

investment – a difficult requirement if growth proves to be relatively employment-rich and productivity gains subdued as the *SPU 2014* suggests.³⁰

Supporting Ireland’s attractiveness as a destination for investment, cost-competitiveness indicators have strengthened in recent years, underpinned by improvements in aggregate labour productivity.³¹ However, as reviewed in Box A, roughly half of the aggregate productivity improvement between 2007 and 2012 has resulted from crisis-related shifts in employment away from relatively low productivity sectors.

Over the medium term, overall economy-wide productivity growth will be affected by how the sectoral composition of employment evolves. As seen in 2013, a domestic-demand driven recovery in total employment could be associated with employment shifts toward sectors with relatively low productivity. Consequently, this could mean a relatively weak aggregate productivity performance. Further detailed analysis of within- and between-sector productivity trends would provide a useful complement to projections based on the common methodology.

BOX A: SECTORAL PRODUCTIVITY AND CHANGES IN THE COMPOSITION OF EMPLOYMENT

Growth in labour productivity is the main driver of improvements in living standards over the long term. Economy-wide labour productivity growth can be usefully decomposed into two broad components. The first is sector-level productivity growth weighted by the sector shares in total output. At the sectoral level, productivity growth is driven by improved efficiency and capital deepening (i.e., increases in capital per worker). The second is shifts in the sectoral composition of employment. Shifts in the composition of employment towards relatively high productivity sectors will tend to increase aggregate labour productivity.

We can approximate these two effects using the following equation³²:

$$\frac{d\rho}{\rho} = \sum_{i=1}^m \frac{Y_i}{Y} \frac{d\rho_i}{\rho_i} + \sum_{i=1}^m \frac{\rho_i}{\rho} ds_i$$

where ρ is productivity measured by output per employee, Y is output, and s is a sector’s share of employment. An individual sector is indexed by i and the total number of sectors is

³⁰ Compensation per employee is expected to be growing at a rate of 2.2 per cent annually by 2018. The transition from a domestic recovery to an export-led one from 2017 is expected to imply lower average GNP growth rates (of around 2.7 per cent) as foreign-owned multinationals increase their factor outflows from unusually low levels.

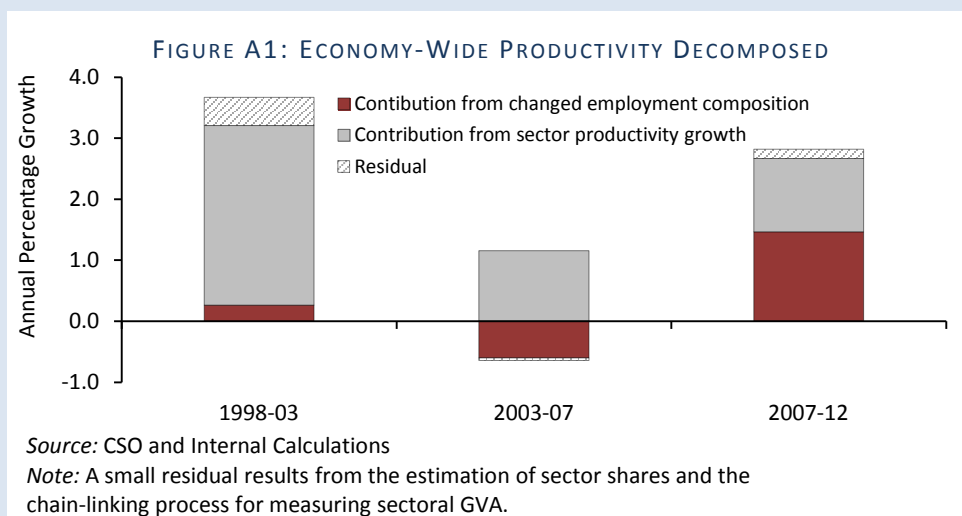
³¹ Real effective exchange rates (EC) suggest that the Ireland’s relative competitiveness is back at 2002-03 levels. More recently, the IMD World Competitiveness Survey (2014) ranked Ireland 15th out of 60 international economies on the basis of a comprehensive range of competitiveness measures.

³² The derivation of this formula and the decomposition can be found at www.fiscalcouncil.ie.

m. Essentially, the growth in productivity is broken down into two components:

- (i) the contribution to productivity growth purely from sector-level productivity growth; this is the sum of each sector’s productivity growth weighted by its share of output;
- (ii) the contribution from shifts between relatively productive and relatively unproductive sectors; this is the sum of the change in share of employment weighted by relative productivity.³³

Figure A1 shows the economy-wide split over three periods; the late 1990s/early 2000s; the mid-2000s (which roughly translates to the housing bubble period); and the post-bubble period.³⁴



We can see that at the tail-end of the Celtic Tiger (1998 to 2003), there is limited productivity growth from shifts in the sectoral composition of employment while productivity growth within sectors accounts for the vast majority of the economy-wide productivity growth over the period, which averaged three-and-a-half per cent *per annum*.

During the housing bubble period, aggregate productivity fell considerably, averaging just 0.5 per cent growth *per annum*. The contribution from shifting employment composition was negative, indicating that relatively unproductive sectors expanded their employment share. This is consistent with an environment in which employment in traditionally low productivity sectors is expanding rapidly. For instance, in the years 2003 to 2007, employment growth in Construction averaged 9.1 per cent *per annum*; similarly, Accommodation and Food Service activities grew at 4.2 per cent *per annum*. In contrast, higher productivity sectors such as ICT and pharma experienced employment growth of 1.1 per cent and 3.2 per cent *per annum*, respectively.

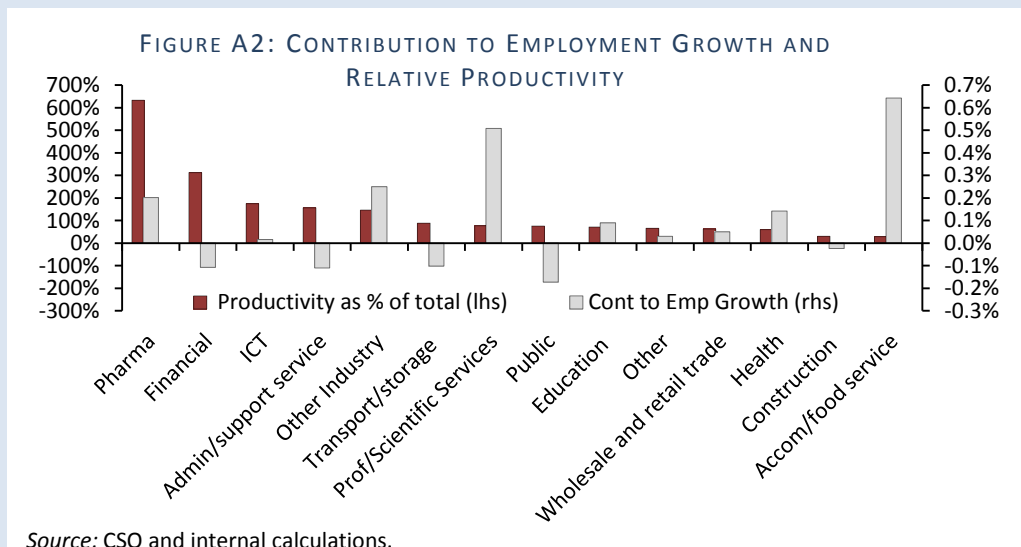
Productivity growth within sectors also fell considerably over the same period, from a 2.9 per cent annual contribution to just 1.2 per cent, possibly reflecting the maturing of the catch-up phase of Irish economic growth. One of the largest contributors to this source of productivity growth was the financial services sector (reflecting, in part, the unsustainable expansion of credit during the period).

³³ The formula assumes that average and marginal productivity are equal.

³⁴ A similar split results from removing sectors dominated by the public sector where output is difficult to estimate.

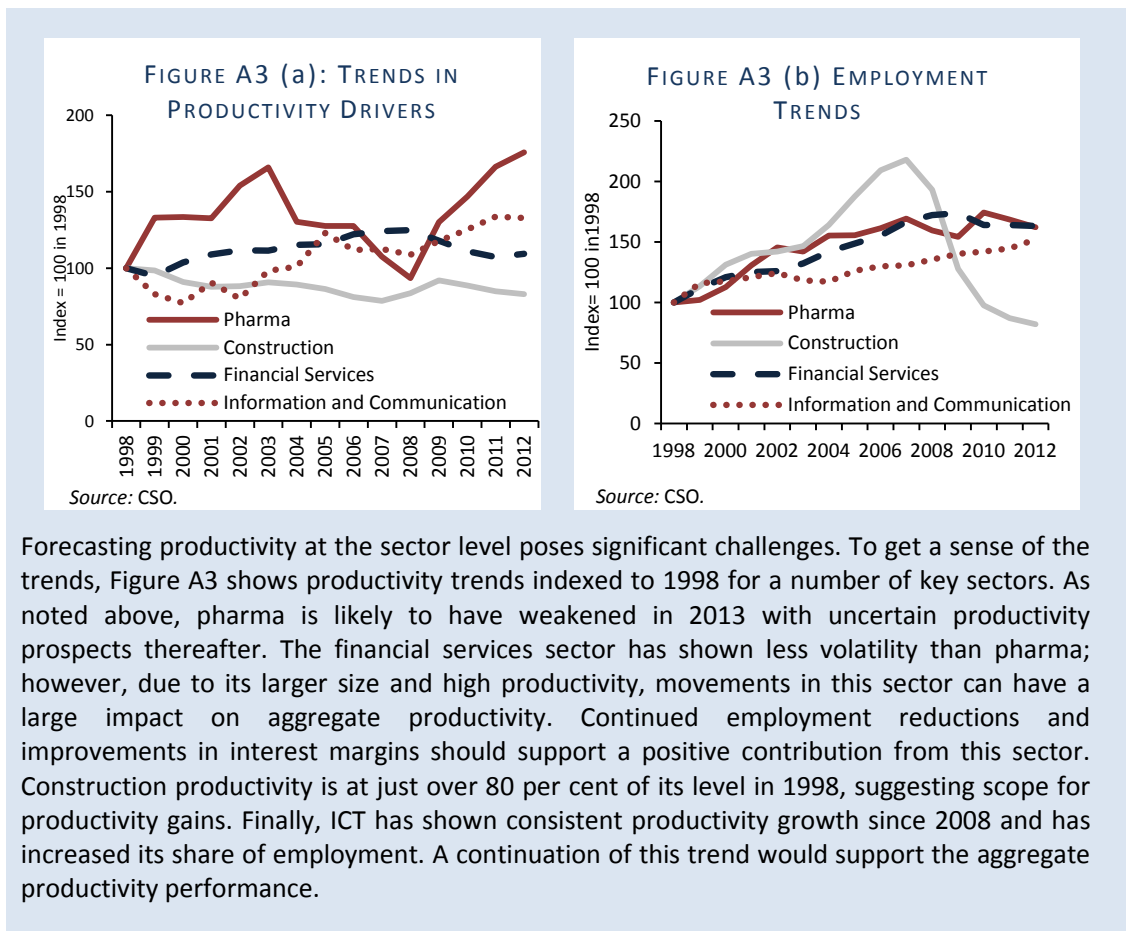
Since the recession (2007-12), aggregate productivity growth has jumped back to 2.7 per cent *per annum*, close to rates seen prior to the housing boom. However, more than half of this has been due to shifts in the composition of employment as the bulk of job losses were concentrated in low-productivity sectors while the annual contribution from sectoral productivity growth did not fare much better than it had during the housing boom at c.1.2 per cent. If employment shares are held constant, then a repeat of the post-2003 productivity performance going forward would see productivity growth of slightly over 1 per cent *per annum*.

In the medium term, the outlook for Irish productivity depends, in part, on the nature of the recovery. A domestic demand-led recovery accompanied by strong growth in construction activity would imply relatively weak productivity growth.



Measured productivity was actually negative in 2013. Part of this is explained by the pharmaceutical sector's 'patent cliff', but it may not be the whole story. It is difficult to draw firm conclusions regarding shifts in the composition of employment for 2013 due to CSO sampling issues regarding agriculture. Figure A2 shows the contribution of several non-agri sectors to employment growth in 2013 and their relative productivity in 2012. The largest contributor to non-agri employment was the least productive sector in the economy, accommodation and food services. While the second largest contributor, professional, scientific and technical services, is considerably more productive, it is still less productive than the aggregate. Some of the more productive sectors saw their share of employment decline, and while the pharma sector did post jobs growth, its relative productivity fell substantially in 2013. There is considerable uncertainty regarding the future of pharmaceutical productivity in Ireland, but Van Egeraat (2014) projects that output losses resulting from patent expirations relevant to Ireland should be concentrated in the period 2012 to 2014.³⁵

³⁵ See comment on forthcoming work, "CSO pharmaceutical industrial production figures – patent cliff or hill" by C. Van Egeraat (2014) available at: <http://irelandafternama.wordpress.com/2012/11/07/cso-pharmaceutical-industrial-production-figures-patent-cliff-or-hill/>



Forecasting productivity at the sector level poses significant challenges. To get a sense of the trends, Figure A3 shows productivity trends indexed to 1998 for a number of key sectors. As noted above, pharma is likely to have weakened in 2013 with uncertain productivity prospects thereafter. The financial services sector has shown less volatility than pharma; however, due to its larger size and high productivity, movements in this sector can have a large impact on aggregate productivity. Continued employment reductions and improvements in interest margins should support a positive contribution from this sector. Construction productivity is at just over 80 per cent of its level in 1998, suggesting scope for productivity gains. Finally, ICT has shown consistent productivity growth since 2008 and has increased its share of employment. A continuation of this trend would support the aggregate productivity performance.

2.2.2 FORECASTS OF OTHER AGENCIES

The *SPU 2014* growth forecasts for 2014 to 2015 are broadly aligned with consensus forecasts. These project that the economy will grow at a reasonable pace this year, with real GDP running at close to 2 per cent, before accelerating to roughly 2½-3½ per cent in 2015 (Annex A.1-A.2). At the higher end, the ESRI foresee real GDP growth of 2.6 per cent in 2014 and 3.5 per cent the following year, while the EC and IMF forecasts are at the lower end of the range.

As with the Benchmark projections prepared by the Council’s Secretariat, differences with the *SPU 2014* and other forecasts largely relate to the composition of growth. As Figure 2.11 shows, contributions from domestic demand components are more pronounced in the *SPU 2014* forecasts than in those of other agencies. For 2014 and 2015, the *SPU 2014* expects domestic demand to contribute 2.6 percentage points and 2.2 percentage points to real GDP growth, respectively, while the consensus among agencies is roughly 1 and 1½ percentage points over the same period.