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ESTIMATING IRELAND'S LABOUR SHARE

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Estimating Ireland's Labour Share

Dónal O'Shea

ABSTRACT

The labour share of income is a crucial economic indicator that captures income distribution between the factors of production. Its importance as a parameter in macroeconomic models motivates this detailed study of methods for estimating the Irish labour share. International comparisons of the labour share that rely on distorted measures of Irish national income are misleading. Modified gross national income (GNI*) should be used as the denominator for the Irish labour share when conducting international comparisons. The numerator of the labour share is a measure of total compensation for labour, including the labour income of the self-employed. This note evaluates existing methods for imputing the labour income of the self-employed and proposes a new method, which applies a sectoral approach to the common assumption of equal total earnings between employees and the self-employed. Using the proposed method, there is no evidence of a decline in the labour share since 1998.

1. INTRODUCTION

The concept of the labour share of income can be informative about developments in productivity and income distribution in a particular economy. The labour share, or the portion of national income allocated to workers through wages and benefits, is a crucial economic indicator reflecting the balance between labour and capital in income distribution. A higher labour share suggests that workers are receiving a fair portion of the economic gains, which can foster economic stability and reduce inequality. It is essential because it impacts the overall well-being of the workforce, affecting their ability to consume and invest, and to improve their quality of life. A decline in the labour share often signals an economy where corporate profits and returns to capital outpace wage growth, potentially leading to wealth concentration and economic imbalances.

The labour share of income is an important parameter in macroeconomic models. Lawless and Rehill (2021) point out that '[t]he stability of the labour share of income is a fundamental feature of macroeconomic models, with broad implications for the shape of the production function, inequality, and macroeconomic dynamics'. In addition, Hur (2021) demonstrates how changes in the labour income share can affect business cycle fluctuations. The analysis presented in this Research Note will have implications for both long-term growth accounting models of the Irish economy and for short-term macroeconomic models.

The *Commentary* has continued to highlight challenges posed by distortions in the Irish national accounts. These distortions affect the accuracy of estimation of the Irish labour share. Section 2 addresses the effect of the choice of measure of national income on the estimation of the labour share. Section 3 then discusses the appropriateness of various methods that are commonly used to ensure that measurement of the labour share correctly accounts for income earned by those who are self-employed, as well as that earned by employees. Section 4 will present the assumptions on average earnings in each sector, with a focus on agriculture.

2. CHOOSING AN APPROPRIATE MEASURE OF NATIONAL INCOME

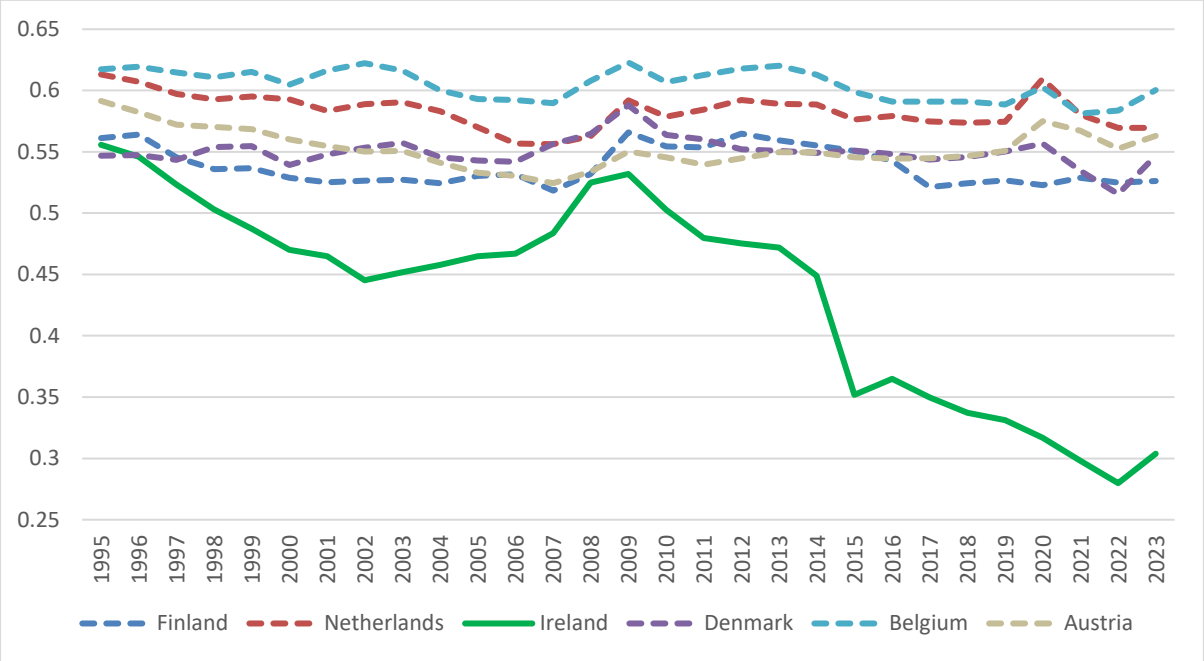
The contemporary literature on the labour share has focused on issues around measurement (Feenstra et al., 2015; Caswell, 2024) and on investigating the causes of a decline in the share in recent years (Cho et al., 2017).

While studies differ in the precise measurement of the numerator of the labour share, most international comparisons use gross domestic product (GDP) as the denominator (for example, OECD, 2024; Gollin, 2002; and Karabarbounis, 2024).

Figure 1 shows the Irish labour share compared with a peer group of European countries of similar size and openness. It shows that using GDP as the denominator in an Irish context is not particularly informative because of large increases in GDP since 2015.

These large increases have arisen as a result of depreciation on foreign assets of foreign-owned multi-national enterprises resident in Ireland and the undistributed profits of redomiciled public limited companies (Fitzgerald, 2016). These elements should not be included in the measurement of the labour share of income, as this recorded income is not available for distribution to either capital or labour in Ireland.

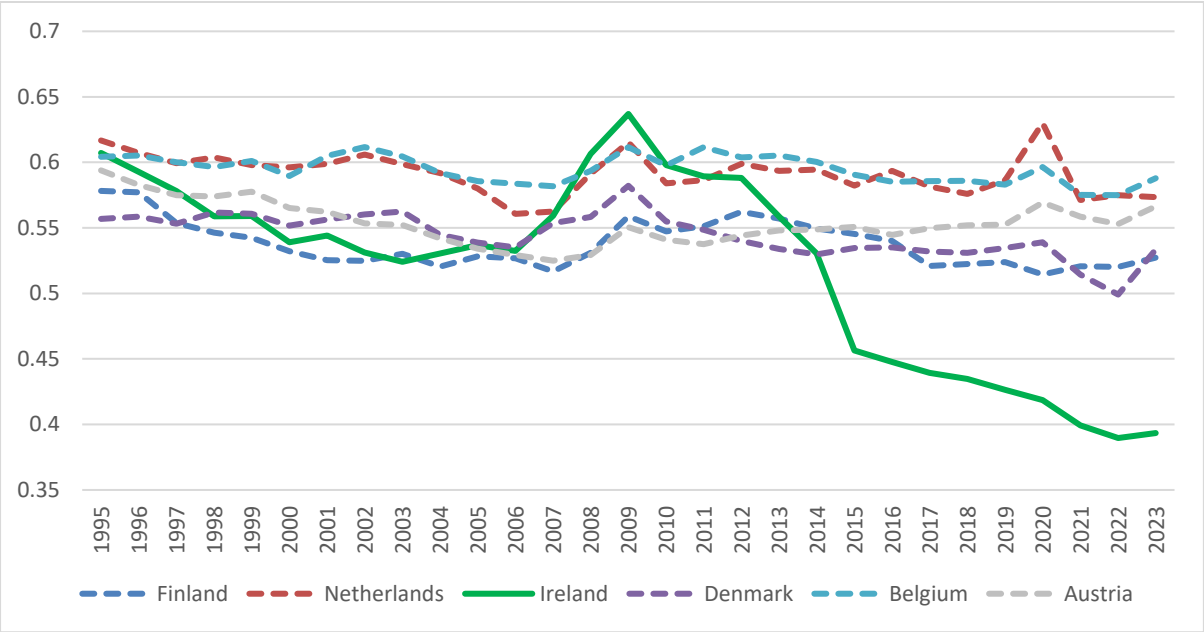
FIGURE 1 LABOUR SHARE USING GDP



Sources: AMECO database and author's calculations.

Flaherty and Ó Riain (2019) identify this problem and use gross national income (GNI) to compare the labour share in Ireland and Denmark. Using GNI causes the value of the labour share to be in line with the peer group of European countries up to the late 2000s. Fitzgerald (2020) points out that while GNI was a satisfactory measure until the 2000s, developments in the years since attributable to increased globalisation have affected the interpretability of GNI. This criticism also applies to the labour share when measured using GNI. Figure 2 presents a sharp decline in the labour share in recent years, which is likely attributable to measurement issues with GNI rather than structural changes in underlying income distribution.

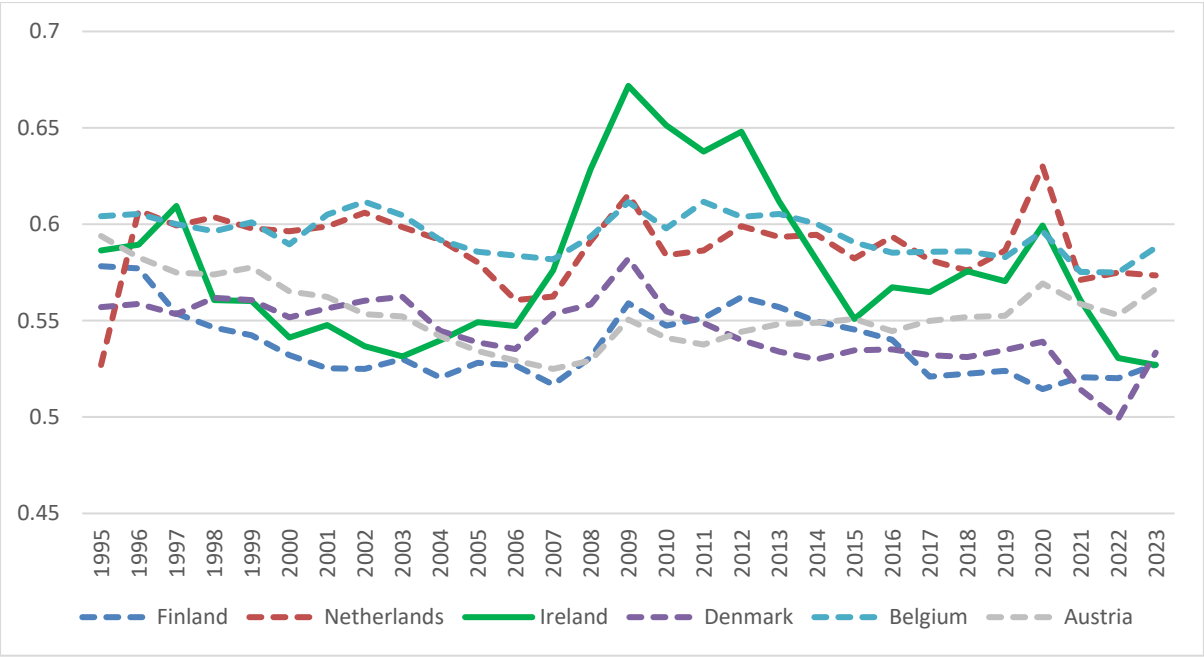
FIGURE 2 LABOUR SHARE USING GNI



Sources: AMECO database and author's calculations.

Various well-documented attempts have been made to generate satisfactory measures of Irish national income. Modified GNI or GNI* removes depreciation on intellectual property and leased aircraft, as well as net factor income of redomiciled PLCs. These corrections generate a measure that more accurately captures the total income available to fund consumption or investment in Ireland.

FIGURE 3 LABOUR SHARE USING GNI* FOR IRELAND AND GNI FOR PEER GROUP



Sources: AMECO database, CSO national accounts database and author's calculations.

Figure 3 shows that the Irish labour share is far more stable when GNI* is used as

the denominator. There is some limited evidence of a decline over time. On average, the Irish labour share is broadly similar to the labour share in the peer group of European countries when GNI* is used for Ireland and GNI for the peer group, although it is more volatile. Honohan (2021) describes any such comparison between GNI* and GNI as 'a crude procedure', but in this case it is far more informative than the GNI comparison presented in Figure 2.

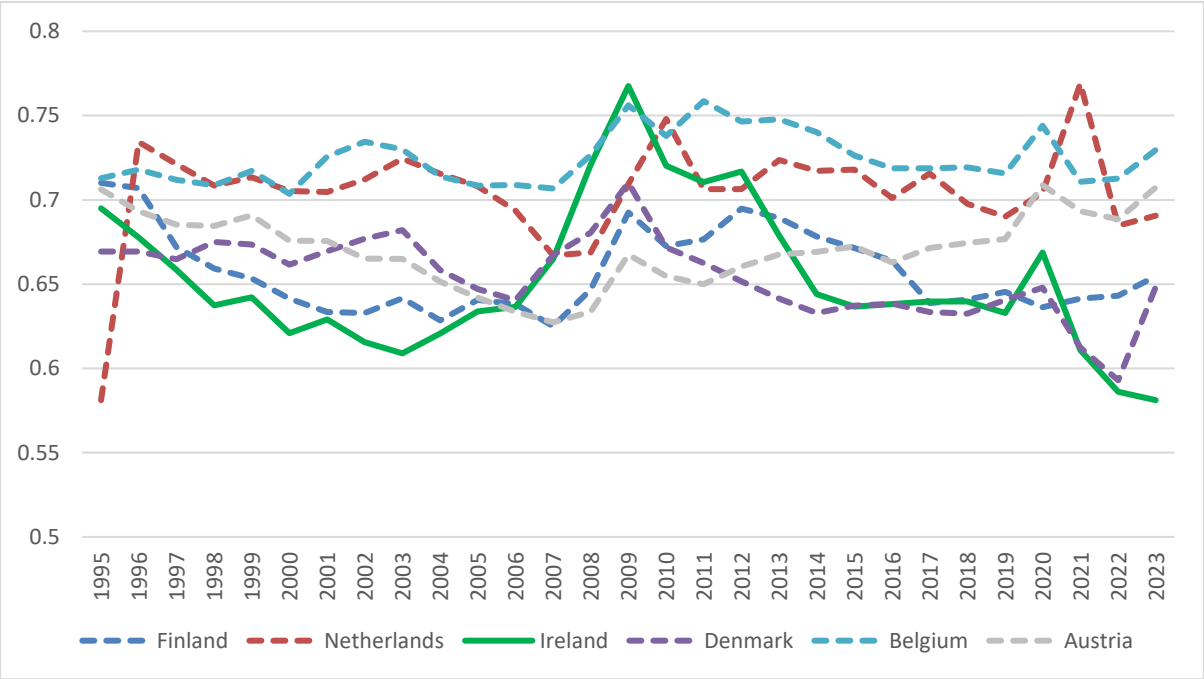
The volatility of the Irish labour share compared with the peer group is noteworthy. This comparison also highlights the scale of the effect of the 2008–2012 period on Irish national income and underlines the importance of considering developments in the labour share over a longer period of time to get a more accurate estimate of the concept.

Fitzgerald (2020) argues in favour of using a measure of output that is net of depreciation because of the distortionary effects of depreciation on the Irish national accounts. By excluding all depreciation, Ireland is directly comparable with other countries. Figure 4 presents the labour share using net national income.[1] There is an immediately apparent level effect of approximately 10 per cent for most countries, but the dynamics over time are similar to the labour share using GNI*. In particular, there is no sharp decline in the post-2015 period.

Schwellnus et al. (2017) argue that using a measure of national income net of depreciation to calculate the labour share may be more appropriate for considering income distribution. This is because it is only income net of capital consumption that is available to compensate workers and capital owners. However, he argues that gross measures of national income should be used to consider structural trends because capital consumption displays counter-cyclical behaviour. So while the labour share presented in Figure 4 is informative when considering income distribution, the comparison above of GNI* with GNI is preferable for considering structural trends.

1 Specifically, Fitzgerald (2020) argues in favour of using net national product at factor prices as a measure of output. The analysis in this Research Note uses net national income at market prices. The two differ because net national income includes indirect taxes and subsidies.

FIGURE 4 LABOUR SHARE USING NET NATIONAL INCOME



Source: AMECO database and author's calculations.

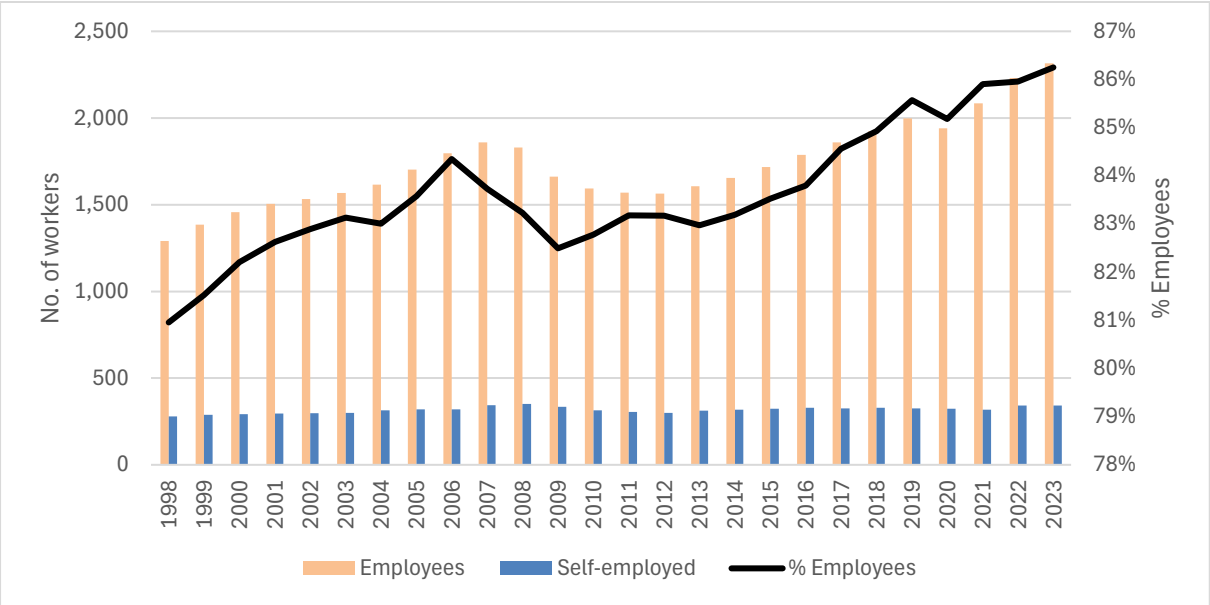
3. IMPUTING THE LABOUR INCOME OF THE SELF-EMPLOYED

The numerator of the labour share is a measure of total compensation paid for labour. National accounts provide an aggregate figure for compensation paid to employees. Total compensation paid for labour as a factor of production consists of this figure and a measure of labour compensation paid to the self-employed.

$$labour\_income = COMPEMP'EE + LabourCOMPSelfEMP \quad (1)$$

Figure 5 shows that self-employed workers in Ireland have consistently numbered over 300,000, accounting for between 14 and 20 per cent of the workforce. Although the share of total workers who are self-employed is decreasing, the size of the group underlines the importance of accurately imputing their labour income.

FIGURE 5 PROPORTION OF WORKERS WHO ARE EMPLOYEES



Source: CSO Labour Force Survey.

Self-employed income is recorded as mixed income in the national accounts. Some of this income is attributable to the labour of the self-employed and some to capital they provide. Their labour income should therefore take the following form, where $\vartheta \in (0, 1)$:

$$LabourCOMPSelfEMP = \vartheta * Mixed\_Income \tag{2}$$

In the figures presented in Section 2, we apply a method suggested by Gollin (2002) to impute the labour income of self-employed workers. This method has the advantage that it can be easily applied to all European countries and that it is sensitive to the number of self-employed workers. This correction assumes that total compensation per worker (earnings) is the same for employees and the self-employed.

$$labour\_income\_A = COMP\_EMP'EE + L_{SelfEMP} * \frac{COMP\_EMP'EE}{L_{EMP'EE}} \tag{3}$$

Schwellnus et al. (2017) show that while there is no significant effect at the average level, labour shares in individual countries can be sensitive to the method used to impute the wages of the self-employed. Therefore, if we focus on trends in the Irish labour share rather than comparing the level with other countries, it is important to evaluate the appropriateness of the different methods proposed. How should the labour income of the self-employed in Ireland be imputed?

3.1 Equal hourly wage or equal total earnings?

Karabarbounis (2024) proposes a number of different methods for imputing the income of the self-employed that can be applied to US data, one of which is easily transferable to European data. This method uses an assumption of equal compensation per hour (hourly wage) between employees and the self-employed.

$$labour\_income\_B = COMP\_EMP'EE + \quad HW_{SelfEMP} * \frac{COMP\_EMP'EE}{HW_{EMP'EE}} \tag{4}$$

Cho et al. (2017) recommend imputing the income of the self-employed at a sectoral level. This is a sensible recommendation in an Irish context because of the wide sectoral variation in the proportion of workers who are self-employed, as presented in Figure 6.

FIGURE 6 SECTORAL COMPOSITION OF EMPLOYMENT (2023)

P – Education
Q – Human health and social work activities
K,L – Financial, insurance and real estate
B–E – Industry
I – Accommodation and food service activities
G – Wholesale and retail trade
H – Transport and storage
M – Professional, scientific and technical activities
R–U – Other NACE activities
F – Construction
A – Agriculture, forestry and fishing
O – Public administration and defence

Source: CSO Labour Force Survey.

The Organisation for Economic Co-operation and Development (OECD, 2024) applies a sectoral approach, which builds on Method B (4). They assume that compensation per hour (wages) is the same for employees and the self-employed in each sector. This gives rise to the following correction to labour income, where

the average compensation per hour worked for employees in sector i is multiplied by the amount of hours worked by the self-employed in that sector:

$$labour\_income\_B_{sectoral} = COMP\_EMP'EE + \sum_i \frac{COMP\_EMP'EE_i}{HWEMPEE_i} * HWSelfEMP_i \quad (5)$$

However, the underlying assumption is still one of equal hourly wages.

The National Economic and Social Council (NESC, 2020), in an analysis of data from EU Survey on Income and Living Conditions (EU-SILC) and the Household Budget Survey conducted by the Central Statistics Office (CSO), conclude that income for self-employed individuals is 10 per cent lower than income for employees. However, hours worked by the self-employed average 20–30 per cent higher than hours worked for employees. Taken together, this would suggest a substantial gap in hourly wages between employees and the self-employed. Therefore, an assumption of equal earnings rather than equal hourly wages seems more reasonable, albeit it is unlikely to be exactly correct.

Caswell (2024) applies the OECD sectoral version of Method B (5) to UK data and concludes that an assumption of equal hourly wages 'should be avoided unless compelling empirical evidence states otherwise'. He invokes identity (2) above to show that imputed self-employed income should not exceed the value recorded for mixed income in the national accounts, i.e. that ϑ should not exceed 1. We will apply this method as a check on applications of Methods A, B and C to Irish data.

We propose an alternative method for imputing the labour income of the self-employed. This method assumes equal earnings in each sector between employees and the self-employed. Therefore, Method C is equivalent to Method A but applied on a sector-by-sector basis.

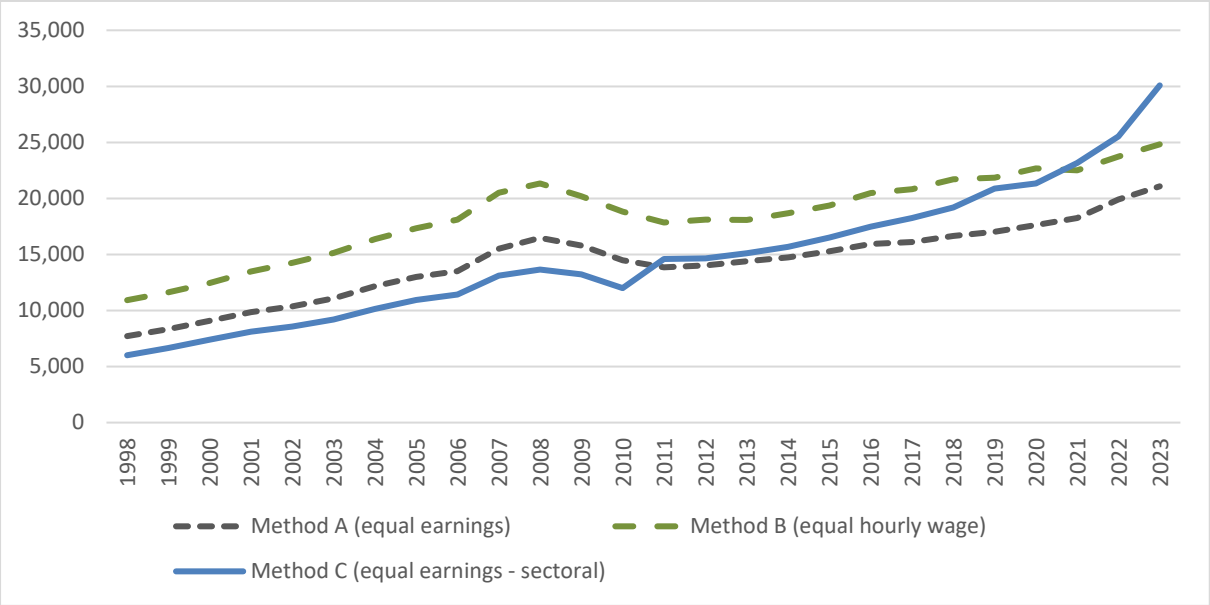
$$labour\_income\_C = COMP + \sum_i \frac{COMP_i}{EMPEE_i} * SelfEMP_i \quad (6)$$

Figure 7 presents estimated imputed labour income for the self-employed based on Methods A, B and C. Method A (3) and Method C (6) both assume equal total earnings, with Method C applying the assumption at a sectoral level. In the period before the global financial crisis (GFC), there is a significant difference between Method A and Method C. The two measures converged for a period, before Method C grew quicker in the post-COVID-19 period.

Method B (5), which assumes equal hourly wages between the self-employed and employees, is consistently higher than Method A. This reflects the issues outlined

above, with an assumption of equal hourly wages between employees and the self-employed.

FIGURE 7 IMPUTED TOTAL LABOUR INCOME FOR THE SELF-EMPLOYED BY METHOD (€, MILLION)



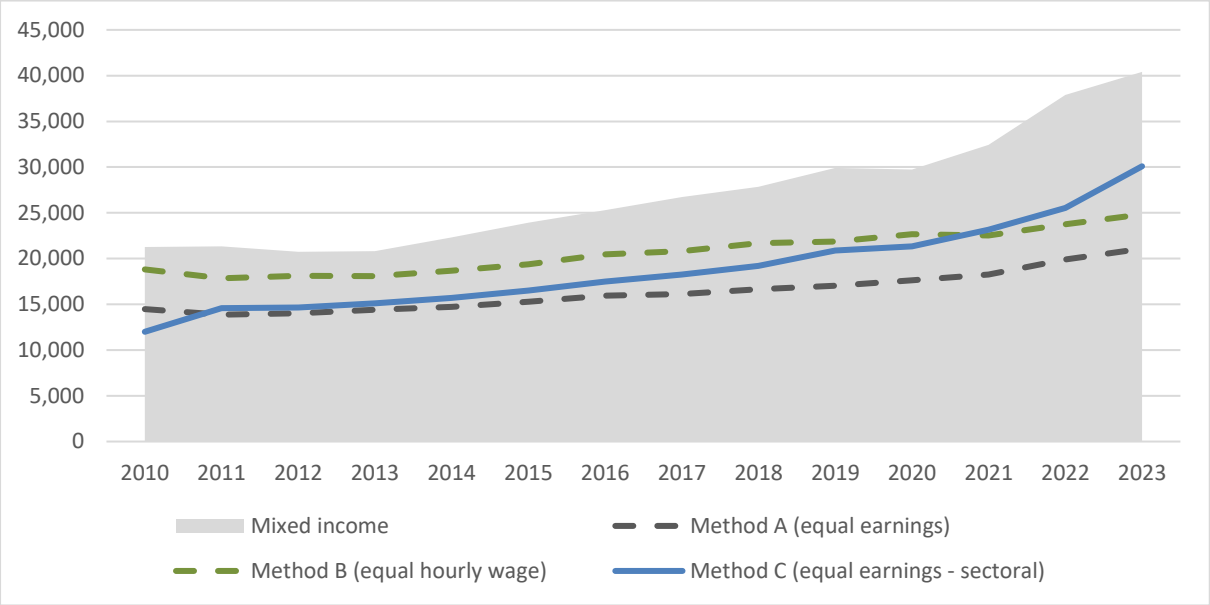
Sources: CSO national accounts database, Labour Force Survey and author's calculations.

Figure 8 presents the imputed labour incomes for the self-employed compared with the figure for gross mixed income recorded in the national accounts.[2] In the earlier part of the sample, Method 2 imputes a value for the labour income of the self-employed that is a large share of the total gross mixed income recorded in the national accounts, implying a level of ϑ close to 1. On the other hand, Methods A and C impute values for the labour income of the self-employed that imply that around two-thirds of gross mixed income is attributed to labour.

Method B implies a value of ϑ that is close to 1 and an overall labour share in the range of 0.55 to 0.65. This would suggest that the production technologies used by employees and the self-employed are structurally different. Karabarbounis (2024) argues against such an assumption, and in favour of assuming equal factor shares between the two groups. Method C achieves a result that is broadly in line with this assumption. Using Method C, a relatively constant proportion of gross mixed income is allocated to labour (ϑ = 0.70 on average).

2 The mixed income series is available from 2010 onwards from the CSO's website: in 'CSO Institutional Sector Accounts', under 'Gross Operating Surplus / Mixed Income for the Household sector'.

FIGURE 8 IMPUTED LABOUR INCOME FOR THE SELF-EMPLOYED BY METHOD WITH MIXED INCOME (€, MILLION)

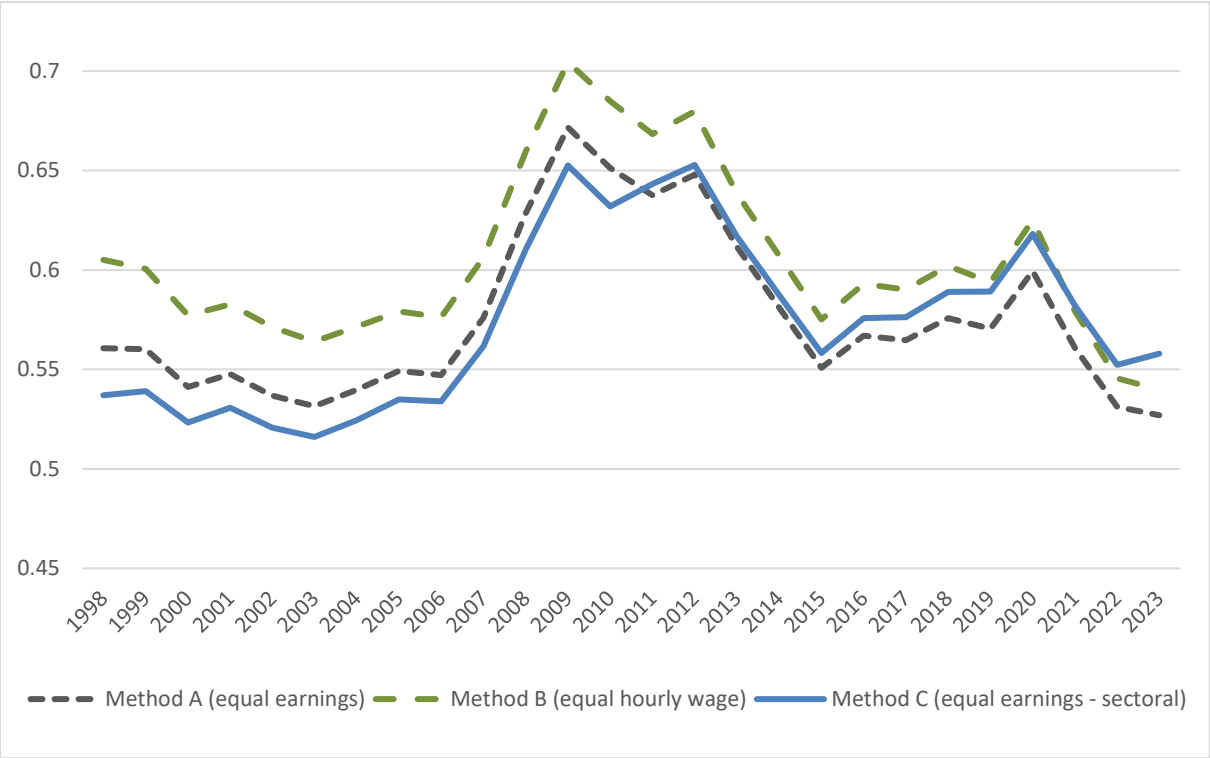


Sources: CSO national accounts database, Labour Force Survey and author's calculations.

Method C achieves this result without directly imposing an assumption for ϑ. Directly imposing an assumption for ϑ would generate an imputed value for labour compensation of the self-employed that does not take account of the number of self-employed workers. Caswell (2024) describes such an assumption as 'somewhat naïve'. This further supports the use of Method C, which assumes equal earnings between the two groups at the sectoral level.

Figure 9 presents the labour share estimated using the three different methods. Following the discussion in Section 2, we use GNI* as the denominator. The three methods have converged to a certain degree in recent years. As shown in Figure 5, the share of workers who are self-employed has fallen over time, so different methods to impute their labour income will affect the overall labour share less in recent years.

FIGURE 9 LABOUR SHARE BY METHOD USING GNI*



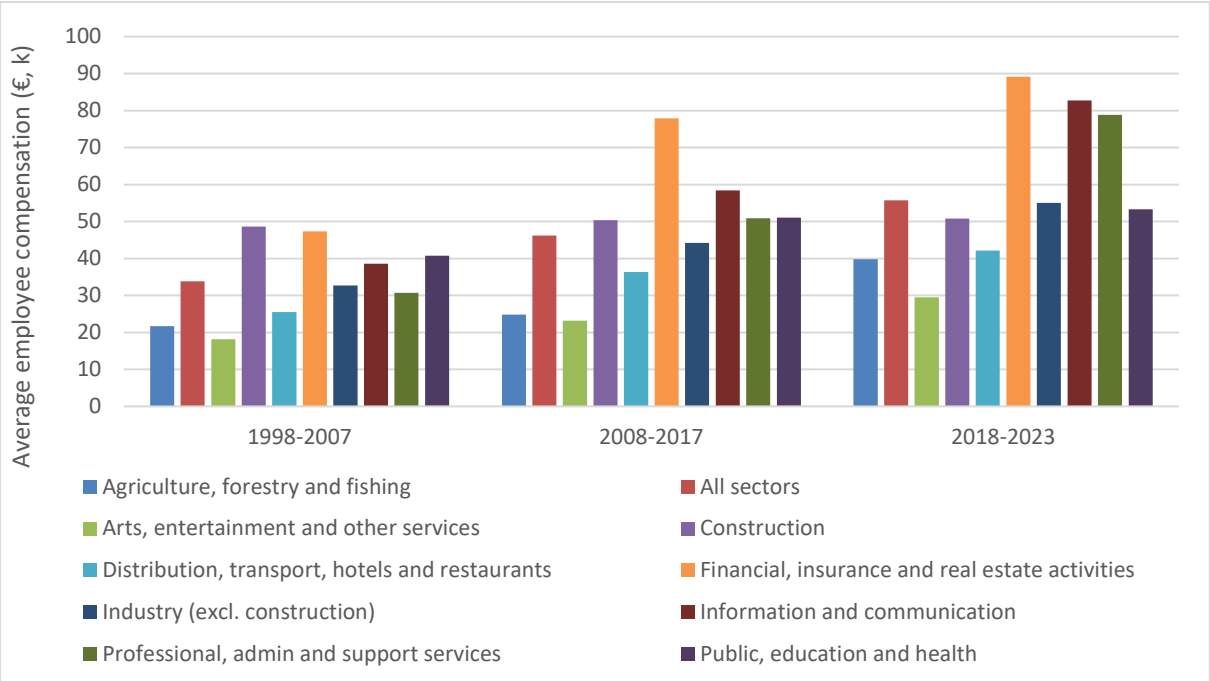
Sources: CSO national accounts database, the National Farm Survey, the Labour Force Survey and author's calculations.

The GFC period represents a clear deviation from the trend regardless of the choice of method. This may be indicative of nominal rigidities in the economy. During the recessionary period, output and income fell quite quickly but wages did not adjust at the same speed. This contributed to a higher than usual labour share during this period. This episode underlines the importance of taking a long-term perspective on the labour share.

4. SECTORAL ASSUMPTIONS

The new method proposed addresses the differences across sectors in the share of total workers who are self-employed. There is also a substantial difference in average employee earnings across sectors. Figure 10 highlights these differences, which translate into different assumptions in Method C for the earnings of the self-employed by sector.

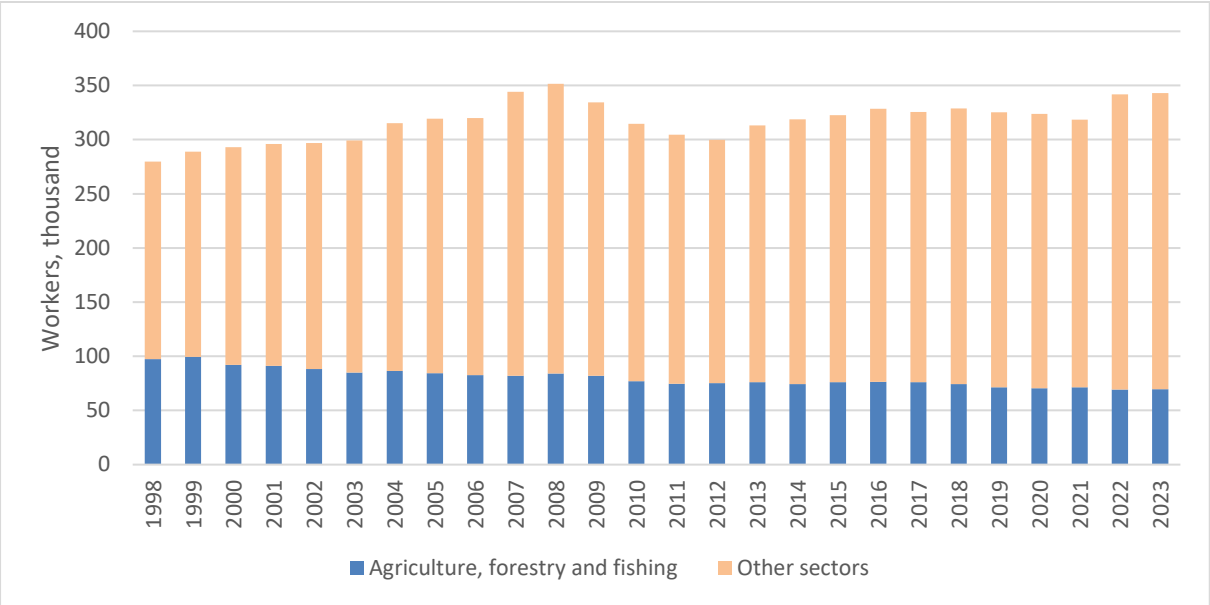
FIGURE 10 AVERAGE EMPLOYEE COMPENSATION BY SECTOR



Source: CSO Labour Force Survey.

'Agriculture, forestry and fishing' is an outlier with respect to the proportion of workers who are self-employed. Figure 6 above shows that it is the only sector where self-employed workers make up the majority of total workers. In addition, it is the largest single NACE sector for self-employment. This suggests that it warrants specific attention. Figure 11 shows that while the share of those in self-employment who work in 'agriculture, forestry and fishing' is declining, the absolute number remains sizeable (70,000 self-employed).

FIGURE 11 SELF-EMPLOYED WORKERS BY SECTOR



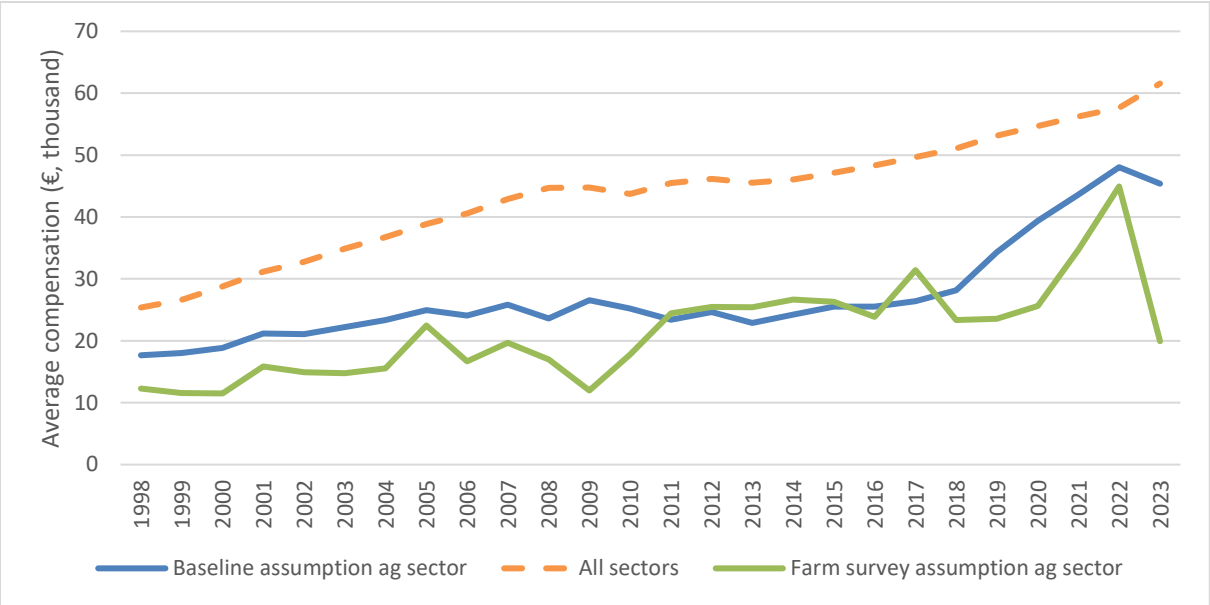
Source: CSO Labour Force Survey.
Note: The employment series in the Labour Force Survey captures the primary employment of respondents. There is a substantial number of farmers whose primary employment is in another sector. They are not included in the analysis here to avoid double counting.

We cross-check the appropriateness of the earnings assumption for agriculture with an alternative source. A historical series of the average income for a family farm is available based on the National Farm Survey dating back to 1998. Figure 12 presents this series, alongside the baseline assumption for earnings of the self-employed based on the average employee compensation in the agriculture sector. Both series are trending upwards at a comparable rate,[3] suggesting that the assumption underpinning Method C is appropriate.

It is also clear from Figure 12 that earnings in the 'agriculture, forestry and fishing' sector are lower than the average across all sectors. The volatility in the series from the National Farm Survey in recent years is attributable to the fact that dairy farms account for a disproportionate share of overall farm income. As a result, this series is sensitive to movements in dairy prices.

3 For the purposes of this analysis, the income listed as average farm income is treated as accruing entirely to labour rather than to land or capital.

FIGURE 12 AGRICULTURE ASSUMPTION COMPARED WITH FARM SURVEY



Sources: CSO national accounts database, National Farm Survey and Labour Force Survey.

5. CONCLUSION

Imputing the labour income of the self-employed in Ireland can be improved by assuming equivalence between employees and the self-employed at a sectoral level rather than at the aggregate level. Assuming equality of earnings between the two groups is more realistic than assuming equal hourly wages. For international comparisons, where sectoral data may not be easily available, assuming equal earnings on the aggregate level can give an overview of trends and of the level of the labour share.

Further, the analysis presented above suggests that the labour share in Ireland is sensitive to the method chosen for imputing the labour income of the self-employed. However, this sensitivity has reduced over time and it is far less significant than the sensitivity of the labour share to the choice of the denominator. International comparisons of Ireland's labour share should use an appropriate measure of national income, namely GNI*, to ensure that such comparisons are relevant. The analysis suggests that, in an Irish context, a value for the labour share between 0.5 and 0.6 should be considered for macroeconomic modelling purposes.

Finally, there is no evidence of a decline in the labour share measured using GNI* since 1998. This is true for all three methods employed to impute the labour income of the self-employed. The relative stability of the labour share is quite notable given the scale of economic changes over the period in question.

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