

# Preface

Economic development has cyclical dynamics and long-term dynamics – the latter are typically related to demographical changes, innovation and long-term institutional changes in open economies. Financial markets – that means mainly capital markets – and labor markets are affected in OECD countries both by innovations and institutional reforms. As regards demographics ageing is a typical challenge on both sides of the Atlantic, and pension reforms in industrialized countries have placed greater emphasis on capital markets than in previous decades. Innovation dynamics certainly are also quite important for all high wage OECD countries. The Lisbon Agenda has put particular emphasis on more growth, higher innovation dynamics and better exploitation of the advantages of a digitally networked society. Traditionally, the US has a lead in global innovations, and the US policy certainly has contributed to the American technological leadership. There still is a per capita income gap in favor of the US and the US labor market situation also looks relatively favorable, but in the five years since 2001 employment growth in the euro area was higher than that of the US. The euro area is, however, a rather heterogeneous set of countries which differ in terms of institutions, attitudes and reform progress – and everywhere governments are aware that there have to be reforms, not least in the context of globalization which bring a more complex and dynamic spatial structure of value-added. In short, policymakers in Europe are well aware of some of the key challenges and the Lisbon Agenda of the EU is one of the answers which Europe has formulated in its search to become more competitive. While the EU (and Japan) are ageing relatively fast, the US still is facing favorable demographic dynamics, but in the long-term ageing will affect all OECD countries, and this in turn raises new issues with respect to factor market adjustments, pension reforms, innovation dynamics and – in a broader global perspective – energy policies. What progress has been made on both sides of the Atlantic, what reforms are promising, and what benchmark is useful for those willing to learn? The analytical contributions and the policy papers presented in this book suggest key answers to these topics and the relevant issues.

The economic relations between the EU and the US are a key element of international dynamics where trade, capital flows and cooperation between policymakers are crucial fields of joint interest. In a transatlantic perspective, one may emphasize both the competition among firms in the world markets (often are multinational

companies) which have split up the value-added chain across many countries. Trade and foreign direct investment thus go together and since the mid-1980s foreign investment indeed has grown faster than trade. Portfolio capital flows and the internationalization of banking in both the US and the EU are also key elements of globalization dynamics on both sides of the Atlantic. The US has been the economic leader since the early 1990s as its growth rate consistently outpaced that of real GDP in the EU and eurozone, respectively.

It was not before 2006 that real GDP in the eurozone increased as fast as in the US, in 2007: the eurozone's growth rate reached 2.6% and thus exceeded that of the US by 0.4% points (figures are based on preliminary calculations of the Deutsche Bundesbank). The fact that the eurozone achieved 2.3% annual growth in the period 2005–2007 and thus had nearly had closed the gap vis-à-vis the US (2.7% growth p.a. in the same period) is strongly influenced by the improvement of Germany's economic growth which improved from a meager 0.3% p.a. in 2002–2004 to 2% in the period 2004–2007. Part of US economic growth might reflect an upward bias through high capital inflows, including foreign direct investment inflows. Such inflows to some extent reflected the favorable expectations stemming from technology dynamics, including the high progress rate in the field of information and communication technology – easy financing conditions supported by (partly doubtful) financial engineering of investment banks in Wall Street also have contributed to the favorable US performance which seemed to outpace the growth dynamics in Europe. Several EU countries had high net capital outflows in the decade after 1995, while the US has moved towards high net capital inflows. Part of these inflows came from Asia and China, respectively.

Both the EU and the US face a long-term challenge from China as the country has launched an impressive economic and technological catching-up process, and this in turn will reinforce leading OECD countries' quest for enhancing innovation and growth – and such goals often can be achieved only if policymakers adopt adequate reforms in the domestic economy and effectively exploit the opportunities of modern globalization. Capital market dynamics as well as labor market reforms and innovation policies naturally become important in this context.

These facts and developments need to be explained, and investment dynamics as well as innovation performance plus factor market developments might have contributed to these changes. Changes in companies' performance, policy reforms as well as institutional modernization might have contributed to the transatlantic convergence in growth rates. Taking into account the different population growth rates in the US and the eurozone – about 1% in the US vs. about 0.5% p.a. in the eurozone in 1996–2007 – one may point out that real net domestic product per capita in 2005–2007 achieved 1.8% annual growth on both sides of the Atlantic while the eurozone stood at a modest 0.4 percentage points in 2002–2004 (compared to 0.4% in the period 2002–2004; 1996–2001 witnessed about 2% p.a. for both the eurozone and the US). In the medium term the EU eastern enlargement seems to favor the position of the eurozone and the EU, respectively: accession countries have achieved relatively high growth and the catching-up process with growth rates somewhat above the EU15 may be expected to continue for many years. The relatively

high unemployment rates of the EU27 – with some EU countries actually having achieved full employment at turn of the century – has gradually come down after 2001, but it is unclear to which extent cyclical or structural influences have been decisive.

With EU eastern enlargement the European Union has become bigger and also more diverse in terms institutional settings, at the same time the EU27 is eager to catch up with the US. Beyond this supranational policy goal which naturally is linked to the EU innovation policy (and that of its member countries) there are key challenges at the national level in EU member countries: labor market reforms as well as reforms in social security are among the most difficult problems in some of the large EU countries. Ageing in European societies is proceeding faster than in the US and this raises major issues for policy makers. Capital markets dynamics will be affected in the course of pension reforms in the EU and elsewhere; this also will have effect on the current account position in the long-term. As economic globalization is unfolding – with a rising role of China and India in the production of industrial goods and the provision of digital services, respectively – the high- wage OECD countries will seek to specialize more in technology-intensive production of goods. Here innovation policy is a key challenge for both the US and the EU, and it is quite interesting to consider the different policy approaches pursued and to focus on key sectors. The knowledge society is a useful concept which is unfolding on both sides of the Atlantic. It is, however, clear that the internet age brings more truly global market places and more worldwide competition than before so that digital modernization has many global aspects.

Both the EU and the US have a common interest in energy security and in energy policies which support sustainable development and economic modernization in combination with ecological progress. Cooperation and competition both play a role in the field of energy markets and innovation in energy-intensive industries and activities, respectively. However, the US and Europe have pursued rather different policy approaches in core fields of energy policy over many years; the issues concerning the Kyoto Protocol and global warming are difficult to reconcile with US ambitions to maintain high economic growth in a framework with maximum policy autonomy. US economic growth – strong in the 15 years after 1991 – is facing new problems in the context of a financial market crisis and a US banking crisis which could not only bring about several years of slower growth in the US but also critical international spillovers for EU countries and other partner countries.

Policy concepts in the US and Europe are similar in many fields, including capital market liberalization and pension reforms, but there are also distinct areas where the policy approaches differ markedly. This partly reflects different weighting of values and differences in terms of global political ambitions; both the US and the EU will jointly face the challenge of China and other new players in the world economy which at the beginning of the 21st century is less shaped by OECD countries than in the second half of the last century. Economic globalization also is a topic of common concern, and outsourcing and off-shoring are key elements here; both in Europe and the US there have been heated discussion about the gross effects and net effects of increasing economic fragmentation, and sometimes the economic debate

is rather confusing here (not to mention the widespread notion in the media that international outsourcing/offshoring imply net losses in terms of jobs and welfare for the US and the EU, respectively). Thus the issue of international economic fragmentation and rising international outsourcing and off-shoring, respectively, are of special interest – and the analyses presented here come up with new findings and suggest that the “bazaar hypothesis” is not convincing for Germany.

From a US perspective transpacific economic relations have gained importance since the 1990s when transpacific trade started to exceed transatlantic trade. However, the transatlantic trade and investment links – with foreign direct investment strong in both directions – rest on strong pillars as one finds much trade and FDI in the field of technology-intensive products and production, respectively. For the US the EU has posed a new challenge, namely in the form of the euro zone, and this holds despite the fact that it is only a sub-group of the EU. The euro zone has not only become a rather stable and dynamic core of the EU: solid growth of trade and foreign direct investment within the eurozone has been observed, with Germany remaining the leading exporting country of the Community.

In their opening chapter, Welfens and Borbély offer a wide-ranging review of structural change, innovation, and growth in the European Union. Their focus is on industrial structural change – its problems and its prospects – in the expanded EU. Their starting point is trade and growth theory. An analysis of structural change along its main dimensions (relative goods and factor prices, shifts in sectoral output and employment shares, and the respective contributions of process and product innovation) is first presented. Next, capital mobility is introduced as well as Sinn’s controversial characterization of the large German trade surplus against the backdrop of the increase in international outsourcing. The authors then flesh out the model to show that growth, at least in the medium term, hinges on both demand and supply-side dynamics, with the structure of output and the intensity of trade contributing to growth. Finally, in this exegesis on structural change, innovation, and growth, they offer some dynamic Schumpeterian considerations. The bottom line is that the ability of firms from EU15 countries to rely on imported intermediate products from EU accession countries is the basis for gaining competitiveness in both the global economy and vis-à-vis the United States. It enables them to become more price competitive while restructuring domestic outsourcing in the EU15, making it more focused on producing technologically advanced intermediate products than heretofore.

A detailed set of empirical regularities are investigated along two main dimensions: innovation traits and structural change, and Sinn’s bazaar effect. International competitiveness is evaluated on the basis of revealed comparative advantage indicators (RCAs) and export unit values (EUVs). Indices by industry are presented for Germany, Hungary, and Italy, each of which countries have vibrant exporting sectors. But, as the authors caution, a flourishing export market does not necessarily translate into competitiveness or success in coping with structural change. What counts here is the ratio of domestic to foreign value added in production, as well as the ratio of domestic to foreign intermediated inputs in production. For this reason Welfens and Borbély turn their attention to the empirical importance of intermediate

imports. Again enter Sinn's so-called bazaar effect, which is that a declining part of the final product's value added is generated domestically via international outsourcing and offshoring.

Cautioning that a declining share of domestic value added in production does not necessarily imply a problem for the domestic economy (as long as the sum of domestic value added share plus domestic intermediate inputs' share in total production does not decline), the authors consider the bazaar effect for six key industries in seven countries. While there is evidence of such an effect (e.g. chemicals) there are some big differences between industries, and often a rising share of domestic intermediates.

Further, all of this obviously applies to the "gross" bazaar effect. A country's imported intermediates may themselves contain its exported intermediates. The authors make a stab at calculating the net bazaar effect for the German motor vehicle industry vis-à-vis the rest of EU15 and observe a further reduction of the Sinn effect.

Finally, by way of a summing up of their diverse findings, the authors offer some policy interpretations and conclusions. These offer comfort to some countries but not others (e.g. Germany and Italy). Overall, they conclude that the EU as a whole should benefit from enlargement and globalization. The devil is as always in the detail, residing in a country's labor market institutions, its R&D programs, and its ICT and educational policies, inter al. The Lisbon strategy also receives a provisional nod and a wink.

In the second contribution to this volume, Joachim Möller investigates the vexed question of wage compression in Germany. As the author notes, Germany is widely characterized as having a "deformed" wage distribution, with compression from below stemming from collective bargaining and the social wage. With insufficient variation in low skill wages – Sinn's accordion effect – employment does the accommodating! That is, there is inadequate employment in low-wage service industries and correspondingly high and persistent unskilled worker unemployment. One remedy that has therefore commended itself to German observers is the abandonment of institutional and other regulations.

Recently this interpretation has come under attack from a variety of sources. Möller's careful paper is in this revisionist tradition. His approach is to examine the distribution of wages in Germany using the German IAB-Beschäftigten-stichprobe (IAB-BST) and, since his analysis turns on a difference-in-differences approach using the United States as the counterfactual distribution, the Current Population Survey/Outgoing Rotation Group (CPS-ORG) for the United States. His empirical analysis is restricted to full-time workers using harmonized data. Results are presented for the aggregate wage distribution(s) and by gender and broad skill category.

Abstracting here from the particular US results, Möller finds scant evidence of wage compression from below, or an accordion effect. In other words, for all low-skilled workers inter-quantile distances are higher below, not above the median. This also holds for females in general. The accordion effect, where observed, is found only among the upper reaches of the male worker distribution (i.e. among skilled workers. His explanation is that German unions home in on *Facharbeiter* as the standard. But all of this has to do with within-group wage dispersion. As Möller

notes, an alternative scenario is one in which between-group wage differentials are too narrow, not that one-sided pressure obtains. The possibility of this type of deformation is no less pressing a research concern than asymmetric deformation.

In his comparative treatment, John Addison examines the links between worker representation, employee involvement/innovative work practices (EI/HPWPs), and various indicators of firm performance. Having reviewed the closely linked theoretical arguments favoring worker representation in its two principal guises and EI/HPWPs, he proceeds to review the empirical evidence on each and on their interaction for the United States and Germany. For the United States, union effects on performance are most typically adverse; where positive, they are likely of small magnitude. The independent influence of EI/HPWPs is frankly mixed, and it is as well to recognize up front the frailty of our understanding on what practices (or bundles of practices) work. Moreover, their positive effects on productivity – where observed – have to be assessed against the backdrop of their cost implications. That said, there is some indication of a positive interaction with unionism.

Despite its position in theory as the exemplar of voice, initial research into the effect of works councils on firm performance reached almost universally pessimistic conclusions. Pace the US evidence, however, more recent studies using large data sets have been more upbeat. Too upbeat in the author's view: excessive praise of the institution is just as misguided as excessive revulsion against it. On balance, however, the German evidence on both worker representation and EI/HPWPs, and their interaction, is more positive than for the United States. But a number of caveats attach to this statement. First, and most obviously, works councils are not unions, and we are only now seeing union effects in Germany, beginning with the union premium and extending to consider the union-works council nexus. Second, there is the vexed question of the endogeneity of the works council institution and EI/HPWPs themselves. Unfortunately, progress in analyzing one dimension is not matched along the other. Third, there is the issue of whether works councils and HPWPs are substitutes or complements. Fourth, beneficial aspects of each obtain devolve on productivity, with the result that cost considerations continue to cast a long shadow. Finally, the stability of relationships in the face of changes in the law and indeed the haemorrhage of formal collective bargaining is a real concern.

Partly by way of addressing this latter issue, Addison concludes with an addendum summarizing the British evidence. That evidence is both instructive and challenging. Instructive in the sense of charting major changes in union effects attendant upon changes in the law undercutting union bargaining power. And challenging both because of the instability of underlying relationships (not just that between unionism and firm performance) but also because of more fundamental ambiguity in the relation between workplace representation and EI/HPWPs reported for that country.

The paper by Joachim Winter aims at discussing the macroeconomic and capital market effect of population ageing and of fundamental pension reforms. As an analytical starting point Winter takes the overlapping generations (OLG) model which is well suited for simulations. The OLG approach then is combined with demographic dynamics – exogenous in the simulations – and the OLG approach



combined with the public pension system. The OLG model has standard features such as a neoclassical production function, convex capital adjustment costs and age-dependent labor productivity as well as standard household maximization behavior. As the approach presented considers an open economy with capital flows, modelling of the international capital market is crucial – including the degree of capital mobility which is changing in the various stages of simulations undertaken by Winter. The author's focus is on those EU countries that are most affected by population ageing: France, Germany and Italy are key countries in this respect. The author also points to some of the key insights from the US debate and argues that Germany's pension reform proposals (Rürup Commission) were adequate.

Three panellists looked at selected issues of capital market dynamics: Volker Clausen considers the macroeconomic perspective of ageing and summarizes key insights from recent debates which emphasize that ageing will both undermine saving – as life-cycle models of savings predict negative savings rates of those who retire – and investment where the latter is related to the decline of the labor force which changes relative factor prices and thus implies a lower rate of return on capital. The net effect of ageing on the savings-investment ratio is somewhat unclear and it is the net effect which determines international capital flows. As regards Germany, the author shows that the savings-GDP ratio has increased while the investment-GDP ratio has fallen with the result that the Federal Republic of Germany has become a major net capital exporter. The net foreign asset position has improved, both through accumulation effects and favorable valuation effects. Next Freddy Van den Spiegel discusses capital market perspectives and points out that the real interest rate has shown a long-term decline in both the EU and the US; the increase of the global savings rate could have contributed to this development. As regards ageing dynamics he points out that governments have several instruments that could influence the pace of ageing; lengthening of working life and immigration are two important elements. As the EU's ageing is occurring in the new set-up of economic globalization, the adjustment pressure will be less severe than without such internationalization. Finally, in his analysis of the US economic outlook Holger Schmieding puts the focus at first on some favorable economic globalization dynamics contributing to relatively high US corporate profit rates. Also, the role of low US central bank interest rates and high Asian savings for the long US upswing receiver are emphasis. The author points out the mechanics of the subprime crisis and the role of asset-backed securities in financing the real estate boom on the one hand, while on the other hand he observes that the aggressive interest rate cuts of the FED could help the US to move to economic recovery relatively soon. There is another favorable aspect as emphasized by Schmieding. Although the ratio of debt service of households to income has increased from 12% of disposable income in the late 1990s to 14% in 2007 asset incomes (interest and dividends) stood at 19% of disposable income in 2007, so that there are no signs that households in the US are overindebted. While the authors expect some cyclical adjustment problems he is optimistic about long-term global rebalancing.

EU countries have achieved a long-term economic catching-up vis-à-vis the US so that innovation has become a major driver of economic growth in Europe and

the US. Lothar Funk and Axel Plünnecke thus focus on the innovation dynamics in selected OECD countries. Their analysis thus evinces a Schumpeterian perspective. The authors first take a broader look at the literature and emphasize some key findings from innovation research – including the ACEMOGLU conjecture that countries that have moved close to the technology frontier will have to rely more on radical innovations combined with fast adaptation to technological progress. The authors discuss the required conditions for innovation and present statistics on human resources and R&D-GDP expenditure ratios for various countries. Among the countries the authors focus on the growth stars, the catching-up countries and the laggards. Ultimately, the authors try to identify clusters of innovativeness and suggest key policy conclusions.

Charles Wessner takes a broader look at innovation dynamics and entrepreneurship in the US. His focus is on the Small Business Innovation Research (SBIR) program which has become a major pillar of US R&D policy. The author argues that new challenges from China and other countries – including a more general concern about US competitiveness – have stimulated policymakers in to emphasize Schumpeterian dynamics of small and medium-sized firms. Wessner discusses funding problems of technology-oriented start-up companies in the US and highlights the strategic orientation of the Small Business Innovation Research program. Moreover, the key factors for success are analyzed and some new elements of R&D policies for Europe (and elsewhere) discussed.

A key field of modern Schumpeterian dynamics concern pharmaceutical innovation. Mario Villarreal and Elizabeth DuPre analyze the links between TRIPS and pharmaceutical innovation dynamics and access to medicines. The authors' analytical starting point is the economics of patents. Moreover, the process of pharmaceutical innovations and the costs and risks involved are discussed. Since patent protection is so important in the pharmaceutical industry the globalization process presents crucial challenges for this sector and the international protection of intellectual property rights. Villarreal and DuPre consider the key problems of WTO rounds and TRIPS, respectively – with compulsory licensing and parallel importing representing the two important policy fields. Finally, the authors focus on the perspectives of the Doha round and policy alternatives.

In a broader perspective, Schumpeterian dynamics concern the expansion of the digital knowledge society in the 21st century. The paper of Ernst Helmstädter confronts the very enthusiastic political expectations about the knowledge society with the austere analytical view of the economics discipline. The political strategies for establishing a competitive knowledge-based economy are numerous. Because such strategies seem to believe in scientific knowledge the climate for the sciences looks very favorable. In contrast, the contribution of the economics discipline to the analytical understanding of the use of knowledge in society is still very rudimentary. This contribution tries to assemble the considerable fragments from the history of economic thought and proposes out of these experiences how to proceed in developing an economic theory of the knowledge economy. The approach is based on New Institutional and Evolutionary Economics. Tentative political conclusions are drawn.



With EU eastern enlargement more than ten new member states have joined the Community and economic and technological catching-up are crucial elements in the modernization of Eastern Europe and the New Member Countries (NMS). The perspective of the new member countries is quite interesting since they have had to combine systemic transformation, economic opening up and modernization. This triple perspective is the context of the contribution of Andrea Szalavetz. The role of exploiting the experience of catching-up in Asia is discussed as is the role of capital deepening and investment in information and communication technology. The author highlights the structure of investment in selected countries and the dynamics of industry where capital-saving technological change in the manufacturing sector is emphasized. In-depth analysis of NMS' technology accumulation experience compared to advanced economies reveals that, beyond the quantity differences related to their actual development status, important quality differences also have to be taken into account.

Innovation performance can be measured in various ways. Benchmarking is useful for policymakers with the aim of finding out the best way to harness Schumpeterian dynamics. Bernhard Iking highlights the findings from EU comparisons – across countries – and from regional comparisons in Germany (Bavaria, Baden-Württemberg and North-Rhine Westfalia). The European Innovation Scoreboard is a well-known concept which facilitates measuring various dimensions of innovativeness. The descriptive statistics not only show a strong variance of innovation indicators across countries but also considerable differences between the regional technology powerhouse Baden-Württemberg – followed by Bavaria – and the largest West German state (in terms of population), namely, North-Rhine Westfalia. Human resource building and knowledge creation are identified as key challenges for policymakers.

A crucial field of EU technology policy concerns the energy sector. Global climate change and issues related to the security of energy supply – mainly concerning Russian gas supplies – as well as high oil prices motivates EU energy technology policy. Jochen Hierl and Peter Palinkas discuss the Community's policy and emphasize the relevance of the EU's Green Paper "Secure, Competitive and Sustainable Energy for Europe" which highlights the key topics and issues. The debate about peak oil, the increasing dependency of the EU countries in the field of energy imports, the post-Kyoto approach to climate policy and the EU's single energy market – starting in July 1, 2007 – are the crucial aspects considered. A European strategic energy technology plan will be adopted and this which underscored the relevance of Schumpeterian dynamics and of EU innovation policy in the energy sector. The fact that energy policies all have a long-term perspective and the EU's strategy to focus both on technology push and market pull forces is emphasized by the authors. Among the crucial policy fields discussed are renewables, carbon capture and storage and energy efficiency.

The US has not only a national energy policy but there are also important regional activities organized by a group of New England and Mid-Atlantic states which agreed in 2005 to create a CO<sub>2</sub> cap and trade system for electricity known as the Regional Greenhouse Gas Initiative. Other US states also have launched

corresponding initiatives. Moreover, there are several potential fields for transatlantic cooperation.

The paper of Fred Sissine summarizes policies in the US that aim to reduce greenhouse gas emissions (GHG) that contributing to global climate change. The status and direction of activities in that country are also described. This provides a framework that may be used to compare and contrast with policies underway in the European Union (EU) to curb emissions.

Caution is required when assessing NMS' technological upgrading experience in an appropriate technology context for at least two reasons. One is that in the NMS, the factors underlying technology choice are still different from the textbook factors. The other reason is that simplistic classifications of technology level may yield erroneous conclusions in assessing the quality of structural upgrading as well as in assessing the human capital intensity of value adding activities or the local direction of technical change. This supports the claim that, besides the well-definable measures of convergence, soft factors also have to be considered when assessing catching-up performance.

Political science analyses are quite important in a transatlantic perspective. Martin List takes a closer look at recent debates and explains both the realist paradigm in international (transatlantic) relations and the institutionalist and constructivist perspectives. The author favors a "critical perspective" as a kind of shared transatlantic approach and argues that more cooperation could be useful for both sides. Common values also are considered as important pillars for joint strategies.

Jackson Janes highlights in his contribution – an extended dinner speech – the historical challenges for the transatlantic relations and takes a closer look at foreign policy issues and security policy aspects. The different role of economic interdependency and political interdependency are discussed and the crucial impact of September 11 on the US public and policy, respectively. In the view of Janes the opportunities for transatlantic cooperation have increased; with special lessons to be drawn from the cooperation between the US and Germany. Jointly part of the global agenda and finding new solutions to old problems could be a key point for future transatlantic cooperation.

All of the above contributions are revisions of papers presented at two workshops organized by the EIIW in Wuppertal – on EU-US economic and technological relations. Transatlantic economic dynamics and policy issues have been on the research agenda of the European Institute for International Economic Relations for many years. With the creation of the Schumpeter School for Business and Economics at the University of Wuppertal (in October 2008) the EIIW considers Wuppertal as becoming an ideal place for conducting research on innovation dynamics. Institutional changes, technological progress and new policy approaches will be recurrent topics for comparative transatlantic and global research.

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