

## **John Hurley: Innovation and productivity in Ireland**

Speech by Mr John Hurley, Governor of the Central Bank and Financial Services Authority of Ireland, to Leinster Society of Chartered Accountants, Leinster, 13 October 2005.

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### **Introduction**

Thank you Chairman for inviting me to address your members here today. Ladies and gentlemen I would like to take this opportunity to talk about one of the key economic challenges of today, namely the importance of improving productivity performance in Ireland. Productivity is a critical ingredient of long-term living standards and the overall growth of the economy. In particular, I want to focus today on the importance of research and development and innovation which are key determinants of productivity growth and competitiveness.

### **Productivity performance in Europe**

To put this in context, allow me first to say a few words about economic performance in Europe, particularly relative to the United States. Per-capita output in the EU-15 is currently about 70 per cent of the US level, roughly the same as it was 30 years ago. It is estimated that about one third of the difference in per-capita GDP between the US and EU can be explained by lower employment rates, one third by shorter working hours, and one third is attributable to lower labour productivity.

Following several decades of strong growth, productivity levels in the EU came close to matching those in the US during the mid-1990s. However, Europe has performed relatively poorly over the past decade and the negative productivity differential vis-à-vis the US economy has widened. During the first half of the 1990s, for example, labour productivity growth in the euro area averaged around 2¼ per cent per annum, above the corresponding rate of increase in the US which was around 1¼ per cent per annum. However, over the past decade, productivity growth in the euro area has fallen to around 1¼ per cent on average while the US improved its productivity performance to around 2½ per cent per annum. The failure of productivity levels to catch up with those in the US represents a crucial challenge for European policy makers, particularly given changing patterns of global competition and the ageing of the population in EU countries.

It is sometimes pointed out that part of the productivity differential between the US and Europe is due to methodological or measurement issues, including how labour input is measured and the greater use of quality-adjusted pricing for output growth for IT products in the US. While these might explain some of the difference, the decline in EU productivity growth and the assessment that productivity growth has fallen behind the US are facts, regardless of the way productivity growth is measured.

The underperformance of the EU economy was recognized in the Lisbon Agenda which outlined an ambitious range of related goals to be achieved by 2010 with the overall objective of transforming the European Union into “the most competitive and knowledge based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion”. While some progress has been made over the past five years, it is clear that many of the targets set at Lisbon will be difficult to achieve.

The failure to meet the Lisbon targets has been partly due to the weaker global economic environment during the first half of the decade but also partly due to a lack of urgency among Member States in implementing the necessary reforms to improve the functioning of markets. In particular, this requires the discipline of competition to spur efficiency and innovation. The Lisbon strategy itself was too broad, with an overload of objectives and targets. If the Lisbon Agenda is to get back on track and the EU is to realise its full growth potential, the pace of reform has to be stepped up at both European and national levels. A more rigorous prioritisation is also required, with increased focus on those areas where the impact on productivity growth and employment is likely to be greatest, a point that has been accepted by the European Council.

## **Ireland's productivity performance**

For individual Member States this means taking ownership of the Lisbon reforms. This can involve national governments providing support for agreed trans-national measures, such as opening up a European market for services, including financial services and services of network industries, or implementing domestic measures such as promoting entrepreneurship and innovation. Some countries have achieved more progress in terms of implementing effective economic reforms than others. Ireland's record, for example, has been relatively good although there are still some areas where improvements are necessary. For example, innovation and R&D are low by international standards while levels of competition need to be improved in parts of the services sector. Before discussing this in some more detail, I would like to turn briefly to Ireland's productivity performance to date.

Productivity growth in Ireland over the past half-century, and the past 15 years in particular, has been impressive by international standards. Labour productivity growth rates, measured as GNP per hour worked, were well above the European average during the 1980s and the highest in Europe during the 1990s. It is now widely accepted, by the way, that GNP measures of productivity growth are a more meaningful measure of domestic economic performance than GDP measures because they exclude the substantial profit outflows of foreign-owned firms. A number of factors contributed to high productivity growth in this country during the 1990s including inward FDI flows in high-technology sectors and past investments in education and physical capital, which boosted the technological and innovative capacity of the Irish economy.

While, at a sectoral level, productivity growth over the past 15 years has been particularly strong in the manufacturing sector, this finding needs to be interpreted with caution for a number of reasons. First, high productivity in Irish industry is largely a result of extremely high productivity levels in a small number of foreign-owned firms, mainly in the Pharmaceuticals and ICT sectors. These high productivity levels largely reflect rewards for R&D effort and marketing by the parent company and should more correctly be attributed as a return to factors of production in the country of ownership. Productivity growth and levels have been much weaker in many other sectors of the economy, including the more traditional manufacturing sectors and many parts of the services sector.

Second, productivity growth in the manufacturing sector has slowed quite significantly over the past two years – from over 14 per cent in 2002 to around 3½ per cent last year. Indeed, on a year-on-year basis, productivity growth in manufacturing was actually negative during the first half of 2005.

Turning to the economy as a whole, productivity levels, measured as GNP per worker, are now only slightly ahead of the EU-15 average which means that we lag behind the US and many of the higher productivity European economies. As a result, there is still plenty of scope for productivity improvements relative to these countries. The latest data produced by the CSO show that in the first half of this year, economy-wide productivity growth was negative. This partly reflects weaker productivity growth in manufacturing and also partly the changing composition of Irish output growth towards a higher concentration of output in services and construction – which are generally associated with quite low productivity. Having said that, the extent of the productivity slowdown during the first half, as revealed in the preliminary CSO estimates, was surprising and is being analysed by the Bank. As more data for this year become available, we will get a clearer picture of what's happening.

Given that Ireland is now one of the higher-wage economies, productivity improvements across all sectors, including services, will be essential if Ireland is to be competitive in the global economy. Empirical studies carried out by the OECD and other international organisations have identified a number of key drivers of productivity growth including macroeconomic stability, human and physical capital formation, competition in markets for goods and services, entrepreneurship and innovation. The European Central Bank's commitment to low inflation and the fiscal requirements of the Stability and Growth Pact provide a framework for macroeconomic stability in the euro area. Public policy at a national level can also have an important role in improving productivity performance by establishing framework conditions that are supportive of entrepreneurship, competition and innovation.

## **R&D and innovation in Ireland**

This brings me to the subject of innovation and the importance of increasing the level of R&D carried out in this country. The link between R&D and innovation on the one hand and productivity growth on the other has been well established. In terms of indicators of innovation performance, Ireland is one of the leading producers and exporters of high-technology products in the world, due mainly to the

presence of high-technology foreign firms in the economy. The economy also performs reasonably well in innovation-related human-capital indicators, including the number of science and engineering graduates and the percentage of the workforce with third level qualifications. However, the economy performs less well by international standards in other key areas, including R&D and patent activity, investment in ICT and the availability of venture capital for high-technology enterprises.

There are clear indications that R&D activity in Ireland has picked up in recent years. Business expenditure on R&D increased by 9 per cent between 2001 and 2003, during which period R&D expenditures were declining in many developed economies due to the slowdown in the global R&D investment. However, overall expenditure on R&D in Ireland in 2003, at around 1.2 per cent of GDP or 1.5 per cent of GNP, was still below the EU and OECD averages and well short of the Lisbon target of 3 per cent set by the European Council for the EU as a whole. By international standards, Ireland also ranks quite low in terms of the number of researchers involved in R&D activity and the number of patents registered in either Europe or the US. In the foreign sector of the economy, which contributed so significantly to the strong productivity performance of the economy during the 1990s, there is a stark contrast between the high-tech nature of output and the low level of R&D carried out in this country. Data released by Forfás show that the R&D intensity of foreign firms in Ireland, that is R&D spending as a percentage of output, is not only very low by international standards but also less than in Irish-owned firms. This reflects the fact that multinational firms still tend to undertake most of their R&D activity in the home rather than the host country. However, there is evidence that the R&D expenditures of multinationals have been increasing in some countries – indeed there have been recent high-profile examples of US firms, primarily in the ICT and Biopharmaceutical sectors, establishing R&D facilities in this country.

In order to remain competitive and move the economy up the value-added chain, it will be essential to increase further the amount of R&D carried out in this country and improve the innovative capacity of the economy. There are a number of ways in which higher R&D activity can impact on productivity. First, domestic R&D can have a direct positive impact on the productivity of indigenous firms. Second, there is evidence of positive spillovers and technology transfers from R&D active multinationals to domestic producers. Third, empirical evidence shows that an economy's ability to absorb imported technology and to benefit from the spill-over effects of the R&D activities of multinational firms will be enhanced by the R&D activity and human skills of indigenous firms. And finally, R&D active multinationals in the Irish economy have been shown to be less footloose, more embedded in the domestic economy and create better jobs than non-active R&D firms.

Selective state supports for R&D activity can be justified by the positive spill-overs that innovation gives rise to and already a range of grants and tax incentives are available to promote R&D. However, the experience of other countries shows that government cannot on its own artificially boost the level of innovation. Instead R&D scale must grow organically. The primary role of government should be to create the necessary framework conditions to support innovation, both for domestic and foreign firms.

A number of government measures have already been taken in this regard. An effective R&D and innovation structure has been established with the Programme for Research in third-level institutions, the appointment of a Chief Science Adviser, the launch of Science Foundation Ireland and various research programmes aimed at increasing third level research and promoting co-operation between third level research institutions and the business sector. Only last month, the Government announced that it had approved a proposal from IDA Ireland to fund the establishment of a National Institute for Bioprocessing, Research and Training. Recent announcements of major R&D investments by leading multinational companies in the Biopharmaceuticals, ICT and services sectors as well as the establishment of innovation centres by major indigenous food companies show that we are already moving in the right direction in terms of increasing R&D activity among both foreign and indigenous firms in Ireland.

Ireland's national R&D action plan includes a number of specific targets for the country to achieve by 2010, including increasing total spending on R&D to 2.5 per cent of GNP, doubling the number of both indigenous and foreign-owned companies with minimum scale R&D and increasing the number of indigenous and foreign-owned companies performing significant R&D. Other targets relate to the number of researchers and R&D performance in the higher education and public sectors. While specific R&D targets can be useful in terms of increasing innovative capacity, two points to remember about them are:

First, research targets measured in terms of inputs, such as the amount of money spent or researchers employed, do not substitute for the effectiveness of innovation, which would ideally be measured by some output measure and its positive impact on productivity. And second, a national innovation policy must operate within a strict cost/benefit framework, particularly since smaller economies lack resources to fund all fields of research at high levels.

While gross spending on R&D of 2.5 per cent of GNP by 2010 is below the target set for the EU as a whole, it is an ambitious target given Ireland's relatively low starting level. Nevertheless, the longer-term target should be to raise R&D expenditure in this country above the European average.

Apart from providing a stable macroeconomic environment and ensuring high standards of competition and an appropriate regulatory regime, the main challenges for Ireland in terms of increasing innovation will be:

- To increase the number of researchers in science, engineering and technology, both by funding advanced research degrees and making Ireland an attractive location for world-class researchers;
- To continue to strengthen co-operation between third-level institutions and high-technology firms;
- To increase the availability of venture capital and equity capital to high-technology enterprises, particularly for SMEs;
- To increase linkages between technologically-intensive multinationals and domestic suppliers; and
- To ensure by our education and training that the domestic workforce is sufficiently skilled to enable the economy to absorb innovation developed elsewhere.

While these are difficult challenges, they are essential if Ireland is to become one of the leading R&D performers in the European Union. Increasing the amount of innovation carried out in this country means not only encouraging indigenous firms to increase their R&D activity but also continuing to attract technology-intensive multinational firms, increasing the amount of R&D activity carried out by these multinationals in Ireland and ensuring the diffusion of the technology embedded in foreign multinationals through the rest of the economy.

In conclusion, Ireland's past productivity performance has been quite good and the productivity potential of the Irish economy remains favourable. What I have been pointing out today are areas where we need to do better in light of the recent slowdown in productivity. For a mature economy like Ireland, innovation in relation to both products and processes is a key determinant of long-run productivity growth and, therefore, living standards. Much has been done in recent years to increase the amount of R&D carried out in this country and improve the innovative capacity of the economy and there is clearly scope for further improvements in this regard. This will be essential if Ireland is to enhance its productivity potential and maintain a competitive edge in the changed global economic environment.