Output and productivity growth in the healthcare sector: a study of four European countries.

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Abstract

This research compares output and productivity across healthcare sectors in four European countries, Germany, Hungary, Spain and the United Kingdom. Systems of health care provision vary across the countries. In the UK and Spain most health care relies largely on public funding and public provision, although the prevalence of private hospitals is greater in Spain. The German system is one of universal insurance coverage with a mix of public and private providers. Following the collapse of the Communist regime, Hungary has moved from a wholly state controlled system to one that is close to the German approach. Through measuring both hospital and non-hospital outputs, and comparing with inputs used, the research can highlight aspects of cross country variation in terms of who is treated, types of treatments and resources employed.

The general approach taken in this project to measure healthcare output and productivity is that outlined in the OECD Handbook on the measurement of the volume output of education and health services (OECD 2010), the Atkinson Review of the measurement of Government activity (Atkinson, 2005) and work carried out for the UK Department of Health by the University of York and the National Institute of Economic and Social Research, London (Dawson et al. 2005). Although health systems vary, the basic form in which data are available is similar across the four countries, consisting of data on the volume of activities carried out by health care providers and associated unit costs. This allows the estimation of

aggregate output growth as the growth in activities weighted by cost shares. In the absence of prices, the use of unit costs is recommended by Eurostat for aggregation across activities (Eurostat, 2001), although it is acknowledged that this approach has many limitations. In particular it requires that expenditures are optimally allocated across procedures which may not be the case for health care services. Related to this is a substitution bias that may occur if the cost of a treatment falls as a result of greater efficiency, for example if some treatments move from inpatient to day clinics. A cost weighted output index may show a fall in weighted output, if substitution between procedures is not optimal, whereas an index that incorporates the value to the patient might show a rise.

The reports mentioned above highlight the importance of adjusting an activity based index for the quality of the services provided. A detailed stratification of activities can to some extent capture quality change, since we are then closer to comparing like with like in each basic unit of activity (see the discussion in OECD 2010). If we assume that higher unit cost treatments are a good proxy for the complexity of procedures and better outcomes for patients then analysis by detailed treatment allows capturing some quality change relative to a simple sum across activities. However it is important to ensure that the disaggregation across types of activity does not go too far in treating procedures that yield the same outcome but with different unit costs as different activities.

Stratification of activities cannot on its own capture all quality change. There are a number of dimensions to quality, both in terms of the long-term outcome of treatment for the patient's welfare and also other aspects to the service provided such as waiting times, courtesy of health service staff and, in hospitals, quality of food and cleanliness. An overall adjustment for quality needs to both identify how these have changed and to take account of the relative

importance of each. Dawson et al (2005) recommended using data on outcomes to adjust for quality change. In doing so it is important that the outcome that is used is that which is attributable to the activities of the healthcare sector. There are a range of factors other than health services, such as lifestyles, that affect outcomes and dealing with this attribution problem is a particularly tricky issue. Data on general health outcomes are not currently routinely available but each country produces data on in-hospital mortality rates which can be employed as a crude measure of quality change.

The research compares the growth in both hospital and non hospital activities across the four countries. Each country produces data on number of episodes and unit costs by DRG for the hospital sector. The list of DRGs varies across the countries so it is not feasible to directly match these but aggregate activity and by broad diagnosis groups can be compared. In-hospital mortality rates are available also by DRG. Non-hospital activity such as primary care, mental health and various screening and diagnostic activities can also be compared across the four countries, although issues of comparability are more difficult to deal with for these activities. In terms of inputs, each country has good quality data on labour input which distinguishes numbers employed and hours worked by occupation (doctors, nurses, auxiliaries etc.) and their relative earnings. Data on capital and intermediate input use are more sparse but some information is available to allow at least crude estimates of the use of these inputs.

Preliminary results covering the period 2002 to 2009 suggest that there is some variation in the growth rate of hospital output across countries, ranging from about 4% per annum growth in the UK compared to a slight decline in Hungary. In all countries, cost weighted activity growth is higher than the growth in total activities suggesting greater concentration of

services in relatively high cost procedures. The underlying data suggests this is likely due to the increases in treatments for those aged 70 or over and/or increases in treatments for complex conditions with co-morbidities. These estimates also highlight the importance of aggregating some procedures to ensure the estimates are free from the substitution bias mentioned above. For example treating inpatient and day cases as separate procedures leads to a much lower growth rate in the UK than when these are aggregated. Finally adjusting for survival rates leads to a small increase in output growth and this appears to be greater in the UK than in the other countries.

This project is financed by the European Commission 7th framework project with a final report due by end December 2012. The research team are currently working to ensure these complex activity datasets are comparable across time in each country – classification changes are the norm rather than the exception – and on putting together the data on inputs. The final report will provide an overview of performance of the health care sector in the four countries but will also highlight data deficiencies, methodological issues and avenues for future research.

References

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