Statistical insights: Are international productivity gaps as large as we thought?

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Labour productivity is a key indicator of economic wellbeing, and raising it – producing more goods and services from the same or less work (labour input) – is one of the main drivers of sustainable economic growth.

Historically, comparisons of productivity across countries have shown substantial gaps, even between similar-sized economies at a similar stage of development – leaving many analysts struggling to understand the causes. However, a new OECD study has found that at least a part of these gaps disappears once we adjust for differences in how countries measure labour input.

In the case of the United Kingdom for instance, the study reveals that the gap in labour productivity levels with the United States, is around 8 percentage points smaller than was previously thought – closing from 24% to 16%. The gap with Germany shrinks from 22% to 14% and with France from 20% to 11%.

How is labour input measured?

For productivity

measures, labour input is most appropriately defined by the total number of *hours actually worked* by all persons engaged in production, i.e. employees and self-employed (OECD, 2001). Hours worked include all hours effectively used in production, whether paid or not, but they exclude hours not used in production (e.g. annual and sickness leave), even if some compensation is received for them. In practice, countries adopt one of two methods to estimate average hours worked for productivity estimates:

(i) the *direct method,* which takes actual hours worked reported by respondents in surveys, generally labour force surveys (LFS); and

(ii) the *component method*, which starts from contractual, paid or usual hours per week from establishment surveys, administrative sources or, indeed, the LFS, with adjustments for absences and overtime and indeed other adjustments that are necessary to align with concepts of output in the national accounts, for example concerning cross-border workers.

What impact do these different approaches have on international comparisons?

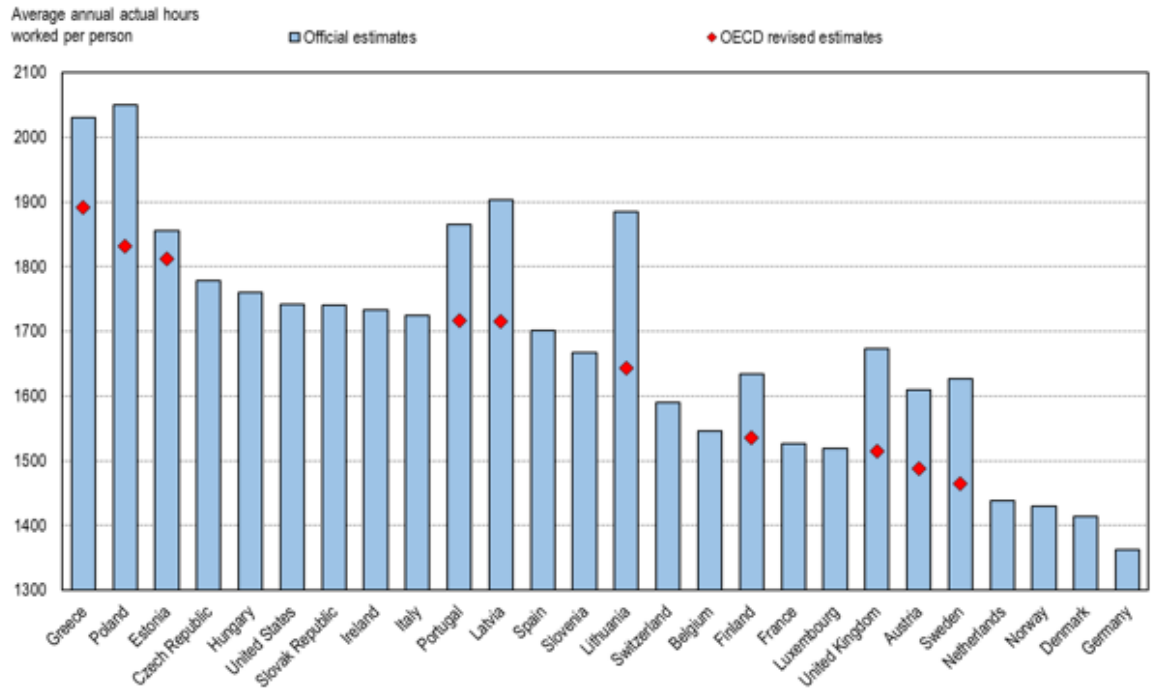
Whilst the 'direct' approach appeals due its simplicity, it depends heavily on respondent recall, cannot account for response bias, and, moreover, assumes a perfect alignment of workers and measures of output. The component approach is more

complex, but it systematically attempts to address these issues. To give some sense of the potential impact of these different approaches on the international comparability of hours worked, the OECD has used the LFS and complementary sources to estimate national hours worked using both a direct approach and a *(simplified) component method*.

Our results provide strong evidence that response bias and a lack of exhaustive adjustments to align with the underlying conceptual boundary GDP, lead to systematic upward biases in estimates based on the direct method, which are, in turn, always higher than those compiled using the simplified component approach.

Figure 1 presents official estimates of hours worked in countries' national accounts, and compares them with the OECD simplified component method estimates for those countries that currently use a direct method with minimal or no adjustments in their official statistics.

Figure 1. Average annual hours worked per person, selected OECD countries, 2016

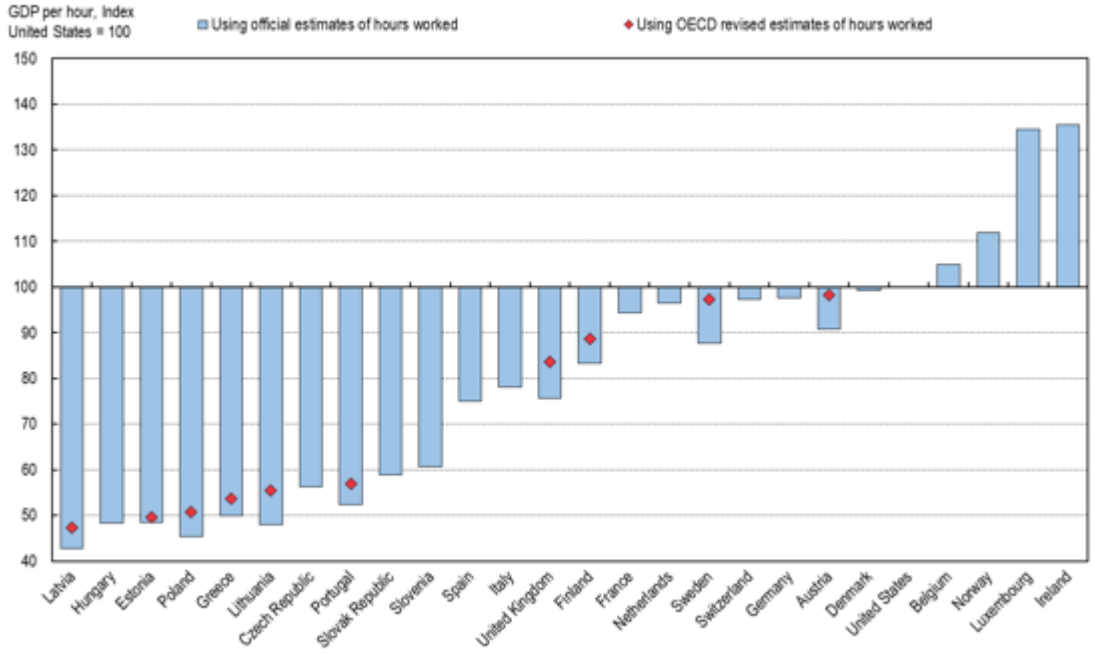


Source: Ward, Zinni and Marianna (2018)

The corollary of lower hours worked of course, is higher labour productivity levels. Figure 2 shows labour productivity levels, referenced to the United States, using official national accounts average hours worked estimates, comparing them with new results from the OECD simplified component approach for countries using the direct method.

Overall, the results point to a reduction in relative productivity gaps of around 10 percentage points compared with current official estimates in many countries. While the broad picture is maintained, notable international ranking changes see the United Kingdom outperforming Italy, and Austria moving ahead of France, the Netherlands, Switzerland and Germany.

Figure 2. International productivity gaps, 2016



Source: Ward, Zinni and Marianna (2018).

The OECD revised hours worked estimates explained

The simplified component method used in the paper takes usual weekly hours worked in a person's main job from the EU Labour Force Survey (EU LFS) and the Current Population Survey of the United States (CPS), as its starting point. Adjustments for the key components of weekly working time are made using self-reported data on overtime, flexible hours and hours on additional jobs. Finally, the method accounts for weeks not worked, i.e. holiday and vacation weeks, full and part-week absences for non-holiday reasons, and absences due to sickness and maternity.

Statutory leave entitlements are used as a proxy for actual annual leave taken in this paper. It is important to note that

this implicitly assumes that workers in all countries take, on average, all the leave to which they are entitled. However, this is not necessarily the case, as among other factors, actual take-up rates are likely to reflect differences in working cultures across countries. For this and other reasons, these new estimates should be considered only as a stop-gap for those countries currently using a direct method with minimal or no adjustments. In this respect it is important to note that most countries are already beginning to work towards improving their methodologies in line with the recommendations made as part of this research exercise, and others will begin to do so.

What's the impact on growth rates?

While the approach recommended in the paper clearly highlights the current bias in international comparisons of *productivity levels,* it does not follow that the same holds for international comparisons of *productivity growth rates;* growth estimates would only be distorted if the impact of the adjustments required showed significant disproportional change over time. Indeed, implementing the simple component approach reveals no systematic bias in growth rates.

Minor differences do occur however, and, so, to avoid introducing differences with national estimates of productivity growth (and those that can be derived from the OECD's national accounts data), the OECD will take estimates of average hours actually worked (levels) using the simplified component method in 2016 as a benchmark, and project series forwards and backwards using official (national) productivity growth rates.

How will these results be incorporated into the OECD's productivity database?

At this stage, based on the data available to the OECD, the implementation of the simplified component method will apply to the following countries: Austria, Estonia, Finland, Greece, Latvia, Lithuania, Poland, Portugal, Sweden and the United Kingdom. It is important to stress that the use of the simplified component method is intended to be only a stop-gap until such a time that these countries are able to align their estimation methods and estimates with the underlying national accounts concepts and that correct for self-reporting bias; indeed many countries are already moving in this direction.

Current efforts of the OECD are necessarily restricted to comparisons of labour productivity levels for the whole economy, but future work will look to explore whether and how labour input measures at the industry level can also be improved. In the meantime, for the 10 countries listed above, estimates of hours worked by sector will be constrained (pro-rata) to those at the whole economy level.

These changes will be incorporated into the OECD Productivity Statistics database and the OECD Average annual hours actually worked per worker dataset by the end of January 2019, along with corresponding metadata.

Further reading

OECD (2001), *Measuring Productivity – OECD Manual: Measurement of Aggregate and Industry-level Productivity Growth*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264194519-en.

Ward, A., M. Zinni and P. Marianna (2018), "International productivity gaps: Are labour input measures comparable?", OECD Statistics Working Papers, No. 2018/12, OECD Publishing, Paris,

https://doi.org/10.1787/5b43c728-en.