

Quarterly Economic Commentary

David Duffy

Joseph Durkan

Eddie Casey

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Research Notes

Eddie Casey

Joseph Durkan and Niall O'Hanlon (CSO)

Pete Lunn

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David Duffy and John FitzGerald

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Research Notes

Unit Labour Costs in Irish Manufacturing

Eddie Casey

Introduction

In an economy such as Ireland's which is heavily dependent on exports as a determinant of economic performance, competitiveness is a key variable for consideration. One way of assessing competitiveness is to look at unit labour costs (ULCs), typically calculated as the ratio of compensation per employee to the unit of value added by each employee. This measure is widely used – a long running series on the unit wage costs in Irish manufacturing has been produced by the Central Bank of Ireland (see various *Quarterly Bulletins*, Table E.4).¹ As broad competitiveness developments across all manufacturing firms can often mask very different shifts in underlying manufacturing sectors, this note seeks to estimate the underlying changes in two commonly identified sectors in Irish manufacturing, the 'modern' sector and the 'traditional' sector.

Underlying Manufacturing Unit Labour Costs

It is possible to obtain an up-to-date measure of underlying manufacturing ULCs derived from the overall manufacturing ULC series produced by the OECD, EU-KLEMS industry level data, the latest data from the CSO on manufacturing earnings per hour and industrial production output volumes (see Appendix for methodology). On the basis of this measure, one can chart the progress of both the 'modern' and 'traditional' sectors in terms of the implied competitiveness developments since 2000. The terms 'traditional' and 'modern' used within the context of Irish manufacturing primarily relate to the nature of the final output produced by each sector as opposed to the actual origin of firms involved or technological means of production employed.² The former primarily comprises of more indigenous manufacturing industries, such as the food and beverage subsectors, while the 'modern' sector is comprised of a number of high-technology and chemical sectors. While the overall trend that emerges is one of broadly improving competitiveness levels in Irish manufacturing, developments in the 'modern' sector appear to have flattered the overall progress made in recent years and softened the impact of weaker competitiveness developments in 'traditional' sectors. It is worthwhile noting that ULC's are driven by labour cost developments, which in turn give rise to competitiveness gains and hence greater output. As such, the components of the ULC are interlinked. For example,

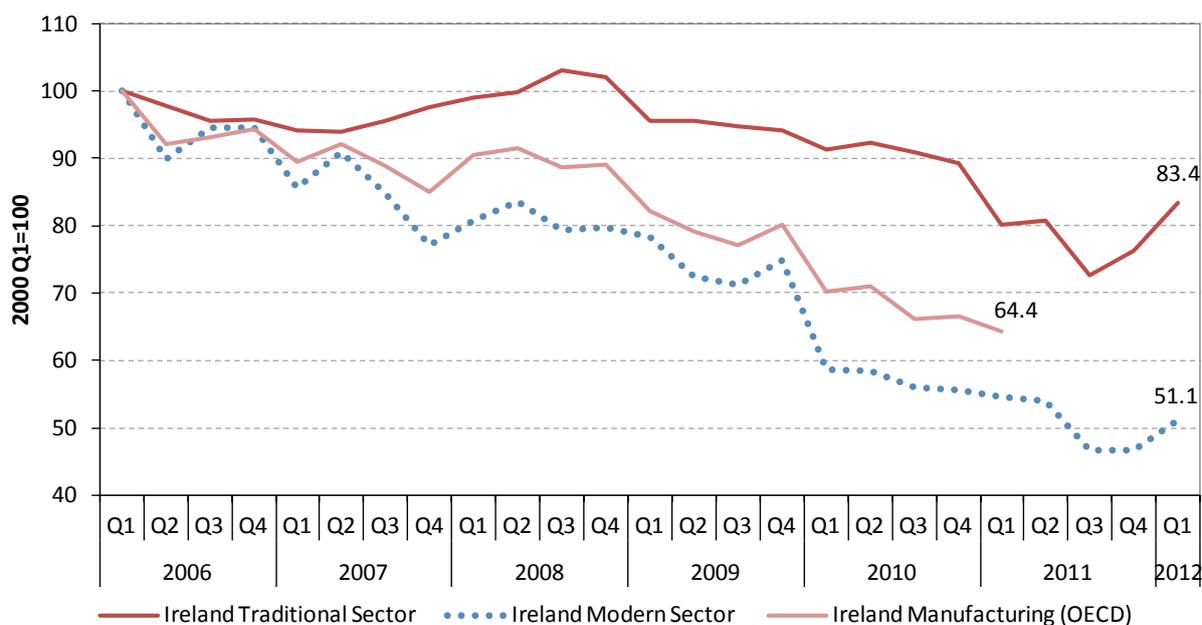
¹ For an excellent discussion of labour cost competitiveness measures in Ireland, see O' Brien, D. (2011).

² For a further detail, see the appendix below or the CSO's 'Industrial Production and Turnover' publication.

improved labour costs are liable to attract further investment from firms, thereby expanding output, resulting in an improvement to both sides of the ULC variable.

Looking at the change in the seasonally adjusted ULCs from the time of the overall Irish manufacturing ULC's pre-crisis peak, it is clear that both underlying sectors have experienced considerable competitiveness gains since the first quarter of 2006. Figure 1.1 reveals that the progress of the 'traditional' sector, while slower than that of the 'modern' sector, is still noteworthy, having fallen by almost one-fifth from its peak. The 'modern' sector has made far more progress, however, largely due to on-going productivity gains in the sector, whereas the 'traditional' sector has experienced sharp declines in output, relying heavily on reductions in total labour costs since early 2008 to improve competitiveness (see Table 1.1). The 'modern' sector ULC for the first quarter of this year stood at almost half of the value of its recent peak, in seasonally adjusted terms.

FIGURE 1.1 Comparison of ULCs in Irish Manufacturing (Seasonally Adjusted, Base: 2006 Q1 = 100)



Source: OECD, CSO, EU-KLEMS and own calculations.

More recently, improvements in ULCs for the both the 'modern' and the 'traditional' sector appear to have lost some momentum and have actually risen since late 2011. Under the assumption that earnings remained unchanged over the first quarter of 2012 (the average quarterly change in the earnings data over the length of the available series is an increase of 0.3 per cent), the recently changed trend in the ULCs is likely to reflect a substantially poorer output performance in both the 'modern' and 'traditional' sectors during the final quarter of 2011 and the first quarter of this year. In the 'modern sector', output

volumes in the large and volatile chemicals and pharmaceuticals subsectors declined by 3.7 per cent over the first three months of 2012, when compared to the previous quarter, in seasonally adjusted terms. This followed a quarterly decline of 1.0 per cent in the fourth quarter of 2011. Similarly, a recent weakening in the 'traditional' sector ULC partly reflected recent contractions in the volume of output from the food and beverage subsectors. Declines in these subsectors for the last quarter of 2011 and the first quarter of 2012 were 3.9 per cent and 7 per cent, respectively.

TABLE 1.1 Estimated Sectoral Developments in Irish Manufacturing since Q1, 2006

	Modern	Traditional
ULC, % change	-48.9	-16.6
Total Labour Costs, % change	-25.9	-18.6
Volume of Output (CSO figures)	25.1	-16.0
Employment, % change	-19.7	-11.4
Change in Employment ('000's)	-16.9	-22.7

Source: CSO, OECD, EU-KLEMS and own calculations

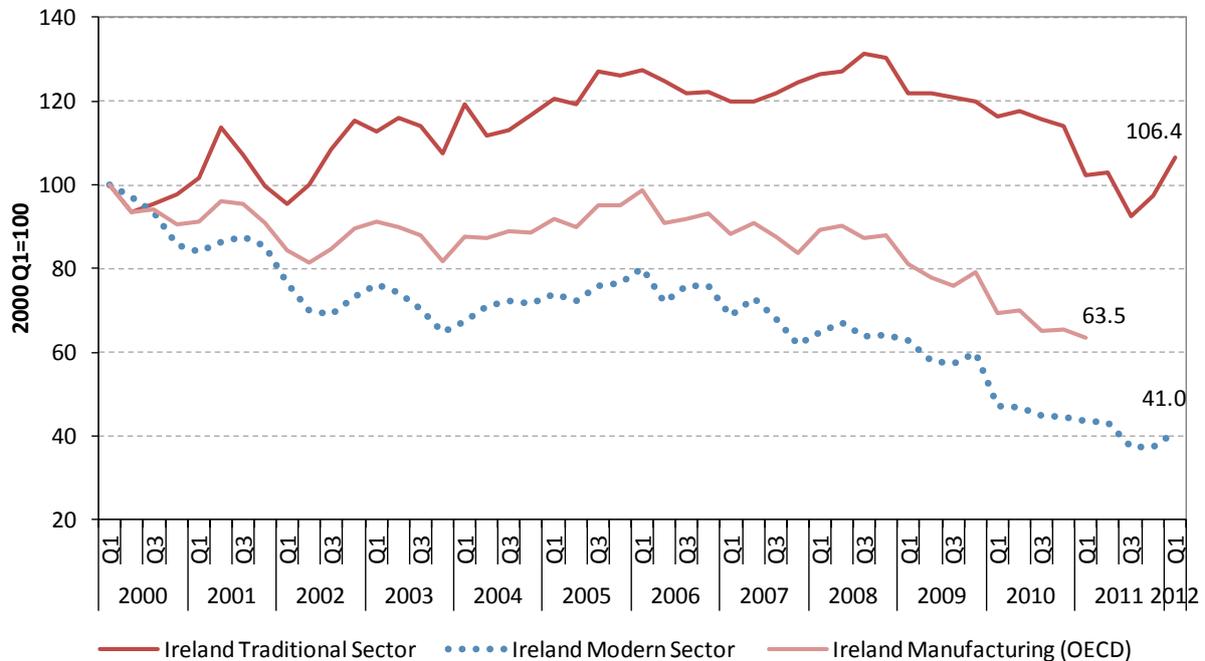
Note: Employment figures are for industry overall, not just manufacturing and are available up to the last quarter of 2011. Output volumes, ULC and labour cost estimates are available to the first quarter of 2012.

Looking more closely at the underlying developments in the determinants of the ULC, it is clear that the 'modern' sector has been more aggressive in strides to improve competitiveness. As shown in Table 1.1, firms have reduced employment and total labour costs much more than in the 'traditional' sector, without impacting negatively on output volumes. Output volumes in the sector were actually up by 25.1 per cent from the first quarter of 2006 (the quarter of the peak in the overall Irish manufacturing ULC) to the first quarter of this year. The 'traditional' sector, by contrast, has seen declines in output volumes of some 16 per cent to coincide with relatively lower reductions in both staffing levels and total labour costs.

Figure 1.2 looks at the long-run changes for the same underlying manufacturing series in Figure 1.1 using the first quarter of 2000 as the base year for each series. The longer run-series gives a sense of the loss of competitiveness over the period of the expanding credit and property bubble in the Irish economy, followed by the contraction in unit labour costs thereafter. As can be clearly seen, the increase in Irish ULCs over this period was concentrated in the 'traditional' sector with the 'modern' sector resuming its improvement long before a correction took hold in the 'traditional' sector. As of the first quarter of 2012, the 'modern' sector ULC has fallen to just 41 per cent of its original level, whereas the 'traditional' sector ULC remains more than 6 per cent higher. The performance of the 'traditional' sector since the onset of the financial crisis, while more subdued than

the 'modern' equivalent, is still lower than levels visible from 2002 onwards and has declined from a peak of 131.5 in the third quarter of 2008.

FIGURE 1.2 Long-Run ULCs in Manufacturing (Seasonally Adjusted, Base: 2000 Q1 = 100)



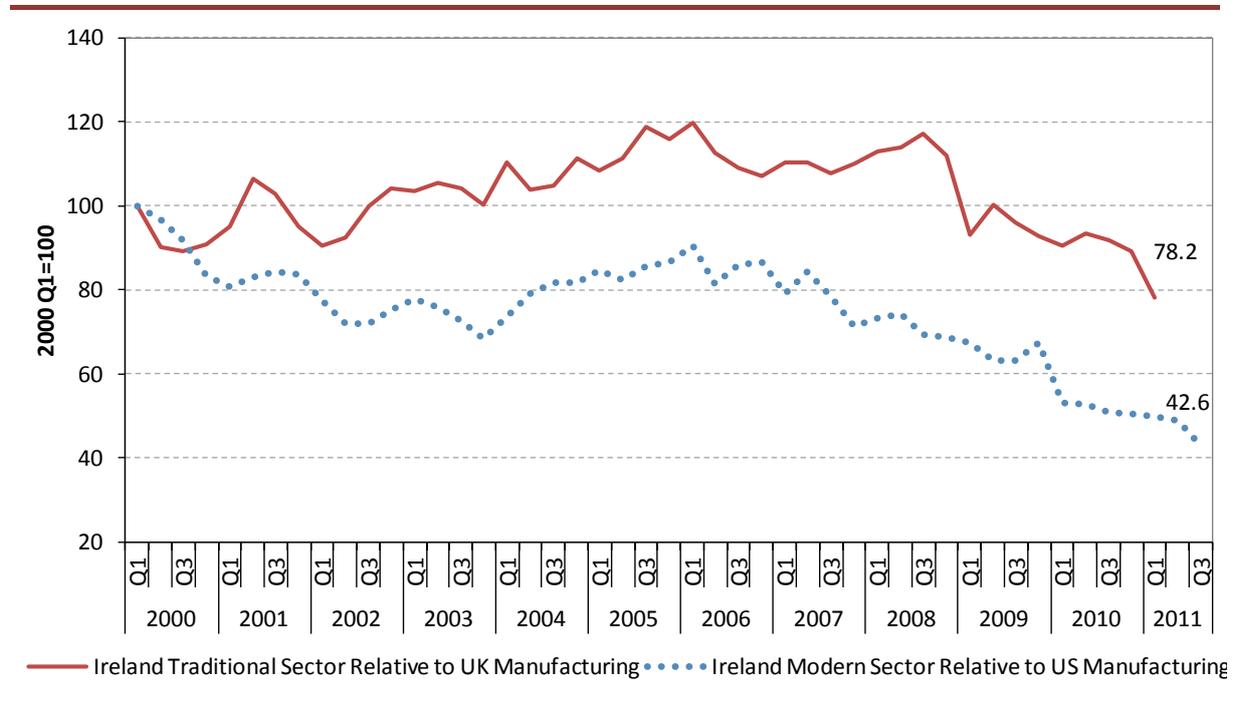
Source: OECD, CSO, EU-KLEMS and own calculations.

It is also worth considering the ULC measure in terms of relative developments using major trading partners for comparative purposes. Specifically, Figure 1.3 portrays the relative movements of the Irish 'traditional' ULC with that of the UK manufacturing sector and the Irish 'modern' sector with that of the US manufacturing sector, based on levels in 2000. The comparison is judged to be useful given that the UK has been the predominant overseas market for final output similar to that produced in the 'traditional' sector, while US manufacturing industries are the main focus of the Irish 'modern' sector.

The correction since then has been marked, however, with relative levels falling below 80 per cent of the UK manufacturing sector as of the last available reading in the first quarter of 2011. When the Irish 'modern' sector is compared with the performance of total manufacturing in the US over the same timeframe, it can be seen that the 'modern' sector began to adjust downwards at a much earlier stage, albeit more gradually. It reveals a considerable improvement in relative terms, down to 42.6 per cent of the US manufacturing ULC as of the third quarter of 2011. These results are partly due to the steep rise in the UK manufacturing ULC over the same period aiding the subdued improvement in the 'traditional'

sector, whereas a modest decline in the US manufacturing ULC lessens the improvement of the 'modern' sector's gains in implied competitiveness.

FIGURE 1.3 Relative Manufacturing ULCs (Seasonally Adjusted, Base: 2000 Q1 = 100)³



Source: OECD, CSO, EU-KLEMS and own calculations.

While the results for the Irish 'modern' sector are particularly striking, especially when compared against other countries, there are reasons to suggest why this may be the case. First of all, if one were to only take account of those sectors which were most productive in comparative economies, then presumably, the results would also be quite strong over several years. When the 'traditional' elements of manufacturing, which are typically less productive and more labour-intensive, are combined with the performance of the 'modern' sector, the overall result is a manufacturing ULC decline that is less pronounced on a national basis. Secondly, as noted by Forfás (2005), high Irish productivity levels in 'modern' manufacturing may reflect the considerable advantages from research and development, marketing and management practices undertaken by multinationals in other countries outside of Ireland. By virtue of this arrangement, the structure of the 'modern' sector in Ireland lends itself to far greater advances in productivity. Other economies that rely to a greater extent on labour-intensive manufacturing industries would be expected to exhibit a relatively less competitive manufacturing sector overall, by comparison.

³ Note that early ULC estimates from the OECD for 2011 Q4 appear to indicate that the Irish 'traditional' sector has continued its correction when compared with the UK manufacturing sector falling by as much as an additional 6 percentage points according to the latest relative ULC estimates, whereas the 'modern' sector measure is unchanged.

Conclusions

The acute decline in the Irish manufacturing ULC visible in recent years is indicative of labour productivity growth outstripping that of average compensation levels for employees, thus lowering costs faced by producers and providing an increasingly more favourable labour environment. Underlying sectoral developments, however, show that very different levels of progress have been made, with average labour costs and productivity improvements in the typically more labour-intensive 'traditional' sectors seemingly much slower to recover than in their 'modern' equivalent. Given that much of the improvement in the 'traditional' sector has been due to falling labour costs, further measures to boost productivity combined with continued wage restraint would clearly provide a further impetus for the recovery in overall manufacturing competitiveness. As it stands, this has been largely driven by advances in the 'modern' sector to date.

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Appendix: Construction of the Sectoral Unit Labour Costs in Manufacturing

As one of the most common measures of labour competitiveness, the Unit Labour Cost (ULC) is typically calculated as the ratio of compensation per employee to the unit of value added by each employee. It is frequently expressed as in the formula:

$$\text{Unit Labour Cost} = \frac{\frac{\text{Compensation of Employees}}{\text{Number of Employees}}}{\text{Value Added Employment}}$$

The OECD provides a useful dataset on ULCs by economic sector, with data available for Ireland as far back as the first quarter of 1998 on a quarterly basis. In forming the ULC for the manufacturing sector, the OECD obtains the ratio of total labour costs to total real manufacturing output, thus bypassing the need for employee numbers in their calculation. Total labour costs here comprise total compensation of employees in return for work done over the specified period and include the value of the social contributions payable by employers:

$$\text{Unit Labour Cost (OECD definition)} = \frac{\text{Total Labour Costs}}{\text{Total Real Output}}$$

Unfortunately, the overall series is only available after a considerable lag. However, as the series is described as the equivalent of the ratio between labour compensation/hour and labour productivity (i.e. real output), it is possible to update the available data using information available from the CSO's quarterly *Earnings, Hours and Employment Costs Survey* (EHECS) and the *Industrial Production and Turnover* (IPT) release. This relies on the assumption that the increase in industrial production volumes equates to the increase in real output in the manufacturing sector and that hourly earnings equate to labour compensation per hour. The Irish manufacturing sector is typically further subdivided into the so-called 'modern' and 'traditional' sectors. The latter comprises of what are considered to be more indigenous manufacturing industries, mainly including the food and beverage subsectors. The 'modern' sector is comprised of a number of high-technology and chemical sectors and is far larger than the 'traditional' sector in value terms. Based on gross value added data from 2005 updated using the volume of production data from the CSO's *Industrial Production and Turnover* release, the 'modern' sector represents 71 per cent of all manufacturing (Q1 2012).

In order to obtain a ULC series for the 'modern' and 'traditional' manufacturing sectors, the gross value added series used in the formation of initial weights for the industrial production series is first extended using the latest volume of industrial production data from the CSO for each sector. This gives two series of

weights for the manufacturing sector that correspond to the 'modern' and 'traditional' sectors, which are then multiplied by the total labour cost series for manufacturing as a whole from the OECD data to give two new value series in real terms that represent the relative size of each sector. Both series are still limited by the length of the OECD data, however. Therefore, the quarterly growth for the volume of production series are applied once more to the remaining quarterly periods of the individual real output series in order to provide a more up-to-date estimate of output in the 'modern' and 'traditional' sectors. In effect, this covers the denominators for both sectors in the ULC calculations.

The next step relates to the labour cost side of the ULC measure. Using industrial level data from the EU-KLEMS database (available up to 2007), average levels of compensation per employees in representative sectors of both the 'traditional' and 'modern' sectors are obtained. These are then assumed to move broadly in line with one another and are supplemented with quarterly CSO data on average hourly earnings for the remaining period. This is judged to be a reasonable assumption given that compensation per employee data for both sectors exhibits a strong positive correlation in the initial EU-KLEMS dataset. Research by Baccaro and Simoni (2004) also shows that hourly wages per employee in the 'modern' and 'traditional' sectors trended very closely over the period 1985-1998. Using employment data from the CSO for the 'modern' and 'traditional' sectors, total labour costs are then computed for each sector as the product of the numbers employed and the compensation per employee.⁴ This enables one to obtain an evolving share of total labour costs for each sector which is applied to the original OECD total labour costs for manufacturing.

Finally, the ratios of the updated manufacturing labour costs series and the updated real output series are then rebased to reflect the peak in both series, which coincided in the third quarter of 2005. One caveat worth mentioning is that the production of ULCs typically employs compensation costs as the numerator in their calculation. These comprise pay, employers' social security contributions and other labour taxes and provide a more comprehensive measure of true labour costs experienced by businesses, when compared to average hourly earnings data from the CSO used here to augment the OECDs ULC series. The CSO earnings data only look at the sum of regular earnings, irregular earnings, overtime earnings and payment for days not worked for the quarter divided by total paid hours for the quarter and, therefore, has little to say in relation to business costs incurred in the form of employers' PRSI and other labour taxes.

⁴ Ideally, data on employees rather than total employment would be used for each sector, but it is quite likely that this will not impact on the ultimate shares that are used in the construction of the index.