Study on the efficiency and effectiveness of public spending on tertiary education

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This is the final report of a study on the efficiency and effectiveness of public spending on tertiary education in the EU commissioned by the Directorate General Economic and Financial Affairs of the European Commission to an ISEG/Technical University of Lisbon team, under contract number ECFIN/329/2007/486218. This final version was concluded in December 2008.

In this report we outline the conceptual framework, present data, and discuss the appropriate input, output, and environment indicators, and take into account the specific features of each country in order to compare properly the tertiary education systems in the EU Member States. Special care is given to the wide-ranging nature of tertiary education, where research and teaching activities cohabit from the individual to the institutional level.

Efficiency of public spending on tertiary education is evaluated using two different methods: a semi-parametric method and the stochastic frontier analysis (SFA). The first method includes data envelopment analysis (DEA) as a first stage and the regression of the obtained efficiency scores on explanatory factors as a second step. The latter is essentially a regression of total tertiary education cost on the considered outputs and factor costs, including the explicit modelling of country-specific efficiency scores. Results from the semi-parametric and SFA methods are essentially consistent.

Effectiveness of tertiary education is the relation between this activity and final goals rather than closely related outputs. As a matter of fact, tertiary education is one of the driving forces of growth. In this report we show that there is a link between labour and total factor productivity, employability, and spending in education. However, this link is only effective when spending is efficient.

A number of conclusions are warranted from this study. These are:

Inefficiency in spending is an important issue when it comes to public tertiary education. An important group of countries was found to be operating under inefficiency conditions irrespective of the methods used. These were not only South and Eastern European countries,

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but also some of the more populous EU member states (France, Germany, and Italy). Also the
US public tertiary education sector was found to be very far from efficiency.

Tertiary education systems in a core group of countries in Europe are clearly more efficient. The UK and to a lesser extent the Netherlands appear at the top of the efficiency ranking irrespective of method or models used. On the other hand, some countries tend to be consistently placed at the bottom league (the Czech Republic, Greece, Portugal, and Slovakia).

Tertiary education efficiency is related to institutional factors and also to the quality of secondary education. The quality of secondary education, as measured by results attained by students at PISA internationally comparable tests, is one of the factors that is consistently correlated to country efficiency scores. Other factors pertain to higher education institutional features. These are:
- The funding rules followed in each country. When funding to institutions depends more on outputs (e.g., graduations and publications) and less on historical attributions or inputs, efficiency tends to increase.
- Evaluation systems. Efficiency tends to be higher in countries where institutions are publicly evaluated by stakeholders and/or independent agencies.
- Staff policy. Institutions’ autonomy to hire and dismiss academic staff and to set their wages is correlated with higher efficiency.

Efficient spending matters for labour and total factor productivity. This is evidence in favour of the greater importance of efficiency in higher education spending, as it is not only a matter of public finance but also a way of promoting innovation and growth.

Efficient spending matters for employability. The difference in unemployment rates among graduates and among those with secondary education depends positively on country efficiency scores.

Some countries specialise in teaching and others in research. Some countries seem to specialise more in research than in the teaching part of tertiary education. This is the case of the Nordic countries, of Austria, of Belgium and the Netherlands. Others are more efficient in teaching (Ireland, France, the East European countries). The United Kingdom was found to be efficient on both accounts.

These conclusions lead us to put forward the following broad policy implications:

Spending increases, if they occur, have to be carefully managed and should go hand in hand with institutional reforms.

Institutional reform of tertiary educational systems should focus on the following points:
- promoting accountability of tertiary education institutions, with careful and fair evaluation ensured by independent bodies;
- increasing competition, by rising the institutions’ autonomy in what concerns staff policy, namely in its ability to hire and dismiss and to set wages;
- designing financial schemes that relate funding to the institutions’ performance in output terms, rather than relying in inputs used or in historical trends.