

Discussant comments on session IPM24: Measuring productivity

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Measuring and analysing productivity developments – a challenging task

Productivity numbers are volatile, subject to large cyclical effects and substantial revisions. Thus, identifying trends in productivity is challenging, particularly when making international comparisons. Despite the many ongoing efforts to improve our measurement and understanding of productivity, new complications seem to emerge as the tools become more refined. Is this a modern version of the Quest for the Holy Grail?

While following rather different approaches, the papers presented at the ISM24 session provided relatively consistent messages

Cross-country analyses have pointed to the dramatic slowdown in European productivity observed since the 1990s, especially compared to the United States, though this picture may have changed somewhat just recently. A major element explaining this difference has been the productivity of market services (distribution, finance, business services) and the rate of multifactor productivity (MFP) growth, which can be disaggregated into technological change (availability of more efficient techniques) and degree of efficiency (more efficient use of the techniques available).

KLEMS database (Timmer, O'Mahony, van Ark)¹

The KLEMS project deals with productivity data at the industry level. Its advantage is its ability to more effectively take into account large cross-sector variations. However, a greater degree of detail does not necessarily yield more precision, as difficulties in measurement at the sectoral level often wash out at the aggregate level. Moreover, detailed data are available mostly in the industrial sector, which accounts for about 35% of US hours worked and is split into 18 sub-sectors, while distribution and finance represent a similar portion of the US economy and are divided into only 6 sub-sectors. A second feature of KLEMS is the ability to provide detailed international comparisons on key productivity-related data. The other side of the coin, however, is that it magnifies problems in measurement (eg composition of the labour force, depreciation rates and intermediate inputs).

¹ O'Mahony, M, M Timmer and B van Ark (2007): "EU KLEMS growth and productivity accounts: an overview", unpublished.

OECD productivity measures (Giovannini & Schreyer)²

The paper – whose presentation unfortunately was cancelled at the last minute – shows that several simple indicators need to be considered when performing international productivity comparisons. In particular, it is useful to account for the depreciation of capital (net domestic product): the “quality” of productivity gains is different if more capital is depreciated through the production process (and has to be replaced, accordingly, by new investment, leaving less output available for consumption). Similarly, the degree to which the labour force is utilised (using, for instance, GDP per capita) has to be considered. For example, higher structural unemployment in Europe suggests that those more frequently left unemployed are unskilled workers, thus biasing the composition of the working labour force toward higher-skilled workers, with a positive impact on average labour productivity. Another factor to be considered is the share of output that is transferred (or received from) abroad, highlighting the need to look at national income indicators. One could even complement these recommendations with other, perhaps simpler, indicators. For instance, looking at the unit of consumption per capita would avoid the measurement problem related to capital depreciation. Similarly, looking at the unit of GDP corrected for employment rates (ie output produced by number of working-age people) takes into account the underlying use of labour resources and limits the bias referred to above in Europe; in addition, it is independent of demographic effects, whereas the output-per-capita indicator is influenced by the exogenous factor of an ageing population.

Very recent improvement in EU vs. US performance? (Cette)

European productivity may have improved relative to the United States over the most recent years. However, statistical techniques (eg HP filters) are not very good at dealing with end-of-period sample problems, and productivity data are notoriously much revised. Moreover, assessments of productivity trends need to be corrected to account for the effect of the business cycle: there is indeed significant empirical evidence that productivity gains are higher when factors of production are utilised to a greater degree. This may have played a significant role recently in the United States, where demand has been weakened by the cyclical housing slowdown. But whether the correction used by the paper accounted adequately for the effect of the business cycle (or could, on the contrary, have actually amplified this effect) remains debatable. Another qualification is that the trends in productivity gains presented by the paper can vary substantially over several years – a point also open to debate. Finally, it is suggested that the lower rate of declines in ICT prices observed recently could indicate a slower rate of US technological progress; but it could also reflect the recent situation of high US profit margins – consistent with the fact that US ICT investment remains solid compared to that in other regions.

Stochastic frontier approach (Amador & Coimbra)

This paper’s approach is highly innovative (cross-country regressions of key productivity variables, using an international production function), especially in comparison with traditional approaches that use mainly time series analyses. However, there are substantial measurement challenges: the authors recognise that “important country-specific practices in

² Giovannini, E and P Schreyer (2007): “The OECD productivity database”, unpublished.

measuring capital could blur international comparisons” and hinder the determination of countries’ positions with respect to the world production frontier. Moreover, the calculations rely on the assumption that productivity gains are constant within successive 10-year periods. Though this assumption was certainly useful in simplifying calculations for the method employed, breaks in productivity actually appear to be somewhat more irregular.

Conclusions

Cyclical influences are important when measuring productivity, and there are significant uncertainties when comparing both productivity levels and gains across countries. However, looking at a period of several decades, one can observe that labour productivity has accelerated in the US and decelerated in the rest of the OECD. The key factor accounting for US performance was less a matter of capital accumulation than of the growing gap in technological progress (MFP) between the US and other large industrial economies observed since the 1980s.³

³ Cf. Skoczylas & Tissot (2005): *Revisiting recent productivity developments across OECD countries*, BIS Working Paper 182, 2005.