# Comparing productivity growth across databases[1]

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There are currently four main databases that provide data on economy-wide multifactor productivity (MFP) growth for advanced economies. These databases are the Penn World Table (PWT),[2] The Conference Board Total Economy Database (TED),[3] the EU KLEMS database,[4] and the OECD Productivity Statistics.[5,6] In addition to information on growth of gross domestic product (GDP), developing data on MFP growth requires data on input of labour (accounting for improvements in schooling levels) and input of produced capital, such as buildings and machinery. The conceptual framework for growth accounting, on how to measure and aggregate data on inputs, is well-established and many individual pieces of data are readily available for advanced economies. Yet the four databases we compare here show notably different productivity growth rates for the same countries.

For example, average annual MFP growth in Germany between 2000 and 2007 could be as low as 0.3 percent (TED) or as high as 1.4 percent (EU KLEMS), with growth rates of 0.7 percent for PWT and 0.8 percent for OECD. This full percentage point difference between the fastest and slowest MFP growth rate is not atypical for the ten countries we compare in this note, on average the difference in growth rate between the database with the fastest and slowest reported growth is 0.9 percentage points. For each database, Appendix Table 1 gives an overview of the average annual 2000-2007 MFP growth as well as the countries' rank based on this growth average. From the table, we can also see that the rankings based on growth patterns are more similar across databases.

We find that the MFP growth discrepancies are not driven by differences in the growth of

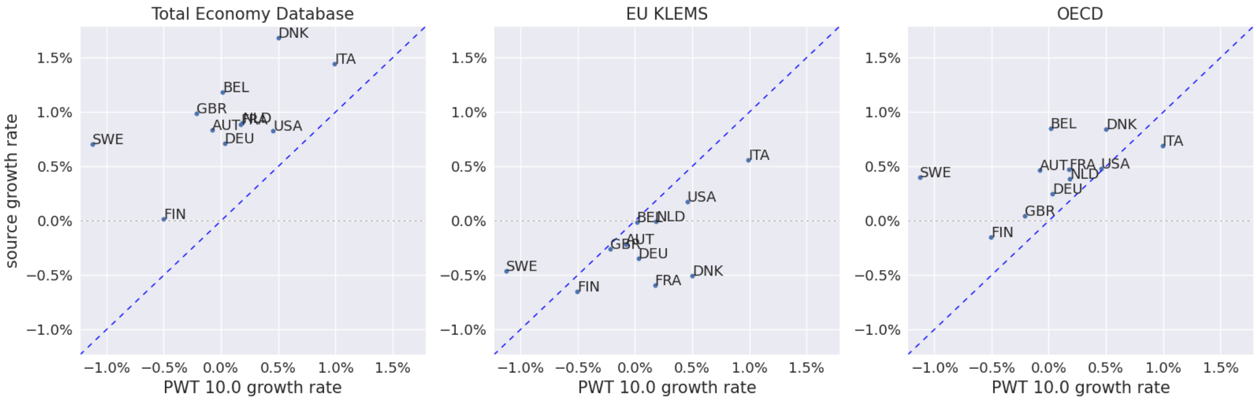
[1] We thank Pierre-Alain Pionnier (OECD), Robert Stehrer (WIIW) and Klaas de Vries (TCB) for helpful comments on a previous version of this note, without implicating them for anything written here.
[2] We use version 10.0, see www.ggdc.net/pwt.
[3] July 2020 version https://conference-board.org/data/economydatabase/
[4] We use the 2019 version, available at www.euklems.eu
[5] Downloaded on 22-06-2021, available at http://www.oecd.org/sdd/productivity-stats/
[6] The database by Bergeaud, Cette and Lecat at http://www.longtermproductivity.com/ could also have been included in the comparison, but to the best of our knowledge, it not widely used so far.

GDP (for instance due to data vintage differences) or the growth of hours worked between the databases but are primarily driven by differences in the measured growth of capital services. Differences in the contribution from labour composition changes also lead to differences in MFP growth, but the size of those differences is generally smaller than for capital. The differences in the contribution of capital services across databases are illustrated in Figure 1 for selected countries. The contribution of capital services per unit of output for the TED, EU KLEMS and OECD databases is plotted against the PWT data. This contribution is calculated using the following equation:

$$k_{con} = \frac{\alpha}{1-\alpha}\left(dk - dy\right)$$

Where $\alpha$ denotes the two-period average share of capital compensation in value added, $dk \equiv \log\left(k_t / k_{t-1}\right)$, denotes the log growth of the capital services index and $dy$ denotes the log growth of the index of value added in constant prices. This contribution is based on a growth accounting decomposition where the endogenous accumulation of capital is (partly) accounted for, see, e.g., Fernald and Inklaar (2020).

*Figure 1. Contributions of capital services per unit of output to labour productivity growth*




In this note we dig deeper into these differences and investigate the potential causes. We focus on a set of nine Western European countries and the United States, since the underlying data for these countries adheres to the same SNA definitions, with a high level of statistical quality. Furthermore, we compare the results averaged for the period 2000-2007, a relatively recent period, which means differences in the statistical source material are minimized. The period is chosen to end before the Global Financial Crisis yet is not so recent that differences in the vintage of National Accounts data will need careful attention.

# 1. Sources and Methodology

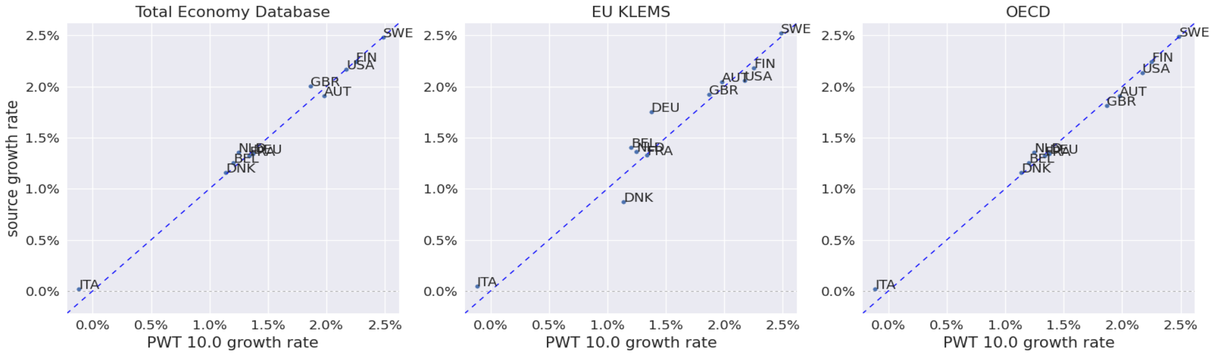
Each of the databases has published documentation regarding the data sources, as well as the methodology used to calculate the productivity statistics. In this note we will not give a full exposition of the growth accounting framework but focus on the key areas in which different methodological choices can and are being made by each database, specifically about the estimation of capital stocks and services. These choices, while motivated by economic theory and purpose of the analysis, are to some extent arbitrary and depend on subjective views on how productivity can best be measured. The current document can also be viewed as a sensitivity analysis with respect to these differences in methodological choices and differences in the sources and use of the data. The table below presents the references to the main published sources and methods documentation.

*Table 1 References to sources and methodology documentation*

| Database | URL |
|---|---|
| **PWT** | https://www.rug.nl/ggdc/productivity/pwt/pwt-documentation |
| **OECD** | https://www.oecd.org/sdd/productivity-stats/ |
| **TED** | https://conference-board.org/data/economydatabase/total-economy-database-methodology |
| **EU KLEMS** | https://euklems.eu/documentation/ |

Since the data sources for output and labour in the current set of countries are the National Accounts (NA), the data for these variables is very similar across each of the databases, as can be seen from Figure 2. This confirms our expectation that this is a period for which differences due to, for example, NA revisions are of secondary importance. Given this result in Figure 2, we focus on the data for the capital stocks and investment in the main text. In Appendix table 3 we also provide a comparison of differences in labour composition change. For most countries, the differences are smaller than for capital services though there are some remarkable results that would benefit from closer scrutiny.

*Figure 2. Average labour productivity growth for 2000-2007*




The National statistical institutes (NSIs) for the countries in our comparison publish capital stocks by asset type in current and constant prices. A drawback of using these reported stocks is that the methods that NSIs use may differ. This could be a benefit, for example, if the service lives of assets would differ by countries and the NSIs would incorporate this country-specific information in their data. However, there may be too little country-specific data to motivate appropriate choices and, instead it could be that each NSI simply makes the set of measurement choices that they find appealing. Of course, even those databases that do harmonise capital stock calculation methods will still need to rely on official statistics on investment and (typically) investment prices, so harmonisation can only be taken so far. Furthermore, the official capital stock series reflect wealth capital stocks,[7] but when doing productivity analysis, we are interested in the productive capacity of the capital stock. So even when relying on official statistics for wealth stocks, methodological choices regarding user costs of capital will need to be made. In other words, the difference between databases is not one of 'harmonise or not' but the degree to which harmonisation takes place.

The databases that estimate harmonised wealth stocks typically start out from an initial capital stock and build up the time series using investment series from the national accounts. The key elements in constructing productive capital stock estimates are:

- Choice or estimation of the initial capital stock
- The combined retirement/age-efficiency profile of assets, reflected in the depreciation rate
- Information on investment and asset prices

Table 2 below presents a stylized overview of the methods used by each of the productivity databases under consideration for their capital stock estimations. Investment at current prices and investment deflators are available from NA statistics, but for Information and Communication

[7] For an overview of the difference between productive and wealth capital stocks see: Measuring Capital – OECD Manual 2009

Technology (ICT) assets, the use of harmonized deflators based on better quality-adjusted price data for the US is often used. As can be observed from Table 2, PWT, TED and OECD all employ a version of the Perpetual Inventory Method (PIM) for constructing capital stocks. Table 3 gives an overview of the assets covered by each database, along with the (implied) geometric depreciation rates used. Note that OECD does not include residential structures or cultivated assets in productivity estimations. This leads to an inconsistency between the growth of output, which does include value added growth in the residential real estate industry, and the growth of inputs, which omits the key input in the residential real estate industry.

*Table 2 Capital stock estimation, methodology overview*

| | **PWT** | **TED** | **OECD*** | **EU KLEMS** |
|---|---|---|---|---|
| **Initial capital stock** | 1950 capital/ output ratio[8] with long run PIM approach | Harberger steady-state assumption | Long run PIM approach, based on (confidential) historical GFCF data[9] | EUKLEMS takes the investment and capital stock series directly from EUROSTAT, for the derivation of the rental price, geometric depreciation is used, see table 3 |
| **Build up capital stock** | Geometric depreciation rates, see table 3; half of current year's investment is depreciated | Geometric depreciation rates, see table 3 | Hyperbolic age-efficiency profile; retirement profile normal distribution; average service life, see table 3.[10] | |
| **Deflators** | Investment prices, hedonic adjustments for ICT | Investment prices, special hedonic adjustments for ICT[11] | Investment prices, hedonic ICT deflators[12] | |

TED, PWT and EU KLEMS calculate capital services from the capital stocks using an ex-post derived internal rate of return. This methodology is based on the work by Jorgenson (1963) and Jorgenson and Griliches (1967). OECD takes an ex-ante approach, computing an exogenous nominal rate of return (ENRR), following Annex 1 in Schreyer et al. (2003), where $r$ is the constant (time-invariant) real interest rate and stands for the 5-year centred moving average of changes in the national Consumer Price Index. All items are extracted from OECD MEI database.

[8]https://www.rug.nl/ggdc/docs/pwt91_capitalservices_ipmrevision.pdf
[9]This information was received from bilateral exchanges with the OECD Productivity Statistics team
[10]https://www.oecd.org/sdd/productivity-stats/OECD-Productivity-Statistics-Methodological-note.pdf
[11]Byrne and Corrado (2019)
[12]Schreyer (2002); Colecchia and Schreyer (2002).

*Table 3. Geometric depreciation rates*

| Asset Code | | | | Rate (%) | | | |
|---|---|---|---|---|---|---|---|
| **OECD** | **EU KLEMS** | **TED** | **PWT** | **OECD*** | **EU KLEMS** | **TED** | **PWT** |
| N111321 | IT | hard | IT | 31.2 | 31.5 | 31.5 | 31.5 |
| N111322 | CT | com | CT | 11.0 | 11.5 | 11.5 | 11.5 |
| N1122 | Soft | soft | SOFT | 33.3 | 31.5 | 31.5 | 31.5 |
| N1113O | OMach | nonITmach | OMach | 11.4 | 13.1 | 12.6 | 12.6 |
| N11131 | TraEq | tra | TraEq | 11.0 | 18.9 | 18.9 | 18.9 |
| N1111 | RStruc | str | RStruc | n.a.** | 1.1 | 2.5 | 1.1 |
| N1112 | OCon | str | OCon | 2.5 | 3.2 | 2.5 | 3.1 |
| N1114 | Cult | Not available | CULT | n.a.** | 20.0 | | 12.6 |
| N1124 | RD | Not available | RD | 10.0 | 20.0 | | 15.0 |
| N112X | OIPP | Not available | OIPP | 14.3 | 13.1 | | 15.0 |

IT: information technology; CT: communication technology; SOFT: software; OMach: other machinery; TraEq: transportation equipment; RStruc: residential structures; OCon: other construction; CULT: cultivated assets; RD: research & development; OIPP: other intellectual property products.
*OECD reports the following average service lives in years:
IT 7; CT, OMach 15; OCon 40; Soft 3; RD 10; OIPP 7.
For the purposes of this note, service lives are converted to geometric rates using the Declining Balance Rates (DBR) from Fraumeni (1997). No DBR are available for Soft, RD and OIPP, they are assumed to be 1.
DBR's used: IT 2.1832; CT and TraEq 1.65; OMach 1.715; OCon 0.8892.
** Not available in the OECD productivity database.

## 2. Comparisons of productivity

As discussed in the introduction we have chosen to take the average 2000-2007 average of the growth accounting results for each of the databases, for a set of nine western European countries and the US. In this section we compare the growth accounting results from each of the databases with the results from the Penn World Table. To assess the importance of different methodological choices, we recalculate the results for each of the databases, using four levels of methodological harmonization:

1. Comparing capital services contributions based directly on the capital services index and labour share $(1-\alpha)$ from the database.
2. Recomputing capital services contributions based on reported capital stocks by asset and a harmonized ex-post capital services method, following the PWT methodology.
3. Re-estimating capital stocks using a harmonized PIM method, based on reported investment series by asset. From these series we calculate capital services contributions, as in 2.
4. Recomputing capital services contributions based on reported investment series by asset, using harmonized PIM stocks, as in 3, harmonized capital services method as in 2, and labour shares from PWT.

We expect that each step of further harmonization will reduce the differences between the databases. To illustrate the differences, we show in Figure 3 scatter plots with comparisons of the other three databases to PWT for each of the four harmonization steps, in Table 4 we provide summary statistics associated with each scatter plot, namely the average difference and the square root of mean squared differences.

It should be noted that OECD PDB does not publish the productive stocks on which their capital services estimates are based. However, investment series used in PDB are available from table 8A in the OECD National Accounts (NA) database. Therefore, we use the wealth capital stocks by asset as reported in table 9A of the OECD NA database, for harmonization method 2. For methods 3. and 4. we take the 1995 stock values as the initial stock. These stocks include values for residential structures and cultivated assets, which are not included in OECD PDB.

## Method 1, no harmonization

The first row of Figure 3 replicates Figure 1, comparing the growth contribution of capital services per unit of output to labour productivity growth across databases. These values have been derived directly from the reported growth of output, hours worked, labour and capital services, as well as the derived or reported shares of labour compensation in value added. We refer to this as the first method of recalculation (M1). The estimated capital contributions in TED are systematically higher than that of PWT, but also higher than the other 2 databases. Most striking are the growth contributions for Denmark and Sweden where the difference in contribution exceeds 1 percent and changes sign for Sweden. EU KLEMS reports capital contribution that are lower than those of PWT, apart from Sweden. Denmark and Sweden, along with France are the countries for which the largest differences can be observed, as seen by the vertical distance to the 45-degree reference line. Results for OECD are more in line with what PWT is reporting, although Sweden is again an outlier, changing sign from a negative contribution in PWT to a positive contribution in the OECD results. The results of three additional methods of recalculation, are shown in the other rows of Figure 3, which are discussed in the next sections. Table 4 reports the average growth difference and the square root of mean squared differences for each method by database pairing, giving us measures of deviation from the PWT 10 growth rates for each database.

*Figure 3. Capital services contributions at 4 levels of harmonization*

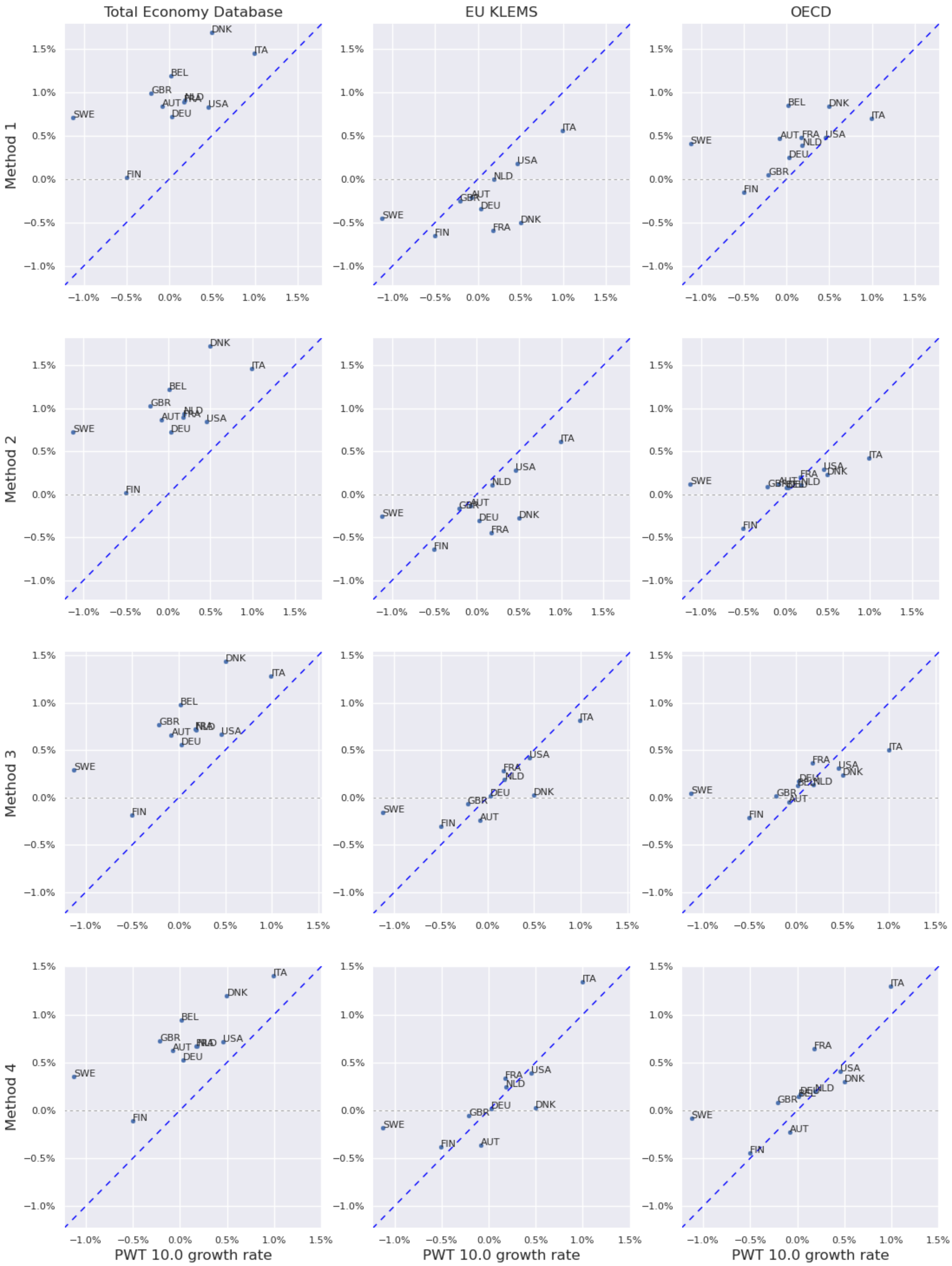


*Table 4. Standard deviations and average growth contribution differences (in %)*

| Comparison database: | **TED** | | **EU KLEMS** | | **OECD** | |
|---|---|---|---|---|---|---|
| Summary statistic: | Average difference | (Mean sq. differences)$^{0.5}$ | Average difference | (Mean sq. differences)$^{0.5}$ | Average difference | (Mean sq. differences)$^{0.5}$ |
| **Method 1** | –0.89 | 0.98 | 0.27 | 0.48 | –0.39 | 0.60 |
| **Method 2** | –0.91 | 1.00 | 0.16 | 0.43 | –0.08 | 0.44 |
| **Method 3** | –0.68 | 0.76 | –0.06 | 0.34 | –0.11 | 0.42 |
| **Method 4** | –0.66 | 0.74 | –0.10 | 0.35 | –0.19 | 0.38 |

Average difference: contribution from PWT 10.0 minus contribution from the comparison database
(Mean sq. differences)$^{0.5}$: square root of mean squared differences

## Method 2, recalculation of capital services with reported stocks

In the second step we harmonize the calculation of capital services growth starting from the reported capital stocks by asset type from each of the databases. For the calculation of capital compensation by asset type, we use the PWT geometric depreciation rates mapped to the assets of the other databases, shown in Table 3. The rates reported to have been used by the other databases are reported as a reference, and they are generally quite similar. Additionally, we use investment deflators in the calculations, whereas for EU KLEMS implicit stock deflators are available.

The row for Method 2 in Figure 3 and Table 4 shows that the recalculation of capital services has not brought the results of TED and PWT closer, the average difference has even increased somewhat. Capital services contributions for EU KLEMS and PWT have converged a little, but not much. The recalculation based on reported stocks has brought the results of OECD and PWT more in line, except for Sweden and Italy. It should be noted that OECD does not include Residential Structures in its measure of capital services. Therefore, part of the convergence from Method 1 to Method 2 can be attributed to the inclusion of Residential Structures in the capital services measure.

These results imply that PWT, TED and EU KLEMS use a very similar approach to calculating capital services, which is also what the documentation suggests.

## Method 3, recalculation of capital services using PIM stocks

Going one step further in the harmonization of the calculation methods, we recalculate the capital stocks based on the investment by asset from the reported 1995 capital stocks, applying the Perpetual Inventory Method (PIM) in the same way across data sources. We apply the PWT method where half of the current years' investment is depreciated and use the PWT geometric depreciation rates as reported in Table 3.

The row for Method 3 in Figure 3 and Table 4 shows that the harmonized recalculation of capital services as well as the capital stock has brought the results of the databases closer together. For the TED the average difference in the capital growth contribution has been reduced by 0.23 percent, but this is not immediately clear from the graph, which suggests that this convergence is spread over all countries. For EU KLEMS the effect is less pronounced, but the results are also moving closer to PWT, except for Sweden. For the other countries the capital contributions have increased, such that the number of observations above and below the reference line is now roughly equal. For the OECD the results are roughly equal to Method 2, diverging a bit when looking at the average growth difference (from -0.08 to -0.11 percent), but converging slightly when looking at the square root of mean squared differences (from 0.44 to 0.42 percent).

Thus, harmonizing the calculation of the capital stocks across databases brings the results for TED and EU KLEMS closer to PWT. For EU KLEMS this could be expected given that they use statistical capital stocks, directly from the NSI’s, without any harmonization. For TED these results are somewhat puzzling given that the methods as presented in Table 2, as well as the depreciation rates in Table 3, for TED and PWT are quite similar.

## Method 4, recalculation of capital services using PIM stocks and PWT labour shares

In a final attempt to bring the results closer together and harmonize the methods of calculation one step further, we apply the PWT labour shares, instead of the reported shares. The application of PWT labour shares has little effect on the comparative results of TED and EU KLEMS. For OECD the adjustments are small at the aggregate level, as shown from Table 4, with the average growth difference increasing somewhat from -0.11 to -0.19 percent, but the square root of mean squared differences decreasing from 0.42 to 0.38 percent. However, this obscures the changes in the results of individual countries. From Figure 3 it can be observed that moving from Method 3 to Method 4 does have some effect on France but more notably on Italy, increasing their capital contributions by approximately 0.2 and 0.7 percent respectively. For Italy, OECD now shows a higher contribution than PWT, whereas it reported a lower contribution when using the previous three methods. The same holds for EU KLEMS, but to a lesser extent. This suggests there are considerable differences in the calculations of the labour share across these databases for France and Italy. Table 5 shows the average share of labour compensation in Value Added for the 2000-2007 period, and indeed confirms that there are considerable differences across the databases. As shown in the bottom row, OECD reports a labour share that is on average 15 percent higher than PWT, for this set of countries.

The higher OECD labour share could partly be explained by a low ex-ante estimate of capital compensation. OECD defines the labour income share as the share of labour costs in the total of labour and capital costs, instead of value added. Since their measure of capital compensation is calculated using an ex-ante nominal rate of return, capital and labour compensation do not necessarily sum to value added.  TED reports labour shares that are roughly similar to PWT, and EU KLEMS is in the middle between PWT and OECD.

*Table 5. Average 2000-2007 average share of labour compensation in value added (in %)*

| | **PWT** | **TED** | **EU KLEMS** | **OECD** |
|---|---|---|---|---|
| **AUT** | 57.5 | 54.9 | 66.0 | 72.0 |
| **DEU** | 62.3 | 59.9 | 66.8 | 71.4 |
| **DNK** | 63.6 | 56.3 | 65.9 | 72.1 |
| **FIN** | 56.7 | 52.1 | 64.2 | 74.5 |
| **FRA** | 61.7 | 58.7 | 67.1 | 76.0 |
| **GBR** | 59.6 | 55.9 | 64.9 | 78.9 |
| **ITA** | 50.5 | 53.2 | 63.0 | 72.4 |
| **NLD** | 60.9 | 57.5 | 67.3 | 74.4 |
| **SWE** | 53.0 | 49.4 | 55.1 | 69.3 |
| **USA** | 62.0 | 65.8 | 59.4 | 77.0 |
| **Average** | 58.8 | 56.3 | 64.0 | 73.8 |

Comparing the results in Figure 3 and Table 4 for Methods 1 and 4, shows that increasing the harmonization of calculations across databases bring the results closer together, most notably for EU KLEMS and OECD. Furthermore, any systematic upward or downward bias seems to have been removed for these two databases. For the TED, the harmonization methods have had a more limited effect. This reflects the fact that TED employs very similar methods as PWT in calculating productivity and uses (approximately) the same data. The higher capital growth contributions can be traced back to the application of alternative hedonic ICT investment deflators, which results in a significantly lower aggregate price inflation of investment as can be seen from Table 6. This in turn leads to higher capital stock growth and therefore higher capital services growth.

For each of the databases and in every calculation method, Sweden is well above the reference line, indicating that PWT is reporting a negative and far lower Swedish contribution of capital to labour productivity growth, than the other three databases. This may indicate a problem with the Swedish data in PWT.

*Table 6. Average 2000-2007 growth of aggregate investment prices (in %)*

| | PWT | TED | EU KLEMS | OECD |
|---|---|---|---|---|
| **AUT** | 1.6 | 0.7 | 1.5 | 1.5 |
| **DEU** | 0.3 | 0.0 | 0.3 | 0.3 |
| **FIN** | 2.2 | 2.0 | 2.3 | 2.3 |
| **FRA** | 2.3 | 1.5 | 2.3 | 2.3 |
| **GBR** | 2.1 | −0.6 | 2.2 | 2.2 |
| **ITA** | 2.5 | 1.1 | 2.3 | 2.5 |
| **NLD** | 2.0 | 0.6 | 2.2 | 2.2 |
| **PRT** | 2.3 | −0.5 | 2.4 | 2.2 |
| **SWE** | 1.4 | −0.6 | 1.6 | 1.5 |
| **USA** | 2.1 | 1.4 | 2.3 | 2.1 |

# 3. Conclusions

As is noted by frequent users, there are considerable differences between the data in different productivity databases. The reasons for these discrepancies are methodological, statistical, as well as country-specific in nature. The previous section has shown that differences are smaller when applying a harmonized methodology in calculating capital growth contributions to labour productivity growth. However, differences remain substantial, particularly the TED data show different growth rates, which have been traced back to the use of alternative deflators for ICT assets.

As was mentioned in the introduction, Appendix Table 1 shows that the rankings of countries based on their average MFP growth rates is quite similar for this set of countries, despite the sizable differences in average MFP growth. Appendix Table 2 shows the same information based on the recalculated MFP growth rates using Method 4. It can be seen that after harmonization, the order of countries based on their average productivity growth rates is also quite similar across these databases.

Judging by these rankings, the user will arrive at more or less the same comparative economic performance from PWT, OECD, and TED, even though TED reports notably lower MFP growth, due to a higher capital contribution. EU KLEMS seems to be the odd one out with a few striking anomalies. The most notable example is Sweden, which PWT, OECD and TED rank as one of the fastest-growing countries while in EU KLEMS, Sweden ranks near the bottom. Appendix table 3 shows that the contribution of labour composition for Sweden in EU KLEMS is 1.9 percentage points higher than the contribution in PWT, which explains the low MFP growth value. Conversely, the anomalous result for capital services growth for Sweden in PWT (see Figure 1) may mean that PWT's MFP growth for Sweden is too high. The difference for Germany (third place in EU KLEMS, sixth of the other databases), would also lead very different conclusions regarding comparative economic performance.

These differences in MFP growth rates are a cause for concern, especially because it is hard for a typical user to trace some of the differences, let alone make a reasoned choice between databases. Yet each database developer has arguments and reasons for the measurement choices they make, and it is not our aim to suggest that some of those choices are necessarily better than others. Instead, our aim with this note has been to highlight some of these differences and illustrate how harmonizing some of these choices can help reduce the differences, thereby demonstrating the importance of particular measurement choices. We do not claim to be exhaustive in this analysis, as there are more detailed levels at which harmonisation of capital calculations could be attempted. Furthermore, choices regarding data and methodology for labour input and labour composition also contribute to differences in measured MFP growth and we have done no more than highlight those differences.

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# 5. Appendix

*Appendix table 1, Average annual MFP growth and country ranking 2000–2007, method 1*

| | PWT | | TED | | EU KLEMS | | OECD | |
|---|---|---|---|---|---|---|---|---|
| | rank | average growth (%) | rank | average growth (%) | rank | average growth (%) | ran k | average growth (%) |
| **SWE** | 1 | 1.6 | 2 | 0.8 | 9 | 0.3 | 2 | 1.4 |
| **FIN** | 2 | 1.2 | 1 | 1.1 | 1 | 1.6 | 1 | 1.8 |
| **GBR** | 3 | 0.9 | 3 | 0.7 | 4 | 1.2 | 3 | 1.4 |
| **USA** | 4 | 0.9 | 4 | 0.6 | 6 | 1.0 | 4 | 1.3 |
| **AUT** | 5 | 0.9 | 5 | 0.4 | 3 | 1.2 | 5 | 1.0 |
| **DEU** | 6 | 0.7 | 6 | 0.3 | 2 | 1.4 | 6 | 0.8 |
| **NLD** | 7 | 0.4 | 7 | 0.0 | 7 | 0.7 | 7 | 0.7 |
| **FRA** | 8 | 0.4 | 8 | 0.0 | 5 | 1.1 | 8 | 0.6 |
| **DNK** | 9 | 0.1 | 9 | −0.4 | 8 | 0.6 | 9 | 0.2 |
| **ITA** | 10 | −1.0 | 10 | −1.0 | 10 | −0.5 | 10 | −0.5 |

*Appendix table 2, Average annual MFP growth and country ranking 2000–2007, method 4*

| | PWT | | TED | | EU KLEMS | | OECD | |
|---|---|---|---|---|---|---|---|---|
| | rank | average growth (%) | rank | average growth (%) | rank | average growth (%) | rank | average growth (%) |
| **SWE** | 1 | 1.6 | 2 | 1.0 | 9 | 0.2 | 2 | 1.4 |
| **FIN** | 2 | 1.2 | 1 | 1.3 | 1 | 1.3 | 1 | 1.5 |
| **GBR** | 3 | 0.9 | 3 | 0.9 | 4 | 0.9 | 5 | 1.0 |
| **AUT** | 4 | 0.9 | 4 | 0.6 | 5 | 0.9 | 4 | 1.1 |
| **USA** | 5 | 0.9 | 5 | 0.5 | 2 | 1.1 | 3 | 1.2 |
| **DEU** | 6 | 0.7 | 6 | 0.5 | 3 | 1.1 | 6 | 0.7 |
| **NLD** | 7 | 0.4 | 7 | 0.2 | 6 | 0.5 | 7 | 0.7 |
| **FRA** | 8 | 0.4 | 8 | 0.1 | 7 | 0.4 | 9 | 0.4 |
| **DNK** | 9 | 0.1 | 9 | −0.1 | 8 | 0.3 | 8 | 0.5 |
| **ITA** | 10 | −1.0 | 10 | −0.9 | 10 | −0.8 | 10 | −0.6 |

*Appendix table 3. Growth contribution differences of labour composition (in %)*

| | TED | EU KLEMS |
|---|---|---|
| **AUT** | 0.15 | 0.06 |
| **BEL** | 0.14 | |
| **DEU** | 0.18 | 0.24 |
| **FIN** | 0.30 | 0.00 |
| **FRA** | 0.50 | 0.36 |
| **GBR** | 0.07 | 0.24 |
| **ITA** | 0.81 | 0.13 |
| **NLD** | 0.38 | 0.57 |
| **PRT** | 0.01 | 0.07 |
| **SWE** | 0.33 | -1.90 |
| **USA** | -0.13 | 0.12 |
| **Average difference** | 0.25 | -0.01 |
| **(Mean sq. differences)$^{0.5}$** | 0.35 | 0.62 |

Average difference: contribution from PWT 10.0 minus contribution from the comparison database
(Mean sq. differences)$^{0.5}$: square root of mean squared differences
OECD PDB does not provide estimations of labour composition