and technology intensive products (high export unit value); linked to FDI & R&D expenditures. Export-unit values increase (product upgrading as $y$ increases)
The Foreign Exchange Market

- In the **foreign exchange market** there is a supply side; in the $ market the supply would stem from firms exporting to the US (firms sell export proceeds in forex market) and from capital imports (US citizens who wish to buy Euro assets, eg bonds).

- The demand side represents importers of goods and services plus capital exports (Euroland citizens who will buy US bonds).
Fig. 2: The Foreign Exchange Market: Impact of a Change in Expected Devaluation Rate (Nominal Exchange Rate $e$: Euro/$)$
What is the Real Exchange Rate $q$?

- $q = P/(eP^*) = 1/q^*$ and has the dimension Euro/domestic good - which is the export good, too - divided by (Euro/$)($/US good): dimension therefore is USgood/EUgood;

- $q$ thus indicates how many US goods are obtained per unit of EU good. A real appreciation means a rise of $q$: eg, we get more US computers per EUcar exported.
Definitions of Exchange Rates

Exchange Rates

Bilateral Nominal Exchange Rate
Bilateral Nominal Effective Exchange Rate
Real Bilateral Exchange Rate
Real Effective Exchange Rate
Correcting Current Account Deficit (including II stimulating output; Y or steady state income Y#); C(...) planned consumption; C=c[Y-T]

1) Y=C(...) + I + G + X^{net}; also 2) Y=C+S+T (T is real tax payments)
Put 2) in 1) and you get S(...) + [T-G] = I + X^{net}; G governm. consumption

Expenditure Switching Policy
(Rise of P^T/P^N; Raising Import-Tariff)

Reducing Domestic Demand
S + [T-G] = I + X^{net}

Supply Augmenting Policy:
Y_{t+1}^{Pot} = (C_{t+1} + I_{t+1} + G_{t+1})

Stimulation of Foreign Output
(Y^* or Y^*#)

Why does Japan or China have Current Account Surplus (X^{net}>0)?
and why has the US a Current Account Deficit?...
Current Account Deficits

Current Account Deficit/Surplus in % of GDP
(annual data, source: AMECO)

Reducing Imbalances: Trilateral Perspective US-EU-Asia

- High and growing US current account deficit ratio (6% in early years of 21st century) reflect mainly deficits vis-à-vis Japan and China
- Japan and China therefore should appreciate currency – would dampen growth in China, Japan and Asia
- If Euro appreciation comes while Yen and Renmimbi remain constant this would undermine EU growth; issue for G-8 – where China is not member!
A closer look at world oil and gas markets

- Truly global markets for oil and gas
- Concern in the political system about energy supply security and affordable prices
- OPEC cartel – with many state-owned firms - in the 1970s started to shape energy market (oil, gas, coal, nuclear, hydro and other renewables are substitutes on the demand side); note: oil in reality with rather strong focus on transportation, mobility needs.
- Since late 1990s increasing interest in global warming issues (UN; Kyoto Protocol) and CO$_2$ emission trading (in EU: started in 2000)
Potential Conflicts in International Relations

Routing of Cross-border Pipelines

Military security aspects combined with oil & gas

MNCs’ investment (size/composition of foreign investm.; barriers to FDI)

Role of OPEC cartel
Price Developments

- Oil price level exceeds that of gas and coal (gas is not indexed to oil price in the US and UK, but in several € countries); oil globally traded
- Inter-fuel substitution is $f(p_i/p_j)$
- Gas increasingly traded – through pipelines or LNG tankers (8 exporters in 07, 4 in 1998) which should reinforce the price link between oil and gas
Energy Markets

World energy prices should depend on
- World GNP (demand)
- Stock of cars per capita
- Global capital stock in oil and gas, + technology (oil patents) = supply side
- Sectoral composition of World GDP (share of industry; PPP!)
- Interest rate (impact on investment is negative, but positive impact through Hotelling effect for non-renewables; \( \frac{d}{dt}(p/P) > 0 \))
- Price expectations (forward markets!)
- Global trade volume; and OPEC reserve capacity (dummy)

Energy consumption in country i depends on
- Real GDP; and stock of cars per capita
- Relative price of energy
- Technology of industrial users and households
- Dummy for intensity of competition
- Trade volume of goods and services
Comparing Economic and Political Aspects of International Economic Relations

- **Business Community**
  - Type of activity: Trade and investment relations; cross-border emissions
  - Length of time horizon: medium term or long term; very long term in the energy sector which also is very international (global oil&gas)
  - Relations: Contract-based or ownership-based

- **Governments**
  - Type of activity: trade relations and investment relations as part of foreign policy; double non-taxation issues
  - Military cooperation
  - International public debt;
  - Emission trading frame
  - Relations: Treaty-based, regional integration clubs or global organizations

Good interplay of economic & political relations = high income
Labor Productivity = High Per Capita Income

The most productive country in 1870 was – besides Austria and Netherlands - the UK, reflecting relatively high capital intensity (K/L) advanced technology, gold standard; since 1913 US is new No. 1

Between 1913 and 1998 Japan achieved impressive catching-up (2000 = 2/3 of US); 1950 per capita income y of Brazil about the same as in Japan!

In the period 1950-98 Venezuela + Mexico + Argentina fell back; Asian NICs caught up
Relative Labor Productivity: Levels of GDP Per Hour Worked, 1870-1998

(United States = 100)

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Source: Maddison (2001)
Explaining Catching up: We define capital intensity \( k := K/L \); \( k' := K/(AL) \) is the ratio of \( K \) to „labor in efficiency units“

1) **Macroeconomic production function**: \( Y(K,A,L) \), that is output depends on capital \( K \), level of technology \( A \), labor input \( L \); subsequently we assume „Harrod-neutral progress“ so that technology is labor-augmenting \( Y = K^\beta (AL)^{1-\beta} ; 0 < \beta < 1 \). Per capita income \( Y/L := y \) is \( y = k^\beta A^{1-\beta} \)

2) Trade, capital flows (in particular foreign direct investment) or migration (affecting \( L \)) will affect economic developments – along with other influences. Trading with technologically leading partners effectively could bring foreign technology to the importing countries, namely through intermediate products. FDI inflows affect capital accumulation, also bring technology transfer which will affect \( A(t) \).

3) Next we combine \( Y(K,A,L) \), investment, equilibrium condition
Simple growth model (SOLOW) explains steady state capital intensity \( k^\# \) (long run equilibrium)

- Production function (1) \( Y = K^\beta L^{1-\beta} \); or: (2) \( y = k^\beta \) where \( y \) and \( k \) are defined as \( y = \frac{Y}{L} \) and \( k = \frac{K}{L} \); \( 0 < \beta < 1 \)
- Growth rate of \( L \) is \( n \), that is \( \frac{dL/dt}{L} = n \)
- Growth rate \( n \) is exogenous, capital depreciation rate \( \delta \)
- Savings (3) \( S = sY \); gross investment (4) \( I = dK/dt + \delta K \)
- Define capital intensity \( k = \frac{K}{L} \), then it holds that

\[
\frac{dk}{dt} = \frac{dK/dt}{L} - K \frac{dL/dt}{L^2} = \frac{dK/dt}{L} - nk
\]

- From equilibrium condition \( S = I \) it follows with (2)-(5):
  - \( \frac{dk}{dt} = sk^\beta - (n + \delta)k \); steady state: \( \frac{dk}{dt} = 0 \);
  - \( k^\# = \left[ \frac{s}{(n + \delta)} \right]^{1/1-\beta} \)
  - Therefore per capita income \( y = \left[ \frac{s}{(n + \delta)} \right]^{1/1-\beta} \)

Neoclassical Growth with Progress: exogenous population growth rate (symbol g) $g_L =: n$; progress rate $g_A =: a$), savings is $S$, $\delta =$ depreciation rate of capital; $\Lambda =$ level of technology, is labor-augmenting; e‘ Euler number

$$y' =: [Y/(AL)]; \quad (1)Y = K^\beta(AL)^{1-\beta}; \quad (2)S = sY; \quad (3)S = dK/dt + \delta K \text{(equilibrium)}$$

Level of Per Capita Income ($y$) and Growth Rate ($a$)

- Savings rate $s$ (positive impact on level of growth path)
- Capital depreciation rate $\delta$
- Progress rate ($a$) can be endogenized (e.g. R&D expenditures relative to GDP, quality of the education system)
- Economic System and Political Order

Having defined $k'$ and $y'$, respectively, we get differential equation for $dk'/dt = sk'^\beta - (n+a+\delta)k'$; with $k' =: K/(AL)$; set $dk'/dt = 0$, gives Steady state solution (long run solution) which is denoted by $#$:

$$Y/[AL] = y' # = [s/(a+n+\delta)]^{\beta/1-\beta}; \text{ hence } y' # = A_0[s/(a+n+\delta)]^{\beta/1-\beta} \text{ e' at}$$
Relative income position

Obviously: Relative per capita income position \( (y/y^*) \)
is given – for the case of \( \beta = \beta^* \) - by

\[
y#/y^# = \left[ \frac{A_0}{A_0^*} \right] \left[ \frac{s}{s^*} \right] \left[ \frac{(a+n+\delta)/(a^*+n^*+\delta^*)}{e^{(a-a^*)t}} \right]^{\beta/1-\beta e^{(a-a^*)t}}
\]

Economic catching up of poor home country (I) requires that \( s \) moves towards \( s^* \) and that \( a+n+\delta = a^*+n^*+\delta^* \) - this brings convergence of levels of growth paths in country I and II (except for initial gap in technology); moreover, there must be catching-up of progress rate and the level of technology, respectively.

Savings rate depends on financial market development and culture. Growth rate of populations depends on education level, social security and cultural background. The depreciation rate should converge in the long run. Convergence of innovation rates is complex: Imitation at first, later stage: R&D promotion/innovations+
Level of Growth Path (0F) and Growth Rate of Per Capita Income (y): $tg \alpha$; $s$ is savings rate, $n$ growth rate of population, $\delta$ is depreciation rate, $A_0$ initial knowledge.

Distance 0F is called level of growth path; If $\beta$ is 0.5: Level is given by $[s/(n+a+\delta)]A_0$.

Here growth rate of technological progress (a) is constant.
Country I and country II; shift in the level of per capita income abroad

a) Country I und Country II

b) Change of Level Abroad
Consider Open Economy Dynamics; we use approximation rule \( \ln(1+x) \approx x \) if \( x \) is close to zero

- Consider modified \( S \) (WELFENS, 2006): \( S = s(1-\tau)(1-hu) \) where \( \tau \) is the tax rate and \( u \) the structural unemployment rate (parameter \( h > 0 \))
- Country I: \( y# = \left[ \frac{s(1-\tau)(1-hu)}{(n+a+\delta)} \right]^{\beta/1-\beta} A_0 e^{\alpha t} \); define \( \beta' = \frac{\beta}{1-\beta} \)
  \( \ln y = \beta' \left[ \ln s - \tau - hu - \ln(n+a+\delta) + \ln A_0 \right] + \alpha t \); decrease \( \tau \) by -1 raises \( y \) by 0.5%; decrease \( u \) by -5 perc. points = \( y+ \) by 2.5% (if \( h=1 \)); \( s \) from 20 to 21 (5%), \( y+ \) 2.5%
- Impacts on home country (I)
  - Outmigration from II will affect growth rate of \( n \) in home country (country I);
  - Opening up in I could raise \( u \) & generate pressure to reduce tax rate; ambiguous
  - Foreign direct investment (FDI) inflows in country I will affect level of technology and progress rate \( a \), respectively. If FDI is in banking – crucial with EU enlargement – the savings rate (read investment-GDP ratio) will increase
  - One also could consider embodied technological progress in imported investment goods (vintage effects; raising \( a \) and \( \delta \)) and intermediate products (amounting to rise of \( a \)). If we give up linear-homogeneous production function we additionally could consider economies of scale effects in imports, exports!
Empirical findings (see also TEMPLE, JEL, 1999); US: JONES (AER; 2002), for EU Commission; human capital + R&D share of jobs considered in progress function – Level effects after 50 years!

<table>
<thead>
<tr>
<th></th>
<th>JONES (2002)</th>
<th>ECFIN</th>
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<tbody>
<tr>
<td>s (I/Y, increasing by 1% point)</td>
<td>2.1%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Years of Education (+1 Year)</td>
<td>7%</td>
<td>12.8%</td>
</tr>
<tr>
<td>R&amp;D share (+1 Point of GDP)</td>
<td>16%</td>
<td>17.7%</td>
</tr>
<tr>
<td>Working Pop (1% reduction in n)</td>
<td>-2.5% to -16%</td>
<td>-8.7%</td>
</tr>
</tbody>
</table>

Note: Commission finds positive eff. of reducing regulation/to US r.
How to shape international relations in growth-enhancing way

- Open up for immigration AND organize immigration process
- Stimulate trade with advanced countries (possibly not going for very large gaps in terms of y or level of technology)
- Open up for foreign direct investment inflows
- Create large integrated markets/requires international cooperation (or regional integr.)
- To the extent that ICT capital (ICT=information & communication technology) has a special role stimulate FDI in ICT-intensive sectors; support R&D.
Economic Linkages in a Demand-side Perspective

(1) \( Y = C(Y-T) + I(r) + \delta K + G + [X(...) - q^*J(...)] \)

(2) real exports \( X = x(q^*)Y^* \); real imp. \( J = j(q^*)Y \)

(1’) \( s(Y-T) + [T-G] = I(r) + \delta K + [X(q^*)Y^* - q^*jY] \)

Medium term perspective suggests \( Y^* \) influences \( Y \); strong growth perspective of \( Y^* \) implies high growth of exports in the long run
Brief History of International Economic Relations

- **Cobden-Chavalier Treaty of 1860**
  between UK and France brought bilateral trade liberalization, paving the way for more trade liberalization in Europe + N. America

- Capital flows and trade facilitated by gold standard (Pound and other currencies linked to gold at fixed parity)

- End of free trade due to World War I
Interwar Years (1919-39);
BIS=Bank of International Settlements

- Chaos in Europe (hyperinfl., pol. Instability)
- German reparation problems (linked with interallied debt problems) led to creation of BIS; remaining debt cancelled in 1931
- Great depression of 1929 after Black Friday which brought collapse of NYSE/stock market, mass unemployment in US, Europe;
- wave of protectionism, competing devaluations, decline of trade and per capita income; political radicalization in Italy and Germany!
New Liberalization: 1944-2001

- 1944 creation of IMF/World Bank by 25 countries
- Failure to create Int. Trade Org., but at least General Agreement on Trade and Tariffs (GATT), WTO (GATT+GATS+...) in 1995
- Restoration of external convertibility in Europe in 1958 (with help of European Payments Union)
- Regional economic integration: EU-6 in 1957 (linked to WTO rounds to reduce trade diversion effects)
- Deregulation & privatization in infrastructure worldwide in the 1990s: stimulates international M&A
Latin America vs. Asia 1960s/70s

- In Latin America import substitution strategy was popular in 1960s
- High foreign debt and inflationary policies
- Unstable Political Systems
- Lack of Competition

- In Asia outward-oriented policies adopted (exports+) plus FDI inflows
- Considerable political stability (but often democratic deficits)
- Prudent monetary and fiscal policy
China’s Economic Opening up and Systemic Transition in Eastern Europe and the Ex-Soviet Union

1978: China starts gradual opening up; special export zones, limited privatization, allowing foreign direct investment, achieving high growth in 1980s/90s; 2003 WTO membership. China=regional economic power!

1991: End of Soviet Union/CMEA („socialist EU“);

Ex-CMEA countries go through systemic transformation and economic opening up; trade liberalization with EU, membership in IMF, WTO

2004 eight eastern European countries join EU; 2007 Bulgaria and Romania to follow
EU eastern enlargement (May 1, 2004) and globalization, Jan. 1, 07

- Eastern enlargement means EU15; new EU25
- Elimination of trade barriers
- Elimination of capital flow barriers
- Rules single market etc. apply
- Globalization=China opening up and reduction of tariffs through WTO (+WTO liberalization)
- 2007: Bulgaria plus Romania, relatively poor; 
  *EU has reached critical dimensions*
Links through Tradables

- Changing trade flows
- Outsourcing – domestic vs. international
  - THE mirror to outsourcing is „insourcing“
- Offshoring (buying intermediates from subsidiaries abroad)

Major change / more options through expansion of Information and Communication Technologies (ICT)
Theory of **Fragmentation**

- Elements of the Value-added-chain can be internationally outsourced: e.g. R&D/Product design, production of component $A_1, A_2...A_n$.
- International outsourcing is particularly interesting if there are large wage discrepancies – more strictly: differentials in unit labor costs (wage divided by labor productivity)
- To which extent is relocation from EU to Asia etc. more or less easy? We can hardly relocate where high R&D intensity and production are strictly complementary (e.g. air & space, special machinery)
Goods/Sectors are different according to factor intensity

- Resource intensive
- Capital intensive
- Technology intensive
- Knowledge intensive
- Economies of scale intensive

Theory of comparative advantage argues that countries specialize in accordance with relative factor endowment; additionally there is product cycle trade theory (VERNON)
Product Cycle Trade: Traditional VERNON view can be combined with fragmentation approach

- R&D and product launching (stage I of product cycle) in innovative OECD country – say US or Ireland; good is also exported. No imports of INNOVATOR COUNTRY A. Price of product is high.

- Stage II: Standardization period; production established through foreign direct investment in continental EU countries. A is now importing form continental EU country B; Product might face alternative product innovations – hence quality competition is crucial.

- Stage III: Saturation stage – production method is mature; goods price has fallen, wage costs now important so that relocation of production to developing country C. A+B now importing from country C; A+B have sectoral trade b. deficit
Goods differ not only in accordance to factor intensity...

- Profit rates the higher the higher **knowledge/technology intensity** is (Schumpeterian rent, that is technological monopoly premium is)

- **Profit rates the higher the closer firm is to the stage of final goods production;** n-th suppliers has lowest profit rate. End supplier has highest
  - THUS type of specialization and share of valued added in final product is important for respective country – high per capita income if specialization in Schumpeterian final products or high technology services (WELFENS, 2006)
Types of Goods and Internationalization

Economies of Scale + Knowledge-extensive = **price competition**
No Economies + Knowledge-intensive = **quality competition**

Types of Goods, Innovation and Internationalization

- **High Economies of Scale**
  - Fordist Goods
  - Schumpeterian-Fordist Goods

- **Knowledge-extensive**
  - Smithian Residual Goods

- **Knowledge-intensive**

- **Low Economies of Scale**
  - Schumpeter-Stiglitz Goods

* Differentiated goods
EU15 Relocation Options Differ: RCAs $\ln\left(\frac{X_i/J_i}{X/J}\right)$ differ across sectors; or modified...

US is shaped by high R&D capital stock + high human capital + big domestic market

I and II to USA?

EU is high wage area with high R&D capital stock + high human capital (and EU single market)

IV to Asia & parts of I/II

Asia (except for Japan) is low wage area with rather small R&D capital stock, catching up in terms of human capital

EU has positive RCA in ICT services; & in some high-technology.
Elements of Economic Catching-up (economic factors)

- High investment
- Rising export-GDP ratio plus a strict competition policy
- Expansion of manufacturing industry (technology intensive; promotion of R&D)
- Education (human capital formation)
Resource Abundant Countries... (a Fairy Tale for OPEC Countries?)

- Some countries are resource abundant (e.g. much oil and gas to be explored and produced)
- Few countries have had long term benefits from resource abundance, namely those with small populations (eg Kuweit, Norway, Libya, Saudi-Arabia)
What Happens in a Resource Boom?

- Expansion of natural resources sector (R) which means that higher share of investment goes into this sector; labor input in this sector will increase

- Assume 3 sectors: R, manufacturing T plus nontradables N

- If export of R increases (current account balance surplus) this will bring about a real appreciation as eP*/P will fall which undermines exports and expansion of T sector
Problems of Dutch Disease [DD] (Resource Boom)

- Name **Dutch Disease** in economic context comes from experience of the Netherlands which had a natural resources boom when gas was discovered in the 1970s/80s; share of employment and of value-added in manufacturing industry fell; could resource boom ultimately undermine prosperity? Similar issue for major oil and gas exporters – in any case they face challenge of long term diversification.
DD dynamics (N is nontradables sector): reduced technological progress and less human capital formation.
Oil Price in a Long Term Perspective (current price and price at constant exchange rate and US price level 2002)
Oil Price Increase in 2002/06 as a Problem? Oil Price $P” +80%!

- Nominal increase of $ price of oil by about 1/3 in 2002-04; less so in € which has appreciated against US dollar. Oil is input in industry & for transportation.

- **No global threat of delivery interruptions**

- If $P”/P$ up: Decline in labor demand if
  \[ Y = K^\beta E^\beta L^{1-\beta-\beta'} \]
  where E is energy; profit maximization for given K implies reduced demand for labor if $P”/P$ (price of energy relative to output price) goes up;

- Modest output decline in EU (-0.2 percentage point for a 10$ price increase) and rise of inflation (0.5 percentage point); risk of second-round effect (dW!)
Oil and Gas Sector in International Perspective

- Gas price strongly linked to oil price; the oil price is not a competitive price, but an OPEC (cartel active since 1973!) price.
- Oil and gas business is highly politicized: oil producer countries politically unstable plus issue of pipelines; also so-called hold-up problem of vertical unbundling in energy sector (transit countries cheat?/opportunistic behavior!)
- Issue whether transit pipeline is private firm or state-owned firm.
Oil price volatility and price level shifts

- Oil price is highly volatile in the short run;
- Oil price level shifts in the long term: Periods of high relative prices vs periods of low relative prices
- Oil price increase reduces demand for oil – raises demand for gas (industry and households); but oil still dominant in transportation. Oil price affects automobile industry!
- Oil price increase stimulates exploration and investment/production in oil and gas; risky business which requires long term investment – financing thus is complex
- OECD countries created **International Energy Agency** after oil price shocks of the 1970s; on spot und future prices see London Petroleum Exchange
- Oil price hikes can stimulate inflation dynamics, undermine growth & jobs
What is Economically Desirable?

- **High real income** (consumption C) per capita on the basis of inputs capital K, labor L, technology A: more inputs = higher output; if national income is Y and population is L (equal to labor), then y=Y/L; C=cY
- Maintaining **peace** (avoiding military international conflicts and civil war; absence of terrorism)
- Avoiding **inflation** = achieving monetary stability at national/international level
- **Avoiding unemployment** = maintaining full employment
- **Long life expectancy** (living is desirable! Health!!)
What is Economically Desirable?

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- **Avoiding inflation** = achieving monetary stability at national/international level

- **Avoiding unemployment** = maintaining full employment

- **Long life expectancy** (living is desirable! Health!!)
Interests within Every Society

When people compete on the basis of limited resources there can be conflicts.
Intellectual Links Across Countries

- Through **mobile culture** (eg literature, movies) = changing attitudes, aspirations
- Through **migrants and foreign investors** which bring new ideas
- Through new **imported products** which invite imitation by domestic firms, individuals
- Though **tourism** = consumption abroad
- Through the **internet/news** other channels
Possible Attitudes Among Neighbors

- Friendship
- Friendly Rivalry
- Envy and Rivalry
- Hostility and War

Critical I: border areas, including natural resources sites;
Critical II: divergent value sets of people (ideologies; partly f(y))
Critical III: domestic economic disasters (social instability, divergence)
Critical IV: political instability and radicalization
Imperfections in Technology Trade
(very asymmetric across countries; mainly intra-OECD!)

- **Trade in technology** also plays a role, but is mainly in the form of embodied technology
- Or: in the form of intra-MNC-licensing and cross-licensing among MNCs

**MAIN PROBLEM:** *imperfections in information markets*, eg seller has to reveal part of info for free, licensee might illegally appropriate new technology and become new rival

MNCs crucial for technology transfer!
Main Fields of International Influence - Economically

Fields of Impact in Macroeconomic Perspective

Output changes via trade balance effects, technology transfer, foreign direct investment

Price effects through changes in world market price or exchange rate effects or changes in money supply

Asset market effects (bond markets, stock markets) Foreigners buy/sell assets denominated in dom. or for. currency
Core Dimensions of the World Economy (K is machinery, L, H unskilled & skilled labor, R nature, q* = eP*/P)

World Gross Domestic Product: Y(K,L,H,T...) + q*Y*(K*,L*,H*.T...); T is trade

Global Trade; Capital Flows; Exchange of Information

World Population; human capital formation

Global (Net) Wealth
Countries differ in many respects

**Country Characteristic**

- Size
- Factor Endowment
- Per Capita Income
- Civilization
Size of Country

- **Small open economy is price taker** in world market (is known to adjust); firms from large country have particular home advantage – eg scale economies
- Small economies have **high trade-GDP ratio** ([X+J]/Y); large economy less open
- Small dynamic OECD economies have **high FDI inflow-GDP ratio**. Large OECD countries are major sources of FDI in absolute terms: role of MNCs!
- Small countries have to cooperate with other countries and need military protection by x; large country can do alone (often it thinks at least it could do so)
Factor Endowment

- If only K and L in home country (I) and K* and L* abroad (II), k=K/L and k* suffice to characterize *Relative* factor endowment!

- With K, unskilled labor L, human capital H (skilled labor), T’ technology and natural capital R we have:
  - K/[L+aH] where a (a>1!) translates H-units (skilled workers) into L-units (unskilled workers)
  - H/L as measure of human capital intensity
  - T’#/[L+H] is patents per capita
  - R/A’ where A’=[P'/P]K + [P“/P]R + M/P where P, P’, P“ stand for price level of output, stock price level, price of natural capital (e.g. oil price in OPEC country), A’ is overall real wealth and M is stock of money. See World Bank 1994. All other – except K – also World Bank.
Per capita income $y = \frac{Y}{L}$ (in economy with $K$ and $L$ as inputs)

- High $y$ implies
  - High ratio of $A'/y$ so that banks and insurance companies will flourish
  - Demand for differentiated products is high
  - Economic influence is high IF population figure is high also
  - Specific political preferences which reflect $y$
Civilization

- Religion
- Role of Men and Women
- Role of Individual and the State (private vs. Public)
- Role of Presence and Future (no interest in future no interest in savings)
- Leisure (musique, how to spend vacations...)
- Attitude towards foreigners
Individuals, Countries, World

- Individuals pursue personal interests; results in income and wealth; within country: aggregate national output (GDP); net wealth of country 1, 2, ..., n
- GDP, trade and international investment is basis of international influence of countries – also military power (partly related to GDP)
- World dynamics are result of billions of individual actions, of government decisions and of decisions in international organizations.
Links and Conflicts

- *Economic linkages* can become the source of economic and political conflicts. Some links create potential regional, others potential global problems.

- From an economic perspective maintaining competition and regional/global free trade, respectively, are important; **free trade is an international public good** (problem of public good: all can join benefits, even those not willing to co-finance the costs; therefore there is a free-rider problem which might be overcome through creation of an international club (read: GATT or WTO or regional organizations: NAFTA, EU, ASEAN...))

- World economy is **inhomogenous**: Large vs. small countries, different interests, different perceptions. Some countries are resource abundant, others richly endowed with labor or capital.
Different Actors in the World Economy

**Economic Actors**
- Firms, including MNCs – long term planning; international
- Households; some are mobile internationally (as workers or pensioners)
- Governments: providing services, buying goods

**Political Actors**
- Governments: often short-term oriented
- NGOs – including trade unions and business lobbying groups
- International Organizations (IMF, WTO, BIS etc.)
Elements and Forces in World Economic Order

World Economic Order

Elements

- Norms (Traditions ...)
- Rules
- Regional Institutions (e.g., EU, ASEAN, APEC, MERCOSUR, OECD, EBRD, African Development Bank)
- Global Institutions (UN, IMF/WB, WTO, BIS)

Forces

- Civilizations (Religions)
- Industry Bodies (Standard Setting)
- National Governments from Small and Large Countries
- NGOs

Behavior of Actors (& Attitudes)

World Economic System

- Political Order
- Monetary Order
- Trade Order
- Legal Order
- Media Order
- Sports Order

World Financial Markets

- Financial Markets
  - Stock Markets
  - Domestic Bonds Markets
    - Corporate Bonds Markets
    - Government Bonds Markets
  - Foreign Bonds Markets
    - Corporate Bonds Markets
    - Government Bonds Markets
  - Foreign Exchange Market
  - Derivatives
Stability of Financial Markets

- Financial markets create international financial interdependency; risk of instability and spillover effects (see Great Depression, Oct. 19, 1987 etc.)
- Bank of International Settlements (BIS) in charge of setting rules for banks (capital adequacy ratio=8% under Basel I; new rules under Basel II)
- Prudential supervision under Basel II has focus on differentiated risk pricing of banks’ assets (Basel II see special section)
Fig. 3: The Foreign Exchange Market: Impact of a Change in Expected Devaluation Rate

(Nominal Exchange Rate \( e \): Euro/$)

expectations matter!
Fig 4: Economic Interdependency (demand side view):
Country I: \( Y = C_0 + cY + I(r_o) + G + xY^* - jY \);
for II: \( Y^* = C^*_o + c^*Y^* + I^*(r^*_o) + G + jY - xY^* \)

Slope \( dY/dY^* = x/[1-c+j] \);
If \( I = hY - h'Y^* - h''r_o \) (FDI) then \( dY/dY^* = [x-h']/[1-c-h+j] \);
Analysis of Problems on the Basis of Various Approaches?

Analytical Approaches

- **Short-Term Financial Markets**
  - Partial Equilibrium Analysis
  - General Equilibrium Analysis

- **Medium-Term Goods Markets (K=K)**
  - Partial Equilibrium Analysis
  - General Equilibrium Analysis

- **Long Term Growth Model (dK>0)**
  - General Equilibrium Analysis

Disequilibrium Analysis Would Be Alternative Approach: Useful Under Structural Non-Market Clearing
Fig 23: The International Monetary Order: Institutions and Rules (with or without leadership/dominance)

International Monetary Order

Created through
Dominance (UK in Gold Standard 1870-1914)
Multilateral System with International Organisations, since 1945
International Agreement via Conferences 1922-31

Currency System

Currency Regime
- fixed
- Crawling peg
- flexible

Foreign Exchange Reserves (Gold, $, Euro, SDR, ...)

Adjusting Balance of Payment Disequilibrium
- Reducing Absorption via Fiscal or Monetary Policy
- Running down Reserves
- Protectionism and Control of Capital Outflows
World Monetary Order

Reserve Currency Country; Number of International Reserve Currencies (Countries)
How do deal with current account deficits (e.g., devaluation allowed, import protection allowed?)

Global Organizations
IMF/WB, BIS, WTO (Financial Services Trade Rules)

Degree of Capital Mobility
(good if long term, what if short term speculation? ...)

Exchange Rate Regime: Fixed vs Flexible

Convertibility: IMF helps countries with technical expertise and simple membership = entitlement to loans to finance current account deficit (+special draw. Rights)
Bretton Woods System: 1958-73

- US pegged dollar to gold; US is reserve currency
- Western European countries plus Japan (and...) pegged currency to the US $ = stability in EU. Countries hold $ (bonds) as reserves
- Fixed exchange rate means no monetary policy autonomy for Western Europe (no problem as long as US monetary policy pursues low inflation policy, but 1960s US financed Vietnam War through inflation..)
- Devaluation allowed if there is large current account deficit – IMF consulted (2 countries, 1 exchange rate); IMF loans possible
- Logic of purchasing power parity says: \( P = eP^* \) or the long run equilibrium exchange rate is \( e = P/P^* \); if \( P^* \) rises faster than \( P \) then \( e \) should fall = nominal revaluation! (DM!) & $ devalues
Interim of EMS; then Euro

- 1971 Nixon suspends gold convertibility
- 1973 generalized floating (flexible exchange rate); problem for EU
- European snake (bloc floating; unstable membership due to oil price shocks etc.)
- Helmut Schmidt and Valery Giscard d'Estaing suggest to establish 1979 European Monetary Systeme = effectively pegging to DM (or ECU)
IMF, WTO and World Bank

- World Bank – sister of IMF – gives loans to poor countries; mainly project financing; WB has top rating and can get loans cheaper that private companies or governments from poor countries; WTO is junior partner of IMF

- WB also involved in financial institution building: helping countries to establish decent banking etc. system.
Werner Plan failed, but Delors Report became reality

- In 1970 Werner Plan envisaged establishing monetary union by 1980
- The oil price shocks undermined any exchange rate stability in Western Europe
- In the late 1980s Delors Report was commissioned: suggested creation of an economic and monetary union with a common central bank – modelled after Deutsche Bundesbank (politically independent, goal No. 1 is price stability)
Is a monetary union really useful?
Theory of Optimum Currency Area

- Economic criteria according to *theory of optimum currency area* = determine those countries which are candidates for absolutely fixed exchange rates, that is: need not use the exchange rate instrument for stabilization purposes

- Mundell: countries with high labor mobility can have fixed exchange rates

- McKinnon: if share of tradables is high devaluation will not help as workers – with focus on e-impact on P - will call for wage hikes which counters the devaluation

- Kenen: highly diversified exports = random shocks likely to cancel out
Overview about next points

1. Basics of the Maastricht Treaty
2. Expectations, Debates, Preliminary Results
3. Optimum Currency Areas: Traditional Views
4. New Perspectives on Euroland and EU Integration Dynamics
5. Long Term Challenges for EU and Euroland
1991; into force Nov. 1, 1993

12 EU countries adopted the Treaty on the European Union; EU henceforth =
European Community, Common Foreign + Security Policy, Cooperation Justice

- New/reformulated goals
  - Harmonious + balanced development of economic activities
  - **Sustainable, non-inflationary growth**, respecting the environment
  - High level of employment & social protection
  - Raising of the **standard of living & quality of life**
  - Economic & social cohesion + solidarity among Member States

HOW MUCH INSTABILITY or REDUCTION in COHESION we will have in Euro Area/EU27...
Maastricht Treaty = €+ECB+.. 

- Effects on Euroland (OCA debate + other)?
- Effects on EMU-outsiders?
- Effects of € & ECB on institutional adjustment in EU27: The European Council/ECFIN has now a Eurogroup and a head of group, Mr. Juncker; discussion about Stability (SG Pact)
- Effects of € & ECB on US-$/US (ROW); q*
- Effects of existence of Euroland on IMF etc.?
What is the European Union?

Since Treaty of Maastricht: € area / Euroland

Mix of supranational (Com.)
and intergovernmental (EU summit) activities

single market

actor at WTO & G8

- In an economic perspective The Maastricht Treaty has brought about EU deepening in several fields:
  - Principles: **Subsidiarity**; supranational policymakers should not assume responsibilities where national policy has comparative advantage – reinforced in CONSTITUTION...
  - Decision-making EU: **more qualified majority voting**, (e.g. environmental policy); **Europ. Parl.** gets more power
  - Single Market: **Capital flow restrictions prohibited**
  - EMU: **Creation of European Central Bank: ECB/ESCB**, Convergence criteria, price stability as priority goal of ECB; one money in the Euro area, no excessive deficit and debt; cohesion fund established: support countries on way to EMU
3. Expectations, Debates, Preliminary Results

- Economist

<table>
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<tr>
<th>Creation of €+ECB</th>
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<td>Business community</td>
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<td>Policy-makers</td>
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Views on the EMU project

Alternative Views on EMU Project 1998/1999

- Euro and ECB will not work without political union (M. Friedman); recommended Currency Board. M. FELDSTEIN: € cannot work
- Euro can be sustained success since introduction of one currency can generate benefits for euro area (several European economist+Mundell)
- Euro will start, but become a inflationary currency so that Euro area soon will disintegrate

Business community in the tradables sector expected ++benefits

Policymakers in Germany and other Countries

- Germany was giving up Deutsche Bundesbank’s monetary policy autonomy and hence monetary leadership – but there was hope that ECB would be a kind of European Bundesbank and the D-Mark would be followed by E-Mark/€; formal loss of political power, but effective gain in stability.

- France and other countries pushed for joint decision-making and EMU; obtained ECB and monetary co-determination ESCB/ECB - to some extent in context of German unification.

- Italy, Spain...imported stability regime=+welfare
Economic and Monetary Union

- At the earliest on January 1, 1997, at the latest on January 1, 1999 = introduction of common currency: € – 1999 was chosen: **good technical start €+ECB**
- Those countries which fulfill the convergence criteria – taking stock is made by European Council – adopt €; Denmark/UK opt out clause, problem with **Sweden**
- Countries which exceed **3% deficit-GDP** ratio face sanctions: a fine to be paid to EU of up to 0.5% GDP; exception is if GDP falls by 0.75% to 2% within one year can get waiver since it is considered a recession
- **Convergence criteria...**
Convergence criteria & Growth and Stability Pact

- **3% GDP ratio** & requirement to balance the budget deficit is derived from 60% debt-GDP (D/Y) limit and..
  - Domar (1944, AER): if growth rate of output Y is a, budget deficit-GDP ratio constant at d, then
    - **Long term (D/Y) = d/a**;
    - if d=1.5% as structural deficit and growth rate a=2.5%, D/Y = 60%
  - High D/Y is long run incentive for political system to favor higher inflation as unanticipated inflation reduces real debt!
  - The critical D/Y (60%) has not been derived from optimum growth models, hence doubtful; but it might be USEFUL in the political process – AVOIDING bail-out problems, AND ESTABLISHING credibility for ECB and the € which will BRING ABOUT LOW REAL INTEREST RATE in € area;
Benefits of low inflation rate:

2% INFLATION of ECB Rule!!

- € stimulates efficiency gain in single market; low inflation in €area=relative price mechanism works well = efficiency gain= positive effect on per capita y
- Low inflation = low nominal interest rate = higher demand for money; share of money in wealth will rise = +welfare
- Low infl. = average bond maturity is long and long run real interest rate low = downward pressure also for short term real rates - Stock Market Capitalization + =higher inv.
  - The most dynamic/sound firms finance investment short term (Buba)
  - Weak firms finance investment short term (no alternative available)
  - Most firms finance medium...; innovation financing long term
  - Government should finance long term; to some extent government in OECD forces insurance companies to also favor long run investment
EMU=One-off benefits for Italy, Spain, other high interest countries

- **Nominal interest rate convergence** in the run-up to EMU; one-off capital gains, +welfare effect \( m^d(i) \)
- Lower real interest rates = **reduced government expenditures** = **lower tax rates**
- Relative costs of capital = \( i^e \) minus national \( n_j \)
  - Might lead to rather low real interest rate if **Balassa-Samuelson effect** plays a role (Spain, Gr...) & different unemployment rates (Germany, France, Italy vs. AU, NL...)
  - Could shift capital intensive production away from traditional low capital costs countries: GE, NL, AU
The Long Run Impact of the Maastricht Treaty

Monetary Union: Started with 11 in 1999, 2001 + Greece, 2007+ Slovenia; rather successful in terms of financial market development and low inflation rate for 13 countries

The € as an international reserve currency: ++

Pol. Union: needed for sustainable €?
Constitution: F/NL..

Economic Union: EU single market +€ = benefits
EMU and political union

- Political Union combined with EMU is a more sustainable institutional set-up at first glance, but might undermine the stability-orientation and thus reputation building of ECB; **Euroland has no integrated public, no Euroland parties, unclear mechanism for achieving consensus**

- Political Union requires common basic political consensus: EU27 constitution not feasible; but after two negative referenda on constitution ?– **Euroland constitution as potential alternative**; might be envisaged by politicians only after 2010 as an option
Is the ECB/Eurozone a success story?

1) potential success through creation of a common central bank
2) ECB has had a convincing start – keeping inflation rate close to 2%
3) but unclear policy approach, and problems with focus on monetary aggregate M3: goal of +4.5% growth has turned out to be rather loose target; M3-growth effectively higher... Leads to discussion about instability in demand for money in Eurozone (ECB confusing)?
UK, US, EU13

Unemployment Rates

Source: Eurostat

Growth Dynamics of UK, US, EU13

Real GDP Growth

Too early to draw conclusion

Source: Ameco Database

EU 13  UK  US
The Euro Area and other EU Countries

- Creation of the Euro AND the ECB on January 1, 1999, 11 countries started, not UK, Denm., Sweden!!, Greece
  - Convergence criteria: political independence of central banks, 2 year exchange rate stability (no devaluation), 60% debt-GDP ratio; outside recession periods 3% deficit-GDP ratio as maximum; entry requirement: interest rate no higher than 2 percentage points above three countries with lowest inflation rate, inflation rate not more than 1,5 percentage points above the three countries with lowest inflation rate: 3% criterion as PROBLEM; Key problems Portugal, Germany & France, Italy, Greece (member country 12)
  - First eastern enlargement in 2007; Slovenia
  - Optimum currency area issues rather neglected
A few figures about the importance of Eurozone

<table>
<thead>
<tr>
<th>Stock Market Capitalization</th>
<th>United States</th>
<th>Euro area¹</th>
<th>Japan</th>
<th>United Kingdom</th>
<th>China²</th>
<th>Canada</th>
<th>Mexico</th>
<th>Korea</th>
<th>India</th>
<th>Brazil</th>
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<tr>
<td>1971-75</td>
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<td>21.2</td>
<td>8.5</td>
<td>4.3</td>
<td>3.0</td>
<td>2.1</td>
<td>1.7</td>
<td>0.6</td>
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<td>21.2</td>
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<td>1.8</td>
<td>1.6</td>
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<td>2.7</td>
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<td>15.6</td>
<td>21.2</td>
<td>7.9</td>
<td>7.9</td>
<td>1.2</td>
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<td>7.5</td>
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<td>11.6</td>
<td>4.7</td>
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<td>0.8</td>
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<td>4.4</td>
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</tbody>
</table>


¹ Excluding intra-euro area trade
² Data in 1971-75 column are for 1976-80
3. Optimum Currency Area

Issues: Traditional Views

Traditional Optimum Currency Area (when countries should have fixed exchange rates)

- Labor Mobility (MUNDELL)
- Degree of Openness (McKINNON)
- Degree of Diversification (KENEN)

BASIC IDEA: exchange rate instrument for external balance/trade!!

Approaches look at currency union topic from the perspective of stabilization policy; - can we give up the exchange rate as a tool of stabilization (domestic & external equilibrium)
Traditional Optimum Currency Area

Stabilization Issues (MUNDELL, McKINNON, KENEN)

What is impact on global inflation rate (e.g. WELFENS, 1991, 3rd ed. 96)

Which effect currency union has on economic growth
Standard OCA versus New OCA

OCA ex ante criteria: pros /cons of creating an OCA

OCA ex post criteria; currency union will affect e.g. degree of openness, specialization...

Empirical analysis
Shocking Aspects

- BAYOUMI/EICHENGREEN and others looked at the correlation of shocks across EU countries in order to determine which countries should be in EMU.

- HORVATH (2003) looks at Exchange Rate Variability and Exchange Rate Pressure (Central Bank intervention) Euro countries – and in eastern European accession countries; tries to assess which ACs are fit for the Eurozone; empirical analysis not always give uniform conclusions (see BOREIKO, 2003);

- Horvath: variability of exchange rate variability
  - Negative function of trade links
  - Positive function of dissimilarity of exports (sector specific shocks)
  - Negative function of financial development (M2/Y) (??)
  - We may add: $q^*$, $\sigma$ indeed a variable which affects trade, FDI and portfolio cap. flows
Nominal and real exchange rates

- Nominal exchange rate is dead as adjustment mechanism within Euroland
  - Standard exchange rate (Von Hagen/Neumann, 1994) well alive; $P/P^*$ (with $e=1$) within €zone
  - Real exchange rate also in the sense of $P^N/P^T$ is active
- TOPIC: should one focus only on stabilization issues – cyclical aspects – or also an growth issues; in a Schumpeterian perspective they are linked...
4. New Perspectives on Euroland and EU Integration Dynamics

Creation of single financial Euro market: Commission programme (42 new Commission measures) which lets expect welfare gains – gaps...

- How much synchronization of business cycles across Euroland countries (uniform monetary policy, growing intra-Euroland trade(?), synchronization of expected inflation dynamics

- What is the effective real exchange rate variability: weighted sum of internal and external variability

- Growth perspectives: Standard model implies $y = \frac{s}{(a+n+\delta)^{1/\beta}} e^{\alpha t}$ where $a$ is progress rate...; will EMU affect savings rate $s$ (level of growth path) or $a$?
Consider Growth Decomposition (JUNGMITTAG, 2006; 2006a)

Knowledge diffusion is based on trade intensity

Technological specialization defined as high technology intensity

Decomposition of growth shows high cross-country differences in potential exposure to adverse shocks: technology, labor markets, capital markets, trade


**Fig. 1.** Decomposition of Average Growth Rates of GDP in Selected EU Countries, 1969-1998
A few thoughts on currency union and growth of per capita income y

- $y^{**} = \phi y + (1-\phi)y^*$; K capital, L labor, A knowledge
- Basic growth model with Cobb-Douglas function $Y = K^{\beta}(AL)^{1-\beta}$ in both countries (I; in II with *); savings I: $S = s[Y(1-\tau) + \mu m - \pi m] + s'[M/P + K]/Y$, in country II: $S^* = s^*Y^*(1-\tau) + s'^*[...]/Y^*$; in monetary economy we have (WELFENS, 2007) function $Y = (M/P)^{\beta'}K^{\beta}(AL)^{1-\beta-\beta'}$
- We use savings function and $S = I = dK/dt + \delta K$; profit maximization and money market equilibrium $m/(AL) = y'/[\sigma r]$
- Two opposing effects if CU reduces average inflation compared to pre-CU status; r will fall (network effect of integrated financial market and hence m\textsuperscript{d} up): S could fall while productivity is raised through production function; what is the net effect?
4. Relevance of ECB & Euroland for EU Integration Dynamics

- Low inflation
- Uneven distribution of benefits: not much for Germany, Netherlands + Austria; only indirect through rise of Y-€partner-countries
- Some problems with Balassa-Samuelson effects which imply different real interest rates
- New initiative for more employment/growth: Lissabon Agenda – raises growth; so low so far
Monetary Union: Partial Welfare Analysis

- Monetary union means absolutely fixed exchange rate OR common currency (plus common central bank – see Euro zone)
- Effects of monetary union include reduction of transaction costs for international trade within the monetary union zone; potentially there also is real appreciation or depreciation vis-à-vis rest of the world
- Monetary union affects labor markets – unclear effects
- Convergence of nominal interest rates (see also convergence criteria for € zone membership)
Fig 25: 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

Real demand for money will rise due to fall of $i$; demand for $K$ will rise (risk averse portfolio investors = $dI > 0$). $K$ up, so $Y(K,L)$ Medium term outward shift of $m^d$....
Growth Differences Across EU Countries

Growth differentials across Euro area countries: According to BENALAL et al. (ECB, 2006, Occassional Paper No. 45) dispersion of real GDP growth rates across Euro area countries shows not upward or downward trend during the period 1970-2004 as a whole. Degree of synchronisation of business cycles has increased since the 1990s; declining trend in the dispersion of value-added growth in manufacturing which might reflect closer intra-industry links. Looking at all pairwise correlation coefficients among the euro area countries Belgium and France have highest degree of business cycle correlation with the rest of the Euro area countries; Greece, Ireland and Finland have the lowest. Germany+Italy low trend growth, partly due to demographical factors in the decade after 1995.

Analytical Split

- EU15 vs. EU10 – as regards the latter capital account liberalization might matter (TORNELL et al. 2004 find that – despite increasing financial fragility – capital account liberalization leads to higher growth in countries with constraints in domestic credit markets; inflows and financial deepening help to overcome credit constraint in the non-tradables sector (export firms mostly have access to international capital markets)
- € countries: Financial market integration matters?! Benefits via trade etc. (EC05)
Structural Change and Growth

In the literature there is empirical evidence that structural change raises economic growth

- FAGERBERG (2000), Technological Progress, Structural Change and Productivity Growth: A Comparative Study; Structural change on average has not raised growth, but countries that have increased their presence in the technologically most progressive industry of this period – electronics – have recorded higher productivity growth than other countries: Which role of financial markets/banks for structural change?

- AMABLE (2000), „International Specialisation and Growth“; inter-industry specialisation and comparative advantage in electronics have positive impact on productivity growth (education is complementary)

- MELICIANI (2002), The Impact of Technological Specialization on National Performance in a Balance-of-Payments-Constrained Growth Model: countries which are specialized in fast-growing technologies have above average growth through +effects on international competitiveness

How are financial markets (nat./intern.) affecting structural change & growth?
Innovation, Growth and Innovation Financing

Innovations (TFP growth) important

Financing innovations is difficult:

- Information asymmetries
- Problem of finding adequate collateral (*immaterial assets*);
- According to PETERS/RAMMER/BINZ (2006, p.100) in GERMANY only 1/3 of innovation expenditures is on capital which easily serves as collateral for loans – but 2/3 is expenditures on personnel and buying innovative services (soft investment is hardly useful as collateral). Note: in Germany venture capital on average finances only 1% of innovation expenditures; exception is biotechnology where share is about 20%; SMEs primarily use internal funds (59% only such funds). Big firms use mix of internal and external funds/or only ex. funds (50%)
Links Between Banking and Structural Change

- Activities/firms from different sectors rely to different degrees on equity capital and loans (banks).
  - If there is a dynamic competitive stock market some sectors stand to benefit particularly – those which are capital intensive and those which are technology-intensive (innovation-driven); see WELFENS/WOLF (2002)
  - If there is a competitive banking sector the firms and sectors which require high ratio of external capital will prosper: See the empirical analysis of CLAESSENS/LAEVEN, 2005 (Journal of the European Economic Association)
  - ICT is a major sector in EU15 – should prosper in countries with strong stock markets; traditional industry in ACs...
Basic Findings for Hungary

France: RCA Dynamics (note: scale adapted to range -1,1; 0 is neutral)
5. Long run perspectives for EU and Euroland

- EU under pressure to prove that it can deliver
  - Lisbon Agenda = ½ success
  - Shaping global rules – see World ICT Summit in Tunis 2006/failure of EU to negotiate efficiently
  - Create a balance of benefits which brings visible net benefit for every country; creation of network effects and of international public good important – EU/Euroland should improve communication with public
Maastricht Treaty a Blessing for Whom?

- For economists who can compare their models/predictions (many economists, including my view/letter in the FT in favor of €; as opposed to some 140 sceptical colleagues)...
- Long run: Monetary growth model= +insights into long run dynamics (Welfens, 2007, Innovations in Macroeconomics)
- For world economy which has an institutional innovation for regional integration clubs: combine single market with convergence rules in a setting with single central bank & single currency
- For Euroland where countries benefit; for EU: it has a fall-back position if EU27 constitution should fail
Three layers of the EU

- **€area**
  - **EU27**: four freedoms + competition policy + trade policy
  - **European Economic Area**: no common agricultural policy, no structural funds, no labor mobility

Political initiative at this layer once unemployment rate reduced and as long as EU27 difficult
Endogenous consensus building in EU27?

If there is neoclassical-type convergence of $y$ across countries this should facilitate building political consensus since political preferences $= f(z/z^*,...)$

- Trade reinforces convergence of factor prices
- EU funds contribute to cohesion across countries, but intra-EU regional differences increase and growth might be impaired (recent emp. findings)
- FDI flows could raise per capita GNP ($z$) figures while GDPs convergence
- EU 27 club is heterogeneous, achieving consensus is difficult with so many members AND no constitution
Strategic Issue for Ministers of Finance/Eurogroup AND ECB: Hardening or softening the Euro?

- Real appreciation
  - undermines international price competitiveness and net exports/jobs
  - reduces the real interest rate below foreign real interest rate (interest parity)

- Long term real depreciation of the $ will raise Euroland's foreign direct investment in $ area (FROOT/STEIN, QJE, 1991) who emphasize imperfect capital market model – more equity capital for firms of the country with an appreciating currency. Real rate $q^* = \frac{eP^*}{P} = :1/q$ (e nom. exch. rate; ...)

Should we like to get a hard € = long term real appreciation?

- Modest real appreciation pace will stimulate product innovations and thus stimulate creation of ownership specific advantages (DUNNING; OLI approach) which are basis for successful outward FDI

- Euroland’s GNP > GDP if cumulated net outward FDI position is positive. Illustrative case: GNP = Y(1 - b*) + q*β*Y*; b is Euroland’s share in capital abroad (K*); Y* = K*β(AL)1-β; A knowledge, L labor; b* share of foreigners in K

- A problem in Europe is Switzerland: many EU billionaires finally move to Switzerland which implies an unfavorable change of EU net foreign asset position – model (HANSEN/RÖGER, 1999) implies real devaluation of €; unfair tax competition from Switzerland, since individuals can obtain ind. rebates which is not in line with principles of equality – before the law. Necessary is political pressure on Switzerland which is free rider of EU (they can have, of course, low uniform rates to which EU countries could react)…
Euroland in the world economy: global organization

Euroland should speak with one voice in the international organizations, would reduce apparent weight of Euroland countries (e.g. compared to present weighing scheme at IMF), but there would be single speaker and thus a serious partner in Europe for policy dialogue about trade imbalances, risk of strong exchange rate changes etc.

- Endogenous incentives for such a reform is weak as national policymakers like to play playing a role
- With Eurozone enlargement after 2010 the problem will be even more complex (Eurozone more heterogenous)
- Attractive 1 voice Euroland model might convince UK etc. to join later; also set role model for ASEAN etc.
Relative Price Level Position

Inflation Rate (Index 2005 = 100)

Source: Ameco Database

Dynamics of Structural Change and Trade in the Enlarged EU

**Modified RCA:** Relative Export Share, revealing comparative advantage to the EU15

\[
RCA_{ik}^t = \left( \frac{\sum_k x_{ik}}{\sum_k x_{jk}} \right) \left( \frac{x_{jk}}{\sum_k x_{jk}} \right)
\]

- \( i = \) Accession Country
- \( j = \) EU15
- \( k = \) Number of commodities
- \( x = \) Export

\( RCA_i > 1 \Rightarrow \) Accession country has comparative advantage

\( RCA_i < 1 \Rightarrow \) Accession country has comparative disadvantage
Lilien Index as a Measure of Structural Change (other indices...).

1. LILIEN Index ($LI$) (see LILIEN, 1982a, b):

$$LI_{1,2} = \sqrt{\sum_{i=1}^{n} x_{i2} \left( \ln \frac{x_{i2}}{x_{i1}} \right)^2}, \quad x_{i1} > 0, \quad x_{i2} > 0. \quad (8)$$

2. The modified LILIEN Index ($MLI$) (see STAMER, 1999, p. 42-44):

$$MLI_{1,2} = \sqrt{\sum_{i=1}^{n} x_{i1} x_{i2} \left( \ln \frac{x_{i2}}{x_{i1}} \right)^2}, \quad x_{i1} > 0, \quad x_{i2} > 0. \quad (9)$$

Some important features of these indicators of structural change are summarized in Table 1. Note that the first three properties are necessary (and sufficient) conditions for an indicator to be a metric space.
Table 1: Various Indicators Measuring Structural Change based on Production Data at the NACE 2-digit level (LI=Lilien Index; MLI= modified LI)

<table>
<thead>
<tr>
<th></th>
<th>NaV</th>
<th>EuN</th>
<th>SRD</th>
<th>IG</th>
<th>GRP</th>
<th>LI</th>
<th>MLI</th>
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<tr>
<td>Germany</td>
<td>93-02</td>
<td>0.1727</td>
<td>0.0760</td>
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<td>0.0434</td>
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<td>20.7673</td>
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<td>0.0756</td>
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<tr>
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<td>0.0409</td>
<td>4.5519</td>
<td>0.0246</td>
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<td>2.6044</td>
<td>0.0097</td>
<td>0.0364</td>
<td>0.0497</td>
</tr>
</tbody>
</table>

Structural Change in ACs relatively high, in reunited Germany low

Source: OECD STAN Database, own calculations
Trade, Output, Tariff

- Trade brings specialization gains through exports and imports; this could additionally include benefits from economies of scale (if such are present in home country or foreign country). Additional gains from imports through import of intermediate products. Trade disruptions – see e.g. period 1932-35 - cause decline of output, employment, economic welfare. Protectionism in the interwar period with high/rising import tariffs and competitive devaluations
Import Tariff in a Small Open Economy (world market price \( p^* \) is given): redistribution effect \( p_1 \text{CH} p_0 \) is neutral for the economy UNLESS past FDI inflows make protection LESS attractive.
Considering Small and Large Countries

- For a small open economy, world market price is given; imposing a tariff will not change $p^*$: the optimum tariff is zero.

- For a large economy, the situation is different: If an import tariff is imposed, import quantity falls and the ensuing excess supply in the rest of the world reduces the world market price $p^*$; terms of trade improve.
Optimum Tariff (demand DD; no domestic production): Import tariff DF: Welfare loss is $DEF'$, the welfare gain is $C'F'CF$ (for rest of the world loss is $F'EF$)

Optimum Tariff = $1/\text{supply elasticity of world market}$
Fig 6: Portfolio Approach to Exchange Rate Determination; 3 Assets: Money M, Bonds B, Foreign Bonds F* (3 equilibrium conditions: \( M/P = n(i,i^*)A' \) [see MM]; \( B/P = b(i,i^*)A' \); \( eF*/P = f(i,i^*)A' \);

Real wealth \( A' = M/P + B/P + eF*/P \); hence \( n + b + f = 1 \); F* in foreign currency.

Rise in F* will occur if there is current account surplus. Expansionary monetary policy (MM₁)
Effects of Expansionary Monetary Policy (short term: i falls, e rises)

Country I:
- Short term: A' will rise due to rise of e
- Medium term: I(r) will rise, C(Y,A') will increase, Y is raised, imports go up
- Long term: P will increase due to higher e and higher capacity utilization; long term depreciation according to purchasing power parity (P=eP*), wealth and output effects. Unclear world output effect

Country II:
- Short term: appreciation, A'* falls
- Medium term: exports raised, unclear effect on Y* as C(Y*,A'*') could fall
- Long term: P* could fall which would go along with long term appreciation according to purchasing power parity; positive wealth effect, C* up; Y*?
Fig 7: Open Interest Parity (domestic and foreign bonds are perfect substitutes; so $i = i^* + \frac{e^E - e}{e}$ is interest rate parity condition; $e^E$ is the expected exchange rate at end of period.

simple short term determination of equilibrium exchange rate and the nominal interest rate

Money Market Equilibrium Line

Interest Parity Line
Purchasing Power Parity (PPP; P [P*] is domestic [foreign] price level)

- PPP is a long term approach (dating back to Gustav Cassel)
- \( P = eP^* \) (simplified approach; law of one price)
- \( P^T = eP^T* \) (\( P^T \) is price of homogeneous tradables)
- \( P = (P^N)^\alpha (P^T)^{(1-\alpha)} = [P^N/P^T]^\alpha eP^T* \)
  - Term in squared brackets is relative price and assumed – according to Balassa-Samuelson – to be a positive function of per capita income.

- \( P^* = (P^T*)^\alpha (P^N*)^{(1-\alpha)} \)
- The situation is different if all or some of the tradables are heterogenous – Schumpeterian – goods.
- Note (see WELFENS, 2003) the case that in country I stock of money \( M \) – given output \( Y \) and velocity \( V \) in the short run – will determine \( P \), relative price is determined by \( y \) and the associated demand structure, respectively. As short term exchange rate is determined by financial markets expansionary monetary policy could bring about depreciation and rise of net exports, hence rise of \( y \) and relative price increase of nontradables so that there will be a medium term appreciation of the currency if world market price \( P^T* \) is given.
Problem of Overshooting in Exchange Rate Markets…

- Exchange rate is assumed to follow purchasing power parity in the long run (country with relatively high inflation will face long term depreciation).

- As P is a sticky variable while interest rates and exchange rate react immediately, there can be overshooting (or magnification effects) in the exchange rate market: e deviates from the long run equilibrium value – see the Dornbusch model.
Systemic Transformation in Eastern Europe/Opening up

- Collapse of Socialist Command Economy = Centrally Planned Economy for various reasons (Welfens, 1996)
  - After 1960s: no longer elastic labor supply from countryside available; firms competing for labor and drive up wages, causes rising wage bill of firms; expansion of money supply/credits which creates excess liquidity – see black market exchange rate (depreciation of currency/ = gains for people with $; gov. created Pewex, Intershop: sell goods for $)
  - Declining working morale of workers = absenteeism as work in shadow economy expands = decline of official output (--)

Systemic Transformation: History=4 Ideas About Socialism in the Soviet Union

Avoiding Cyclical Instabilities (Great Depression etc.)

Avoiding Problems of Deflation and Inflation

Achieving Prosperity (+Standard of Living)

Achieving High Equality and Ending Alienation through State-Ownership of Firms

Central planning commission defines quantitative production goals & allocates factor inputs to firms; state foreign trading monopoly
System with Weaknesses

- Weak innovation performance – except in the military
- Innovation not really rewarded = falling back in world markets; in 1970s Asian NICs gained market shares – Asian product innovations forced CMEA/Soviet exporters to sell at declining prices = reduced imports from the West = **declining standard of living** in 80s
Inequality Rising, Monetary Policy Endogenous

Market economy: Market price is signal how high costs may be at the maximum

- Rise of Socialist Shadow Economy = Inequality Grows
- Monetary plan translates into inflation engine; strong in shadow economy
- Worker motivation weakens, investment projects often inefficient = poverty

Government sells goods at state-administered prices (cost=price)

No competition = poor quality, weak innovation record; no capital market = nonsense investm.

For ideological reasons services totally neglected/wait phone 10Y
System collapsed, in the end high inflation; inefficiencies, stagnation!

- Market economy on the basis of privatized firms + new firms in a setting with competition; privatization difficult (inv. funds!?)
- Opening up= membership in IMF, WTO, OECD (story about Slovak R./Kosovo War)
- more trade with the West; relative price shock
- poverty for many, prosperity for many
- Democracy with new inexperienced players
GDR versus other transition countries

- Germany with respect for former GDR currency unification with 1:1 exchange rate (inoff. was 1:7; official inofficial 1:4); exchange rate shock; EU membership of enlarged Germany;
- Privatization+Rule of Law
- 100 bill € transfers p.a.(15Y)=5% of West German GDP
- Productivity gap (East G. =1/3 of West-Ger. in 1991; 50% in 1950)
- Some external support of IMF (eg Poland)
- Asymmetric trade liberalization (EU) plus Phare program
- Creating new institutions, new economic policy
- FDI inflows (Hungary! sold firms to for. inv.; Czech R., Poland, Slov.R
Eastern European Dynamics

Foreign Direct Investment in Selected Countries (in % of GDP) (M / Q / Y)

Source: World Development Indicators 2004
Germany is triple winner of EU eastern enlargement

- New markets which grow at 3-5%: with growing imports of machinery & cars (Germ. No. 1 export items)
- New opportunities for German firms to relocate production abroad
- Strong import competition from CECs = low inflation (D)
- Prospective immigration = more young people
- Problems with lack of integration on the side of education system; high unemployment rate; problem is New Left, triggers New Right
- West-East divide in GER
EU Eastern Enlargement

- EU more heterogeneous and with many more countries
  - EU faces problems in acting swiftly; and on global level
  - EU could face new internal conflicts over redistribution issues (cohesion countries, eastern Europe, poor regions in West of the EU)
  - EU loses sense of identity

- High emigration potential in CEECs
  - as long as high intra-EU income gap
  - as long as high unemployment in ACs
  - in countries with low (expected) GDP
  - in countries with instabilities (HU?)

Unclear prospects: Turkish EU enlargement/poor Verheugen Rep.
Fig 14: FDI-GDP Ratios in Selected OECD Countries
Fig 10: Effects of Foreign Direct Investment (MPC in country and foreign country; K and K* (* foreign) are given

Initially: K₀ in home country; open up= FDI inflow K₁-K₀. World income gain is BED of which BCE goes to host country of FDI; in host country workers gain r₀BCr₁ (redistribution) with r₁=\(Y_K=Y_K^*\)

Source c.: investors will gain
Fig 11: International Migration (MPL is marginal product labor, stock of labor $L$ and $L^*$ is assumed to be given)
EU Growth Perspectives/Lisbon Agenda

Economic growth in the era of globalization – we have to consider the role of foreign direct investment + other influences on economic expansion. EU integration dynamics = enlargement, deepening (e.g. single market 1992, € for 11/15) and expansion of real income and output, respectively.

A few macroeconomic models consider the role of foreign direct investment and technology (e.g. WELFENS, 2007); at least three aspects are crucial:

- FDI= international capital flows, affects the balance of payments equilibrium
- FDI inflow= +investment & contributes to technology transfer
- FDI implies that firms in source countries receive profits from abroad so that one must distinguish between gross domestic product Y and national income Z=Y+profits from abroad (pure source country); vs. Z*=Y*- profit MNCsubs

2. Basic Reflections on Economic Growth

\[ Y = Y(K, L, H, A, N, T, \Omega, M/P, \Phi) \]

where input variables \( K, L, H, A, N, T, \Omega, M/P \)

- \( K \) capital,
- \( L \) unskilled labor, \( H \) skilled labor,
- \( A \) technology, \( N \) infrastructure capital,
- \( T \) the use of telecommunications,
- \( \Omega \) technological specialization
- \( M/P \) real money balances (\( M \) is the stock of money, \( P \) the price level)
- \( \Phi \) is the institutional set-up (politico-economic order)
1) Accumulation of Input Factors

International Influences via Trade, FDI, Technology Transfer, Migration (but also indirectly, e.g., volatility of financial markets) or Integration Club Dynamics

Economic System/Order

Economic Policy (Medium Term)
Integration means (see EU)

+Pol. Power

Sharing Institution for Economic Policy (€zone more than EU)

More intra-regional trade and more intra-regional investment
2. Basic Reflections on Economic Growth

Fig. Output Growth in the Eurozone (EU13), the UK and the US

European Commission: EU Lisbon Agenda 2010: +growth, digital networks

Economic Dynamics (Y is gross domestic product, Z is gross national product)

Rise of per capita income leads to structural change (e.g. via demand structure)

Rise of Y and Z

Innovation & structural change: \(dY > 0, dZ > 0\)
Further findings from literature: integration & growth

- COE/HELPMAN (1995) have shown that foreign research and development (R&D of trading partners) positively affects total factor productivity. BALDWIN/SEGHEZZA (1996) have presented similar evidence and shown that this trade-related spillover effect is particularly strong for EU countries.

- HENREKSON/TORSTENSSON/TORSTENSSON (1997) also present for EU countries and EFTA countries empirical evidence that the growth rate of GDP is positively influenced by regional integration. VANHOUDT (1999) puts the focus on EU countries and does not find an EU-related growth effect. JOHANSSON (2001) finds in his study for four large EU countries a positive link between imports and growth – with intra-EU-imports showing a stronger effect than extra-EU imports. MIXED evidence integration & output expansion
2. Basic Reflections on Economic Growth

To the extent that increasing trade in intermediate products within global multinational production networks contributes to higher global output it is important to consider the growing role of offshoring (production in foreign subsidiaries) and international outsourcing (KLODT, 2007; KLEINERT, 2004). There might be positive static and dynamic scale effects as well as network effects related to the size of integration club.

Kohler: EUeastern enlargement brings one-off GDP level effect of about 1%
2. Basic Reflections on Economic Growth

As regards relatively poor countries naturally there are rather favorable opportunities for catching-up of poor countries provided that a number of requirements are fulfilled (standard expectation, eg. for eastern EU countries)

- **economic liberalization** is consistently phased in and financial market crises be avoided (for the contrary see the Asian crisis in 1997/98);
- policymakers adopt **growth-enhancing economic policy** which includes trade liberalization and high foreign direct investment inflows
- **macroeconomic stability** (low deficit-GDP; low inflation)
- **infrastructure modernization** and environmental policies
- **political stability** and modernization of the political system
- institutional change (?) stimulates growth: **incentives for diffusion of knowledge**
### Proxy for the Level of Technology (selected countries)

Table 1: Patents Granted of USA, Germany, France, UK, Italy, Spain, Sweden, China, Russia, Poland at the US Patent Office (absolute and per capita)

<table>
<thead>
<tr>
<th>Country</th>
<th>2003-2005 Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>82267</td>
</tr>
<tr>
<td>Germany</td>
<td>10411</td>
</tr>
<tr>
<td>France</td>
<td>3371</td>
</tr>
<tr>
<td>Italy</td>
<td>1534</td>
</tr>
<tr>
<td>Spain</td>
<td>282</td>
</tr>
<tr>
<td>UK</td>
<td>3410</td>
</tr>
<tr>
<td>Sweden</td>
<td>1311</td>
</tr>
<tr>
<td>China</td>
<td>368</td>
</tr>
<tr>
<td>Russia</td>
<td>173</td>
</tr>
</tbody>
</table>

Source: USPTO

3.3. Role of Information and Communication Technology

Ranking of average innovation performance by sector

- DL Electrical and optical equipment: 0.63
- ICT Information and communication technologies: 0.61
- K72 Computer and related activities: 0.59
- DG24 Chemicals and chemical products: 0.58
- DM34 Motor vehicles, trailers and semi-trailers: 0.57
- K Real estate, renting and business activities: 0.56
- DL31 Electrical machinery and apparatus n.e.c.: 0.55
- DM Transport equipment: 0.55
- DK29 Machinery and equipment n.e.c.: 0.54
- DH25 Rubber and plastic products: 0.48
- D Manufacturing: 0.47
- Total industry (excluding construction): 0.45
- DJ27 Basic metals: 0.45
- DJ26 Other non metallic mineral products: 0.43
- DE Paper and paper products; publishing and printing: 0.40
- DJ28 Fabricated metal products, exc. machinery and eq.: 0.40
- Business services: 0.39
- DA Food products; beverages and tobacco: 0.39
- J Financial intermediation: 0.38
- DD20 Wood and products of wood, exc. furniture: 0.37
- E Electricity, gas and water supply: 0.36
- G51 Wholesale trade and commission trade: 0.35
- DB Textiles and textile products: 0.35
- C Mining and quarrying: 0.34
- I Transport, storage and communication: 0.29
- I Transport, storage and communication: 0.29
- I Transport, storage and communication: 0.29
- I Transport, storage and communication: 0.29
3.4. Cyclical and Structural Aspects of Euro-Area Dynamics

Mobile plus Fixed-Line Density in the EU 27 and the US

Source: ITU Database

* 2004 instead of 2005

True net savings ratio = EU ok (add education, subtract depreciation of capital + energy depletion +...)

<table>
<thead>
<tr>
<th></th>
<th>Gross Savings (1)</th>
<th>Exp. on Education (2)</th>
<th>Use of Capital (3a)</th>
<th>Energy Depletion (3d)</th>
<th>Emissions (4)</th>
<th>Net (5) Savings 1-3a</th>
<th>True (6) Savings 1+2-3-4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fixed Capital (a)</td>
<td>Mineral Resources (b)</td>
<td>Forests (c)</td>
<td>Particulates</td>
<td></td>
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<tr>
<td>Canada</td>
<td>24,6</td>
<td>4,9</td>
<td>13,1</td>
<td>0,2</td>
<td>0,0</td>
<td>4,9</td>
<td>0,2</td>
</tr>
<tr>
<td>USA</td>
<td>17,4</td>
<td>4,2</td>
<td>17,4</td>
<td>0,0</td>
<td>0,0</td>
<td>1,2</td>
<td>0,3</td>
</tr>
<tr>
<td>Mexico</td>
<td>21,0</td>
<td>5,0</td>
<td>10,6</td>
<td>0,1</td>
<td>0,0</td>
<td>5,9</td>
<td>0,5</td>
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<tr>
<td>Russia</td>
<td>37,1</td>
<td>3,5</td>
<td>10,0</td>
<td>0,4</td>
<td>0,0</td>
<td>39,6</td>
<td>0,6</td>
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<tr>
<td>France</td>
<td>22,0</td>
<td>5,1</td>
<td>12,6</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
<td>0,0</td>
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<tr>
<td>Germany</td>
<td>20,3</td>
<td>4,3</td>
<td>14,9</td>
<td>0,0</td>
<td>0,0</td>
<td>0,1</td>
<td>0,1</td>
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<tr>
<td>UK</td>
<td>15,0</td>
<td>5,3</td>
<td>11,5</td>
<td>0,0</td>
<td>0,0</td>
<td>1,1</td>
<td>0,1</td>
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<tr>
<td>Italy</td>
<td>20,1</td>
<td>4,4</td>
<td>13,7</td>
<td>0,0</td>
<td>0,0</td>
<td>0,1</td>
<td>0,2</td>
</tr>
<tr>
<td>Kuwait</td>
<td>40,0</td>
<td>5,0</td>
<td>6,5</td>
<td>0,0</td>
<td>0,0</td>
<td>48,7</td>
<td>2,0</td>
</tr>
<tr>
<td>Indonesia</td>
<td>21,0</td>
<td>1,4</td>
<td>5,6</td>
<td>1,4</td>
<td>0,0</td>
<td>12,5</td>
<td>0,5</td>
</tr>
<tr>
<td>China</td>
<td>38,8</td>
<td>2,0</td>
<td>8,9</td>
<td>0,3</td>
<td>0,1</td>
<td>3,6</td>
<td>1,0</td>
</tr>
</tbody>
</table>

4.1. Basic Dimensions of Policies for the Lisbon Agenda

Structural indicators earmarked for the Growth and Jobs Strategy, euro area (change in percentage points from 2000 to 2005)

GDP per capita in PPS (*)
Productivity per person employed (*)
Employment rate - Total
Employment rate - Women
Employment rate - Men
Employment rate of older workers- Total
Empl. rate of older workers- Women
Empl. rate of older workers- Men
GDP expenditure on R&D(**)
Youth education attainment level-Total
Youth education attainment level-Women
Youth education attainment level-Men
Comparative price levels (*)
Business investment
At-risk-of poverty after soc. transfers(*)
Disp. of regional unemployment rates
Long-Term unemployment rates
Total greenhouse gas emissions(**)
Energy intensity(**)
Volume of freight transport/GDP

Note: data and methodology could be accessed on the Eurostat website (http://europa.eu.int/comm/eurostat/structuralindicators)
(*) change in relation to the EU25 average; (**) 2000-2004 change
4.1. Basic Dimensions of Policies for the Lisbon Agenda

The EUROPEAN COMMISSION (2007, p.23) notes:
“Euro-area Member states have addressed many reform areas that are important to stimulate growth and jobs. This is shown in the Annual Progress Report of December 2006 in which the Commission assesses the National Reform Programmes and Implementation Reports of the Member States.

Promising reforms have been undertaken, or have been planned, to increase labour participation rates, boost R&D and innovation, develop human capital and create a more attractive business environment, notably through policies improving the quality of regulation. There have also been important steps to reinforce fiscal sustainability...
4.4. Selected Innovation Traits and Structural Change

The EUROPEAN COMMISSION (2007, p. 42-43) notes with respect to China, India and Russia:

“Trade and investment flows between China and the euro area have been rising. The euro area is a very important export destination for China, accounting for 19.4% of its total exports in 2005, equalling 9.7% of overall euro area imports in that year ...

Regarding, Foreign Direct Investment (FDI), euro-area flows to China have been rising both in absolute value and as a percentage of total euro-area outward FDI .... The euro area, however, remains a less important direct investment partner for China than the United States or Japan, which together accounted for 18.1% of China's total FDI inflows in 2005”
Issues for EU and China

- Common challenges:
  - contain anti-rational behavior in radical islamistic societies
  - building commercial and intellectual bridges
  - global warming – as growth in Asia remains high: cooperation in sustainable growth; cooperation in (environmental/energy-saving) R&D useful
  - Hot financial markets as part of globalization – unclear to which extent China as a new trading and GDP giant has a global perspective and indeed considers effects of its policy + repercussions (remember US in 1900-1935)
  - EU-ASEAN relations will expand= integration is important
### Table 3.1: Major currencies' shares in gross issuance of international securities

<table>
<thead>
<tr>
<th></th>
<th>Average 2004Q3-2005Q2</th>
<th>2005Q3</th>
<th>2005Q4</th>
<th>2006Q1</th>
<th>2006Q2</th>
<th>2006Q3</th>
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<tbody>
<tr>
<td><strong>Short-term international debt securities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro</td>
<td>37.0</td>
<td>37.9</td>
<td>35.0</td>
<td>33.7</td>
<td>38.0</td>
<td>38.3</td>
</tr>
<tr>
<td>US dollar</td>
<td>39.6</td>
<td>36.5</td>
<td>39.2</td>
<td>40.2</td>
<td>36.5</td>
<td>37.9</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>2.1</td>
<td>3.2</td>
<td>1.9</td>
<td>1.5</td>
<td>1.6</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Long-term international debt securities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Euro</td>
<td>35.6</td>
<td>30.3</td>
<td>25.1</td>
<td>28.7</td>
<td>26.9</td>
<td>28.5</td>
</tr>
<tr>
<td>US dollar</td>
<td>39.5</td>
<td>42.5</td>
<td>48.8</td>
<td>43.8</td>
<td>50.2</td>
<td>49.9</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>6.2</td>
<td>7.0</td>
<td>5.3</td>
<td>4.3</td>
<td>3.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>

**Source:** ECB based on BIS and ECB calculations

### Table 3.2: Currency shares in foreign exchange reserves*

<table>
<thead>
<tr>
<th></th>
<th>Dec 01</th>
<th>Dec 02</th>
<th>Dec 03</th>
<th>Dec 04</th>
<th>Dec 05</th>
<th>Sep 06</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>71.4</td>
<td>67.0</td>
<td>65.9</td>
<td>65.8</td>
<td>66.6</td>
<td>65.6</td>
</tr>
<tr>
<td>EUR</td>
<td>19.2</td>
<td>23.8</td>
<td>25.2</td>
<td>24.9</td>
<td>24.3</td>
<td>25.2</td>
</tr>
<tr>
<td><strong>Industrialised countries:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>72.7</td>
<td>68.9</td>
<td>70.5</td>
<td>71.5</td>
<td>73.6</td>
<td>73.1</td>
</tr>
<tr>
<td>EUR</td>
<td>17.9</td>
<td>22.3</td>
<td>21.9</td>
<td>20.8</td>
<td>19.0</td>
<td>19.6</td>
</tr>
<tr>
<td><strong>Developing countries:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD</td>
<td>70.1</td>
<td>65.2</td>
<td>61.3</td>
<td>60.2</td>
<td>60.7</td>
<td>60.1</td>
</tr>
<tr>
<td>EUR</td>
<td>20.6</td>
<td>25.4</td>
<td>28.5</td>
<td>29.0</td>
<td>28.7</td>
<td>29.4</td>
</tr>
</tbody>
</table>

*disclosed currency composition at current exchange rates.

**Source:** ECB based on IMF and ECB calculations
4.2. Current Account Position (right scale), Real Exchange Rate (left scale), **EUROZONE**

Current Account Position relative to GDP and Real effective exchange rate (2000=100) (M / Q / Y)

Source: Eurostat, Bundesbank

Fig 13: Simplified Structure of OECD – higher profile once Russia is on board (good for Western countries & Russia)

Source: OECD
Fig.: International Aspects of Environmental Damages

a) Emission Problems of Producers Abroad

b) Environmental Problems in Domestic Export Sector

c) Negative Indirect International External Effects
Fig 16: Import Demand with External Effects Abroad

Import is higher than the optimum quantity which is $J_0$; justifies import tariff/negotiations about internationalization approach in policy abroad.

(negative external effects abroad)
Fig 17: FDI with negative external effects in the source country
Fig 18: Transboundary Pollution and Economics of Efficient Agreement

Emissions of Country I
Fig 19: Growing Demand and Risk of Overfishing

![Diagram illustrating growing demand and risk of overfishing. The diagram shows the relationship between fishing effort, yields (tonnes), revenue (R in $), and stock (tonnes). It includes lines representing costs (no subsidies) and costs (with subsidies) at different levels of demand (high and low). The biological maximum (MSY) and overfishing points are also indicated.]
Comparison of Oil Prices with Natural Gas Prices (1976-2006)

Conversion Factor: 1000 Cubic Feet of Natural Gas (in Henry Hub) = 0.18 Barrel of Oil (in WTI)
Data Source: EIA
Index WTI Spot Prices (1986:100) / US GDP Deflator (1986:100)

Data Source: Energy Information Administration (EIA) and Bureau of Economic Analysis (BEA)
WTI (Western Texas Intermediate) Monthly Spot Prices

Cushing, Oklahoma WTI Monthly Spot Price FOB ($/Barrel)

Distinguish Competition vs. Monopoly

- **Cournot Monopoly**

- **Monopoly**

  (intersection of margonal costs curve $k'$ and margonal revenue curve $R'$ is crucial; note that $R=pq(p)$; if $q=A-Bq$, then $R'=A-2Bq$ (slope is 2x that of demand curve!!)
Why is OPEC a Problem?

- OPEC creates negative international welfare effect through quasi-monopoly price
- Monopolistic oil billions undermine efforts for industrialization which would mean technological and intellectual modernization plus involvement in international intra-industry trade
- Monopolistically high oil price is desaster for poor oil-importing countries
- Monopolistic oil price gives OPEC artificial leverage over many countries (OPEC countries funds...)
- How Saudia-Arabia as the leader of OPEC cartel could become WTO member country in 2006? Maybe joining this free trade institution will be a starting point to rethink OPEC cartel
- How about a Boeing-Airbus-X-airplane cartel?
Fig 20: Monopoly Effect of an Import Quota
Fig.: Foreign Exchange Market

a) fixed exchange rate

E₀F = $ excess supply = increase in foreign exchange reserves
= increase in money supply

b) flexible exchange rate

Fig 22: Effects of Foreign Direct Investment
Regional Integration and Global Free Trade

- Global free trade: role of WTO – which allows regional trade integration) areas; regionalism has gained momentum in 1990s
- Regional free trade (free trade area or customs union = FTA + common customs rate which requires cooperation among countries) could also lead to global free trade provided that average liberalization pace is raised and ultimately the trade barriers between regional FTA/or customs unions be reduced to zero. However, regionalism – the emphasis on FTA/customs union - also could become stumbling bloc to global liberalization if regional bloc building turns out to be protectionistic.
Economic Catching-up (w is real wage, r is real interest rate; Y output, K capital, L labor; assumption: competition)

- According to Heckscher-Ohlin theory: Countries which are relatively labor (capital) abundant will specialize in labor (capital) intensive production and exports, respectively. Assumption: production technology across countries identical!

- As capital abundant country will import labor intensive products effective labor supply – including labor embodied in imported products – will increase so that wage-interest ratio (w/r) in capital rich country is falling until w/r=w*/r* (* is foreign); economic convergence! Under competition w=marginal product of labor Y_L; in the case of Cobb-Douglas production function Y=K^βL^{1-β} it also holds that Y_L=[1-β]Y/L; r=βY/K; 0<β<1

- As Y=wL+rK; y=Y/L=w+rk; as k=k(r/w) equality of w/r brings about equality of per capita incomes y=y* (* =foreign)
Different Approach: Growth Theory

(\(\delta\) is depreciation rate of capital, \(k=K/L\) is capital intensity, \(Y\) output, \(K\) capital, \(L\) labor)

- Assume balanced current account; no government for simplicity
- Per capita income is \(y=Y/L\); growth rate of population constant
- Savings (1) \(S=sY\); assume capital depreciation is \(\delta K\):
- Investment (2) \(I = dK/dt + \delta K\) (net investment \(dK/dt\))
- Equilibrium condition is (3) \(I=S\); hence \(dK/dt + \delta K = sY\)
- (4a) \(dk/dt = (dK/dt)/L - nK\) (with population growth rate \(n=dL/dt/L\))
- (4b) Hence \(dk/dt = sy - (n + \delta)k\)
- Production function – with inputs \(K\) and \(L\) - which determines long term output and real income \(Y\), respectively: (5a) \(Y = K^\beta L^{1-\beta}\); \(0<\beta<1\); (5b) \(y=k^\beta\)
- Thus (6) \(dk/dt = sk^\beta - (n + \delta)k\)
Fig 26: Steady State Growth in the Neoclassical Model
(k# is steady state value; assume that parameters in country I and II are identical)

A poor country with k<k*# moves towards k#, hence y towards y#*
Solution – with e` standing for Euler number - for k(t) and y(t)

- (I) $\frac{dk}{dt} = sk^\beta - (n + \delta)k$ is Bernoullian equation
- (II) $k(t) = \{C_0 e^{-s(1-\beta)t} + \frac{s}{(n+\delta)}\}^{1/1-\beta}$
- (III) $C_0$ is to be determined from initial conditions (in t=0)
- (IV) equation (II) will converge with t approaching infinity if $\beta < 1$. Hence the long term steady state value ($t \to \infty$) for k# and y # is given by
- (V) $k# = \{\frac{s}{(n+\delta)}\}^{1/1-\beta}$
- (VI) $y# = \{\frac{s}{(n+\delta)}\}^{\beta/1-\beta}$

- Long term per capita income is the higher the greater savings rate $s$ is and the lower population growth rate $n$ and the depreciation rate $\delta$
Fig 27: Free Trade and Economic Development

**Pro-Competitive Effect**

**Free Trade in Goods and Services**
- Intra-Firm or Inter-Firm

**Stimulates Foreign Investment in the Long Run**
- Product-Cycle Trade

**Specialization Gains**
- Static
- Dynamic

**Exploiting Scale Economies**

**Innovation and Diffusion**

**Real Income Gain**

**Trading More Product Varieties**

**Positive Welfare Effect**

**Raises Cyclical Economic Vulnerability (if X/Y and J/Y high)**
- Creates Larger Markets which Stimulates M&As (anticompetitive?)
Fig 28: Growth Analysis

Growth Theory

Schumpeter Theory

Recession = Pressure on Entrepreneurs: Product and Process Innovations Stimulate Expansion - along with Diffusion

Positive Network Effects + Economies of Scale: Dynamic Growth of Demand and Supply, -> Sustained Growth (New Economy)

Lucas-Model: Accumulation of Human Capital -> Sustained Progress and Growth

Romer’s Approach: Intrasectoral Spillovers from Investment -> Sustained Growth

Helpman-Grossman: Trade Allows to Produce More Product Varieties which Stimulate Consumption and Output -> Sustained Growth

Level of Growth Path Determined by Savings Rate; Growth = Exogenous Technological Progress Rate

Falling Prices at End of Innovation Cycle Lead to Lower Investment and Recession

Adjustment Dynamics
Regional Integration (Countries I, II; Outsider III) and Global Economic Integration

Regional integration of goods markets

- a) preferential trading zone (reciprocal preferences)
- b) free trade area (free trade I&II, external tariffs)
- c) customs union (free trade I&II, common external tariff)
- d) common market (=CU+common competition law)
- e) monetary integration = club of countries with fixed parities – with wide or narrow parity bands
- f) monetary union= abs. fixed parity or 1 currency
- g) economic and monetary union = e] plus f]
Global Integration

- Linking regional integration schemes to each other; and combining regional integration with superpower influence of US and influence of international organizations...

- 1980s and 1990s period of globalization, growth of trade and foreign direct investment high plus growth of portfolio capital flows and expansion of the internet (in the 1990s). Role of multinational companies (MNCs) increasing in world economy.
21st Century: Towards a Digital World Economy

- Information and communication technology (ICT: computer, software, telecommunications, IT services) is fast growing sector (accounted for roughly 10% of GDP in US, Germany in 2000= twice the figure of 1990); ICT has strongly contributed to acceleration of growth in the US and other OECD countries in the 1990s. Large share of investment growth fell on ICT investment in the US; productivity growth can increase through ICT production – eg very important in the US - or ICT use (requires ICT investment) – eg very important in the Netherlands and the UK.

- World economy is becoming a networked system in which information is a specific input in the production function (of a firm or the overall economy).
Globalization and North-South Divide

- Globalization means **rising role of MNCs** – or even transnational companies which have no clear national center of economic gravity (hence not much interested in privileged relations with government of headquarter country); FDI flows are asymmetric

- Globalization means all major countries (incl. China, India) involved in liberal trade and capital flows
International Social Market Economy

- Definition of **Social Market Economy**: Redistribution in favor of poor people, eg through progressive taxes

- John RAWLS (A Theory of Justice): Contractarian approach on the basis of hypothetical situation with **veil of ignorance**: People do not know about their future position in society. **Difference Principle** would be accepted which says that income differences (incentives=higher growth) are acceptable if they improve income position of the poorest strata as well

- Implications...
21st Century: Towards a Global Social Market Economy?

- Rivalry between EU and US and Asia (China)
- Ageing problems in Japan and EU, less so in US and in Asia (except for Japan)
- US Free Market Economy approach is dominating; US enjoys higher growth – partly due to ICT expansion – and full employment. In the EU/Eurozone growth rate is lower and unemployment higher than in US
- Can EU cope with ageing and declining growth rate plus increasing internal heterogeneity? Will globalization reinforce income differentials within or across countries (it seems not so much across c....) so that political long run demand for expansion/maintaining of social security systems will increase
- Role of the Internet in the 21st century: DEBATE
Problems with Prudential Supervision in the EU

- Objective is to maintain confidence in the financial system and ensure system with deep liquidity as well as to create competent international network of supervisors/actors able to cope with potential crisis.
  - create certain degree of transparency in banking (incl. central bank) and financial market system
  - perception of solid banks which provide financial services efficiently and innovatively; banks should be able to absorb adverse market dynamics and shocks
  - Reducing the systemic risk (domino type risk); risk-taking in individual banks ok and indeed necessary & useful
Financial markets and prosperity

- Financial markets provide financial services to households, firms and government – important role of banks in the intermediation process: collect short-term and medium-term savings from millions and finance long-term projects of billions through loans.
- Investors want high yield, low risk and high liquidity.
- Risks can be reduced in portfolio if assets with negatively correlated price variance combined.
EU needs cooperation and harmonization

- Basle Committee on Banking Supervision established in 1974 (Herstatt bank went bankrupt in Germany); G-10 initiative of central bankers at BIS; in the Committee Central Bankers + representatives from supervisory agencies
- Basel I: 8% own capital required by banks as regulatory capital (buffer for adverse shocks)
- Basel II: 2007/08 in EU/Germany: more risk-differentiated
Basle Committee on Banking Supervision

- Aims at
  - Encouraging international cooperation
  - Achieve consistency in supervision
  - Raise quality of supervision process (setting standards, establishing best-practice, technical sophistication); quite informal since no international treaty – but most OECD countries stick to most guidelines and standards
Single EU Financial Market

Central Banks/ECB & ESCB

BIS

IMF: Financial Stability Forum

National Prudential Supervisory Agencies/EU with Directive on Basel II (forces member countries to implement; but US, China, Russia?)
EU: Lamfalussy Process

ECB ➞ ECOFIN

European Commission (Framework Directives = Level 1)

European Parliament

ECB has observer status

Level 2
Technical implementation

European Banking Committee* (EBC)

European Securities Committee*

European Insurance & Occupational Pension Committee

European Financial Conglomeration Committee*

Committee of European Banking Supervisors (CEBS) - established by EU, 2004

CESR (Securities)

CEIOPS

Interim Working Committee on Financial Conglomerates

Level 3
Convergence, consistency

EU Problems in Supervision

- Many different systems (some countries have exclusive central bank competence, others mixed system=central bank + special agency; others no role for central bank)
- No level playing field in EU27 as more than 120 national options are used
- ECB relatively weak/could become problem for Euro;
- Insufficient transparency on regulators
- Too many informal rules = poor crisis management to be expected in case of crisis
Problems with the US-Subprime Crisis in 2007

- German bank IKB (No. 4) and SachsenLB (state owned) gave high credit lines to special investment vehicles in US =contingency claims; no report on this in balance sheets & notes. SIV long term investment with short-term refinancing (commercial paper=risky!)

- Germany’s BaFin (supervisory agency; jointly active with Deutsche Bundesbank) allowed postponing Basel II rules by 1 year/too much a burden for banks!!? Basel II rules show partly size of contingency claims

- Big reform of prudential superv. in D&EU needed; more indep. Bundesbank involvement would be good!!
Looking Ahead for Basle III/Transatlantic Dialogue

- US should finally implement Basle II
- On the Basel III Agenda could be:
  - Transatlantic stability group which is involved in discussion about need for improved supervision in the US and the EU, respectively
  - Careful debate about the need to adopt international accounting standards – and how these should be determined (by IFRS, London/Delawar?); better quality required
  - Broaden role of BIS; in Basle Committee on Banking Supervision China, Russia and other players should come on board
Goods Market, Money Market, International Capital Market
Financial Market Equilibrium and Goods Market Equilibrium

\[ \ln P \]

\[ \ln P^0 \]

\[ \ln P^1 \]

\[ E_0 \]

\[ E_1 \]

\[ FMS_0 \]

\[ FMS_1 \]

\[ ISP \]

\[ \ln e \]

\[ \ln e_0 \]

\[ \ln e_1 \]

\[ \ln e_2 \]
Productivity Growth

Annual percentage change

1. GDP per employee for the EU27 and GDP per hour worked for the others.
Source: Eurostat and OECD, Economic Outlook No. 81 Database.

Europe Top 100: Average revenue structure

Export shares by skill intensity (2004)

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<th>Medium-high technology</th>
<th>Medium-low technology</th>
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</tbody>
</table>

Source: OECD calculations based on UN Comtrade.
Net FDI inflows

In per cent of GDP, 2001-05

Source: Eurostat.
Thank you for your attention

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