CONSIDERATIONS REGARDING THE EFFICIENCY OF PUBLIC EXPENDITURES FOR EDUCATION

Creţan Georgiana Camelia
Bucharest University of Economics Faculty of Finances, Insurance, Banks and Stock Exchange No. 6 Piaţa Romană, room 1104, sector 1, Bucharest georgiana_cretan@yahoo.com 0723.659.437
Iacob Mihaela
Bucharest University of Economics Faculty of Finances, Insurance, Banks and Stock Exchange No. 6 Piaţa Romană, room 1104, sector 1, Bucharest miuiacob@yahoo.com 0721.767.165

The impact that education, particularly higher education, has on individuals - with direct influence on their standard of living, but also on society as a whole - on the community's economic development, requires concern towards the necessary resources for funding educational activities, the benefits released and towards the efficiency of resources usage. The aim of this paper is to identify the methods to estimate the efficiency of using public funds in financing education as well as the evaluating methodology of costs and benefits associated with educational activities.

1. Introduction

Current economic context associates investment in human capital to a catalyst for economic development of any community which invests in education, at all levels, both in order to achieve future higher income, in terms of individuals, and to improve the living standards of citizens – of society as a whole.

As a worldwide trend, over 75% of educational services, at least for compulsory education, are provided by public education institutions. This reflects the state's intervention on educational services market in order to correct the existing failures (such as"public goods" and"externalities") (Moşteanu and Iacob, 2007a, 2007b).

However, Governments' intervention in providing access to education, respectively in funding education from public funds may be the consequence of public benefits of education or of the fact that the main beneficiary of human capital investment is the state, which, as a result of increased productivity and of increased individuals' revenue, collects a higher level of income tax.

Considering public expenditures for education as investment, the analysis of their efficiency requires the accounting of education's efficiency – *internal efficiency*, simultaneously with the efficiency of the financial resources allocated to education, determined by comparing the economic and social effects with the required efforts - *external efficiency*.

This way, the economic literature launches two dimensions in addressing efficiency. On one hand, it deals with *technical efficiency* seeking the optimum combination of production factors and comparing the effect/effort ratio with a standard rate considered optimal, and, on the other hand, it deals with *allocative efficiency* which refers to allocating resources properly to *Pareto-optimal*[109].

Generally speaking, efficiency pursues proper present use of the resources, in order to promote growth in the future.

---

[109] According to Pareto, beyond the optimal resource allocation, there is no other allocation to positively influence a person without issuing negative influences on a third person.

2. A short tour of the recent history regarding public spending efficiency evaluation for education

The most used methods for estimating efficiency frontiers are the non-parametric methods: Free Disposal Hull (FDH) and Data Envelopment Analysis (DEA). The aim of these methods is to construct an efficiency frontier in such a way that all observations lie on or within the frontier.

Concerned with measuring the efficiency of public spending on education and health, Gupta and Verhoeven (2001) apply the inputs oriented approach of FDH[110] method for a sample of 37 African countries, considering public expenditure on education as *inputs*, and the literacy rate and number of students as *outputs*. The study's conclusions emphasize Government educational policies inefficiency. However, over the analyzed period, there is a tendency of increasing the efficient use of public funds for education.

Two years later, Afonso, Schuknecht and Tanzi (2003) used, in order to determine public spending efficiency, the same non-parametric method. Thus, using a series of performance indicators of the public sector as the *effect* and the entire public expenditure as the *effor*t, they determine the efficiency of public spending and conclude that countries with limited public sector have the highest level of efficiency and effectiveness in achieving social goals. Beside St. Aubyn, Afonso (2005) applies, in assessing the effectiveness of public spending on education and health, another non-parametric method - DEA[111].

Another study conducted by Pang and Herrera (2005), much wider than the previous, estimated public spending efficiency as the distance between the point corresponding to the adequate mix of effects and efforts and the *efficiency frontier*. Thus, it appears that those countries which have a high level of public expenditure have lower efficiency indicators. The same trend also appears in states where the share of personnel expenditures in total public spending is high enough.

Moreover, Eid (2008) proposes applying CAPM[112] in order to determine the efficiency of public spending for education, using Sharpe index as a measure of performance, and concludes that even if, over a decade, the system of financing higher education is slightly effective, beyond this period the index recorded a negative value suggesting the inefficiency of public spending for education system.

Regardless of the method used, the efficiency of public spending on education requires, first of all, the correct definition and estimation of resources / efforts / costs, and also of results / effects / benefits associated with educational activities.

3. The costs/efforts/resources associated with higher education

In order to correctly estimate the efficiency of public spending for education is necessary to consider all costs - both direct resources allocated to education from the state budget, as well as indirect costs, which may include transportation, accommodation, food or health insurance subsidy for students or other type of aid granted by local authorities or higher education institutions.

While determining the company's financial effort with education, it should be taken into account the lack of earnings, which represents the income that students who are enrolled in different forms of education would get, if, instead of learning, they would engage in an activity which brings a benefit.[113]

---

110 Free Disposal Hull – method used for the first time by Deprins(1984).
111 Data Envelopment Analysis. A non-parametric method used for the first time by Farrell (1957) in order to assess public spending efficiency. The method requires a convex production frontier.
112 Capital Asset Pricing Model.
113 Văcărel, I., et al., 2007,"Finanțe Publice", Editura Didactică și Pedagogică, București.

However, the value of all public costs related to education may be underestimated, mainly for two reasons:[114]

- firstly, due to the fact that Governments do not include the *opportunity costs* for the use of a property owned by the state, such as educational spaces, within the estimation of the costs associated to education;

- secondly, because the budget for education, which is related to the benefits associated to public spending, does not cover all fix costs related to the Government operation.

4. The effects/benefits/outcomes associated with higher education

According to human capital theory, education is a prerequisite for increasing labour productivity, which has as a direct effect the increased revenue. Moreover, income growth may be based on a number of factors which are not necessarily related to an individual's level of education. However, the educational activity also issues social benefits, other than increasing productivity and income.

Sometimes, the benefits associated with educational activities may occur, both as private non-market effects, as well as social benefits associated to pure public goods or, also, as externalities.

As a result of investment in higher education appear the positive externalities which represent the basis for social strengthening and economic development in the transition to knowledge-based economy (Cretan and Lacrois, 2008). The source of the externality may consist in the interaction, both at work as well as in the society, with better trained people. A large proportion of worldwide studies indicate public outputs of higher education (Lacrois and Cretan, 2008, p. 65).

A first example of a positive externality associated to educational activity is productivity. If an individual additional education influences productivity – meaning increasing the labour marginal productivity of that person´s work colleague –, it can be observed the positive externality of the individual´s education on his colleagues. Additionally, if the increase in the labour productivity of a person with a higher level of education is reflected on his increased revenue, the Government receives a benefit in the form of additional income tax. Evaluating this type of effects with respect to educational investment is hard to achieve. However, it is absolutely necessary to continue research in this direction due to the importance of this quantification in policy making in education. Thus, various studies have focused on determining and valuing the non-market benefits of education (Haveman and Wolfe, 1984, Wolfe and Zuvekas, 1997, McMahon 1999, Mora et al., 2007).

Evaluating benefits associated with educational activity requires classifying them by their nature, in private benefits and social benefits, as seen in table 1 (Wolfe and Zuvekas, 1997, McMahon, 1999, Villa, 2000, Mora et al., 2007). Furthermore, measuring educational social effects needs to settle a clear delimitation of the benefits encountered by an individual from the ones encountered by the society as a whole.

Table 1. Classification of education's benefits

Nature of the benefit	Private	Social
Market	- increasing employment rate; - obtaining higher earnings; - less unemployment; - labour market flexibility; - greater labour mobility;	- higher productivity; - higher tax revenue; -dissemination of technological innovations;

---

114 Afonso, A., Schuknecht, L., Tanzi, V., 2006, "Public Sector efficiency: Evidence for New EU Member States and Emerging Markets", European Central Bank Working Paper No.581.

Nature of the benefit	Private	Social
	- higher saving rate;	
Non-market	-higher family productivity; - higher consumer efficiency; - better own and family health; - more charitable acts; - more hobbies; - better spending leisure time; - achieving optimal family structure; - increased efficiency in determining marital status; - increased efficiency in obtaining jobs; - better working conditions; - higher work satisfaction ; - increasing the educational level of those children coming from a family of educated people; - increasing happiness.	- social cohesion; -better vote participation; - reduce violence during protests; - reduced crime ; - lower fertility ; - reduced bureaucracy ; - less spread of infectious diseases ; -environmental protection; - reduced corruption

Source: amended and adapted after Wolfe and Zuvekas, 1997, McMahon, 1999, Villa, 2000, Mora et al., 2007

5. Conclusions
Educational policies aim at improving the efficiency of the education system, both of the learning activities as well as of funding it, in the whole range of systems funded from the public budget. The efficiency of public resources in financing education can be regarded as a static efficiency necessary to bring, in the future, a dynamic efficiency measured through economic growth. Known the fact that the educational dimensions are determined by consumers and producers of educational services, Governments have the responsibility of sizing and setting public spending needed to achieve the optimum level of benefits. For an optimal sizing it is necessary to measure all costs and benefits of education, including the social ones. Assessing higher education social benefits becomes absolutely necessary in the actual economy.

Referrences:
1. Afonso, A., Schuknecht, L., Tanzi, V., 2003,"Public Sector Efficiency: An International Comparison", European Central Bank, Working Paper No.242;
2. Afonso, A., Schuknecht, L., Tanzi, V., 2006,"Public Sector Efficiency: Evidence for New EU Member States and Emerging Markets", European Central Bank, Working Paper No.581;
3. Afonso, A., St.Aubyn, 2005,"Non-parametric Approaches to Education and Health Efficiency in OECD Countries", Journal of Applied Economics 8, pp. 227-246;
4. Creţan, G.C., Lacrois, Y.L., 2008, "Consideraţii privind aplicarea analizei cost-beneficiu în evaluarea eficienţei investiţiei în învăţământul superior", lucrare prezentată la Conferinţa Internaţională "Inovaţie financiară şi competitivitate în Uniunea Europeană", Academia de Studii Economice, Bucureşti, Facultatea de Finanţe, Asigurări, Bănci şi Burse de Valori, noiembrie 2008;
5. Gupta, S., Verhoeven, M., 2001,"The Efficiency of Government Expenditure Experiences from Africa", Journal of Policy Modelling 23, pp. 233-467;
6. Haveman, R. H., Wolfe B., 1984,"Schooling and Economic Well-Being: The Role of Non-Market Effects", Journal of Human Resources 19(3): 377–407;
7. Hillman, A.L., 2003,"Public Finance and Public Policy: Responsibilities and Limitations of Government", Cambridge University Press, Cambridge;

8. Lacrois, Y.I., Creţan, G.C., 200,"Higher Education between Public and/or Private Financing", Education and Creativity for a Knowledge Society, International Conference Education and Creativity for a Knowledge Society- second edition, Bucureşti, pp. 65-67;

9. McMahon, W. W., 1999,"Education and Development: measuring the social benefits", Oxford University Press, Oxford;

10. Moşteanu, T., Iacob, M., 2007a, "Teoria externalităţilor şi economia reală", lucrare susţinută la Conferinţa ştiinţifică internaţională Coordonate Europene ale Sistemului Financiar din România, Academia de Studii Economice, Bucureşti, Facultatea de Finanţe, Asigurări, Bănci şi Burse de Valori, Centrul de Cercetări Financiare şi Monetare "Victor Slăvescu", Bucureşti, 24 noiembrie 2006, publicată în Studii Financiare, vol 1/2007 (35, Anul XI), pp 13-21;

11. Moşteanu,T., Iacob, M., 2007b, "Theories and Approaches Regarding the Cost-Benefit Analysis Role and Principles", susţinută la Conferinţa Internaţională "Politici Financiare şi Monetare în Uniunea Europeană" Academia de Studii Economice, Bucureşti, Facultatea de Finanţe, Asigurări, Bănci şi Burse de Valori, noiembrie 2007, pp 7-13, publicată în Supliment Economie Teoretică şi Aplicată, Volume 11(528) 2008;

12. Mora, J. G. et al., 2007, "Rates of return and funding models in Europe", Final report to the Directorate-General for Education and Culture of the European Commission, Center for the Study of Higher Education Managment;

13. Pang, G., Herrera, S., 2005,"Efficiency of Public Spending in Developing Countries: An Efficiency Frontier Approach", World Bank Policy Research Working Paper No. 3645;

14. Văcărel, I., et al., 2007,"Finanţe Publice", ediţia a V-a, Editura Didactică şi Pedagogică, Bucureşti;

15. Villa, L. E., 2000,"The non-monetary benefits of education", European Journal of Education 35, pp. 21-33;

16. Wolfe, B. L., Zuvekas S., 1997, "Non-Market Effects of Education", International Journal of Education Research 27, pp. 491–502.