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Structural policy and economic convergence

Iain Begg*

The promotion of economic convergence has been a long-standing aim of the European Union that has spawned a wide range of structural policies. Structural policies have also moved to centre stage in economic governance since the appointment of the Barroso Commission in 2005 and the re-launch of the Lisbon strategy. In the latter case structural reforms have been sought to underpin the competitiveness of the EU as a whole, not least in response to challenges from China, India and other emerging economies as well as more established competitors such as the United States. Structural policies – widely defined – consequently have a dual aim of reducing regional disparities and boosting aggregate competitiveness. The policy challenges are further complicated by the use of the term 'cohesion' which intuitively implies more than a purely economic convergence objective.

Following the accession of Bulgaria and Romania to the EU, regional disparities have become wider than ever before in the EU: in fact, the ten regions with the lowest GDP per head in 2005 (the latest year for which full data are available) are in these two countries, and just above them are the four least prosperous Polish regions (Eurostat 2008). Convergence is undoubtedly occurring, within the EU, with the rapid growth of the Member States that acceded to the Union in 2004 raising their GDP per head relative to the EU average. Convergence is advanced both by market integration and by the support from cohesion policy, although experienced observers such as John Fitzgerald (2006) maintain that it is integration (provided it is supported by suitable accompanying policies) that is the more powerful force. The sheer diversity of experience is also salient and even if there is a plausible case that policy intervention has had positive effects, the added value from carrying out the policy at EU level may not be proven. Twenty years ago, Ireland's GDP per head was barely 15 percent above that of Portugal, but Ireland's GDP per head today is double that of Portugal, even though both countries have enjoyed similar support from the Structural Funds since the major policy reforms of the mid-1980s.

The clear implication is that structural policies can be helpful, but only as part of a more comprehensive development strategy and governance framework. Yet cohesion policy is something of an enigma. It is a popular policy: a Eurobarometer survey carried out early in 2008 found that as many as half of EU citizens were aware of cohesion policy support for their region or city, and of that proportion, 70 percent approved of the way the policy was conducted as opposed to 22 percent who believed that it had no positive effects (European Commission 2008). But critics – and there are many, especially among the ranks of orthodox economists – assert that it has little or no impact on regional growth and that the money is ineffectively spent.

This article looks at the role of structural policies in advancing convergence, and at the tensions between Lisbon aims and cohesion aims. The next section elaborates on the policy background and is followed by an appraisal of how effective cohesion policy is.

Policy background

In the Treaty Establishing the European Community (Art. 158, TEC), economic and social cohesion is defined in terms of reducing regional disparities in the level of development, usually measured by GDP per head (relative to the EU average) in purchasing power parities. Assuming the Lisbon Treaty is ratified, the definition will change somewhat through the addition of the word "territorial" to the objectives of cohesion, implying a focus on spatial balance in economic development.

European Commission (2007) lays great stress on the fact that cohesion policy is confluent with the goals of the Lisbon strategy by promoting growth and employ-

* London School of Economics. The author is grateful for financial support from the DIME (Dynamics of Institutions and Markets in Europe) network of excellence, funded under the European Commission's 6th Framework Programme.

ment, implying that it improves the use of resources, but many regard it is primarily a distributive, rather than an allocative policy. In cash terms, the outlays are substantial, with projected commitments in the current fiscal year, according to the EU's 2008 budget, of 47 billion – more than the entire GDP at current prices of Luxembourg, Slovenia or Slovakia. But as a proportion of EU GDP they are just 0.35 percent.

While there are well-established broad orientations for cohesion policy, articulated notably in the Community Strategic Guidelines (European Council 2006), in practice it embraces a wide range of public interventions and, in some of the current discourse, several new directions are canvassed. The strategic guidelines (European Council 2006) go some way towards fleshing out what is meant by territorial cohesion, emphasising that it is about different facets of geography. On the one hand, "territorial" is about assuring that economic activity is spatially balanced, thereby avoiding simultaneous over- and under-heating of regional economies that results in less favourable macroeconomic conditions. On the other hand, it is about tailoring policy support to the differing geographies of different sorts of regions, including urban, rural, peripheral, mountainous, maritime and so on. The impact of economic integration on border regions is recognised as a specific challenge for the EU.

The focus of structural policy in the Lisbon agenda is, though, rather different. The twenty-four integrated guidelines for the Lisbon strategy comprise six with macroeconomic objectives, ten aimed at structural policies and eight covering employment. The expression "cohesion" does appear in the text of the guidelines, but not in a systematic way, nor is it visible in the focusing of the Lisbon strategy, re-affirmed by the European Council in March 2008, on four overarching priorities of investing in people and modernising labour markets; unlocking business potential; investing in knowledge and innovation; and developing energy policy and countering climate change.

Is cohesion policy working?

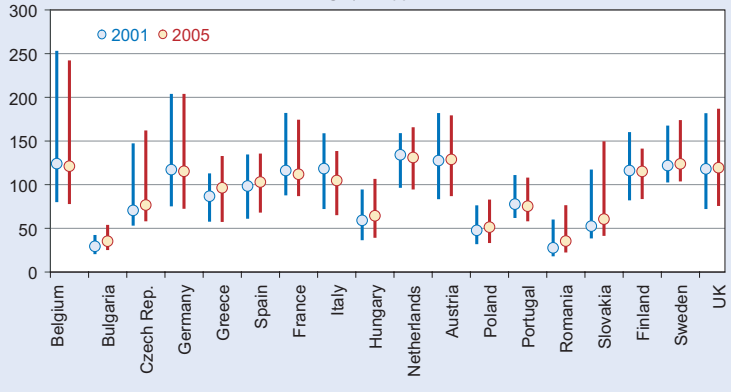
As the Commission's 4th *Cohesion Report* notes, convergence can be observed at both the national and regional levels (European Commission 2007). In addition to the overall story of catch-up by the least prosperous Member States, it notes that average growth in the regions below 50 percent of the EU average for GDP per head grew 2.4 percentage points faster than the EU27 as a whole over the period 2000 to 2004. The report also draws attention to declining GDP per head in a number of higher-income regions and the relatively slower growth of geographically core regions relative to the EU's periphery. The upshot is that standard measures of regional income inequality show that the EU is becoming less unequal and, moreover, that territorial cohesion is improving insofar as growth is more widely spread.

Possible concerns

However, the 4th Cohesion Report also identifies regional divergence within many Member States as a continuing difficulty. As Figure 1 shows, in many Member States the disparities between the most and least prosperous regions have been widening. In Slovakia, for example, the GDP per head of the capital region jumped from 116 percent of the EU27 average in 2001 to 148 percent in 2005, whereas the least prosperous region rose only from 40 percent to 43 percent. Even allowing for data anomalies such as the "commuting" effect (European Commission 2007) that over-states the GDP per head of geographically compact urban regions, the aggravation of such imbalances is worrying with regard to territorial cohesion. In addition, as Landesmann and Römisch (2007) show, most of the gains posted by the recently acceded Member States stem from rapid productivity increases, whereas employment has not

Figure 1

DISPARITIES IN REGIONAL GDP PER HEAD:
HIGHEST AND LOWEST REGION
EU27 = 100



Source: Eurostat.

grown much. Although the growth is impressive, this conjunction poses problems of social cohesion.

There is more disturbing evidence about future prospects from indicators of regional R&D and the *Regional Innovation Scorecard*. These data testify to how spatially concentrated these activities are. Favoured regions in the three Nordic countries and southern Germany dominate the top of the innovation scorecard list along with the capital regions of the UK, France, the Czech Republic and Austria, while the bottom end comprises less-favoured regions in the southern and eastern periphery of the EU (Innometrics 2006). R&D expenditure is even more spatially skewed (European Commission 2007) with high R&D effort in much the same favoured regions, nearly all of them high income ones, yet with more than 100 regions recording R&D investment rates below 1 percent of GDP – less than a third of the "Barcelona" target adopted for the Lisbon strategy.

Post hoc ergo propter hoc?

What is much more difficult to show is causality. Plainly, expenditure from the Structural and Cohesion Funds will, by adding to demand, increase GDP in recipient regions and Member States and, vice versa, reduce it in the areas that are net contributors to the EU budget. This is a *level* effect and given that the resulting transfers may reach as high as 4 percent of GDP in the most intensively assisted regions, should have a corresponding effect on their measured prosperity. Consequently, for regions in the new Member States, the build-up of cohesion spending before and after 2004 can, itself, explain a proportion of their convergence. Given the budgetary arithmetic, a small, negative level effect of around a third of a percentage point should be expected in regions that pay for the policy.

The more interesting question is whether cohesion transfers have an impact on underlying growth rates. Answers vary, depending on the methodology employed to assess the policy, and none in isolation offers a wholly convincing answer. On the whole (for an overview, see Begg 2008; see also Bachtler and Gorzelak 2007), econometric studies find little evidence that cohesion policy increases growth rates (see, for example, Boldrin and Canova 2001; Ederveen et al. 2006). Other studies are more supportive of the role of the Structural Funds (see Cappellen et al. 2003), but still have difficulty making a convincing case for the effectiveness of cohesion policy.

By contrast, macroeconomic modelling exercises are more sanguine, partly because they attempt to look beyond the immediate effects. In modelling work, Bradley et al. (2007) distinguish two distinct phases. They refer, first, to the level effect as an "implementational time phase" in which the main effects on recipient area economies is through the demand-side. Demand is boosted by, notably, increased spending on construction or similar public investment. After this initial phase, it is the supply-side effects resulting from the investment that make the difference. These can arise from enhancement of infrastructure or human capital, effects on technological capacity and so on. According to Bradley et al. (2007), though generally positive, structural effects are typically much smaller than the demand-side effects, albeit of different magnitudes from one Member State to another.

Qualitative evaluation studies are generally much more positive, highlighting the influence of governance aspects (Leonardi 2005). There is thus a paradox that it is hard to draw firm conclusions about the effectiveness of policies subject to so much evaluation effort. One contributory factor is that Member State governments have used the cohesion budget as a fund for evening-out net balances in the EU budget, with political leaders judged more by what they concede or obtain in the negotiations than whether or not there is a sound purpose for the expenditure, let alone whether the money is well-used. Moreover, a frequently over-looked consideration is that regional development can be a painfully slow process, with success only being achieved over decades rather than months or years. Yet as Fitzgerald (2006) observes, there are often unrealistic short-term expectations of what cohesion policy can deliver and there is a tendency – whether in econometric specifications or critiques of policy – to under-estimate the lags involved in either turning-round a declining region or building up an under-developed one.

How should cohesion money be spent?

In the past, support from the Structural Funds was concentrated on infrastructure and, to a lesser extent, on human capital development. However, the Lisbon strategy's emphasis on the knowledge economy potentially raises new policy orientations for cohesion policy, especially around approaches to innovation and research, prompting questions of compatibility of aims. Cohesion policy has the potential to augment innovative capacity and performance

in qualitative as well as quantitative ways, but convergence cannot be taken for granted.

The Community Strategic Guidelines (European Council 2006) explicitly stress the link with the Lisbon strategy (in the first clause) and list three over-arching priorities:

- improving the attractiveness of regions, in terms of accessibility, environment and services,
- encouraging innovation, entrepreneurship and growth, and
- fostering more and better jobs and the development of human capital.

While the guidelines repeatedly stress that expenditure has to be adapted to the needs of individual regions, noting for example that infrastructure investment exhibits diminishing returns and makes most sense in lower-income Member States, the language of the Lisbon strategy appears frequently in the elaboration of all three priorities. Indeed, it is presented as though cohesion and Lisbon aims largely coincide. If the purpose of cohesion policy is seen as being purely allocative, this conjunction can largely be defended, so long as the policy is activating or enhancing factors of production that would otherwise be less productive, although it has to be recognised that cohesion spending implies an increased tax burden on the most productive regions. However, to the extent that cohesion also has distributive aims, it cannot so easily be assumed that the transfers are welfare enhancing for the EU as a whole. The equity/efficiency trade-off is a familiar one in any debate on regional policy, and it would be cavalier to assume that it does not apply to cohesion policy.

Innovation and research in convergence processes

Research on productivity growth at the national level by Fagerberg and Srholec (2007) – adopting a capabilities approach to economic development – finds that the quality of systems of innovation and of governance play an important part in promoting catch-up. At the regional level, the literature on knowledge spillovers shows that spatial proximity plays an important part in fostering knowledge creation, an implication of which is spatial imbalance that is to be expected. Empirical work undertaken by participants in the DIME network fleshes out the extent of the disparities and their determinants (see, for example, the evidence on technology clusters adduced by Verspagen 2007).

The volume of patenting in a region is greatly stimulated not only by the indigenous science base and, implicitly, the funding of research, but also by the region's proximity to other regions with strong scientific performance (Frenken et al. 2007; see also, Maurseth and Verspagen 2002). They find that researchers collaborate most with each other in research-intensive regions, but that cross-border links tend to be between researchers located in capital regions. As a result, less-advanced regions struggle to connect to the research leaders and find it harder to access the potential benefits of research networks. Networks, such as those funded by the Framework programmes can help, but there is a danger that the philosophy behind the European Research Area will reinforce the links between the best researchers in capital regions, leaving others on the outside. A possible conflict with cohesion cannot be excluded.

In the integrated guidelines for the Lisbon strategy, innovation poles or clusters are mentioned in Guideline 8, which refers to "helping to bridge the technology gap between regions" and Guideline 10, which focuses on networking between clusters. However, elsewhere in the guidelines cohesion is only mentioned in connection with social and territorial aims, not economic. Instead, the message from these Guidelines is much more that regional and structural policies should serve "Lisbon aims". Thus, in introducing Section B.1 on *Knowledge and innovation: engines of sustainable growth*, the Commission document places policies to invest in knowledge and to strengthen innovative capacity at the heart of the strategy, and states that "national and regional programmes will be increasingly targeted on investments in these fields in accordance with the Lisbon objectives" (European Commission 2005, 16). However, few "Lisbon" National Reform Programmes (NRPs) have a strong regional dimension and, instead, focus on improving national economic performance.

Policy development challenges

It can be difficult to design an approach to structural interventions that combines common principles and customised content. For some parts of the EU, deficiencies in basic infrastructure are still striking and are likely to prevent other policies having much effect. In other areas, entirely different obstacles to increased competitiveness may be most damaging[1]. While cohe-

[1] A possible approach would be to focus on what inhibits investment in a region and to concentrate policy effort on overcoming such obstacles – what Begg (2002) has called an "investability" approach.

sion policy has progressively become more subtle, there is a danger that too great a "Lisbonisation" of cohesion policy will result in inappropriate policy choices, and may also undermine equity considerations. For example, De Propris (2007) finds that approaches to clustering appear to lack coherence and to be overly prone to capture by narrow interests.

One strand of thinking, strongly advocated in the Sapir Report (2004) and reinforced in other work (for example, de la Fuente 2004; Santos 2008), is that the regional focus of cohesion policy is inappropriate. Instead, it should be at the level of the Member State that the distributive element of cohesion policy operates, leaving Member States to determine their own priorities. For the recently acceded Member States, there is an open question about whether it makes more sense to promote national growth, irrespective of territorial balance. Certainly, there is strong evidence that inward investment is attracted primarily to growth areas and that in the competition between countries to lure inward investors, infrastructure and services play an important role. According to Santos, it is the confusion between growth and convergence aims that needs to be resolved, and she argues that the former requires a concentration on where the resources are most productive, whereas the public good of convergence has to be reconciled with subsidiarity concerns.

The Sapir Report also emphasised the importance of boosting institutional capacity. New cohesion policy instruments with the colourful acronyms *JASPERS, JEREMIE* and *JESSICA* have been introduced, partly in response to a perception that administrative weaknesses can greatly diminish the effectiveness and efficiency of structural policies. In this regard, the measures can be seen as offering a response to the empirical finding that cohesion policy works best where there is a robust institutional capacity (Ederveen et al. 2006). The Catch-22 is that the regions lagging furthest behind are, very often, those that exhibit the greatest institutional shortcomings.

Ignoring the adverse effects of regional imbalance would be risky. In Germany and Italy, the problem of coping with uncompetitive regions has been a severe one. Although the lack of success in transforming several of the Mezzogiorno regions casts doubt on the wisdom of policies implemented over many decades, well-conceived structural policies have clearly made a difference in other settings, and it is hard to believe that the continuing problems of the Mezzogiorno would be solved by directing cohesion support to Italy as a whole.

Conclusions

Cohesion is a Treaty commitment and is something that EU citizens seem to favour, so that the EU needs effective structural policies. Unrealistic promises and aspirations are, however, a perennial problem, whether in regional economic development or in Lisbon NRPs. How then can the cohesion and Lisbon aims be better reconciled? A first element would be to add an explicit convergence/cohesion guideline to the Lisbon framework.

Second, the plausibility of targets and policy orientations should be revisited. All NRPs contain ambitious policies to promote R&D and innovation, and the 4th *Cohesion Report* reveals that the amount spent on innovation and R&D in the 2007–13 programming period of the Structural Funds (European Commission 2007) will double. Questions should, however, be posed about whether a crude R&D target (3 percent of GDP) makes much sense. For several Member States, the economic structure is one for which such a target is potentially misleading and at the regional level, it may be even more so. This suggests a much more subtle approach to innovation and knowledge, rather than allowing it to be hijacked by the crude target (Musyck and Reid 2007). Yet it is here that the policy prescriptions become more tricky, as it is easy to fall into the trap of calling for broader support for regional innovation systems without a sufficiently clear idea of what these entail. Indeed, a number of commentators have expressed dismay about the lack of precision on what such innovation systems imply for policy making. For example, de Bruin and Lagendijk (2005) note that while the concept has taken hold as a normative ambition, it lacks sufficient analytic content.

Structural policies have long time horizons and even when a country achieves substantial progress (as Ireland has), this and the fact that the tap is not immediately turned off are important features of the EU system. Yet cohesion policy faces a dilemma about its spatial concentration and scope. Regional policy, tautologically, is about assisting specific classes of regions, implying that it cannot be comprehensive. For the least prosperous Member States of the EU, convergence is principally about raising GDP per head for

the country as a whole, with the regional distribution of growth as a second-order question. As the Sapir Report advocated, the greatest returns are likely to be from investment in the growth poles, most of which are capital regions, such as Warsaw or Bratislava. But from the perspective of future territorial balance, the evidence of widening disparities in several Member States is a cause for concern. In part, the challenge for the least prosperous regions is to build up the institutional capacity to be competitive in future.

An especially contentious issue is how to interpret the Treaty commitment to cohesion for richer Member States; or to put the question starkly: should the EU try to deal with regional problems in eastern Germany, northern England or the Mezzogiorno, or should they be left to the Member States? To the extent that flows from the Structural Funds are one means of attenuating the net contributions of richer Member States to the EU budget, this is a political economy question, and the economic logic is easily lost in the process. Political economy also rears its head insofar as recipient regions in these countries see money from "Brussels" as a means of acquiring additional resources, whereas central governments are more inclined to see the money as a substitute (notwithstanding the principle of additionality that states that EU money should add to what the Member State offers).

Renationalisation as a direction for cohesion policy is an alluring, yet possibly risky option, albeit one that cannot easily be disentangled from wider differences of opinion about the future of the EU budget. A glib answer in some national capitals is to argue that by reducing the EU role, the EU budget can simply be cut, whereas others advocate greater concentration of EU outlays on regions most in need of structural policy support with an unchanged budget. An alternative approach may be the co-ordination of national policies aimed at cohesion objectives (Begg 2003). The policy methodology of the Lisbon strategy puts the onus on Member States to develop national reform programmes that address common strategic goals, and in the areas of social protection and social inclusion, a new co-ordination process has been in place since 2006, also operating through the open method of co-ordination.

Cohesion policy is awkwardly positioned within two over-lapping sets of tensions. The first is between distributive and allocative objectives, while the second is between the imperatives of the Lisbon strategy and the demands of convergence in economic activity. For the period 2007-13, policy has been orientated towards achieving all four aims, although arguably at the cost of not having as sharp a focus on any of them as might be wished. There is an obvious tension here for structural policy.

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Regional convergence: A relevant measure of policy success?

Nicola De Michelis*

European cohesion policy is governed by Articles 2 and 4, and Title XVII of the Treaty establishing the European Community. In particular, Article 158 determines that the Community "shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas". Article 160 further adds that the "European Regional Development Fund is intended to help redress the main regional imbalances in the Community through participation in the development and structural adjustment of regions whose development is lagging behind and in the conversion of declining industrial regions".

The draft Treaty which is currently being ratified by Member States does not fundamentally change these provisions, though by introducing the notion of territorial cohesion it opens up potentially new, important dimensions to the understanding and implementation of European cohesion policy. This is why the European Commission intends to publish in autumn 2008 a Green Paper on territorial cohesion.

An important question is, therefore, how to measure the effectiveness of European cohesion policy in fulfilling the objectives set down in the Treaty. Since the inception of the policy in the late 1980s, convergence of regional GDP has been the key measure to determine its success. A large body of literature has developed since then to assess whether regional convergence has occurred. Although regional disparities have shown a tendency to gradually decrease over the long run, the process of convergence among European regions has slowed down considerably in recent decades despite the fact that important growth differentials still characterize the European landscape somewhat undermining certain tenets of neoclassical theories.

Certain strands of the economic literature underline the positive effects of European cohesion policy on regional growth and convergence. For example, a recent paper by Puigcerver-Peñalver (2007) estimates a hybrid growth model which allows for endogenous and exogenous factors of growth over the period 1989 to 2000 for 41 Objective 1 regions. Apart from finding convergence, she also finds a significant and positive impact of Structural Funds, which, however, was stronger in the programming period 1989 to 1993 than in the period 1994 to 2000. Successive reports on economic and social cohesion have also attempted to estimate the degree of regional convergence. By comparing the top and bottom quintiles of NUTS2 regions, the report shows that the ratio of the average level in the top regions to that in the bottom regions has declined from 4.1 to 3.4 between 1995 and 2004 (European Commission 2007). Previous work by Leonardi (2006) shows that beta convergence is positive in all the studies which have presented comparative analyses of beta and sigma convergence.

Other studies, however, provide a more mixed picture suggesting that there is not a unique development path. Depending on the characteristics of the regions, the development trajectories differ due to different capacities to catch up and to take up technological opportunities. For example, Cappelen et al. (2002) investigate the long-term effects of Structural Funds on growth at the regional level over the period 1980 to 1997 and found evidence that the effect differs according to different types of regions. While in general EU regional support has a significant and positive impact on the growth performance of EU regions, the effect is much stronger in more developed environments. They highlight that for less-favoured European regions, the unfavourable industrial structure, which is dominated by agriculture and the lack of R&D capabilities,

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may hamper growth. They conclude that in these regions the support needs to be accompanied by policies improving the competence of the receiving environments (for instance by facilitating structural change and increase R&D capabilities in poorer regions). A related investigation is taken up by Dall'erba (2003) who studies the relationship between the spatial distribution of regional income and of regional development funds over 1989-99 using an exploratory spatial data analysis. Results show global and local spatial autocorrelation in the distribution of regional per capita incomes, reflecting the fact that rich (poor) regions tend to be clustered close to other rich (poor) regions, and in the distribution of regional growth rate and regional funds. The analysis also reveals a negative correlation between growth and initial income, which tends to indicate beta convergence. A positive relationship between regional growth and European cohesion policy is also identified in this work, though it clearly emerges that the funds are not the only variable to control for the various growth rates among European regions. A closer look at the economic structure, the accessibility, the institutional aspects of each region as well as the type of projects that Structural Funds finance in these regions and their neighbouring regions could help explain why these regions display greater/smaller development progress than their neighbours even if they receive similar amounts of structural funds.

Finally, other economists argue that it is unclear whether European cohesion policy by itself accounts for the bulk or only a minor part of the growth produced. For example, Santos (2008) finds a weak link between Structural Funds and growth and maintains that European cohesion policy is pursing conflicting objectives by allocating resources to regions where returns on capital are less productive.

In conclusion, it may be argued that – while research on regional convergence and on the role of European cohesion policy in explaining it should continue to improve its analytical tool kit – so far the results remain inconclusive.

One may ask, therefore, whether regional convergence is the most relevant measure of success of European cohesion policy. There are few reasons to actually consider that it is not, at least if taken in isolation.

First of all, there are problems of a technical nature which are linked to issues of relevance, responsibility and measurability. One of the lessons which can be drawn from the literature is that it is very difficult, if not altogether impossible, to isolate the effects of European cohesion policy from other factors that interfere with the operation of the policy: administrative capacities; macro-economic framework; functioning of labour and financial markets; and "institutional thickness". Moreover, one of the most overlooked dimensions of the debate on the effectiveness of European cohesion policy is its interaction and coordination with other public investment policies at national and regional levels. For example, it has been shown (European Commission 2007) that compared to the initial distribution proposed by the European Commission, Member States operate significant adjustments in the allocation of financial resources between sectoral and regional programmes, and among regional programmes. While this is a result of the multi-level governance system of European cohesion policy, it obviously has effects on the development perspectives of regions. And this without considering national investment decisions other than those linked to European cohesion policy. For the period 2007 to 2013, there is only one country – Italy – that has presented to the European Commission a national strategic reference framework which consolidated in one single, coherent document the entirety of the investment in support of regional development.

In any case, even if it were possible to isolate the effects of European cohesion policy, it would remain extremely difficult to establish a causal link between the policy instrument and changes in macro-economic variables. This is why, for example, during the negotiations of the legislative framework for European cohesion policy for the period 2007 to 2013, the large majority of Member States refused to accept the performance mechanism proposed by the European Commission (the so-called performance reserve) linked to the improvement of GDP growth. This reflects a typical problem of responsibility, where the achievement of a given objective depends on several agents (public and private) and policies, making it impossible to bind agents to the target.

Finally, the recent literature on the empirics of growth focuses on the variables which are important determinants of growth in a variety of different models. A first difficulty is linked to the fact that, given the open-ended nature of growth theories which are not mutually exclusive or even com-

patible to each other, choosing a particular model implies a rather strong imposition of prior information. And these priors are often very different depending on whether they are linked to research or to policy-making. A second difficulty which explains some of the scepticism and mistrust to growth regressions is related to the potential collinearities of regressors which might affect the results, to potential parameter heterogeneity which might seriously affect the results of growth regressions, and to the potential endogeneity of the variables included in a regression and the difficulty in finding proper instruments to tackle this problem. Several studies using different statistical techniques showed, for example, that the assumption of parameter homogeneity is incorrect in most cases (see Durlauf and Johnson 1995; Desdoigts 1999; Pritchett 2000).

There is, however, a second group of reasons of more of a policy nature which argue for re-thinking the way in which policy impact and effectiveness is measured. Measuring the effect of European cohesion policy by exclusively looking at regional GDP convergence means in fact looking at one dimension – albeit important – of the rationale of the policy.

European cohesion policy has historically addressed, in a more or less explicit way, three main objectives:

- Promoting European *legitimacy*, by enhancing rights and opportunities throughout the Union,
- Improving *competitiveness*, by reducing in all territories the underutilization of resources, and
- Increasing *equity*, by improving citizens' capabilities according to the features of their territorial context.

The policy has done so, by using three separate "modes" of operation:

- *Compelling* Member States to implement "regional policies", or, more generally, public capital spending, according to common EU principles;
- *Setting conditionality rules* coherent with turning regional policy into a "new paradigm" as developed by the discussion within the OECD on territorial policies (roughly defined as a policy which has evolved from subsidies compensating disadvantage to investment supporting regional opportunities; from sectoral approaches to multi-sectoral place-based approaches; from a dominant role of certain levels of government to a multi-level governance approach involving coordination of national, regional and local governments and other stakeholders); and
- *Redistributing resources* across Member States to be put at the disposal of "regional policy" or, more generally, capital public spending.

By concentrating on growth of regional GDP, the debate has de facto limited the analysis of European cohesion policy to its equity objective and its redistributive instruments. Excessive reliance on macro-analysis where causation cannot be proved and where counterfactuals are not developed have prevented the debate on European cohesion policy both from learning about its results, from discriminating between good and bad actions, and from identifying the elements of the policy which need genuine improvement.

Subsequent evaluations have shown that European cohesion policy has contributed to improve the standard of living and economic opportunities in regions, by supporting institutional convergence and administrative modernisation; by improving accessibility to and from the regions; by establishing linkages between research institutions, universities and the business community; by improving skills and employability; by providing advanced services to small and medium-sized businesses. In other words, European cohesion policy has adhered to the mandate set in primary EU law to redress territorial imbalances and improve regional development perspectives rather than compensating for disadvantage.

This pleads for a serious re-consideration of the instruments needed to correctly assess the impact of European cohesion policy with a view to complement and enrich the still much needed analysis of macro-trends. Meso- and micro-level indicators need to be developed and tested that are verifiable, measurable and directly linked to the interventions co-financed by European cohesion policy, while recognising that success is context dependent.

Advancing on this front would also open up interesting possibilities to address one of the most difficult criticisms addressed at the policy and well captured by the recent report of the OECD on the European Union (OECD 2007): how to make the policy more performance-based? As long as the

effectiveness of European cohesion policy is only assessed on the basis of regional GDP performance, it will be extremely difficult to introduce conditionality and incentive mechanisms which would make all the actors involved responsible and accountable for its success.

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Regional growth convergence and EU policies: Empirical evidence and measuring problems

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Introduction: Policy objectives and the agenda

Regional growth and its convergence has been on the top of the EU policy agenda since the first programming period of EU Structural Funds, 1989 to 1993. Over years and programming periods, the reduction of the existing gap between countries and regions in terms of *per capita* GDP remained one the most important policy objectives of the EU. Apart from the change in its denomination (from "Objective 1" to "Convergence Objective"), the current programming period also confirms this priority: the largest part of financial resources is going to be spent in lagging regions and, if we also include the Cohesion Fund, in lagging member states.

Given this emphasis of EU policy on the regional growth divide (for simplicity, *cohesion policy*), it may be surprising to realize after almost 20 years that empirical evidence on its impact is still controversial and, in fact, incomplete. Whether growth convergence really occurred in the EU and whether *cohesion policy* played a significant positive role in this respect is an empirical question, to which no conclusive answer can be provided at the moment. Moreover, hardly any empirical evidence exists regarding the question whether the relevant EU policies as a whole – i.e. the Common Agricultural Policy (CAP) included – actually induced a reduction of the growth gap, since the combination and interaction of different types of policies and their measures could eventually offset any economic effects caused by individual measures.

The Fourth Cohesion Report released by the European Commission last year as well as its predecessors offer an optimistic view in this respect (European Commission 2001, 2004 and 2007). Generally speaking, growth convergence across regions and states in the EU has been presented as a well-established evidence in these reports. Taking a wider look at the existing empirical literature, however, sheds a different light on this subject: results are often controversial and suffer from some serious methodological and data limitations. In particular, whenever *cohesion policy* is evaluated with respect to the observed growth convergence, it is implicitly assumed that all other EU (as well as national and regional) policies are irrelevant. For instance, this is the case of the CAP, for which very little is said about its possible effect on growth processes, although this subsidy still represents the main form of financial support transferred from the EU to the regions.

Over the third programming period from 1989 to 2006, the CAP accounted for 45% of the EU budget, compared to 25% for *cohesion policy*. During the current programming period, these shares are expected to move progressively closer and their positions will be inverted by 2013, while the sum of the two will still remain at about 70% of the EU budget. In September 2007, President Barroso launched the public debate on "Budget Review", the process be which the EU is to redesign its policy and spending priorities for the coming programming period of 2014 to 2020. Commissioner Grybauskaite (responsible for Financial Programming and Budget) explicitly acknowledged that the current budget allocation is clearly in conflict with the real EU priorities, being in fact mainly an expression of old and almost completely out-of-date objectives. The CAP is evidently at the centre of this debate for being inconsistent – and even conflicting – with the overall growth and convergence objectives of the EU. In contrast, structural policies are (at least implicitly) assumed to provide good performance and, consequently, should gain room relative to the "old" and ineffective CAP. This perspective might explain the discontent about the current EU budget allocation.

This article will present an overview of the empirical findings on the role of major EU policies in regional

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growth performance and convergence, and will assess whether such widely shared opinion is actually supported by the facts.

Existing empirical findings and their inconsistency

The Fourth Cohesion Report (European Commission 2007) addresses the evaluation of the impact of structural funds on EU regional economies. Such assessment, in fact, mostly concerns the last programming period (2000 to 2006) and also aims at providing a first *ex ante* evaluation of the current programming period (2007 to 2013). The empirical evidence on which the report establishes its conclusions, however, is mainly obtained from three macro-economic models, HERMIN, QUEST and EcoMod. These models demonstrate a significant positive impact of Structural Funds (Cohesion Funds included) on the growth of lagging regions and states, thus promoting convergence. However, the computed size of this impulse, as well as the speed of convergence it induces, appreciably differs across the models.

In fact, evidence provided by such models, based on simulations rather than econometric estimations of the impact, is of major interest as an *ex ante* and *in itinere* evaluation tool. But they can hardy provide a clear *ex post* demonstration of the effect such policies have really had on growth. In other words, they cannot say much about whether growth convergence actually occurred over a long period of time and whether such a process has been actually fostered by structural policies. The major strength of macro-economic models can also be their main drawback. They are designed to fully represent the impact of policies on both the demand and supply sides of the economy, and both the short-run and the longer-run impacts (Bradley et al. 1995 and 2003). Nonetheless, the real interest in growth empirics is only on those supply side impacts that eventually produce the long-term, namely permanent, effects on growth performances.

Evaluating the impact of Structural and Cohesion Funds may definitely involve many other relevant issues and the above-mentioned macro-economic models represent excellent instruments in this respect.[1] Nevertheless, we must also acknowledge, in the words of the European Commission, that "transfers from the Structural Funds added directly to demand and economic activity, but more importantly, since they were concentrated on investment [. . .], they were aimed at increasing growth potential in the medium and long term. [. . .] The estimates of the "supply-side" effects on growth [. . .] become predominant in the long term. [. . .] Although structural policies are ultimately judged in terms of their effect in narrowing regional disparities in GDP *per* head of employment, it is their impact on the underlying factors which determine economic development" (European Commission 2001, 131).

As a consequence, firstly, a correct evaluation in this respect should be performed over a long enough period of time (namely, more than one programming period). Secondly, whenever the main objective of policy evaluation concentrates on these long-term and persistent effects on the supply side of regional economies, approaches exclusively targeting on such aspects may indeed be preferable. If we agree that the key objective of evaluation is the long-term supply-side effect eventually generating persistent growth and its convergence, we may understand why several empirical studies evaluate these policies within a neoclassical conditional growth convergence framework. This framework admits an empirically tractable, and relatively straightforward, model specification that allows the estimation of growth-enhancing effects over a large-enough number of years and regions or countries.

This empirical approach is also adopted in previous Cohesion Reports for the evaluation of "Objective 1 Structural Funds". The Third Cohesion Report (European Commission 2004) provides an unconditional convergence rate estimate of 0.5 percent for the 1980 to 1988 period over the whole EU area; this rate increases to 0.7 and 0.9 percent in periods 1989 to 1993 and 1994 to 2000, respectively. During these two programming periods the convergence rate observed only across Objective 1 regions has been much higher, at 3.1 and 1.6 percent, respectively. This latter evidence, in fact, would demonstrate a positive impact of Structural Funds on this convergence process.

The almost contemporaneous "Sapir Report" (Sapir et al. 2004) is actually less optimistic in this respect than several empirical studies. In spite of an analogous growth convergence framework adopted, this report provides fairly different empirical findings.

[1] A more complete picture on the whole set of issues, as well as approaches, about the EU structural policy evaluation is also provided by Bachtler and Wren (2006).

Moreover, in this report the possible negative role of the CAP on growth is mentioned parallel to the growth-enhancing impact of Structural Funds, although it is not clarified how this contrasting effect could be actually generated. Among various Cohesion Reports published, the latest one (European Commission 2007) actually refers to the likely contribution of the CAP to regional cohesion, with the conclusion that the distribution of CAP funds seems to favour richer regions in the case of the first pillar (i.e. expenditures related to market support and direct payment to farmers), and is less related to regional growth levels in the case of the second pillar (i.e. expenditures related to rural development-oriented accompanying measures, investment in holdings, agri-tourism, etc.). This evidence, extensively analysed in Shucksmith et al. (2005), would suggest some relevant implications of the CAP on growth convergence and cohesion across EU territories. On this, however, more in-depth empirical analysis is still lacking.

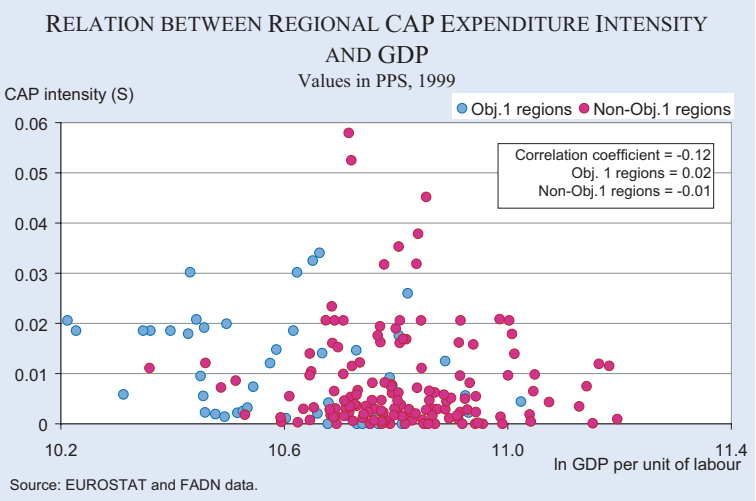
Taking a wider look at the empirical evidence on growth convergence across the EU and the role of policies indeed confirms that a conclusive answer can hardly be given (Fagerberg and Verspagen 1996; Neven and Gouyette 1995). The large body of studies (in the order of hundreds) on growth convergence across EU regions and countries provides mixed and controversial results. This may be caused by the large number of different model specifications, data (for instance, period under investigation) and econometric methods used in this literature. Croci Angelini (2002) surveyed 16 different estimations of "unconditional" β-convergence across the EU published from 1992 to 2000; the convergence rate varies between 0.4 and 2.9 percent, but several studies actually provide evidence against regional convergence (Abraham and Van Rompuy 1995; Molle and Boeckhout 1995). Adopting a panel and dynamic specification, Canova and Marcet (1995) report a very high convergence speed (about 11 percent for countries and 23 percent for regions in the EU), while, expressed again in specific statistical terms, other studies do not show any clear evidence of "unconditional" convergence (Boldrin and Canova 2001). Within this approach, the "conditional" convergence is strongly supported by some empirical works, while contested by others. Moreover, several empirical studies are also consistent with the so-called "club"-convergence which is the convergence observed within subgroups of regions (Chatterji 1993; Quah 1996; Canova 1999).

Within this large amount of empirical literature, Dall'erba and de Groot (2006) review eleven papers focusing on the impact of Objective 1 Structural Funds on growth convergence. In all these cases, the period under investigation at maximum covers the two programming periods from 1989 to 1999, as final data on 2000 to 2006 payments were only recently released (European Commission 2007). Except for Rodrìguez-Pose and Fratesi (2002), Bivand and Brunstad (2003) and Esposti (2007), none of these studies acknowledges a possible role of the CAP payments. These eleven papers report the impressive number of 200 different estimates of the impact of Structural Funds on regional growth. On average, the estimated impact is small, though positive, but an extreme variability is observed. Eight papers admit a negative impact, while a mean negative effect is obtained in four papers. Moreover, the Structural Fund payments enter the conditional growth convergence model according to *ad hoc,* thus arbitrary, specifications. Consequently, comparability across results is highly questionable.

Differences in data under consideration may also explain such major disparities. For instance, in order to evaluate the Objective 1 Structural Funds, Beugelsdijk and Eijffinger (2005) apply the growth convergence model to the EU15 countries and not to regions – the actual recipients of these funds. Moreover, they specify the policy support in terms of a growth rate instead of the level, the former apparently being much less regular and potentially more statistically "noisy" over a short period of time. In addition, these empirical studies often concentrate on different time periods. Cappelen et al. (2003) consider a long time period (1980 to 1997), but they evaluate structural policy by limiting the estimation to the "treatment" years from 1989 to 1997. Beugelsdijk and Eijffinger (2005) examine the period of 1995 to 2001. Rodrìguez-Pose and Fratesi (2002) investigate the whole 1989 to 1999 period but they also estimate the conditional convergence for the 1989 to 1993 and the 1994 to 1999 sub-periods.

In most of these applications, as mentioned before, the CAP expenditure is not taken into account. This can be also explained by the fact that analysis of the territorial or regional impact of CAP has become a major research concern only in the last fifteen years (Sotte 1995; Laurent and Bowler 1997; Shucksmith, Thomson and Roberts 2005). The main finding often reported is the positive – or at least not significantly

Figure 1



negative – statistical correlation between first pillar CAP expenditure per unit of agricultural land (or labour) and regional *per capita* GDP (Shucksmith, Thomson and Roberts 2005).[2] If we consider the "CAP intensity" (i.e. the CAP expenditure per unit of GDP) and both pillars' payments, we actually do not observe any relation with regional per capita GDP (Figure 1). This is the *distributional argument* on the inconsistency of CAP with the economic and social cohesion objectives of the EU (Tarditi and Zanias 2001).

In any case, this does not necessarily imply that the CAP offsets, even partially, structural policies and thus acts as a counter-treatment (the *counter-treatment hypothesis,* see Esposti 2008). Explicitly testing whether the CAP actually acts against *cohesion policy* requires a more careful approach, as we need to model how the CAP interferes with structural policies in affecting regional growth processes. The use of an appropriate theoretical framework to analyze the CAP's possible inconsistency with regional cohesion has been, in fact, suggested by some recent empirical work (Rodrìguez-Pose and Fratesi 2002; Bivand and Brunstad 2003; Esposti 2007). Yet their results are controversial and, as a matter of fact, not fully comparable. Also in these cases, the inclusion of CAP payments in conventional conditional growth convergence is largely *ad hoc.* Moreover, the construction of a complete and consistent regional dataset for CAP payments is particularly critical and may lead to substantially different results.

[2] Though this conclusion is based on the CAP before the 2003 reform there is evidence suggesting that such a reform is not doing very much to remove this inconsistency (Shucksmith, Thomson and Roberts 2005).

Issues regarding research improvement

We wonder why an apparently simple research question – Do *cohesion policy* and the CAP affect regional growth and growth convergence? – within a well-established and widely adopted theoretical framework (the "neoclassical growth convergence model") generates so different and controversial results. There are three sets of fundamental issues on which empirical research has not provided a conclusive answer so far: (i) how the conditional convergence model has to be appropriately augmented to include EU policies; (ii) which policy data are actually available; and (iii) what appropriate econometric techniques are required to estimate policy impacts.

As mentioned above, most empirical studies include policy support by augmenting the growth convergence model with largely arbitrary solutions. This happens because it is not so obvious on which growth conditioning variables the *cohesion policy* and the CAP actually intervene. About fifteen years ago, two seminal empirical works by Barro and Sala-i-Martin (1992) and Mankiw et al. (1992) rigorously derived the conventional linear regression specification of growth convergence from the transition dynamics of the neoclassical growth model (in both the Solow-Swan and Cass-Koopmans versions). In this "formal" or "model-based" specification of the growth convergence model, *per capita* GDP growth depends on the initial per capita income level, as well as on other conditioning variables, these being strictly and exclusively justified by the underlying theoretical framework. Accordingly, the conditional β-convergence model takes this form:

(1)

$$E\left(y_{it}|Y_{i0}, X_{i0}\right) = t\,g + \left(1-e^{-\lambda t}\right)\ln A_{i0} + \left(1-e^{-\lambda t}\right)\frac{\alpha}{1-\alpha}\ln s_{i0} - \left(1-e^{-\lambda t}\right)\frac{\alpha}{1-\alpha}\ln\left(n_{i0}+g+\delta\right) - \left(1-e^{-\lambda t}\right)\ln Y_{i0}$$

On the left-hand side, y_{it} is the i-th region's (or country) *per capita* (or *per* unit of labour) income growth rate over period t; Y_{i0} is the i-th region's initial (at time 0) *per capita* income; X_{i0} denotes a set of other

conditioning variables. The right-hand side makes explicit the whole set of these conditioning variables X_{i0}; g is the total factor productivity (TFP) growth rate; λ is the speed (or rate) of convergence with

$$\beta = -\left(1 - e^{-\lambda t}\right)$$

expected to be < 0 for β-convergence to occur; A_{i0} is the i-th region's initial TFP; $0 < \alpha < 1$ is the coefficient (indicating the capital share or capital intensity within the economy) of the underlying Cobb-Douglas production function with two factors (capital K and labour L) and constant returns to scale; s_{i0} is the i-th region's initial investment rate; n_{i0} is the i-th region's initial population (or employment) growth rate; δ is the capital depreciation rate.

According to the underlying neoclassical growth model, however, g, δ, α and λ are usually assumed to be constant across regions and over time. Thus, the remaining really conditional variables beside Y_{i0} are A_{i0}, s_{i0} and n_{i0}. These are the only legitimate conditioning variables in this conditional convergence model. As equation (1) describes the regional growth convergence pattern toward the respective steady-state, it implies different regional steady-states, therefore the conditional convergence, whenever regions show different conditioning variables.

Augmenting equation (1) to include policy variables thus means to ask how policies affect one of the conditioning variables A_{i0}, s_{i0} and n_{i0}. In this respect, two different modelling solutions can be proposed for the Structural Funds and the CAP payments, respectively. The former makes *capital formation* within equation (1) explicit (Esposti and Bussoletti 2008); the latter obtains an alternative specification of equation (1) from a *two-sector balanced growth* model (Esposti 2007).

As far as the Structural Funds are concerned, the most natural way to include them into a regional growth convergence model is through the investment rate s_{i0}. After all, it should be fairly obvious to regard the Objective 1 Structural Funds as investments, given that most of them (92% in the whole 1989 to 1999 period, 98% in the 1994 to 1999 programming period) aim at building regional stock in three different areas: infrastructure; human capital; other (mainly private) investments including in R&D (European Commission 2001 and 2004; Rodriguez-Pose and Fratesi 2004). According to this straightforward argument, these funds may be interpreted as an increase of the capital stock in the unit of time, i.e.

$$\dot{K} = \partial K / \partial t \,,$$

and, consequently, of the investment rate

$$s = \dot{K} / \bar{Y} \,,$$ where $\bar{Y}$ is the regional GDP.

Considering the Structural Funds expenditure as capital accumulation also has the advantage to allow modelling the different effects of the aforementioned areas of intervention (infrastructure, human capital and R&D, for instance), and how they interact in shaping the growth convergence process. In some studies, structural policy itself is explicitly distinguished among these different investment categories, but this is done only at the country level or considering single regional cases (Bradley et al. 2003; Rodriguez-Pose and Fratesi 2004). Unfortunately, in fact, current available data do not allow attributing the whole Objective 1 expenditure to different investments at the regional level. However, it is often neither possible nor appropriate to associate the expenditure of a given EU Structural Fund to a specific investment typology. One possible way to proceed, therefore, is to model at the regional level the interaction between the overall amount of policy expenditure and the different capital assets (infrastructure, human capital, R&D), or some proxies of them, as this interaction depends on the underlying unobserved share of structural funds invested in that specific asset.

These aspects can thus be modelled by specifying a *capital formation function.* Firstly, we can cumulate past expenditure in new capital formation as a weighted sum of past policy expenditure *per capita* (or labour unit) within the region, that is

$$T_{it} = \sum_{s=0}^{Z} w_s M_{it-s} \,,$$

where w_s is the weight indicating the "portion" of the policy expenditure M, delivered at time t-s and affecting the outcome at time t, and Z is the maximum time lag. Secondly, we can specify a relation between the regional investment rate s and this policy treatment, representing how this public expenditure converts into the above-mentioned different capital assets and interacts with them:[3]

[3] Esposti and Bussoletti (2008) adopt a flexible function specification of equation (2). Beside, *H*, *I* and *RD* other, and more detailed, assets can be evidently considered.

(2)

$$\ln s_{i0} = f(T_{i0}, I_{i0}, H_{i0}, RD_{i0})$$

where I_{i0} = initial regional infrastructure endowment; H_{i0} = initial human capital in the i-th region; RD_{i0} = initial regional R&D expenditure *per capita* (or labour unit).

By substituting equation (2) in equation (1), we obtain an augmented growth convergence model where the impact of Structural Funds on growth and conditional convergence (by affecting the regional steady-state) and, in addition, this impact is actually allowed to differ across regions or groups of regions. This difference may occur either for the different amount of funds but also for the different initial resource endowment across regions in terms of infrastructure, human and knowledge capital, with which structural funds themselves interact.

It is less obvious how to include the regional CAP expenditure in the conventional growth convergence model. The basic idea is that the CAP, as any other sectoral policy, may influence the growth process because it is directly related to the share of agriculture. The underlying hypothesis is that growth in poorer regions is greatly hampered by an unfavourable sectoral structure dominated by agriculture (Cappelen et al. 2003). The formal conditional convergence model shown in equation (1), however, receives sound theoretical justification from the one-sector neoclassical growth model. One possible way to proceed is to enter multiple sectors through term A_{i0} in equation (1). The general idea can be simplified as follows: (i) assume that the regional economy is made of two sectors, agriculture *(F)* and non-agriculture *(N)*; (ii) the share of *F* is related to the CAP expenditure within the region; and (iii) A_{i0} then depends on the shares of the two sectors, therefore on the CAP expenditure itself.

By formulating a two-sector balanced growth model it is possible to express ln A_{i0} as a function of the CAP expenditure as follows (Esposti 2007):

(3)

$$\ln A_{i0} = d_{i0}\left[S_{i0} - F_{i0}^{L}\frac{(1-\alpha)}{(1-\alpha')}\right].$$

where d_{i0} expresses the *agricultural technological gap,* i.e. the difference between the TFP of sectors *N* and *F*; S_{i0} is the regional CAP expenditure *per* unit of GDP or *CAP intensity;*

F_{i0}^{L} is the share of agriculture on regional employment; α and α' are capital intensities in sectors *N* and *F*, respectively. By substituting equation (3) in equation (1), it becomes clear that, through different TFP levels, steady-state levels as well as convergence process itself are allowed to differ across regions as a consequence of different CAP intensity and agricultural employment share. Moreover, together with equation (2), equation (3) also provides the testing possibilities regarding whether the regional CAP expenditure really counteracts the effect of structural funds, thus assuming the above-mentioned counter-treatment hypothesis (Esposti 2007).

Introducing EU policies in equation (1) as an appropriate augmentation of the base model, however, does not necessarily ensure more robust and concordant results from different empirical applications. Some further data and estimation issues remain. Among the former issues, we may mention the lack of official datasets containing policy data at the regional level. EU institutions do not provide the harmonized and long-term series of Structural Fund payments at the EU regional level. This information can indeed be reconstructed from EU and regional documentation but actual comparability of data across regions and over years is highly questionable. Without a shared and univocal solution in this respect, researchers adopt arbitrary or *ad hoc* solutions. This is the case with Multiregional Funds that are a very important part of the whole Objective 1 Structural Fund payments over the period 1989 to 1999 (Table 1), but their actual distribution across regions is unknown. Consequently, they are ignored in some applications or distributed proportionally in other cases. Yet both solutions may eventually lead to biased empirical results.

Analogously, information is lacking on the time when these funds actually generate investments within the region and when they finally produce an impact on growth (i.e. how to compute the term

$$T_{it} = \sum_{s=0}^{Z} w_s M_{it-s}$$

above). Available information often reports years when political decision on fund allocation is taken but not when funds are actually spent within the regional economy. This is evident when one looks at the remarkable and increasing volatility of *annual* expenditure observed over years 1989 to 1999 (Table 1). Also the attribution of funds across prior-

Table 1
Statistical dispersion of *per capita* Structural Fund payments (in PPS) in Objective 1 regions, 1989 to 1999 – CV expressed in %

		Average		Coefficient of variation (CV)	
Year	No. of regions	Total funds	Share of multiregional funds (in %)	Total funds	Multi-regional funds
1989	45	148.9	45.0	57.7	104.3
1990	45	188.0	47.6	108.4	193.7
1991	51	149.8	42.9	65.2	122.1
1992	51	221.4	33.3	89.4	147.5
1993	51	231.7	42.9	58.7	106.8
1994	58	342.5	61.8	230.9	314.0
1995	58	287.4	53.9	105.4	137.9
1996	58	356.0	64.3	220.6	280.2
1997	57	344.4	57.3	162.3	217.4
1998	57	443.2	64.5	175.3	227.2
1999	57	336.8	52.6	95.5	140.6

Source: Esposti and Bussoletti (2008).

ities or items (infrastructure, human capital, etc.) is almost completely lacking as mentioned before. And, if available, it does not necessarily represent the actual expenditure made at the local level.

This incomplete information on policy implementation at regional level is even more severe for the CAP. Building a regional dataset of the CAP expenditure is complex and controversial. With respect to the CAP support, previous studies have calculated a regionalized producer support estimate (PSE). This might be appropriate because, at least in the past, a large part of the support granted by the CAP was not delivered directly in the form of subsidies but through market price support. Unfortunately, defining the PSE at regional level is particularly complex (Tarditi and Zanias 2001; Anders et al. 2004).

Even if only the explicit and direct CAP supports were considered, serious problems would still be encountered. Firstly, this amount should include either the first and second pillar payments. However, the second pillar payments cannot always be regarded as constituting support of agricultural income (Shucksmith, Thomson and Roberts 2005) and, in previous programming periods and in the Objective 1 regions, a part of the structural CAP support was delivered together with the Structural Funds, so that they cannot be distinguished or separated. In any case, the European Commission does not provide regional series of the first pillar payments. EUROSTAT provides NUTS II-level series of agricultural subsidies, but these subsidies cannot be directly and univocally treated as the first pillar CAP expenditure, although they have been used as such in previous work on the regional impact of the CAP (Bivand and Brunstad 2003). Therefore, as Shucksmith, Thomson and Roberts (2005) suggest, the only consistent source of the CAP payments appears to be FADN (Farm Accountancy Data Network), which unfortunately does not cover the whole post-1989 period and may not be fully representative of the actual CAP payments granted to the entire regional agriculture.

Estimation issues are a major source of highly volatile empirical results, too. The first aspect to be considered is that the use of panel data, instead of more traditional cross-sectional ones, has become prevalent in growth convergence studies. Islam (2003) details the main advantages of panel data in growth convergence studies; in such context, dynamic panel-data specifications are increasingly adopted (Caselli, Esquivel and Lefort 1996; Yudong and Weeks 2000; Carmeci and Mauro 2003), with some recent applications also to evaluation of Objective 1 expenditure (Beugelsdijk and Eijffinger 2005; Esposti and Bussoletti, 2008). Such dynamic models explicitly take into account the serial correlation which often affects growth figures, especially in the short term.

Therefore, the use of dynamic panel specifications should significantly improve robustness and consistency of convergence model estimations. However, these formulations may raise further empirical issues as well. In particular, a major problem is the short frequency of data with respect to the medium or long-term horizon of the estimated relations (see Islam 2003). Moreover, these models involve the generalized method of moments (GMM) estimators, small-sample performance of which is often unpredictable. And these problems may be particularly critical when panels with many cross-sectional observations in a form of short-time series are in use – this is evidently the case of Structural Funds across EU regions. Eventually, the relevance of all these econometric concerns is revealed by the sys-

tematic differences emerging between panel-data and cross-sectional studies, as well as dynamic and static specifications. Different choices of moment restrictions and instruments in performing the GMM estimations may also generate systematically different estimates.

Some concluding remarks

On all these open issues, empirical research is expected to make some progress in coming years. This could be greatly supported by the availability of updated statistical information on both growth performance and policy expenditure over the programming periods 2000 to 2006 and later 2007 to 2013. Despite these longer time series, however, it must be also noted that the inclusion of regions of new EU Member States will remain particularly difficult, as policy data will inevitably cover only few years, and reliability of regional growth data before accession is often questionable. Moreover, better and more detailed information on regional expenditure granted through EU policies has still to be provided, especially for the CAP, which will not be available either for the periods 2000 to 2006 and 2007 to 2013.

Aside from these improvements, empirical research on regional growth convergence across the EU is also expected to take care of relevant theoretical and empirical aspects almost completely disregarded in the empirical literature so far. One of them involves the extreme regional heterogeneity now observed across the EU27 in terms of initial capital endowment, sector structure and EU policy implementation. This heterogeneity is often neglected even in panel-data applications, although it should be more explicitly included in the formal model specification. Related to this, one should also consider the cross-sectional dependence which often occurs across regions, but is quite often ruled out in empirical studies. The spatial dependence of growth performance and conditioning policy variables not only raises critical estimation issues but also concerns the representation of regional growth processes and policy impacts within the formal convergence model (Byrne et al. 2008). Badinger et al. (2004) suggests the cross-regional dependence within a conditional convergence model but also admits that a consistent estimator considering the correlation over time and across space at once is currently lacking.

The proposed integration of EU policies in the conventional convergence model may also be further improved. First of all, most studies discussed above exclusively analyse the policy impact within the β-convergence framework, thus assuming that such impact occurs in the region-specific steady-state situation. This does not seem to fully consider the aspect which is more plausible related to the intentions of policy makers – namely that policy actually affects convergence speed, i.e. the β parameter itself. Nevertheless, policies directly affecting β might not be appropriately represented within the conventional neoclassical growth framework. Other approaches should thus be developed in this respect (Croci Angelini 2002), aimed at exploring appropriate links with the above-mentioned macro-economic models. More generally, it would be helpful to re-design the analysis of the policy impact on regional growth performance taking into account all possible policies contributing to the final outcome, as many of them are actually often ignored. For instance, in evaluating the impact of Structural Funds on former Objective 1 regions, those still granted to Non-Objective 1 territories as well as Cohesion Funds flowing into the lagging countries (and, consequently, to their regions) in the EU, are often neglected. Making a policy evaluation in terms of the "treatment effects" (Esposti 2007) would require a more careful consideration of all "treatments" actually contributing to generate (or to counteract) such effects as well as of all methodological implications suggested by the so-called treatment-effect literature (Frölich 2004).

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IRELAND – POLITICS, INSTITUTIONS AND POST-WAR ECONOMIC GROWTH

FRANK BARRY*

Ireland has been one of the global success stories of the last 15 years. The transformation of the economy over this short period of time has been dramatic. Between the mid-to-late 1980s and the present, (1) Ireland's national income per head rose from 65 percent of the EU15 average to above parity; (2) unemployment fell from 17 percent of the labour force – double the EU15 average of the time – to around 4 percent, which is half the current EU15 average; (3) government debt fell from 120 percent of GDP to around 30 percent, and (4) an almost doubling of the numbers at work saw emigration replaced by very substantial immigration.

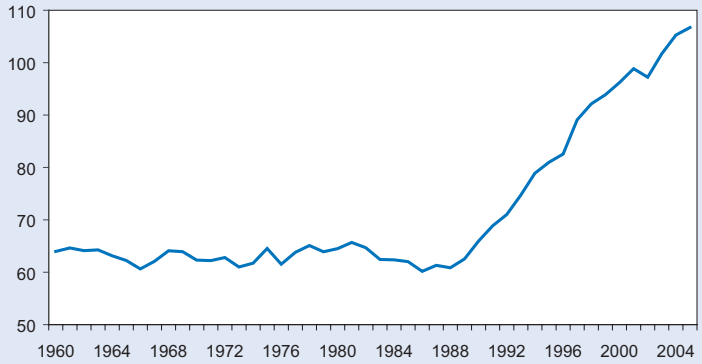
GDP figures overstate Ireland's achievements as they include the massive profits recorded by foreign multinational corporations operating in Ireland. The national income measure cited above is based instead on GNP (and is adjusted for purchasing power differences). Irish GDP is more than 20 percent higher than GNP, a difference not reflected in the data for any other EU country.

Another necessary correction reduces further the scale of Ireland's recent success. Between 1987 and 2003, the merchandise terms of trade fell by some 10 percent, which has a substantial effect on an economy as export-oriented as Ireland's, where the value of exports is close to that of GNP. Crafts (2005) shows that this took 1 percentage point per annum from the growth rate of real GNP per person between these years. The growth phase nevertheless represents a very considerable achievement, especially when measured against the Irish record from the 1960s to the late 1980s, when – as seen in Figure 1 – no convergence was attained on EU15 income per head. Ireland, furthermore, grew far less rapidly than its European neighbours over the course of the 1950s.

The present paper analyses Ireland's post-war growth experience in four phases: the decade of the 1950s, the periods 1960–73 and 1974–86, and the subsequent 'Celtic Tiger' era. Previous comprehensive discussions have been provided by Ó Gráda and O'Rourke (1996), who analyse the phase to 1986, and Barry (2003) who compares the Irish growth rcord to that of the other traditionally lagging European cohesion economies of Greece, Spain and Portugal. Following Abramovitz (1986), who highlights *social capability* along with *technological congruence* as factors determining the extent and pace of economic convergence, a specific focus of interest in the present study is on *institutional capacity* and its evolution in Ireland. Some attention is also devoted to the role of electoral politics in occasionally facilitating and at other times delaying the implementation of positive-sum economic policy changes.

Figure 1

IRISH GNP PER HEAD (PPS)
EU15 = 100



Source: Eurostat AMECO database; Central Bank of Ireland Quarterly Bulletins for Irish GNP relative to GDP.

* Trinity College Dublin.

The 1950s

Ireland remained protectionist for about a decade after most of the rest of Western Europe had moved towards freer trade. The post-war boom of the 1950s saw Western Europe achieving growth rates of almost 6 percent per annum, while protectionist Ireland stagnated with a growth rate of less than 2 percent, an employment growth rate of less than 1 percent, and recurrent balance of payments crises precipitated by the need to import the more sophisticated capital and consumer goods that the country could not produce for itself. Over the course of the 1950s, more than 400,000 Irish people emigrated out of a total population of less than 3 million.

Maddison (1964) charts the opening up of trade in Western Europe in the immediate post-war period. One driving force was Marshall Aid, which required recipient countries to remove the mass of bilateral trade barriers and quantitative restrictions which had developed in previous decades by signing up to a code of trade liberalisation under the auspices of the OEEC (forerunner of the OECD). Non-agricultural quantitative restrictions had virtually disappeared in Western Europe by 1960. Payments arrangements were liberalised at around the same time by the establishment of the European Payments Union. Internal tariffs were cut within both the Common Market, established in 1956, and EFTA, which was created in 1959. There was also a general reduction of 20 percent in industrial-country tariffs as part of the GATT round of 1962. In the Irish case, by contrast, even after unilateral tariff reductions in 1963 and 1964 the average effective tariff level remained almost four times as high as in the country's trading partners in the mid-1960s and were about twice the average level in the run up to EEC entry in 1973.

Why did Ireland remain inward-oriented for longer than most of the rest of Western Europe? As elsewhere, the influence of external agencies was directed towards liberalisation, although only low-level pressures appear to have been exerted. Thus, while Ireland, though a non-combatant in the war, was in receipt of some Marshall Aid funds, the programme agreed under the Marshall Plan was accepting of protection to "enable industries to gain a sound foothold in countries underdeveloped industrially" (Ó Gráda 1997, 49). Ireland joined the IMF in 1957 and submitted a loan application to the World Bank in 1958, although protection only began to be dismantled some five years later.

The ideological impediment to outward orientation resided mainly in the negative attitude of the dominant Fianna Fáil party to foreign ownership.[1] The drive to attract foreign capital was initiated by the non-Fianna Fáil coalition governments of the periods 1948–51 and 1954–57. The first coalition government established the Industrial Development Authority (IDA) within the Department of Industry and Commerce in 1949 to initiate proposals for the creation of industries and to attract foreign industrialists.[2] The second coalition granted the Authority the power to offer industrial grants – which had hitherto been employed only as a means of diverting new industrial activity to the less developed western regions of the country – in furtherance of this mandate. It also took the crucial and imaginative step, in 1956, of introducing Export Profits Tax Relief which triggered the entry of foreign corporations and partly reoriented indigenous industry towards export markets.[3] A further important step was taken in establishing the Capital Investment Advisory Committee in 1956, with a membership of economists and representatives of agriculture, industry, finance and the unions. The Committee would ultimately recommend that grants, loans, subsidies and publicly-provided services be concentrated on export-oriented activities. The Fianna Fáil party opposed many of these innovative measures while in opposition but fully embraced them upon returning to power, a phenomenon we will encounter again when we come to discuss the 1980s, the next major period of economic crisis in Ireland.

The policy shift implemented by the second coalition government began to bear fruit rapidly. Many analysts date the shift in thinking on outward orientation to the report on *Economic Development* prepared in 1958 by T. K Whitaker, the chief civil servant in the Department of Finance, which strongly influ-

[1] For nationalist ideologues "foreign capital was a far more explosive issue than protection. After all, protection was only a means to an end – the building up of a native Irish industry" (Bew and Patterson 1982, 70). The psychological impact of the shift in policy on foreign ownership, when it finally occurred, is apparent from the reaction of one leading Fianna Fáil deputy, who recalls that: "I was bewildered and shocked to find that the principle of Irish ownership of industry, which was central to the Republican policy as I had always understood it, was gone…" (quoted by Bew and Patterson 1982, 121).

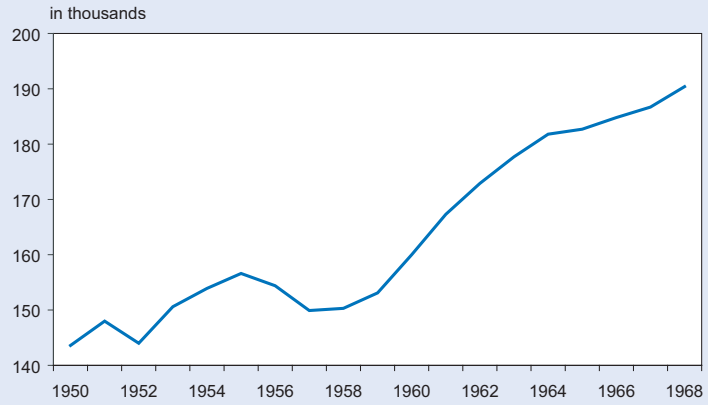
[2] It also split the government budget into separate current and capital accounts, promoting the notion that borrowing should be acceptable for productive capital investments.

[3] The initial Act gave 50 percent tax remission on profits derived from increased manufactured exports. This was increased to 100 percent two years later. The move led to little diminution in the tax base, given that the vast bulk of the country's exports at the time were agricultural in nature.

enced the government's *First Programme for Economic Expansion* published shortly thereafter. Whitaker himself, however, observes that Sweetman, the Finance Minister in the second coalition government, was singularly unfortunate in that his government was overthrown before the "ideas which he implemented could bear fruit", as quoted in Fanning (1978, 511).

Figure 3

EMPLOYMENT IN TRANSPORTABLE-GOODS INDUSTRIES



Source: Kennedy (1971).

There was relatively little in *Economic Development*, furthermore, about the failures of protectionism. It was concerned primarily with fiscal policy, emphasising the importance of "productive" rather than "social" investment and the need for a significant reduction in taxation, while on sectoral issues it argued that attention should be concentrated primarily on raising the efficiency and volume of production in agriculture and in industries based on agriculture. As Leddin and Walsh (2003) point out, few of the policy recommendations in *Economic Development* were subsequently implemented, while careful analysis reveals that the turnaround in economic fortunes occurred before the recommendations that were implemented would have had time to take effect.

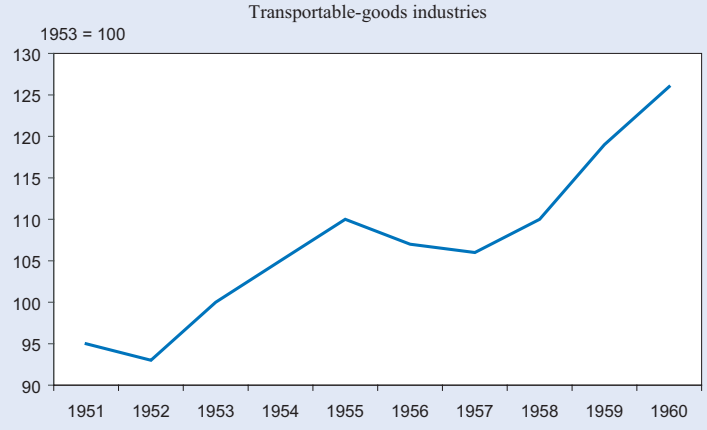
Industry reorientated rapidly towards export markets in the wake of the policies implemented by the second coalition government, evidenced by a 20 percent increase in manufactured exports in 1957 and a 100 percent increase between 1956 and 1960.[4] Manufacturing employment began to grow inexorably from 1957, with the increases apparently all accounted for by new foreign industry, and real GNP grew from 1958 (Kennedy 1971).[5] The turnaround in manufacturing is depicted in Figures 2 and 3.

The improvement in the conditions of industry influenced the overall assessment of the Committee on Industrial Organisation which had been established in 1961 and which reported on the prospects for individual industrial sectors under free trade conditions over the first five years of the 1960s. "Public opinion", according to Fitzgerald (1968, 64), "was struck by the conclusion of almost all these investigations that there was a viable industrial base, with individual inefficient firms, rather than a series of industries incapable of withstanding competition".

That the political pressures to maintain protection had lost substantial ground already by this time is further suggested by Fitzgerald (1968) in his analysis of the response to the 1957 publication of an OECD working party on the creation of a free trade area in Europe. He suggests that so rapidly were public

Figure 2

VOLUME OF INDUSTRIAL PRODUCTION
Transportable-goods industries



Source: Kennedy (1971).

[4] O'Malley (1989) and O'Hearn (1987) estimate that by 1960 the new export-oriented foreign firms established in the 1950s would have employed between 2,300 and 3,000 people in the manufacturing industry.

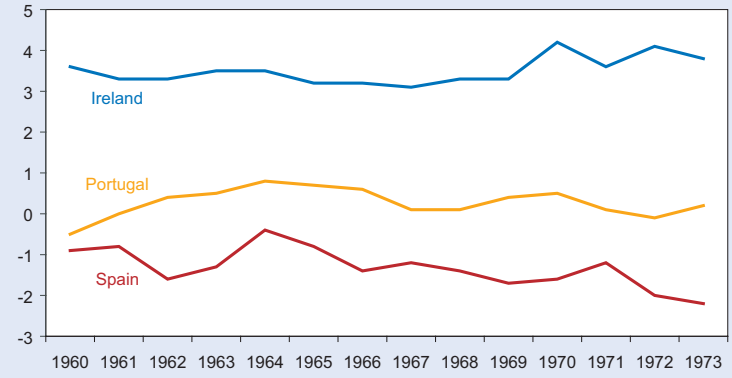
[5] Budgetary policy in 1956 had been very restrictive in the wake of a severe current account deficit and loss of foreign assets in 1955 (Honohan and Ó Gráda 1998).

attitudes on the issue reversed that those who had an interest in maintaining industrial protection found it impossible to resist this movement of opinion, and the proposal (that Ireland would join the proposed free trade area) met with surprisingly little serious opposition.[6]

We can see then, in outline, the constellation of factors that eventually promoted the reversal of protectionist policies. The change of government allowed new policy initiatives – particularly on attracting foreign industries – to be tried. Their subsequent success facilitated a change in ideology on foreign ownership and, by stimulating growth, appeared to have reduced fears over the removal of protection. The widespread respect with which the public service bureaucracy was regarded provided "political cover", which further facilitated the reversal of policy.[7] The growing interactions between government and external organisations and expertise, furthermore, operated in the same direction.[8]

Figure 4

UNEMPLOYMENT RATES IN IRELAND, PORTUGAL AND SPAIN
Current rate subtraced by EU15 average



Source: Eurostat.

1960–72

As seen above in Figure 1, Ireland failed to achieve any convergence on average Western European income per head over the period 1960–72. Ó Gráda and O'Rourke (1996), who benchmark Irish performance against that of the rest of Western Europe, argue that factors such as the share of agriculture in the economy, the delay in dropping protectionism, excessive interventionism, low educational throughput and rent seeking in industrial relations all played a role in the poor Irish outcome. Barry (2003), however, shows that Ireland was in no worse a position than Spain or Portugal along most of these dimensions, yet these other economies achieved substantial convergence over the period.

Macroeconomic policies in each of the countries were conservative at this time. Ireland had a slightly higher share of agriculture in national product but less heavy state interventionism generally. It was the most export-oriented of the group and had begun, like the others, a delayed embrace of outward-orientation. Educational throughput, furthermore, was above the levels prevailing in either Spain or Portugal. Of the factors that growth theory typically focuses upon, only the operation of the labour market appears to distinguish Ireland from the other cohesion countries over the course of the 1960s. The unemployment experiences of these three economies (relative to the EU15 average) are charted in Figure 4. All three were characterised by high emigration. Only in Ireland, however, was this associated with high unemployment and rapid real wage growth.

Notwithstanding Ireland's high unemployment and a productivity growth rate below that of the other cohesion countries (as well as the EU15), Irish real wages rose far more rapidly than in the other cohesion countries, as seen in Table 1.[9] O'Rourke (1995) points out that the labour-market disequilibrium prevailing in Ireland in the 1960s had long historical antecedents. For much of the previous century, in fact, Irish real wages appeared to have been at least as high as in the UK for equivalent occupations, while productivity was likely to have been substantially lower.

[6] Whitaker (1974) indicates a slightly later date for the change in attitudes to protection and ascribes it to the "success – far beyond the initial modest expectations – of the First Programme for Economic Expansion".
[7] Fitzgerald (1968) points out that by publishing *Economic Development* shortly after the *First Economic Programme* was issued, the government made it clear that the Programme was not, and was not claimed to be, a policy prepared by the government party, but was a national programme, prepared by the head of the civil service. This allowed it to be widely accepted as transcending party politics.
[8] The consequences of the growing contacts with international agencies would prove to be particularly important in the field of education, with the implementation of policies advocated in a 1965 report commissioned from the OECD.
[9] The real wage data come from Williamson (1995). These present a different picture from the Eurostat data, but accord better with the reports of economic historians working on the various national economies.

Table 1

Productivity, wages and investment, 1960–73

	Spain	Ire–land	Por-tugal	UK	EU-15
Percentage change in GDP per person employed, at 1995 market prices	114.1	66.7	105.2	38.3	68.3
Percentage change in real wage, relative to 1975 UK real wage	77.8	91.3	62.5	54.8	n.a.
Ratio of real wage change to productivity growth	0.68	1.37	0.59	1.43	n.a.
Investment as % of GDP	24.8	21.0	25.2	18.3	23.8

Note: Irish productivity, measured as GNP per person employed, grew by 66.3 percent, slightly less than when measured using GDP. The term n.a. indicates "not available".

Source: Eurostat.

Daveri and Tabellini (2000) demonstrate the corrosive effects that disequilibrating real wage developments can have on economic growth and convergence prospects. They show in particular that an increase in labour taxes, when wage bargaining is driven by strong and decentralised trade unions, reduces both labour demand and the incentive to invest. The prediction of a resulting low investment rate is clearly borne out in both the Irish and UK cases shown above. Investment rates in Spain and Portugal, by contrast – where "state corporatist" regimes enforced wage moderation – were above the Western European average.

The Irish real wage levels of the 1960s appear to have been too high for labour-intensive industries to prosper. Domestically-owned firms, which were in low-skill-intensive sectors, failed to gain foreign market share while seeing their share of the home market eroded (O'Malley 1989). Only the significant levels of FDI entering the economy propped up Irish manufacturing.

What drove this excessive wage growth? Ó Gráda (1997) hypothesises that because of easy access to the British labour market cheaper labour could do little to compensate for Ireland's relative backwardness and isolation, or to generate the investment necessary for faster economic growth. The high unemployment of the period suggests that other disequilibrating factors would also have been involved, however. The argument proposed here is that the situation was exacerbated by expansionary fiscal policies – associated with increasing labour taxes – in the presence of inefficient industrial relations structures.

The main recommendations of the 1958 Whitaker document on *Economic Development* were for a significant reduction in taxation and for public capital investment to be redirected from "social" to "productive" investment projects. Yet, neither of these recommendations was pursued. The capital budget in 1963–64 was 60 percent above that proposed in the First Programme, with only a small diminution the social investment share.

Bew and Patterson (1982) argue that the expansion in social investment represented a Fianna Fáil strategy to recapture its working class constituency in the aftermath of the election losses of the 1950s. Seán Lemass, who succeeded de Valera as Taoiseach in 1959, appeared to agree with the newly established Irish Congress of Trade Unions in the value of pump-priming the economy, even though this might be pro-cyclical.[10] Within a year of Lemass becoming Taoiseach, according to Girvin (1994, 126), "he had abandoned the cautious economic policy, and budgets began to expand with increased investment in those areas identified by Congress both in policy documents and in its private research".

The expanding share of government spending in GNP was associated with an increasing burden of labour taxation. Table 2, from Nickell (2004), provides data on developments in the Irish tax rate on labour over time.[11]

[10] Lane (1998) provides evidence that the pro-cyclicality of Irish fiscal policy dates back to the 1960s.
[11] Irish real labour costs, furthermore – according to Nickell (2004) – exhibit amongst the sharpest increases in the OECD in response to increases in the tax wedge, arguably because of the openness of the labour market.

Table 2

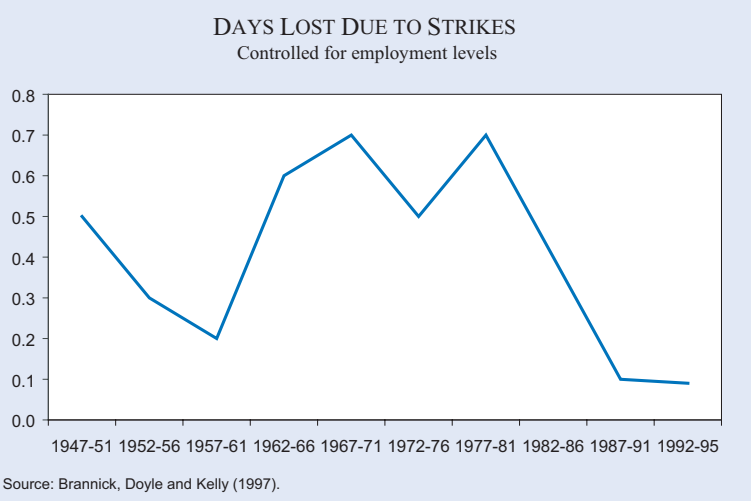
Total tax rate on labour
(payroll, income and consumption taxes in %)

1960–64	1965–72	1973–79	1980–87	1988–95	1996–2000
23	30	30	37	41	33

Source: Nickell (2004).

The situation in Ireland in the 1960s conforms to the Daveri and Tabellini (2000) model and contrasts sharply with that of Eichengreen (1996) who proposes that the social contract established in continental Western Europe, which purchased wage moderation by guaranteeing construction of a welfare state and high private-sector investment, promoted rapid post-war growth and convergence on US living standards.

Figure 5



Source: Brannick, Doyle and Kelly (1997).

The Irish industrial relations system of the time prevented the establishment of any such compact. As described by Hardiman (1994), bargaining groups in the strongest bargaining position assumed a role of wage leadership, establishing the norm for the pay round which later entrants sought to emulate.[12] No single bargaining group believed it had to pay any attention to the impact of its activities on the overall state of economic performance. Yet the cumulative consequences of everyone's bargaining practices were proving more and more harmful to overall economic performance. Divisions within the trade union movement contributed to the extent of wage inflation and the scale of industrial conflict. Sectional differences between skilled workers and the rest increased the potential for leap-frogging wage claims.

This closely conforms to the type of industrial relations system that Calmfors and Driffill (1988) associate with the poorest macroeconomic outcomes. Citing Olson (1982), they note that organised interests are most harmful when they are strong enough to cause major disruptions but not sufficiently encompassing to bear a significant fraction of the societal costs associated with pressing their own claims.[13]

Evidence of the poor industrial relations environment of the time is provided by the data on days lost due to strike activity (controlled for employment levels in non-agricultural activities) as seen in Figure 5.[14] Work days lost were at historically high levels during the 1960s and again from 1977–81, another period of fiscal expansion. Irish strike activity, furthermore, was very high by European standards over this period.

While it would take another fifteen years for changes in the Irish industrial relations system to begin to yield better outcomes, more benign subterranean developments were taking place elsewhere in the economy, particularly with respect to education. Growing outward orientation was reflected in an increased desire to benchmark against international standards. Thus, Ireland, recognising that the changing occupational structure associated with the growth of manufacturing would place significant demands on education and training systems, volunteered to have its entire educational system surveyed by the OECD (White 2001). The subsequent report, *Investment in Education* issued in 1965, made newspaper headlines when it reported that over half of Irish children left school at or before the age of thirteen, a far higher proportion than for most of Western Europe. Free second-level education and free access to special transport networks for all second-level school pupils were introduced shortly thereafter. Thirty years later the numbers at school had trebled, with 80 percent completing the full cycle (compared to only 20 percent in 1965). Numbers at third-level meanwhile had increased even more substantially – by a factor of six.

1973–86

Like the other EU cohesion countries, Ireland failed to achieve any convergence on average

[12] The wage leaders were generally craft groups.
[13] As a further reflection of this, Hardiman (1994) cites a trade union official who commented that if there are 16 percent out of work, there are still 84 percent in work, who are not too put out by the plight of the unemployed and who want their wage increase.
[14] McCarthy's (1973) detailed history of the major Irish strikes of the 1960s confirms Hardiman (1994)'s description of the industrial relations environment of the time.

Table 3
Growth, inflation and fiscal outcomes (in %), 1974–86

	Ireland	EU15
Growth in income per head	1.6	1.7
Inflation	13.1	9.6
Net borrowing by general government as % of GDP	10	3.7

Source: Eurostat.

EU15 income per head over the period 1973–86, which was dominated by the two oil crises. Barry (2003) shows that the cohesion countries exhibited greater macroeconomic instability than the European average in the wake of the oil shocks and suggests that this phenomenon – of poorer countries losing macroeconomic control more easily than richer countries under difficult global conditions – may account for generally poorer convergence performances over periods of global slowdown. The oil shocks were exacerbated in all the cohesion countries by concurrent wage explosions. While the causes of the wage explosions differed – Spain, Greece and Portugal, after all, each returned to democracy over this period – the events of the late 1970s in Ireland illustrate even more dramatically than in the earlier phase the costs of pro-cyclical fiscal expansion combined with unsustainable wage increases.

Leddin and Walsh (2003) provide a detailed account of the budgetary strategies adopted by the numerous fragile governments of the period. In line with the behaviour of many other governments, the Irish government of the time responded to the first oil shock by increasing spending in an attempt to maintain aggregate demand. It lost power, however, when it attempted to reverse policy as the economy recovered. The ensuing (Fianna Fáil) government of 1977, in a bout of naïve Keynesianism, instituted a major pro-cyclical fiscal expansion, which it described (in the belief that the increased growth achieved would generate sufficient tax revenues to quickly eliminate the budget deficit) as a "self-financing fiscal boost".

As a later Finance Minister (from the same political party) was to astutely observe: "All the benefits in the ill-fated 1977 Fianna Fáil manifesto were front-loaded and the payback never came. Tax cuts were delivered in anticipation of pay moderation rather than in response to it. It was all carrot and no stick."[15]

With the rise in world interest rates in the wake of the second oil shock, the deficit quickly spiralled out of control. Governments from the early 1980s responded by raising taxes, with Ireland exhibiting the fastest growing tax-to-GNP ratio in the OECD. The tax burden raised wage demands however, exacerbating unemployment and raising social welfare spending. Political wrangling prevented the implementation of expenditure cuts, since trenchant opposition criticism encouraged the defection of government coalition partners or the withdrawal of support for minority governments.[16] How the fiscal crisis was eventually resolved will be discussed in the next section.

As seen above in our analysis of the 1960s, even in the face of macroeconomic underperformance some positive subterranean institutional developments were still in progress and these would set the scene for the Celtic Tiger expansion of a later period. Some of the most important developments in the tertiary education sector in Ireland, for example – particularly within the vocational element of the system – occurred over the course of the 1970s. The cornerstone of this element consisted of the Regional Technical Colleges (RTCs), five of which were established in 1970 and a further four between 1971 and 1977. These colleges, offering mainly short-cycle and sub-degree level programmes, concentrate on the provision of courses in engineering, construction and business studies, applied science, and art and design. From having had a tiny short-cycle third-level sector before 1970, by 1981 Ireland had internationally, after the Netherlands, the highest proportion of third-level students taking sub-degree courses. The significance of this expansion will be addressed when we come to consider the later Celtic Tiger era.

Another institutional development over this period saw the IDA grow in influence within the public-sector bureaucracy. The IDA evolved into an important channel of knowledge transmission from the multinational business sector to government. It played a major role, for example, in forcing through the modernisation of the country's telecommunica-

[15] See also MacSharry and White (2000).
[16] Patrick Honohan (1988), who was an economic adviser to government at that time, notes that it was immediate political pressures rather than any intellectual argument that resulted in the choice falling on tax increases rather than spending reductions. In short, it was the familiar consideration that expenditure cuts tend to hit particular identifiable interest groups, while tax increases can be spread more thinly across society. Even the political party that won the election of 1987 and implemented far sharper spending cuts than proposed by the previous government had campaigned on the slogan that health cuts hurt the old, the poor and the handicapped.

Table 4

Enrolment in various elements of the tertiary education sector

	Mid-1960s	Early 1970s	Early 1980s	Early 1990s	Late 1990s
Total number enrolled (in thousands)	21	27	43	73	112
of which (%)					
Universities	75	75	55	54	54
Vocational, Technological & RTCs	5	9	26	39	37
Others	21	16	19	7	9

Source: White (2001).

tions infrastructure in the late 1970s and early 1980s in response to MNC complaints. This allowed Ireland to emerge, thereafter, as a leading location for traded-services offshoring from the US and elsewhere.

It also played an important role in national manpower policy through the establishment of a forum in 1978 for dialogue between the agency and the educational institutions. The agency, concerned by the looming disparity between electronics graduate outflows and its own demand projections, convinced the government to fund a massive expansion in educational capacity in these areas. The output of engineering graduates, as a result, was raised by 40 percent between 1978 and 1983, while the output from computer science increased tenfold over this same short period.[17]

1987 – the present

A fortuitous combination of changes in policy and the external environment occurred in the late 1980s. The effects were dramatic, as cited earlier, and gave rise to the Celtic Tiger sobriquet. The beneficial shocks included a change in fiscal strategy in 1987 which created space for future tax reductions. These, in combination with the country's newly developed "social partnership model" of wage determination, bolstered cost competitiveness. The doubling of the EU Structural Funds in 1989 allowed a rapid resumption in the badly-needed infrastructural projects which had been put on hold as part of the change in fiscal strategy, while the Single European Market and the global high-tech boom saw a huge increase in FDI flows both into and within Europe, of which Ireland captured a sharply increased share.[18] We discuss each of these factors in turn.

Since the early 1980s successive governments had attempted to reduce the government budget deficit through tax increases because expenditure reductions would have been too costly at the political level. A combination of factors in 1986–87 paved the way for a new and ultimately successful stabilisation attempt which relied on cuts in government spending instead. Supportive developments included a currency devaluation, which improved cost competitiveness against the UK, and a lift-off in the world economy – and especially the UK – in 1987, which meant that the Irish expenditure cuts were (benignly) countercyclical.

Two other factors – one institutional, the other political – enhanced the space for fiscal consolidation. The first was the agreement of the social partners in 1986 on the necessity for fiscal consolidation, and the second was the agreement of the political opposition to support the expenditure cuts. These latter factors have been acknowledged by the Finance Minister of the 1987 government, who writes: "In 1987, for the first time, a political consensus on fiscal policy was beginning to emerge to underpin the economic consensus already outlined in the NESC report *Strategy for Development 1986–1990*, which had been published the previous November."[19] The NESC analysis of what was wrong and the prescription of what needed to be done was agreed by all the social partners – including employers, trade unions, farmers and others – without dissent. The NESC described the economic and social problems facing the country as "extremely grave" and set debt stabilisation as a minimum objective of fiscal policy, while relying on public-spending cuts – not taxation – to achieve that adjustment. This was the most critical part of its overall strategy. The boldness of the NESC approach, the consensus of the social partners in

[17] Further examples of its influence would surface later: for instance, in the government decision to reduce the rate of corporation tax on services substantially in the face of European Commission demands to harmonise rates across sectors, and in the massive increase in funding of science, technology and innovation policy instituted over the last decade.

[18] Another factor which has received less attention is the deregulation of airline access to the country (in 1986), which facilitated a more than doubling of inbound tourist numbers over the following decade.

[19] NESC – the National Economic and Social Council – can be loosely described as the social-partnership secretariat.

backing it, and Fine Gael's generous promise of political support on fiscal policy all created a new opportunity to tackle, finally, the public finances[20]" (R. MacSharry, writing in MacSharry and White (2000, 62).

The year 1987 also saw the introduction of pay determination via social partnership, with government, unions and employers coming together every three years to chart a course for future wage increases.[21] Successive governments have used the process to purchase wage moderation via the promise of future tax reductions, with tax cuts estimated to have accounted for about one-third of the rise in real take-home pay since the partnership process began.

This corporatist structure stands in sharp contrast to the way pay rates had been determined in the 1960s and 1970s. In terms of the Calmfors-Driffill analysis discussed earlier, the new system meant that participants in the negotiations were now sufficiently encompassing to take into account the macroeconomic consequences of the pay deals struck.[22] In line with this analysis, Baccaro and Simoni (2007) argue that social partnership changed the wage leadership process. Wage increases pre-1987 had been driven by the rapid productivity growth of the foreign-owned modern sector, while increases over the partnership period matched more closely the much slower productivity growth of the largely indigenous traditional sector, leading to substantial reductions in overall unit costs.

The process of social partnership was influenced by ongoing change within the structure of the trade union movement (as well as by declining union membership). Crafts unions, which had played a major wage leadership role in the 1960s and which were amongst the most militant of trade unions, accounted for a steadily declining proportion of total union membership, while a further steady decline – this time in the number of unions – reduced the potential for conflict between different unions which had been a characteristic of the unsettled industrial relations environment of earlier periods. The process of negotiating the partnership agreements, furthermore, has been argued to have promoted a shared understanding of how the economy functions and of the appropriate response to different economic shocks.

The timing of the expansion in EU Structural and Cohesion Funds (SCF) from 1989 was also fortuitous. Besides raising the level of FDI inflows that the economy's infrastructure could handle, the aid would also have impacted on the type of FDI Ireland was able to attract, with the human-capital-development elements of SCF expenditures (which accounted for a higher proportion of SCF spending in Ireland than in the other cohesion countries) contributing to the expanding skill levels of the Irish workforce.[23]

The Structural Funds also contributed to organisational learning within the bureaucracy. FitzGerald (1998) notes that the need to satisfy the donor countries, through the EU Commission, that their money is well spent has resulted in the introduction of a set of evaluation procedures which has helped change the way the administration approaches public expenditure. In the past the only question, once money had been voted by parliament, was whether it had been spent in accordance with regulations. Now there is increasing interest in assessing how effective the expenditure has been.

The final beneficial shock to which the economy was subject was the development of the Single European Market. This led to a doubling (in real terms) in the amount of investment undertaken by US firms in the EU between the early and the late 1980s, and a quadrupling of Ireland's share. In part this may have been due to the playing out of Marshallian agglomeration and bandwagon or demonstration effects in the newly enhanced environment. Perhaps even more important, however, was the liberalisation of public procurement policies that the Single Market entailed. This prevented larger EU countries from using the threat of blacklisting publicly-funded purchases of a firm's products as a lever to influence their location deci-

[20] Fine Gael is the country's second largest political party. It has led all non-Fianna-Fáil coalition governments.
[21] As unemployment fell from the high of 17 percent prevailing at the time of the first partnership agreement, a declining proportion of the workforce have been bound by the partnership agreements, while the heavily unionised public sector has received special "benchmarking" awards.
[22] Hardiman (1994, 157) quotes the then Minister for Enterprise and Employment, speaking in 1992, to the effect that "the trade union commitment in relation to the social dialogue … must be and is driven by the demands of their own members, very largely members who are at work and have strong political clout. On the other hand, politicians…have an obligation to the entire labour force, including those out of work".
[23] The high share allocated to human capital development in the Irish case was arguably influenced by the national focus on FDI, the successful use of the much lower levels of EU regional aid available in the 1970s in developing the RTC element of tertiary education and the fact that national investment priorities were largely determined at the national rather than at the sub-national regional level.

sions, a practice which had previously operated to Ireland's disadvantage. Ireland also attracted a substantial share of newly-offshoring international services sectors over the course of the 1990s, particularly in the areas of computer software and international financial services. Both of these factors have solidified Ireland's position as the most FDI-intensive EU economy.

Of course, Ireland's ability to attract increasingly high-tech FDI over this period was enhanced by the ongoing improvements in educational attainment levels. Ferreira and Vanhoudt (2002) conclude that increased educational throughput – especially given the vocational/technical slant of the skills provided at third level – and the sectoral (high-tech) composition of the increased FDI inflows were self-reinforcing factors that proved decisive for the boom.

Conclusions

The interlocking system of parliamentary, judiciary, press and civil-society scrutiny of government that characterises liberal democratic electoral systems is clearly not sufficient to ensure that positive-sum economic policy decisions are always made expeditiously. One of the benefits of liberal democracy appears, however, in our analysis of Ireland's move towards outward orientation in the 1950s. The Fianna Fáil party had long been committed to domestic ownership of Irish business. The success of the policies adopted by a non-Fianna Fáil coalition government to attract export-oriented foreign businesses facilitated Fianna Fáil in adjusting its ideology upon returning to government. Something similar can be seen in the legacy bequeathed to subsequent Labour governments in the UK by the Thatcher administration. The policy learning process may take much longer in non-democratic or effectively single-party systems, as evidenced by the prolonged economic failures of Mao in China or the long stagnation of Northern Ireland under Unionist Party domination.

A less benign outcome associated with democratic politics appears in our analysis of the difficulties in having expenditure cuts implemented over the course of the Irish fiscal crisis of the 1980s. Because the remedy was painful, political considerations prevented it from being implemented. The necessary political cover was eventually provided through the newly emerged social-partnership process.[24] The emergence of social partnership represents an example of *institutional learning*, which refers to "improvements in the quality of interactions between organisations that relate to each other in a given context".

The task for democratic political systems is then to develop institutions that prevent political parties from being locked into such prisoner's dilemmas in the future.[25] Many of the constraints entailed by EU or WTO membership function in this way. In the case of the EU for example, Buiter at al. (1993) note that external fiscal commitments such as the Stability and Growth Pact can serve as a useful scapegoat in helping politicians to resist domestic factors that systematically induce excessive deficits and ratchet up current spending. The internal market, too, strengthens the hand of government by limiting its freedom to provide state aid, as do requirements on the independence of competition authorities and regulatory agencies. Friedman (2000) refers to this as "the golden straightjacket".

Some institutions then – notably "social partnership" in Ireland in the late 1980s and, by some accounts, the fact that Whitaker's *Economic Development* report of the late 1950s emerged from within the civil service – have been effective in depoliticising or providing political cover for necessary policy changes. Two other important roles of public-sector institutions have also been identified. The IDA and its sister agencies have been important in acting both as buffer and as channel of communication between the private sector and government. Private-sector interests lobby governments for either of two reasons: to achieve benefits for themselves at the expense of others in zero- or negative-sum games, or to convey genuinely useful asymmetric information that can, if accepted, trigger positive-sum government responses. An efficiently-functioning public-sector bureaucracy can help government in distinguishing one form of lobbying from the other.[26] The

[24] The courage of the then leader of the opposition in promising political support for expenditure cuts is also widely acknowledged.
[25] *Vide* FitzGerald (2000), an economist and former Irish prime minister: "Democratic national governments tend to be subject to such strong pressure from vested interests within their own territories that many of their decisions operate against the interests of society as a whole" (FitzGerald 2000, 117).
[26] Evans (1995) identifies the "embedded autonomy" of the bureaucracy as key to insulating "the developmental project" from clientalism and interest-group pressures. Embeddedness – in agency clients and constituencies – is necessary to be able to mobilise the private sector to support the developmental project. Agency autonomy, on the other hand – in the form of performance requirements, constant informal monitoring and formal evaluations – is necessary to prevent the overembeddedness associated with clientalism and corruption.

second and related role, as sent up by the 'Sir Humphrey' character in the TV series *Yes Minister*, is in acting as a repository of organisational learning for government.

Bureaucracies exhibiting certain key characteristics – namely meritocratic recruitment and predictable, rewarding long-term careers and career ladders – are found to perform these functions well. Thus Evans and Rauch (1999) find that these characteristics significantly enhance a country's prospects for economic growth, even when initial levels of GDP per capita and human capital are controlled for.[27] Ó Riain (2004) has recently evaluated the Irish civil service and industrial development bodies on the Evans and Rauch (1999) scale which measures the extent to which they conform to best-practice principles. He finds that the Irish bureaucracy compares favourably to those of countries such as Singapore, South Korea and Taiwan, the highest scoring of the 35 "developing countries" to which the Evans and Rauch analysis is confined.

Significantly, many new policy initiatives are thought to emerge from within best-practice public-sector bureaucracies. White (2001), for example, in his history of the Irish tertiary-level education system, suggests that a particular named senior civil servant was the main driving force behind the promotion of non-university higher education in the period from 1966 to 1980. This element of the system has been argued to have been of particular importance in enhancing Ireland's attractiveness to FDI.[28] While many discussions of the comparative performance of Western economies take institutional capacity as given, it clearly has a critical role to play in economic development more generally.

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[27] See also Rauch and Evans (2000).
[28] Barry (2007).

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A NEW CLIMATE POLICY FRAMEWORK FOR POST 2012

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At the 2005 climate summit in Montreal, the international community agreed on negotiations for the time after 2012. However, guidelines for a new climate protection treaty are still being disputed. Members of the European Union are urging to continue within the framework of the Kyoto Treaty and to further develop its emission caps and flexible mechanisms. The United States, in contrast, did not sign the protocol and do not accept any binding reduction targets. They fear potential economic costs and criticise that emerging countries like China and India do not accept emission caps either (Holdren 2003), although China is already one of the most important emitters of greenhouse gases. China and India should not grow without limits, while costly climate protection harms their own economy and leads to competitive disadvantages. The argumentation of US officials follows the rules of a common good, which is valid for international climate protection (Bardt 2005). The United States strongly claim that emerging countries also have to commit themselves to reduce greenhouse gas emissions (Müller 2003). This claim resulted in the so-called "Byrd-Hagel-Resolution" adopted unanimously by the US Senate in 1997 (US Senate 1997).

But the US position is only one reason why fast growing emerging countries have to be part of a new international climate regime. Today, China is emitting 18 percent of all carbon dioxide, only the United States is emitting more of this greenhouse gas. China will be the largest emitter very soon, countries like India, South Africa, Mexico or Brazil also being among the larger emitters. Therefore, any successful climate policy depends crucially on a limitation of the increase in greenhouse gas emissions in emerging countries. According to the International Panel on Climate Change (IPCC), carbon dioxide emissions from fuel combustion could rise by 45 to 110 percent by 2030 without further global measures. Developing and emerging countries (the "Non-Annex-1-countries") will be responsible for two thirds to three quarters of these additional emissions (IPCC 2007).

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Guidelines for a new climate protection agreement

Global climate protection should be organised as efficiently as possible. Hence, measures to reduce emissions should be applied wherever abatement costs are lowest. This is the only way to get the most climate protection per dollar or euro. Many of the most efficient options are located in developing and emerging countries. On the other hand, most of the cheap potentials of those industrialised countries with active climate policies have already been realised. A new international climate agreement has to make sure that the most efficient mitigation measures will be realised on a global level. Therefore, the flexible instruments of the Kyoto Treaty – "joint implementation", "clean development mechanism" and "emission trading" – have to be strengthened. Massive research and development of climate-friendly technologies that can be sold on world markets may contribute to climate protection as well. A flexible use of different measures in order to fulfil reduction commitments can ensure the efficient allocation of resources while mitigating global warming. This flexibility must be ensured, no matter how national targets would be distributed.

In order to ensure a significant effect on global greenhouse gas emissions, a post 2012 agreement has to be ratified by a group of fifteen countries or country groups which are responsible for 80 percent of worldwide emissions. This includes the most important industrialised countries as well as upcoming emerging countries. The level of commitments should depend on the economic situation of each country. This should help the emerging countries to accept a new agreement. A classification into at least three groups of countries according to their GDP per capita – as an indicator of wealth – seems to be appropriate. In this respect, the fifteen largest emitters of carbon dioxide could be grouped as shown in Table 1.

A new international agreement must allow the participating nations utmost flexibility to decide about how to reach the national targets. Therefore, concepts like a global carbon tax do not lead to the desired results and would hardly be agreed on. Further commitments – like research and development initiatives – should, however, become an important part of a future climate protocol. Existing elements like regional climate protection initiatives or research co-operation should be integrated as well, even though they do not focus directly on reducing greenhouse gas emissions.

Table 1
Fifteen largest emitters of carbon dioxide

High-income economies	Upper-middle-income economies	Lower-middle-income and low-income economies
Australia EU Japan Canada South Korea Saudi Arabia USA	Mexico Russia South Africa	Brazil China India Indonesia Iran

Source: Own compilation based on IEA (2006).

Nevertheless, these decentralized measures will not be sufficient to limit global warming. Consequently, clear emission caps seem to be necessary, at least for the well-performing high-income economies. In spite of US opposition to binding reduction targets, interest in climate protection is rising (Dröge 2007). There are already various climate initiatives on the state level. In order to meet the concerns of the federal government, the reduction targets could be modified in different ways. One possibility to avoid unforeseeable costs is to link national targets agreed on in an international protocol to certain conditions. A safety valve, for example, could be included, which means that reduction obligations could be suspended if reduction costs exceed a certain percentage of GDP. The disadvantage of this modification is a lower ecological effectiveness. Other ways to implement a specific target and to avoid a possible negative effect on economic growth and incalculable costs are indexed targets. An indexed target defines a reduction target which is pegged to one or more variables. An example could be the emission of greenhouse gases per unit of GDP. That means the participating countries would have to increase their greenhouse gas efficiency by a certain rate (Bodansky 2003).

It will be even more difficult to find appropriate targets for emerging countries. Upper-middle-income economies could agree on the avoidance of growing absolute emission levels and the reduction of emissions per unit of GDP by a specified rate. The lower-middle economies and low-income economies could commit themselves to reducing emissions per unit of GDP without limiting the absolute increase of emissions. This would not reduce their emissions, but could lead to more efficient wealth creation and progress in separating economic growth and greenhouse gas emissions. After several years, stricter reduction targets for emerging countries could be introduced as well.

A core element of a new agreement must be the improvement of market-based flexible instruments that are also a crucial part of the Kyoto Treaty. This is the only way to allow reductions to be implemented at minimum cost. Instruments like the clean development mechanism, joint implementation or emissions trading lead to efficiency in reducing emissions. In an ideal world where these instruments would guarantee full flexibility and allocation efficiency, the distribution of reduction targets would be nothing more than the distribution of costs. Additionally, the time horizon of a new treaty will be essential for private business. To be sure, long-term targets are necessary for long-term investments like power plants. In order to define the road towards such long-term targets, medium-term milestones should be agreed as well.

Table 2
Impact of different emission targets

	Ecological effectiveness	Flexibility of compliance	Influence on economic growth	Cost control
Absolute reduction target	+	+	–	–
Indexed target	0	+	0	0
Conditioned target	0	+	0	+
Sector-specific target	0	0	0	–
Financial target	0/–	+	0	+

Note: The signs "+", "0" and "–" mean "positive", "neutral" and "negative", respectively.

Source: Own compilation.

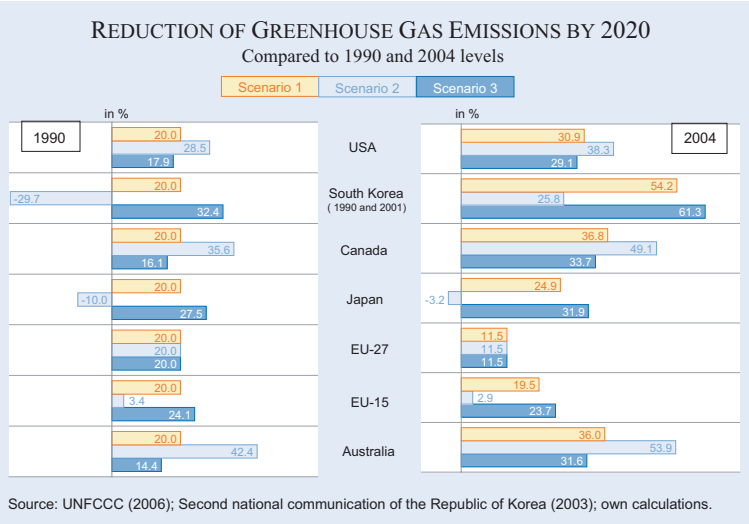
Distribution scenarios

Binding targets to reduce greenhouse gas emissions may only be a result of intense negotiations and can hardly be predicted. But even if an agreement on decentralized elements like the promotion of technological development and non-binding targets can be reached, an implicit burden-sharing will result from those commitments. Clear reduction targets would make this bur-

den-sharing explicit. The following scenarios show three options for possibly resulting distribution effects (Bardt and Selke 2007). The scenarios vary in the basic distribution rule for reduction targets:[1]

- scenario 1: reduction of greenhouse gases by 20 percent
- scenario 2: harmonisation of greenhouse gas intensities
- scenario 3: definition of reduction targets according to gross domestic product

Figure 1



Source: UNFCCC (2006); Second national communication of the Republic of Korea (2003); own calculations.

Scenario 1

At the Council meeting in spring 2007, the heads of state and government of the European Union decided to reduce greenhouse gas emissions by at least 20 percent by 2020 compared to the level of 1990. Emissions should be reduced by 30 percent, provided that other industrialized countries commit themselves to comparable reductions and that well-performing developing countries contribute appropriately according to their responsibilities and capabilities. If members of the category "high-income economies" agreed to a 20 percent target, all countries would have to reduce much more than 20 percent compared to the 2004 level – except the European Union (see Figure 1). This is the result of stable emissions in the "old EU" (i.e. EU-15) and significant reductions in the transition countries of central and eastern Europe, while there has been a massive increase of emissions in most other countries since 1990, regardless whether they signed the Kyoto Treaty or not.

Scenario 2

Another reasonable rule could be the harmonisation of emission intensities, i.e. greenhouse gas emissions per unit of GDP. While the European Union follows its 20 percent target, other high-income economies could commit themselves to reduce their emissions until the European emission intensity is reached, based on today's GDP. In this case, most countries would have much stricter reduction targets than in scenario 1, while Japan could even increase emissions until 2020.

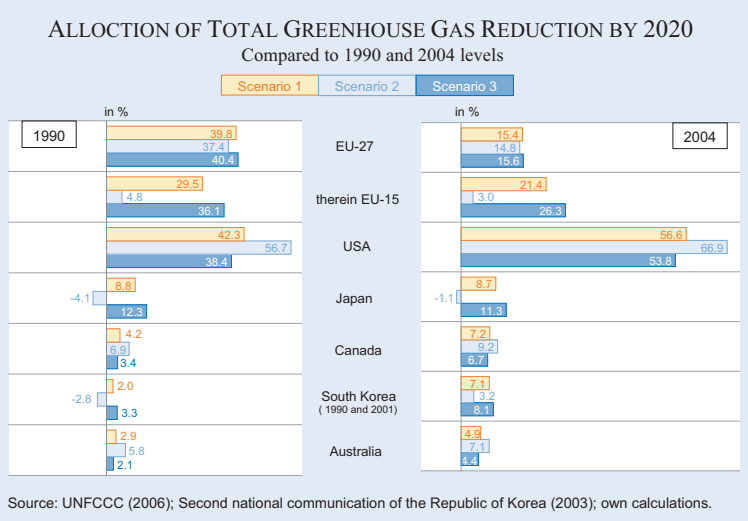
Scenario 3

The third option for a distribution rule is to use the current GDP. The idea is to have richer countries reduce emissions on a larger scale than less wealthy countries. Therefore, in the third scenario the shares of 2004 GDP should be equal to the corresponding shares of total greenhouse gas reduction compared with 1990. Again, the European Union is supposed to reduce its emissions by 20 percent by 2020. In effect, the results are quite similar to those of scenario 1: Canada, Australia and the United States would have slightly less ambitious reduction targets, while Japan and Korea would have to reduce more.

Although the scenarios show higher reduction targets for most countries than for the European Union when taking the 2004 emission level as the benchmark, the EU has to accept a very high share of the total reduction burden. According to the scenarios 1 and 3, the European share is about 40 percent of total emission reductions since 1990 (see Figure 2). The relatively low value in scenario 2 is a result of the lower carbon intensity of the European economy. When calculated based on the 2004 emission level, further reduction duties are distributed quite differently. The European share of any future reduction is significantly lower because of the climate protection efforts made between 1990 and 2004.

[1] Because of insufficient data, Saudi Arabia will not be considered in the scenario calculations.

Figure 2



Source: UNFCCC (2006); Second national communication of the Republic of Korea (2003); own calculations.

All three scenarios demonstrate different potential results of international climate negotiations. These results are derived based on "fair" underlying distribution rules. They also highlight the commitments of other countries which are necessary for the European Union to increase its reduction target to 30 percent by 2020 compared to the 1990 level, as the European Council indicated in March 2007.

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A Chinese renaissance in an unremittingly integrating global economy

Dilip K. Das*

China's rapid economic growth has had a great impact on the global economy, but this is not a "zero-sum" game some worry about.
Joseph E. Stiglitz (2006)

China and the global economy: A fundamental repositioning

The role of China in the global economy has radically expanded since 1978. Its emergence as a powerhouse economy is unprecedented in its ramifications for the global economy. During the early reform phase, China's resolve to globalize appeared feeble. However, with the passage of time the political leadership recognized the invaluable contribution that globalization could make to their economy. Realization of China's potential impact on the global economy also dawned on them. This self-reinforcing two-way process is likely to continue in the foreseeable future. In the initial years of the 21st century, the global economy was on the cusp of a defining historic transformation. It was evident that gradual, albeit tangible, tectonic changes were underway in the global economy. By the end of 2007, after the post-sub-prime mortgage crisis in the US economy, it seemed increasingly obvious that global economic prowess was in the process of making a secular shift from the industrial economies to China and the major emerging-market economies (EMEs).

China's economic presence in several geographical sub-regions steadily increased. Africa, the Caribbean, Latin America, Middle East and South and Central Asia used to be the regions with which China did not have close economic and political relations. However, in the recent past, China has cultivated countries in these sub-regions, essentially for ensuring reliable supplies of industrial raw materials and energy as well as developing trade. Business leaders in China tended to target those regions that were resource-rich but neglected by other major economies for political or other reasons. China's heavy investment in the oil industry of Angola, Nigeria, Sudan and the mining sector in Congo, Zambia and Zimbabwe are some cases in point. China has been assiduously developing these and other African economies as trade partners. Consequently, China's trade with Africa has grown at a rapid pace.

China's re-emergence and economic status is often compared to the growth performance of "miracle" Asian economies that came into their own during the post-War era and carved a niche for themselves in the global economy.[1] While there are many commonalities, this comparison is not entirely correct because, unlike them, China's economic ascent – as it is progressing – is going to be to the status of an economic superpower. It has more in common with the ascent of the US economy a trifle over a century ago and the United Kingdom, where the industrial revolution started during 1760 to 1830. Hence, an appropriate comparison should instead be made to the US economy instead of China's modern Asian predecessors.

The fact that China's present growth performance is comparable to that of the US and the UK is confirmed by the historical growth statistics for these two economies and post-1978 China. In Table 1 below, mainly drawing on Maddison (2003), the growth differential of China has been compared to the UK and the US during the 18th and the 19th centuries. This reveals that neither economy administered such a large shock to the global economy as has China (Winters and Yusuf 2007). Based on the World Development Indicators (WDI), column 1 shows that China started with 2.9 percent of the world's income; for 26 years its average annual growth rate was 6.6 percent higher than that of the global economy. Data compiled by Maddison (2003) in column 2 shows that China had an initial world income share of 4.9 percent and for 25 years its growth differential was 4.4 percent. In comparison to this, historical growth rates of the UK and the US were much lower in terms of the growth differential. Only the US economy came close to China's performance during the period of 1820 to 1870, when its growth differential was 3.3 percent for five decades.

Three decades of macroeconomic reforms, sustained growth and global integration have turned China

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[1] See Das (2005) for a detailed exposition on this issue.

Table 1

Comparative industrialization
(GDP at PPP)

Factor for comparison	China		UK		US	
	WDI 1978–2004	Maddison 1978–2003	Maddison 1700–1820	Maddison 1820–1870	Maddison 1820–1870	Maddison 1870–1913
	1	2	3	4	5	6
Industrializer's initial share (%)	2.9	4.9	2.9	5.2	1.8	8.8
Industrializer's annual growth (%)	13.3	7.5	1.0	2.1	4.2	3.9
Global annual growth rate (%)	6.8	3.1	0.5	0.9	0.9	2.1
Growth differential	6.6	4.4	0.5	1.2	3.3	1.8
Number of years	26	25	120	50	50	43

Source: Computed by Winters and Yusuf (2007) from Maddison (2003) and World Development Indicators, various volumes.

into a future economic power of global magnitude, with unmatched breadth of resources and a robust manufacturing sector. The political leadership of China is committed to world-class economic achievements and to becoming an economic power to be reckoned with. Barring a major domestic or global economic crisis, the economy has an enormous potential to becoming one in the foreseeable future. Numerous macroeconomic projections have been made regarding the point in time when the size of China's GDP will achieve parity with that of the US, or surpass it. Goldman Sachs (2003 and 2004) projected that China could be the largest economy in the world in 2041, if appropriate macroeconomic policies are followed. However, some analysts disagree and argue that China can get there sooner (Shenkar 2006).

Even before reaching that status, China's surging economy is affecting the lives of people around the globe. Such rapid growth in an open economy cannot possibly take place in isolation. Not only China's exports have gained significant market shares in global markets but also its rapidly increasing imports have supported strong growth performance in many countries. It has been having a notable impact on national economies, global businesses as well as employment and consumption patterns. China has been affecting inflation rates, interest rates, wages, corporate profits, real estate prices in many countries and commodity and petroleum prices in the world markets. In pervasive ways, China has been driving economic trends that many countries assume to be domestically determined (The Economist 2005). As China continues to grow, and even if this growth occurs at a more moderate pace, its global economic impact will continue to ratchet up. Economies and firms in a large part of the world will need to devise their strategies to cope with the impact of China's rapid growth.

Can this be termed "dislocation", caused by China's rapid growth? The answer will have to be in the negative because it is not a cyclical or transitory change that China's growth is causing, after which circumstances will be back to normal. Our perspective needs to change. It is a fundamental structural change. Both China's increasing economic weight and escalating integration into the global economy have been rebalancing the global economy. To be sure, some national economies will face significant adjustment problems. China's rapid on-going growth calls for a fundamental repositioning in both macro- and micro-economic terms. That is, essential adjustments that are required will need imaginative strategies from both public policy makers and managers of business firms. Even households are and will continue to be influenced by China' brisk growth, which has been changing relative prices and incomes. The new global economic and business milieu that is being engendered by China's rapid growth will call for new ground rules for competing successfully. The positive supply-side shock that it has given to the global economy has far-reaching implications. Both global employment and consumption patterns have been changing accordingly and will continue to

change. Economies, firms and households will need to prepare for these basic transformations in the global economic structure.

An unprejudiced assessment

China's rapid growth of the preceding three decades has made it an economic force to reckon with, not only regionally but also globally. A tangible outcome of this brisk growth is an increase in the country's global shares of production, investment and trade. A lesson of economic history of the last two-and-a-half centuries is that whenever an economy starts growing rapidly, it inevitably causes some disruptions, displacement and imbalances in the prevailing *status quo* in the global economy. This happens more during the initial phases of rapid growth of an economy than in the latter. When the initial phases end, the economy has attained a more significant global position. In Britain the industrial revolution began in 1760 and was followed by several episodes of such economic expansion. In each case the rapidly growing economy succeeded in locating a new niche in the old global economic order. The rise of a united Germany in the early 19th century and the US in the late 19th and early 20th centuries are two cases in point.

The rapid growth and global integration episodes of Japan, the newly-industrialized Asian economies (NIEs) and subsequently the ASEAN-4 during the post-1955 period are some of the recent illustrations of successfully growing economies making a new niche for themselves in the global economy. What China is doing now is identical to what several other Asian high-performing economies (AHP)[2] did in the preceding half century. During their comparable rapid-growth periods Japan, the NIEs, and the ASEAN-4 economies also had a similar impact on the global economy. They initially caused some disruptions and even consternation. In case of the ASEAN-4 this disruption was minor, but eventually their emergence benefited the global economy. It led to all the boats rising due to their tidal influence.

The Chinese economy is presently in the throes of its initial phase of growth, expansion and global integration. Its pace has been remarkable, comparable to those of the other AHP economies. While it has faced resentment and antipathy from some quarters, a lesson of history is that antagonism is hardly warranted. A realistic and dispassionate estimate of the impact of China's economic emergence and global integration is that, while some short- or medium-term problems are be expected, the impact on the global economy is likely to be positive on balance after the initial phase of disruptions is over. However, the outcome of this problem phase will be far from uniform and its impact will necessarily vary across countries, industrial sectors and socio-economic groups. An economy's trade structure and its trade and investment relations with China will determine the nature and magnitude of this so-called China-effect on it. In this article we shall explore which countries and sectors will reap the largest opportunities and which may have to bear the heaviest adjustment burdens.

As China grew to be the fourth largest economy in the world (in 2005) in a short time span of three decades, should the other countries be apprehensive of a rapidly growing Chinese economy completely dominating the global economy and thereby inflicting harm on their economies? Let us take one prominent eye-catching variable, trade. In 1977, China was a marginal trading economy and its share in world merchandise exports was 0.6 percent (Lardy 1998). In 2005, China accounted for 7.3 percent of total multilateral exports and 6.3 percent of total imports (WTO 2006). China had become the third largest global trader. Some startled non-economists often construe that China will manufacture and export everything soon and the other economies of the world will have nothing left to trade. This is an inappropriate, simplistic, extrapolation of the past developments to reach an illogical conclusion. In accordance with the classical principle of comparative advantage, China's rapid growth will change the global division of labor, and it will produce goods in which it has a comparative advantage, which will be determined by its factor and organizational endowments and will import those in which it does not have a comparative advantage. As China's status as an exporter has grown, so has its status as an importer. Economies, large and small, trade on the basis of their comparative advantage, which in turn is a dynamic concept. Therefore, this apprehension is basically futile. However, what concerned public policy makers or business decision makers need to know is where

[2] The ten Asian high-performing (AHP) economies that turned Asia into the rapidest growing region of the recent past comprised China, Hong Kong SAR, Indonesia, Japan, Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand. This dynamic group of Asian economies was led by Japan. China is the latest entrant to this group of dynamic economies.

China is going to fit in this changing global division of labor.

Modest role in the global economic fora

The influential G-7 was established in 1985 to facilitate global economic and financial cooperation among the largest seven industrial nations. The annual summit meetings of the member nations, Canada, France, Germany, Great Britain, Italy, Japan, and the United States, had begun earlier in 1975. The G-7 has been the dominant forum for deliberations and discussions on economic, financial and commercial matters of its members and works to assist the economies of other nations. In 1998, Russia was officially included to form the G-8.

The United States, Japan and Germany are the three largest global economies, in terms of GDP. Although in 2005 China was the fourth largest economy, it was on course to overtake Germany in 2007. If adjustment is made for China's relatively low cost of living and if nominal GDP is measured in purchasing power adjusted currencies, China became the second largest economy in the world in 2004, after the United States. As such it has provided significant impulses to global growth. Its impact on the global economy has been pronounced and growing. According to the 2004 statistical data, China is also the third largest trading economy in the world after Germany and the United States. Surging economic growth is moving the Chinese economy towards the center of the global stage, adversely affecting the hitherto overbearing authority of the Quad (Canada, the EU, Japan and the United States). In an increasingly multi-polar world business and political leaders will need to have an authentically global collaborative mindset.

As the realization of China's global economic significance grew, it was invited to the G-7 deputies' meeting in 2003 and to the G-7 meeting in 2004. However, China – the fourth largest economy and the third largest trader – is still not a formal member of the G-7 or G-8. A G-7 without China cannot rationally be regarded as the true representative of the global economy. It does not reflect the present division of economic and financial powers. To rectify this, the proposal was made (Wolf 2007) to replace the G-7 by the G-4 consisting of China, the Euro Zone, Japan and the United States, so that a global dialogue among the leading economic players can better take place.

Realization of the fact that the G-7 was losing its relevance gave rise to the concept of the Group-of-Twenty (G-20) during the G-7 summit of June1999. The leaders of the G-7 industrial economies declared their intention to work together to establish an informal mechanism for dialogue among important countries within the framework of the Bretton Woods institutional system. The intention of the G-7 leaders was to broaden the dialogue on the crucial economic and financial issues related to the global economy. The objective was to promote cooperation to achieve stable and sustainable global economic growth that benefits all. The G-20 was formally created at the September 1999 meeting of the G-7 Ministers. It was launched with fanfare in December 1999 in Berlin. Over the years the G-20 emerged as a valuable piece of global architecture, although some of its members are more active than others (Sobel and Stedman 2006).

A different Group-of-Twenty (G-20) was born before the Cancún Ministerial Conference of the WTO in 2003. This G-20 coalition included some developing country members of the Cairns Group (Argentina, Brazil and Thailand) which were interested in improving market access for their agricultural exports. It also included other developing countries (India, Mexico, Bolivia and Ecuador) which were concerned with defending their domestic markets from import surges. The leadership of the G-20 was collegial; it was jointly led by Brazil, China, India and South Africa. China is the larger trader among the G-20. It not only played a meaningful role in the Cancún Ministerial Conference but also at the 2004 WTO meeting in Geneva, which put together the July Framework Agreement reviving the moribund Doha Round.[3] For the members of the G-20, one lesson learned at Cancún was that, to avoid later frustrations, they needed to approach future ministerial conferences, multilateral trade negotiations (MTNs) and other important WTO meetings with well beefed-up teams of trade economists and better preparations in terms of research for negotiations (Das 2007). As a G-20 member, China could influence the formulation of multilateral trade rules more than it has done so far. However, Brazil and India

[3] At the time of writing, the G-20 has the following 21 members: Argentina, Bolivia, Brazil, Chile, China, Colombia, Costa Rica, Cuba, Ecuador, Egypt, Guatemala, India, Indonesia, Mexico, Nigeria, Pakistan, Paraguay, Peru, Philippines, South Africa, Thailand, and Venezuela. The role of collegial leaders of G-20 was played by Brazil, China, India and South Africa.

consistently remained more active than China during the Doha Round of MTNs.

Established in 1989 by Australia and Japan, the Asia-Pacific Economic Cooperation (APEC) has emerged as one of the most important regional groupings. This 21-member group spans four continents, home to almost 2.7 billion people. The member countries represent 57 percent of global GDP and 46 percent of multilateral trade (APEC 2007). In 2005, its members committed to achieving the Bogor Goals of free trade and investment in the Asia-Pacific region by 2010 for the developed members and 2020 for the developing country members. A member since 1991, China has been an active participant in this trade enhancing group and is a signatory of the Bogor agreement.

Although its economy is growing and importance and participation in the global policy arena has been increasing, China has so far played a modest role relative to its economic weight and heightened status. To be sure, China has abandoned its previous aversion to multilateral organizations. During the Deng Xiaoping (1978 to 1994) period, they were believed to constrain China and it was therefore considered best either to keep a distance from them or be a passive member (Medeiros and Fravel 2003). As China is a member of virtually all the important supranational institutions now, the general expectation of the global community is that it should play a role that is compatible with its global economic status. So far China has lagged behind and has projected an image of a reluctant leader. In addition, the principal global economic powers expect China to assume its global responsibilities, get engaged and play an active role in ensuring continued health of the global economic system (USTR 2006). However, these large economic powers are negligent of not inviting China as a full-fledged member to the G-7 table, although China has participated in the G-7 finance minister and central banker's meetings.

In the late 1980s, China began its drive to expand its bilateral relationships. It normalized and established diplomatic ties with 18 countries, including the Russian Federation. In the post-Deng Xiaoping era China's worldview began to change. The next step forward was to develop various levels of "partnerships" to facilitate economic and security coordination. A crowning achievement of this new approach was the signing of the Treaty of Good-Neighborliness and Friendly Cooperation with Russia in 2001. In bilateral relations, in multilateral organizations and in security issues, China began to adopt an unforeseen flexibility and finesse. This change in comportment and approach reflects an attempt by China's recent leaders to break out of their post-Tiananmen isolation, rebuild their image, and protect and promote Chinese economic interests (Medeiros and Fravel 2003).

China as a source of global growth

The latter half of the 20th century belonged to the US economy playing the role of the principal locomotive of the global economy. It was a domineering, trend-setting economy, having deterministic influence over the majority of economic trends. As China has evolved into a large-size economy, growing at a rapid pace and steadily globalizing, it has begun influencing the global economic growth trajectory. As an important link in the production chain, a large exporter of numerous manufactured products, an important destination (and lately source) of FDI, importer of sizeable quantities of consumer goods, energy, raw materials, commodities like aluminum, steel, copper, coal and technology, China will significantly affect both, the supply and demand sides of the equation in the global economy. International commodity prices can no longer be regarded as exogenous for China. It has been influencing them in a discernible manner. In the future, they will become increasingly responsive to China's growth prospects. This will not only be limited to raw materials and commodities but also to high-priced, high-technology products. In 2007, China was the second largest market for commercial airliners after the United States. Thus viewed, while its positive supply-side shock to the global economy has been conspicuous, its large array of demands also carries great weight in the global economy.

Evidence of China's influence on contemporary global economic growth is easy to see. During 1986 to 2006 China added $2 trillion to global GDP and created 120 million jobs (Aziz and Dunaway 2007). These impressive statistics amount to annually adding an economy of the size of Portugal to the global economy and annually creating jobs equal to the total number of people employed in Australia. An oft-cited proof of China's influence on the global economy was its impact during 2000 to 2001. When the so-called IT-bubble burst in the US and the global economy went into a modest recession, China's

contribution to the global recovery was significant. Without China's robust growth, this global recession could have been severe and long-lingering because at this point both the other two large economies, the EU and Japan, suffered from weakness.

Since the beginning of this decade, China has been regarded as a secondary engine of growth after the United States. Between 2000 and 2005, China's contribution to global GDP growth in terms of purchasing power parity (PPP) was more that half as big as the combined contribution of India, Brazil and Russia, the three next largest emerging-market economies (The Economist 2006). China's large and increasing demand for imports for meeting domestic demand has become an important source of growth for the global economy. In the first half of 2007 China made the largest contribution to global growth evaluated at both market and PPP exchange rates, counterbalancing the moderation of growth in the United States (IMF 2007).

Broad measures like GDP growth rates tend to conceal important trends in global production. When the US economy grows at a steady pace, it increases its per capita income by 2 percent per annum. Although it appears modest, 2 percent of $33,000 is $660 worth of goods and services produced per capita. Conversely, when the Chinese economy grows at, say, 9 percent per annum, it increases goods and services worth around $320 per capita. Over the 1990 to 2005 period, the era of rapid globalization, China and the United States were able to add greatly to per capita goods and services production in the global economy. Taking their respective GDP growth rates, Dollar (2007) computed that China accounted for 28 percent increase in global GDP during the period under consideration, while the United States for 19 percent. Together they generated almost half of all global GDP growth in the period 1990 to 2005. Over the years 2006 to 2020, China is likely to account for an even greater share of the increase in global GDP. If China's annual GDP growth averages 7 percent over the 2006 to 2020 period and the rest of the economies of the world continue to perform at the same pace as they did during 1990 to 2005 period, China will account for 37 percent of global GDP growth during 2006 to 2020. In this scenario, the United States will be responsible for merely 16 percent of global GDP growth (Dollar 2007).

Although China's GDP is still one-fourth of the US level at market exchange rates, its growth rate has constantly been much higher. Therefore, China's contribution to the global GDP growth rate may be higher than that of the US. According to the World Bank (2007), China's growth contribution may reach 16 percent at market exchange rates in 2007. When considered at PPP exchange rates, which are a better indicator, its contribution was found to be even higher.

To be sure, the US economy will continue to be an important engine of global growth. However, if the current growth trends in the global economy persist, China will be another principal source of future global growth, which is an indisputably wholesome development. As noted above, under certain assumptions China may even start playing a relatively larger role than the United States. Given the subprime mortgage crisis that started in September 2007, a recession in the United States has become highly probable.[4] The need for a second engine of growth for the global economy has become more important. Towards the end of the 2007, China was beginning to be seen as this kind of force for stabilization of the global economy.

A second related plausible scenario is that as the Chinese economy becomes well integrated with its dynamic neighbors, it may, in partnership with the other AHP economies, well emerge as the principal growth pole of the global economy in the future. China's influence will certainly be felt during the rest of the 21st century in shaping the contours of the global economy. It will not be far-fetched to believe that the global economic environment will then depend more upon how well the Chinese economy performs than on how the US economy does.

Outward FDI and the "going global" strategy

During the mid-1980s, Chinese firms began investing in other industrial and developing countries and the EMEs, with its largest investments going to neighboring Asian economies, Australia, the United States and two Caribbean islands that are prominent financial centers. At a later stage, FDI in the Latin American and African economies followed. FDI outflows increased from a measly $100 million a year

[4] In a BBC interview on October 1, 2007, Alan Greenspan notes, "The most credible worst case scenario is a recession in the US, driven by further fall in US house prices as people feel less wealthy and spend less money". Even in the best case, "a substantial slowdown in the US, with repercussions across the globe" cannot be ruled out. Available on BBC News on the Internet at http://news.bbc.co.uk/go/prfr/-/2/hi/business/7022117.stn.

in the mid-1980s to $12.3 billion in 2005. The outward stock of FDI at this point amounted to $57.2 billion, which was 2.6 percent of Chinese GDP. Being a new outward investor, China accounted for merely 0.5 percent of the global outward FDI stock (UNCTAD 2007). With the adoption of a "going global" strategy and present forex reserves of $1,400 billion,[5] China is vying to become one of the largest FDI source countries in the foreseeable future.

Chinese firms began with small investments in neighboring Hong Kong and Macao in the mid-1980s. At this point, they not only lacked the knowledge and experience needed for investment abroad but also suffered from a shortage of foreign exchange reserves. The government exercised stringent control over foreign exchange outflows. In the late 1980s the government promoted flexible arrangements to promote outward FDI. Chinese firms invested abroad by providing production equipment, technological know-how and raw and processed materials. Until 1990 all FDI projects were small, only a handful exceeded $5 million. A dramatic increase occurred after this point, both in terms of the number of projects and the value of investment. By 2000, Chinese firms had invested in 6,296 projects in 140 countries. In terms of the stock of FDI, Hong Kong was the largest destination country in 2005, followed by the Cayman Islands and the British Virgin Islands. Korea, the United States, Macau and Australia followed in terms of the volume of stock (UNCTAD 2007). Neighboring Asian economies, in particular Hong Kong, remained the favorite host region for the Chinese firms. Latin America stood second and until recently Africa was marginal.

Whether FDI projects were chosen with proper business acumen or not is revealed by the fact that one third of them yielded a positive rate of return, while another third managed to break even. FDI outflows are not only a mode of Chinese firms' operating and competing in the global markets but also an integral part of China's increasingly global economic role. Driven by objectives of market and asset expansion and resource seeking, Chinese firms have started taking far greater interest in investing abroad. In that, they were being encouraged and supported by the strategy of "going global" that was adopted in the late 1990s. It was a thoroughgoing strategy that included the provision of preferential bank loans for the investing firms, streamlined border procedures, preferential tax policies and special trade laws. In 2004, numerous laws were promulgated to encourage outward investment. In addition, both the National Development Reform Commission (NDRC) and the Export-Import Bank of China (EIBC) jointly began promoting outward FDI (see UNCTAD 2007).

Chinese authorities were aware that their enormous foreign exchange reserves could be used in lucrative and productive outward investment. After investing heavily in low-yielding liquid assets like US Treasury securities, they were looking for avenues to higher returns on their global investments. High profile transactions like the acquisition of IBM's personal computer business for $1.25 billion by Lenovo in 2004 are examples of China's ambitions for better returns as well as to improve its global stature by acquiring high-value, if ostentatious and glitzy, assets. In 2005, another large global investment was made by the, China National Petroleum Corporation in Canadian-listed PetroKazakhstan; worth $4.18 billion. In mid-2007, the government-run China Development Bank (CDB) announced taking a stake in Barclays Bank, Britain's third largest bank (The Economist 2007). CDB's total investment in this venture amounted to 9.8 billion, making it China's biggest overseas investment. Under the deal, the CDB took an initial 3.1 percent stake in Barclays for 2.2 billion. Its total stake was expected to be extended further.

Summary and conclusions

Over the last three decades China's significance has radically increased and it has traversed from the periphery of the global economy to the core. For all appearances, this progress is likely to continue in the foreseeable future. Three decades of macroeconomic reforms, sustained growth and global integration have turned China into a future economic power of global magnitude, with unmatched breadth of resources and a robust manufacturing sector. Its re-emergence and economic status is often compared to the growth performance of "miracle" Asian economies that came into their own during the post-War era finding a niche in the global economy. A more appropriate simile for China is the US economic rise over a century ago. That China's growth performance is comparable to that of the US and the UK is confirmed by the historical

[5] At the end of August 2007.

growth statistics for these two economies and post-1978 China. One tangible outcome of its brisk growth is the rise in the global shares of production, investment and trade.

China has grown to be the fourth largest economy in the world and the third largest trader in the short time span of three decades. It is endeavoring to make a new position for itself in the global economy as well as formulate a new role. This cannot be termed dislocation or displacement but is a fundamental structural change in the global economy brought about by China's vertiginous growth. Both China's increasing economic weight and escalating integration in the global economy have been rebalancing the global economy. China's potential catching up with the United States may be considered a tectonic geo-economic and geo-political occurrence.

Although its economy has been growing and its importance and participation in the global policy arena has been increasing, China has so far played a modest role relative to its economic weight and heightened status. To be sure, China has abandoned its previous aversion to multilateral organizations. Yet, its eagerness to assume a leadership role is conspicuous by its absence.

For some time now, China has become a source of global growth. Evidence of China's influence on contemporary global economic growth is easy to see. It is being regarded as the second engine of growth after the United States. While it will not replace the United States as the leading economic power, China, in partnership with the other AHP economies, may well emerge as the principal growth pole of the global economy in the future. The influence of this growth pole, led by China, will certainly be felt during the rest of the 21st century in shaping the contours of the global economy.

In their endeavor to go global, Chinese firms began investing in other industrial and developing countries and the EMEs, with its largest investments going to neighboring Asian economies, Australia, the United States and two Caribbean islands that are prominent financial centers. At a later stage, FDI in the Latin American and African economies followed. Chinese firms also have been making high profile acquisitions of world-class assets. Several modeling exercises were undertaken to assess the outcome of China's global integration. This article presents their conclusions.

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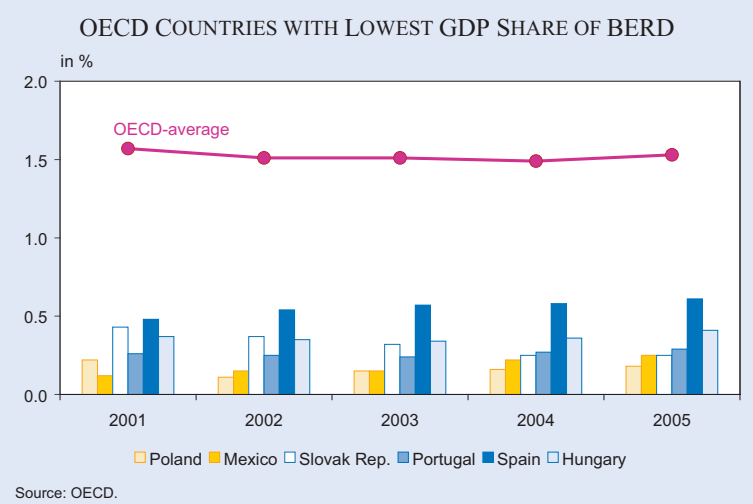
Business R&D expenditures in OECD countries

Figure 2



It is widely acknowledged that economic growth is driven by the accumulation of knowledge-based factors of production such as human capital, R&D and innovation. Moreover such knowledge-based production factors determine a nation's long-term competitiveness in a global world. In this context the endogenous growth theory argues that technological advancement is well stimulated by the R&D activities and expenditures of firms. R&D enters the production process as a factor of production and is used in conjunction with other inputs.

According to OECD (2007), business expenditures in R&D (BERD) have recently been quite differently performed in its member countries.[1] Among the thirty members, Sweden, Finland, Japan, Korea, the United States and Germany were the countries with the highest GDP share of BERD in the period of 2001-2005 (see Figure 1). In particular the annual share was above 2.3 percent in Sweden, Finland and Japan in the entire investigated years, whereas the OECD-average slightly fluctuated in the narrow range between 1.49 (2004) and 1.57 percent (2001). Moreover, an increasing trend of the share was evident in Finland, Japan and Korea in the same period of time.

In comparison, Figure 2 shows the six OECD countries with the lowest GDP share of BERD – Poland, Mexico, Portugal, the Slovak Republic, Hungary and Spain. In general Poland and Mexico experienced the poorest R&D expenditure performance of firms between 2001 and 2005, although a strong improvement took place in Mexico in 2004 and 2005. It is to note that the Polish share reached 0.11 percent in 2002 compared to the Mexican share which amounted to 0.12 percent in 2001. Spain continued the increase in share from 0.48 to 0.61 percent in the same period. Yet it appears to be critical that, in spite of its rather low level, the GDP share of BERD continuously decreased in the Slovak Republic from 0.43 (2001) to 0.25 percent (2005).

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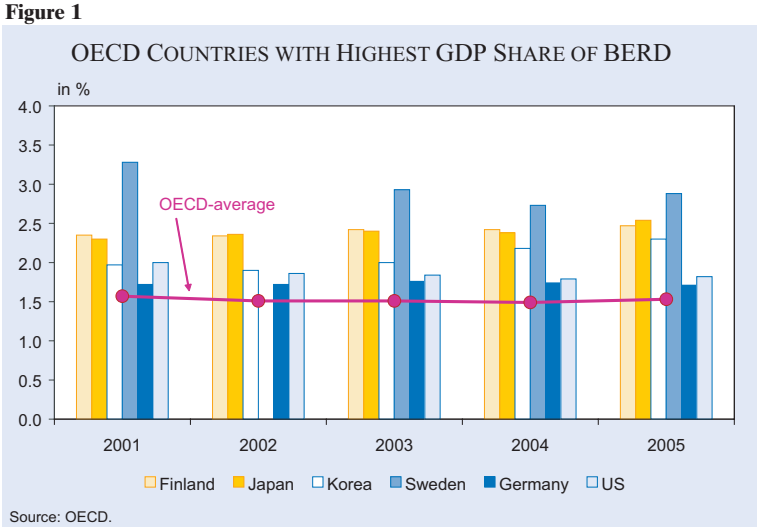
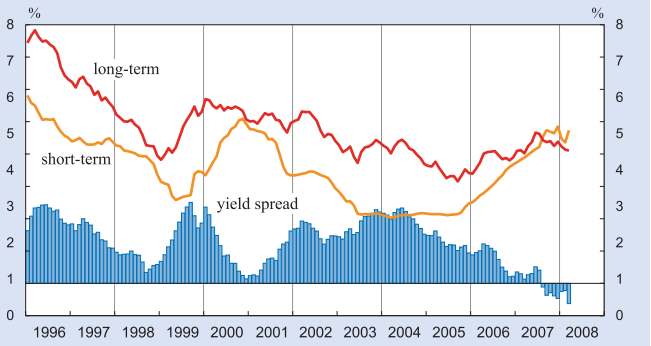
Figure 1



[1] Organisation for Economic Co-operation and Development (OECD), Main Science and Technology Indicators, 2007, Paris.

FINANCIAL CONDITIONS IN THE EURO AREA

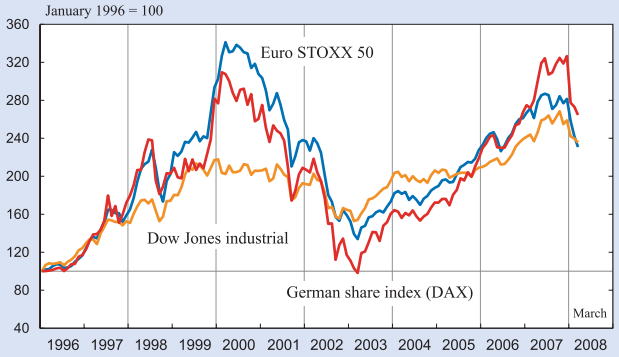
Nominal Interest Rates [a)]



a) Weighted averages (GDP weights).
Sources: European Central Bank.

In the three-month period from January 2008 to March 2008 short-term interest rates rose. The three-month EURIBOR rate increased from an average 4.48% in January to 4.73% in March. Yet, ten-year bond yields declined from 4.23% in January to 4.14% in February and 4.10% in March 2008. In the same period of time the yield spread declined from – 0.25% (January) to – 0.63% (March).

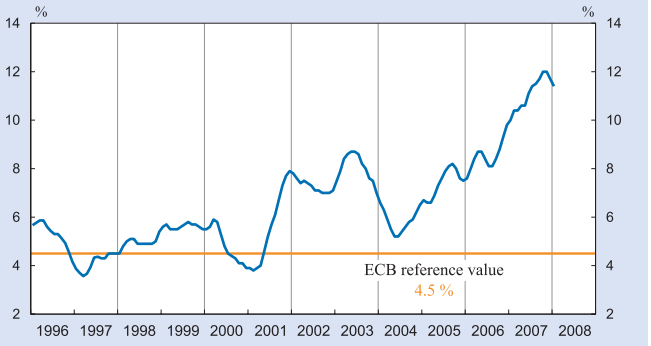
Stock Market Indices



Source: Deutsche Bundesbank, Dow Jones & Co., Inc.

The German stock index DAX continued to decline in March, averaging 6,535 points compared to 6,852 points in January. The Euro STOXX fell from 4,026 in January to 3,596 in March. The Dow Jones International also declined averaging 12,194 points in March compared to 12,538 points in January.

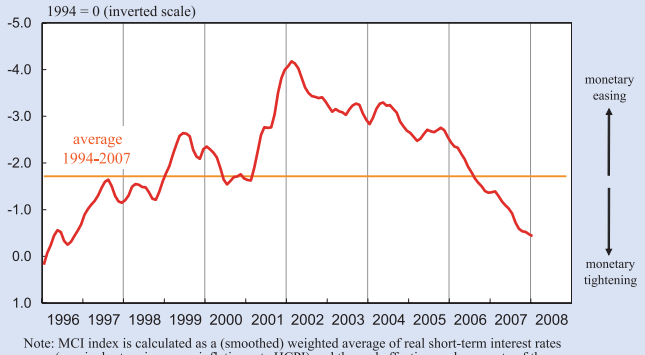
Change in M3 [a)]



a) Annual percentage change (3-month moving average).
Sources: European Central Bank.

The annual rate of growth of M3 stood at 11.4% in January 2008 compared to 12.0% in November 2007. The three-month average of the annual growth rate of M3 over the period from November 2007 to January 2008 reached 11.7% and, therefore, remained unchanged compared to that for the period August-October 2007.

Monetary Conditions Index



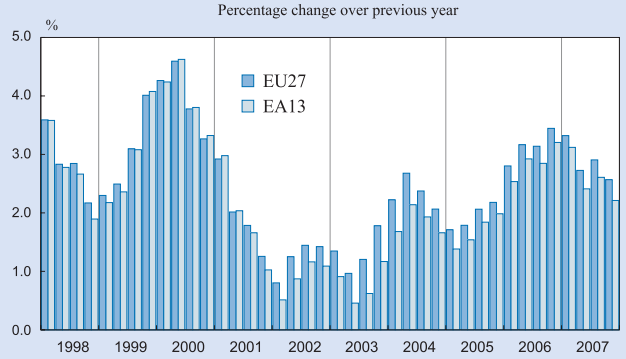
Note: MCI index is calculated as a (smoothed) weighted average of real short-term interest rates (nominal rate minus core inflation rate HCPI) and the real effective exchange rate of the euro.
Sources: European Central Bank, calculations by the Ifo Institute.

In March 2008 the monetary conditions index continued its general decline that had started in late 2001, signalling greater monetary tightening. This is the result of rising real short-term interest rates and a rising real effective exchange rate of the euro.

EU SURVEY RESULTS

Gross Domestic Product in Constant 2000 Prices

Percentage change over previous year

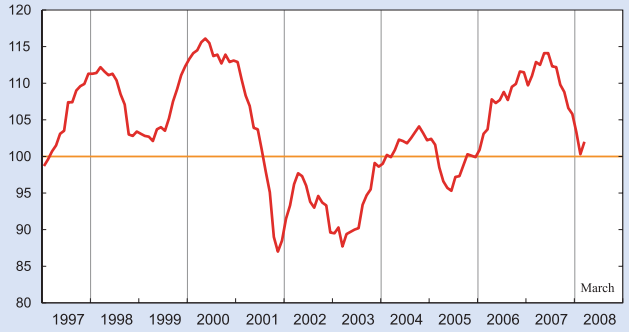


Source: Eurostat.

According to the first Eurostat estimates, euro area (EU13) GDP grew by 0.4% and EU27 GDP by 0.5% in the fourth quarter of 2007 compared to the previous quarter. In the third quarter of 2007 the growth rate had amounted to 0.7% for the euro area and 0.8% for the EU27. Compared to the fourth quarter of 2006, i.e. year over year, seasonally adjusted GDP rose by 2.2% in the euro area and by 2.6% in the EU27.

EU27 Economic Sentiment Indicator

Index 2000 = 100, seasonally adjusted

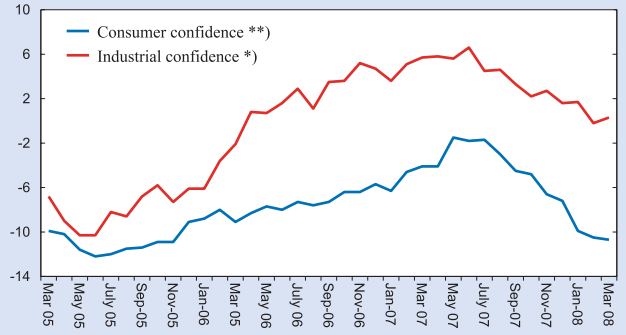


Source: European Commission.

In March 2008, the EU Economic Sentiment Indicator rose by 1.7 points in the EU27 and decreased by 0.6 points in the euro area, to 102.0 and 99.6 respectively. Following a continuous decline since mid-2007, the indicator rebounded somewhat in the EU27. Yet, it weakened further in the euro area and now stands just below its long-term average. Overall economic confidence improved in the UK, Poland and Germany.

EU27 Industrial and Consumer Confidence Indicators

Percentage balances, seasonally adjusted



Source: European Commission.

* The industrial confidence indicator is an average of responses (balances) to the questions on production expectations, order-books and stocks (the latter with inverted sign).
** New consumer confidence indicators, calculated as an arithmetic average of the following questions: financial and general economic situation (over the next 12 months), unemployment expectations (over the next 12 months) and savings (over the next 12 months). Seasonally adjusted data.

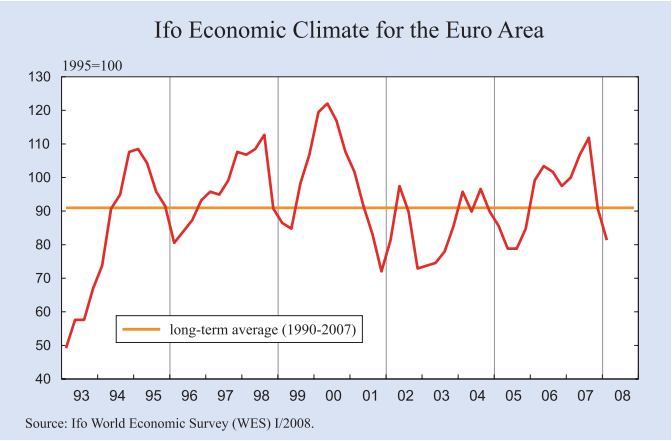
In March 2008, the *industrial confidence indicator* remained unchanged in both the EU27 and the euro area. Despite the downward trend observed since mid-2007, the level of the indicator still stands well above its long-term average. Among the large EU Member States, industrial confidence rose in the UK and France, while it weakened in the Netherlands, Italy, Spain and Poland. *Consumer confidence* also remained unchanged in the EU27 and the euro area in March 2008. The indicator has been on a downward path since its peak in May 2007 and currently stands below its long-term average in both areas. In March consumer confidence worsened in Italy, France and the UK, while it improved in Spain and Germany.

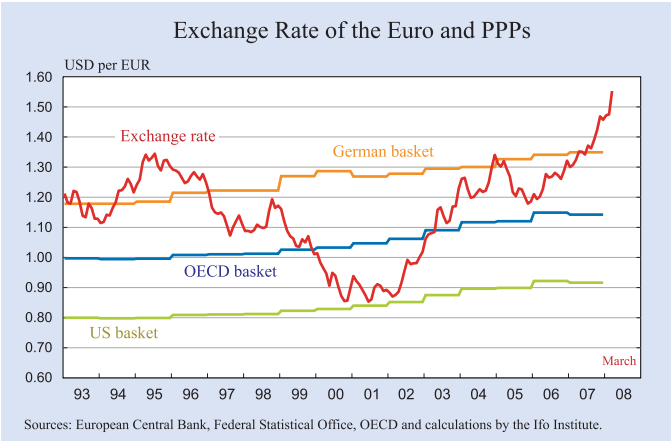
EU27 Capacity Utilisation and Order Books in the Manufacturing Industry

Source: European Commission.

Managers' assessment of *order books* improved to – 1.2 in March 2008 from – 2.4 in February. In January the indicator had reached – 0.9. *Capacity utilisation* slightly improved to 83.8 in the first quarter of 2008 from 83.7 in the previous quarter.

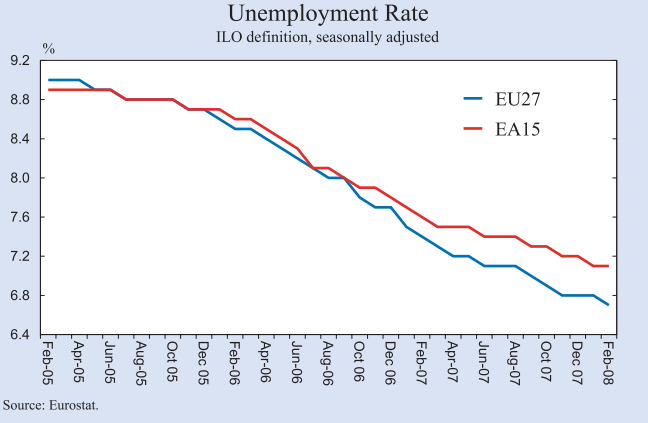
EURO AREA INDICATORS

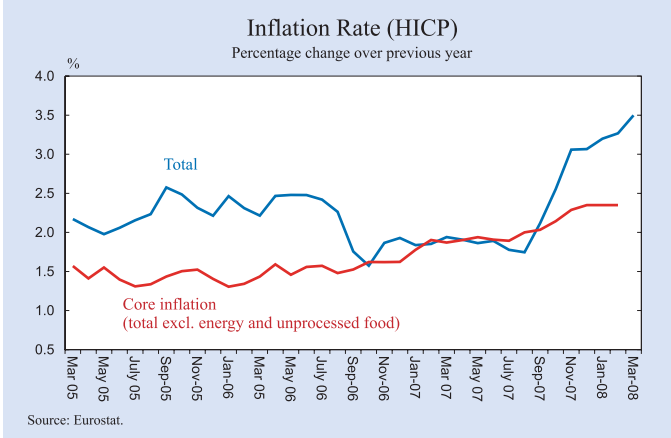




The Ifo indicator of the economic climate in the euro area (EU15) has clearly worsened again in the first quarter of 2008. Its decline is attributable to both less positive assessments of the current economic situation and less favourable economic expectations for the coming six months. The latest survey results indicate a slowdown in economic growth in the coming half year.

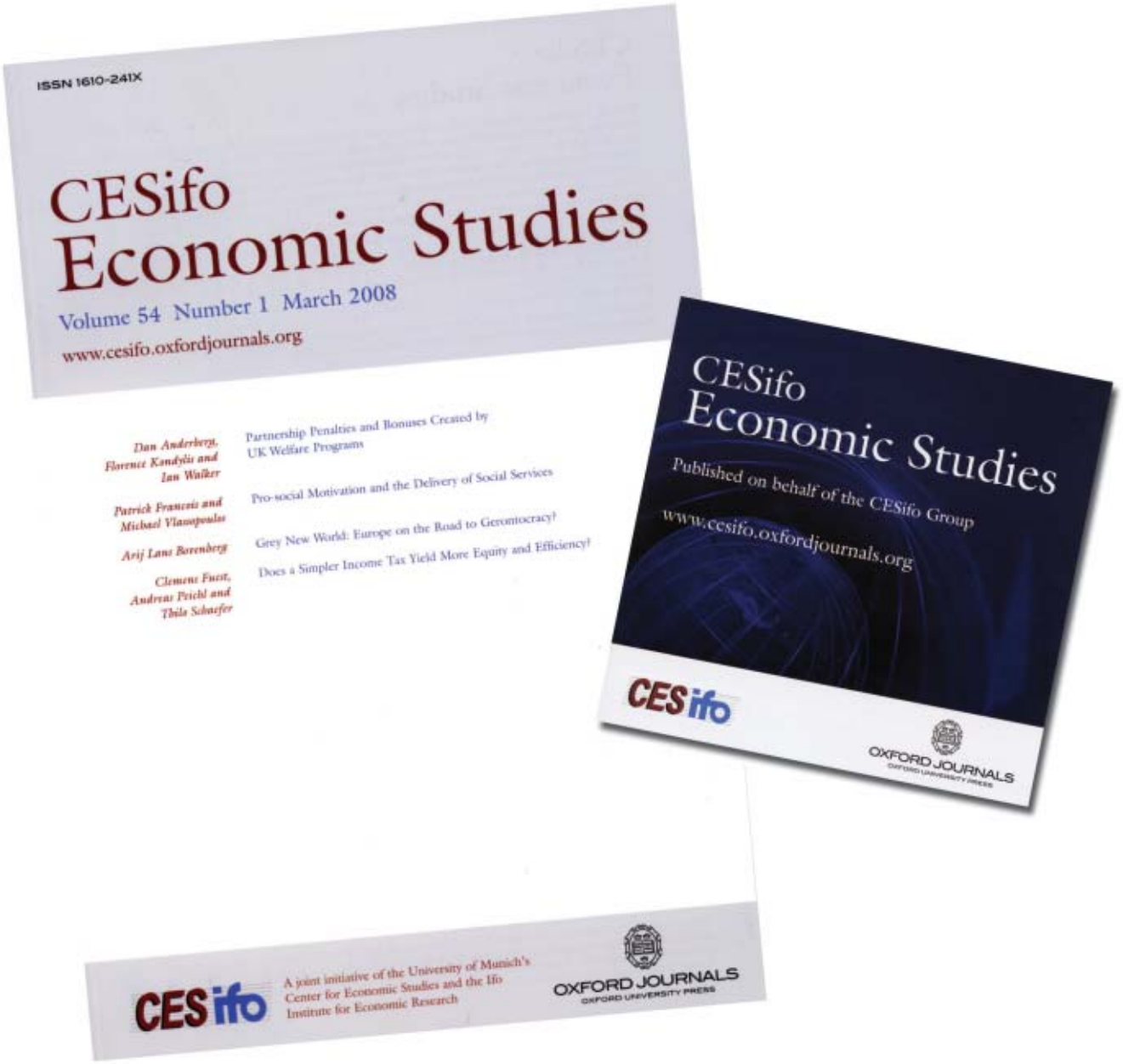
The exchange rate of the euro against the US dollar averaged 1.55 $/€ in March 2008, an increase from 1.47 $/€ in January. (In December 2007 the rate had amounted to 1.46 $/€.)





Euro area (EU15) unemployment (seasonally adjusted) stood at 7.1% in February 2008, unchanged from January. EU27 unemployment amounted to 6.7% in February 2008 compared to 6.8% in January. This is quite a decline from the 7.4% of a year earlier. Among the EU Member States the lowest rates were registered in the Netherlands (2.7%) and Denmark (3.1%). Unemployment rates were highest in Slovakia (9.9%) and Estonia (9.0%).

Euro area annual inflation (HICP) was 3.3% in February 2008 after 3.2% in January. This is quite an increase from a year earlier, when the rate had been 1.8%. The EU27 annual inflation rate also reached 3.4% in February. An EU-wide HICP comparison shows that in February 2008 the lowest annual rates were observed in the Netherlands (2.0%), Germany, Portugal and Sweden (2.9% each), and the highest rates in Latvia (16.5%), Bulgaria (12.2%) and Estonia (11.5%). Year-on-year EU15 core inflation (excluding energy and unprocessed foods) rose to 2.35% in February, the same rate as in January.



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