

AUGUR – Challenges for Europe in the World in 2030

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Trade and Technology (WP 3)

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Challenges for Europe in the world, 2030



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WP3: Trade and technology – AUGUR Working Papers

- **R. Stoellinger:**
 - Trade specialisation and global/regional trade integration – goods trade
 - Club convergence, threshold effects in innovation and technology transfer
 - Trade projections by global AUGUR scenarios
- **O. Pindyuk:**
 - Trade specialisation and global/regional trade integration – services trade
- **G. Hunya:**
 - Global business organisation and patterns of FDI
- **N. Foster:**
 - Innovation and technology transfer – use of R&D and patent statistics
 - The role/impact of intellectual property rights (IPR)
- **C.P. Chandrasekhar and J. Ghosh:**
 - Upheaval in the World Economy: China and India as a Challenge to Europe (contribution from the Emerging Economies Consortium)
- **M. Landesmann:**
 - Compilation of inputs from WP3 for AUGUR scenario analysis.
 - Technology, Productivity, Trade and Growth: Europe in the Context of Regionalisation and Globalisation

WP3: Trends in trade and technology – issues covered

- Trends in trade integration and trade specialisation:
 - Global vs. regional trade integration – goods trade, services trade
 - Convergence processes and trends in trade specialisation
 - Regional vs. global trade and production integration
 - Trade policy issues
- International business organisation and patterns of FDI
 - Again: regional vs. global
 - IBOs from advanced economies and from EMEs
 - IBO strategies and AUGUR scenarios
- Patterns of innovation and technology transfer
 - Innovation activity
 - Technology transfer
 - Internationalisation of research and development
 - The role of IPR

WP3 ('Trade and Technology') and AUGUR Scenarios

Principal challenges for Europe:

- (i) Remain in the vanguard of advanced economies with respect to frontier positions in technological innovation
- (ii) Adjust to the challenges of emerging economies
- (iii) Deal with internal European problems of uneven development and imbalances
- (iv) Contribute significantly to the main global developmental and ecological challenges

We explore these four challenges in the light of the discussion of the main issues covered by WP3 and the various scenarios discussed in this report

Summary 1: trade specialisation and regional vs. global trade integration

- Changing patterns of trade specialisation:
 - Rapid growth (market shares and up-grading) of select group of EMEs
 - Club convergence: non-linearities/thresholds and absorption capabilities
 - Goods vs. services ('North-South') specialisation
 - 'Europe's position' in international specialisation - heterogeneity
- Regional vs. global trade integration
 - Strong bias towards regional integration in Europe and increasingly in Asia
 - What will remain of globalisation and international production networks in the different scenarios?
 - What are the implications for trade policy and the WTO? Increase in bilateral and regional trade deals (covering wider set of issues, such as IPR, investment, etc.)
- Patterns of trade specialisation closely linked with convergence patterns and regional/global production integration

Summary 2: Developments in Innovation Activity

- The vast majority of R&D and patent applications is/are still conducted/held by a small number of advanced countries
 - But other countries – particularly China and the Republic of Korea – have become more important and have seen a rapid expansion in innovative activities
- There have been substantial changes in the industry or technology sectors in which innovation takes place
 - Majority of patent applications still in traditional sectors such as electrical apparatus, transport, medicine, etc as well as currently relevant sectors such as computer technology
 - Rapidly expanding technology sectors in terms of patent applications are IT methods for management; digital communication; nano-technology – though they still account for a small share of overall patent applications
 - Rapidly expanding industries in terms of R&D spending are e.g. recycling; and services
- The internationalisation of R&D has been increasing in recent years. Flows of R&D follow flows of FDI very closely.

R&D Spending by AUGUR Region – 1996-2009

(Source: UNESCO)

AUGUR Region	R&D Spending (1,000,000 US\$)	Share in Total R&D	Cumulative Share	Growth Rate of R&D
US	269000	39.09		3.56
JA	152000	22.09	61.18	2.69
EUC	101000	14.68	75.86	3.06
OD	28900	4.20	80.06	5.42
EUW	27700	4.03	84.08	2.24
EUS	22500	3.27	87.35	7.71
EUN	21100	3.07	90.42	3.68
EAH	19300	2.80	93.23	9.04
CN	17900	2.60	95.83	15.90
AM	9180	1.33	97.16	5.76
IN	3900	0.57	97.73	8.08
CI	3440	0.50	98.23	6.12
WA	2790	0.41	98.63	5.70
EUE	2740	0.40	99.03	14.17
ACX	2580	0.37	99.41	11.92
AFS	1800	0.26	99.67	-0.57
EAO	1150	0.17	99.83	-6.14
AFN	855	0.12	99.96	-1.14
ASO	284	0.04	100.00	9.98

Summary 3: International business organisation (IBO) and FDI

- Dominant positions of European and US IBOs:
 - Western IBOs have dominant positions in international FDI (M&A and greenfield)
 - However, rapid growth rates of international business activity especially of BRICs (from a low initial level)
- Regional vs. global FDI activity and production networks:
 - Transactions (transport, energy) costs and risk factors (governance, political-economic) in favour of regional integration;
 - Flexibility in terms of differential market growth, exploiting cost factors in favour of global integration;
 - Complex packages of international business integration (goods & services, complex logistic coordination, knowledge flows and knowledge protection) – demands on policy/institutional setting; co-determines regional vs. global business activity
- European IBOs:
 - Potential scope in regionalist and neighbourhood settings; different strategies of MSEs and very large corporations

WP3 ('Trade and Technology') and AUGUR Scenarios

Struggling On - Reduced government:

Technology transfer and catching-up restricted to a sub-set of lower-/middle-income countries with sufficient absorption capabilities, favourable governance structures and geographic locations; IPR in favour of international business and core economies

Club convergence: non-linearities/thresholds; limited scope in EMEs and LDCs to counteract with industrial policies; trade policy arrangements favour bi-modal development of global catching-up and specialisation structures, i.e. convergence and divergence.

WP3 ('Trade and Technology') and AUGUR Scenarios

Struggling On - Reduced government (cont'd):

Prolonged stagnation in Europe: underutilisation of technological potential; hysteretic effects on skills and R&D capacities; much reduced scale of Community programs; falling behind in 'convergent technology' race; reduced capacity to support development processes in Europe's periphery and neighbourhood – which are more affected than other global EMEs (those are less burdened by debt crisis)

Europe loses further attractiveness for 'global talent' – net out-migration; EU MNCs tend to increase their global rather than regional activities – benefit from pro-business IPR and trade policy rules (WTO+); more global out-sourcing/off-shoring has labour market and distributional impacts

WP3 ('Trade and Technology') and AUGUR Scenarios

Eurozone break-up - US-China Accomodation:

Stackelberg leaders in two blocs; conflictual and cooperative relationships in different policy areas between China and US: global and regional trade policy arrangements, IPR systems, R&D races; differentiated developments of services and goods liberalisation and of regulatory frameworks in favour of respective economic interests of US and China in their respective spheres of influence

Europe: more likely to tend towards strong trans-atlantic alliance with US as driving partner; will affect internal European integration processes and relationships to neighbourhood (to CIS, WA, MENA, Africa). US and China play increased role in Europe's neighbourhood region and unstable 'Rim'; interest in securing energy and commodity supplies

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Eurozone break-up - US-China Accommodation (cont'd):

Europe's 'innovation system' becomes nationally segmented; EU R&D and educational programs collapse; loss of economies of scale and scope; loss of S&T staff to US and Asian centres; some countries and firms remain attractive as R&D locations (for US and transatlantic MNCs); some revival of national industrial and development strategies – succeed in a limited set of countries

Europe – much diminished actor on the international scene; little impact on regulatory structures and international policy making bodies – largely follows US lead; China and Asian economies challenge Europe's traditional industrial strengths – low level of protection for European IPR; Chinese investment in Europe 'technology seeking'; trade policy conflicts and conflict zones.

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Multi-speed Europe/Federal Europe - Regionalisation:

Three global areas of strong regional integration (Europe, North/Central America, SEEA): regionalist trade and production integration proceeds; different forms of institutional, political-economic (i.e. 'deep') integration in the 3 areas.

Other regions develop neighbourhood relations, between bloc positions, or suffer from continued marginalisation in international trade, FDI and technology/knowledge flows

Europe: main challenges to decide on directions for further 'deep integration'; technology, industrial, labour market, social policies; and on relationships to EU neighbourhood and partnership arrangements. 'Federal Europe' could be success or failure w.r.t. unbalanced European developments

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Multi-speed Europe/Federal Europe – Regionalisation (cont'd):

Europe can pursue more intensive R&D collaboration; new, more effective programs; danger of 'knowledge diversion' if too much inward looking; scope for sustained efforts in neighbourhood policy and on development in Europe's periphery; differences between 'multi-speed' and 'Federal Europe' scenarios in terms of resources and scope for differentiated treatments (the former provides a continuum of access to EU; less of demarcation line between 'ins' and 'outs')

Improved position of Europe in energy supply/security; more weight in international policy-making/regulatory structures; but differentiated by regionalist entities; scope for inter-regionalist conflicts and conflict potential in Asian region