

RETURNS TO TERTIARY EDUCATION IN GHANA: SOME UNANSWERED QUESTIONS

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ABSTRACT

The rapid expansion of university education in Ghana since the 1970s has not been accompanied by commensurate improvement in economy performance as predicted by economic theory and supported by cross-country studies that show high social returns. In contrast, expansion of university education in South Korea has been instrumental in propelling that country from third-world status in the 1950s to its current status of a newly industrialised country. The difference between Ghana and South Korea is that while South Korean universities continually adapted their curriculum so that the skills acquired by graduates met the needs of the country's economy, Ghana's universities continued with a curriculum that has become increasingly irrelevant to the needs of the economy. The main conclusion of the article is that social rate of return for university education in Ghana is overstated because university education in Ghana, for many, is simply a means of acquiring credentials for getting employment in a declining but higher paid public sector, and results in little or no social benefits. Based on this conclusion, the article suggests that the Ghanaian Government use its university funding arrangements, and the scholarship and loan guarantees it provides to students as a leverage to align universities' courses and the skills acquired by university graduates with those needed for economic growth.

1. INTRODUCTION

Economic policies in developing countries have undergone a significant shift from those that emphasised investment in physical capital and infrastructure as the way to achieve economic growth to those that also stress the importance of education (investment in human capital). This shift is largely due to the recognition by governments, major donors and financial institutions such as the World Bank of the importance of education in economic development (World Bank, 1995, p. 147). The education sector, however, suffers from market failure resulting from

externalities, capital market imperfections and incomplete information. Externalities arise in education because the benefits of education do not go to the person acquiring the education alone but also to the public². Imperfections in capital markets can also lead to a sub-optimal investment in education by individuals. This is because while it is easy for individuals to take loans for consumer items such a house or a tractor, financial institutions are generally reluctant to lend for education, with future earnings of the person acquiring the education used as the collateral. Consequently, some people may not have the means to invest

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optimally in education. Incomplete information also leads to suboptimal investment in education because rational decision-making is predicated on having adequate information. However, an individual making decisions about the level and the type of education to acquire may not possess relevant information on what labour market conditions would prevail after acquiring the education. Clearly then, without government intervention, individuals will undertake the levels of education, which while optimal from their private viewpoint, may be sub-optimal from the society's viewpoint. More recently, government intervention in education has been advocated because education is increasingly seen as an important aspect of poverty alleviation strategies because of its impact on earnings, and on empowering people. Ideally, the nature of the market failure should determine the type of government intervention. However, intervention in education in many African countries has taken the form of the provision of free or subsidised primary and secondary school education³, and varying levels of subsidy and student loans for university education.⁴

If education is an investment, the amount of it acquired by an individual should depend largely on its benefits or rate of return. The rate of return to the individual acquiring the education (private rate of return) has been estimated to be very high for primary or basic

education, and relatively lower for secondary and tertiary education, with rate of return decreasing with higher stages of education. Social rate of return has also been estimated to be high but generally lower than the private rate of return. Given the high estimated social rate of return to all levels of education, and the acknowledged relevance of education to economic growth, why has the Ghanaian economy not experience growth commensurate with the increased investment in higher education? This question is pertinent because university enrolment in Ghana increased from under 5000 in the 1970s to over 31000 in the early 2000 (Harsch, 2000), however, this increase in university education has not been accompanied by increased economic growth.

Certainly, other factors may also be responsible for the poor performance of the Ghanaian economy. Yet the potential public benefits of university education have not materialised because of what Gyimah-Brempong (2003) described as the irrelevance of the curriculum offered by many African universities to the needs of their economies.⁵ If Gyimah-Brempong's observation about the curriculum being irrelevant is correct, then the skills acquired by students following this curriculum will be ill suited to those required for economic growth.

From the foregoing discussion it is clear that the approach used to estimate the social rate of return to primary and secondary education, which provides

mainly a generalist education is adequate. The approach, however, provides a misleading picture of the economic impact of university education, which provides a more specialised education. At the university level, social benefits of education ideally should be measured for particular subjects (courses) rather than for a generic 'university education'.⁶ This view may explain why increased university education has so far generated little or no positive externalities. In fact, some university courses may even generate negative externalities. There is anecdotal evidence to suggest that in Ghana many students who undertake courses with no vocational content aspire to work in places such as the Customs Department where there is ample opportunity to take bribes.

2. Measuring rate of return to education

Based on the human capital theory, education is now commonly considered as an investment in the person undertaking the education. Hence, the decision to undertake education is based on a comparison of the cost of acquiring the education with the benefits (after tax earnings after graduation). A secondary school graduate, for example, contemplating to acquire university education compares his or her earning profile with that of university graduates. The appropriate starting point of our discussion is, therefore, an examination of components of the costs and benefits

included in the estimation of the returns to education.

Costs of education

Education involves both private and public costs. Private costs are those faced by the person undertaking the education, or by his or her parents or guardians. These may be direct costs (school fees if tuition is paid, cost of uniforms, books and transport to and from school) and indirect costs in the form of foregone earnings (income the person could have earned during the years of schooling). Public (social) costs of education include costs such as teachers' salaries, educational administration costs and rental of school buildings or other educational infrastructure, if these are paid by the government.

Benefits of education

Similar to costs, education may give rise to both private and social benefits. Private benefits are in the form of higher after-tax earnings, over the working life of the educated person, relative to average earnings of less educated cohort groups.⁷ Conceptually, social benefits or externalities of education fall into three broad classes namely: static education externalities, dynamic education externalities, and non-pecuniary education externalities. Static education externalities describe the impact of education on current production, and are based on the view that education increases the productivity of both labour

and physical capital. People are more productive in environments of higher concentration of educated people than in an environment of the less educated, probably due to the result of sharing knowledge through general day-to-day interaction (Shultz, 1993; Benhabib & Spiegel, 1994; Lucas, 1988). This is “a rising tide that lifts all boats” effect. Although the concept of static externality seems to be in accordance with common sense, empirical evidence on its existence is inconclusive. While Rauch (1993) found strong evidence of static externalities, Acemoglu and Angrist (1999) only found evidence of weak static externalities, and Benhabib and Spiegel (1994) found no evidence at all of their existence. The concept of dynamic education externalities is based on the notion that education hastens scientific progress, resulting in more educated societies having higher rates of inventions and of adopting new technologies (Hanushek, 2003). Dynamic external benefits may also derive from the general flexibility of an educated workforce and the increased ability of educated people to engage in lifelong learning. Benhabib and Spiegel (1994) found dynamic externalities to be significant.⁸ Lastly, non-pecuniary education externalities arise through various channels in which education empowers a person and enriches the life of the community of the educated individual. Commonly cited examples include:

- positive relationship between

schooling and lower birth rates. This is the quantity-quality trade-off discussed in Becker et al (1990),

- positive association between one’s schooling and one’s own health and the health of one’s family (Kenkel, 1991), and
- lower crime rate, and higher socialisation skills of educated people, leading to a more stable community (Havelman & Wolfe, 1984; Wolfe & Zuvekas, 1995).

Estimation of the private rate of return to tertiary education

From the preceding discussion, the calculation of private rate of return to education involves essentially a comparison of private costs and private benefits of schooling over the working life of the person acquiring the education. This comparison is illustrated with stylised earnings profile presented in figure 1, adapted from Psacharopoulos (1995). In figure 1, Y_s and Y_u represent respectively, the age of completion of secondary education and university education. Y_r is the age of retirement. For simplicity, it is assumed that all secondary school graduates have similar earning profile. Similarly, all university graduates are assumed to have the same earning profile. Hence, undertaking university study involves direct costs of C_{pu} , per year, amounting to a total of Area D, over the $(Y_u - Y_s)$ years spent pursuing the university education. In addition, there is foregone income while the student is

undertaking university studies represented by Area B, giving a total private cost of B + D. The private benefits of undertaking university education are the higher after-tax earnings of university graduates over their working life,

represented by Area A. A secondary school graduate, contemplating to undertake a university education goes ahead only if the benefits represented by Area A are greater than or equal to the costs represented by Areas B + D.

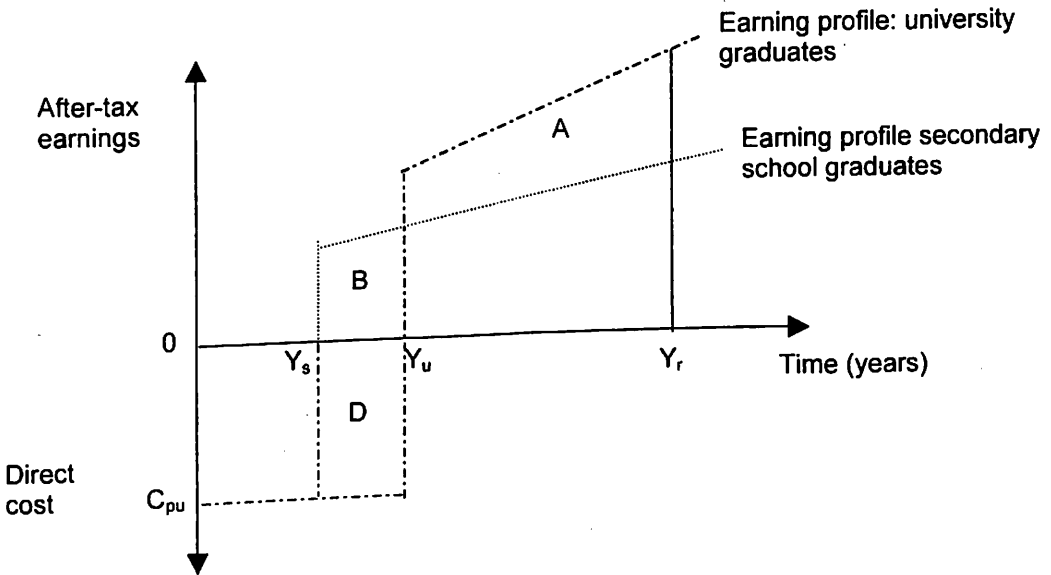


Figure 1: Illustration of measurement of returns to education

Two main methods are commonly used to estimate the rate of return to education empirically, depending on availability of data. If information is only available on averages of earnings, direct costs, foregone earnings, and years spent at each level of education for cohort groups, but not information on individual graduates, the private rate of return to university education is obtained by solving for r , the rate that equalises discounted costs to discounted benefits in equation 1.

where:

- Y_s = age of graduating from secondary school
- Y_u = age of graduating from a tertiary institution
- Y_r = age of retirement
- C_{pu} = direct yearly private cost of university education
- W_u, W_s = the average wage of university and secondary school graduates respectively.

$$\sum_{Y_s}^{Y_u} \frac{w_u - w_s}{(1+r)^t} = \sum_{Y_u}^{Y_r} (w_t + C_{pu}) \cdot (1+r)^t \quad (1)$$

Strictly speaking, r is the internal rate of return to education. However, as argued in Psacharopoulos (1995), educational projects do not typically yield multiple rates. Thus, the internal rate of return gives the same ranking as the net present value, which leads to r being interpreted as the rate of return on education. If information is available on earnings, direct costs, years of education, foregone earnings for individual graduates a second method, commonly termed the Mincerian method after Mincer (1974), represented by equation 2, is used.

$$\text{Log}E = \beta_0 + \beta_1 S_i + \beta_2 X_i + \beta_3 X_i^2 + \varepsilon_i \quad (2)$$

where

- Log E = natural log of earnings
- S_i = years of schooling
- X_i = years of experience
- ε_i = error term

Years of schooling can be replaced by dummy variables for the stage of schooling attained, resulting in equation 3

$$\text{Log}e = \beta_0 + \beta_p + \beta_s + \beta_u + \beta_1 X_i + \beta_2 X_i^2 \quad (3)$$

where

$$\beta_p \begin{cases} 1 & \text{for primary graduates} \\ 0 & \text{otherwise} \end{cases}$$

$$\beta_s \begin{cases} 1 & \text{for secondary school graduates} \\ 0 & \text{otherwise} \end{cases}$$

$$\beta_u \begin{cases} 1 & \text{for university graduates} \\ 0 & \text{otherwise} \end{cases}$$

X_i retains its meaning in equation 2.

In this form, the private rate of return to primary, secondary and university education is given as:

$$r_p = \frac{\beta_p}{S_p}$$

$$r_s = \frac{\beta_s - \beta_p}{S_s - S_p}$$

$$r_u = \frac{\beta_u - \beta_s}{S_u - S_s}$$

Social rate of return to education

The difference between social and private rate of return estimates is that in estimating the former, benefits include private benefits plus social benefits (education externalities), and costs include private costs as well as all public costs. Social rate of return to education can be obtained by modifying equation 1 to include public costs and social benefits, resulting into equation 4, where C_{su} represents public expenditure on education, and other variables retain their previous meaning. However, because data are generally not available on social benefits, these benefits are not included in equation 4.

$$\sum_S^U \frac{w_u - w_s}{(1+r)^t} = \sum_U^r (w_s + C_{pu} + C_{su}).(1+r)^t \quad (4)$$

The inclusion of public costs but not public benefits results in the social rate of return to education, as calculated by this method, being typically lower than the private rate of return. In the case of the earnings function method, the social rate of return is obtained by deducting public costs from earnings. From equations 3 and 4, it can be seen that the social rate of return for university education is based on years spent in the university rather than on the specific subjects undertaken.¹⁰

Criticisms of rate of return estimates for education

Rate of return estimates, particularly those for Sub-Saharan African countries, have been severely criticised on many grounds. Bennel (1996), for example, argues that the use of poor quality of data (which in some cases were no more than guesstimates) in the estimation leads to the underestimation of foregone earnings during primary and secondary school education, which in turn leads to inflated estimates of rate of return to education.¹¹ In other cases, earnings in the formal sector have been used to derive net income for cohort groups even though formal sector earnings are not representative because the sector employs only a small proportion of the labour force. For example, in Ghana, the formal sector employs only about 20 percent of the labour force as shown in Figure 1, which is based on Boateng and Ofori-Sarpong (2002). Using formal sector wages is inappropriate also because

wages in the public sector, where the bulk of formal employees work, are determined mainly by political and administrative factors and therefore do not reflect marginal productivity of labour, one of the main assumptions behind the rate of return calculation. Bennel (1996) argued that when the mentioned factors are taken into account the rate of return to primary education dropped from 14 percent to 5 percent.

Another criticism of the rate of return estimates is that the effect of important factors such as innate ability, geographic location, size and type of industry are not generally taken into account (Goux and Maurin: 1990). Attempts to allow for these factors have, however produced conflicting results. While Ashenfelter and Krueger (1994) found omitted variables on family background and individual ability to have no effect on earnings, Miller and Mulvey (1995) reached the opposite conclusions, finding these factors as important as education itself. A very important shortcoming of the rate of return estimates, from the viewpoint of this article is that all formulations use years of schooling to represent human capital rather than specific subjects studied. The estimates, thus, imply that a degree in courses such as engineering, accounting, information technology or agriculture; subjects that drive productivity, have the same social rate of return as a degree in say, classics, religious studies or ancient history.

3. Rate of return to education and potential skills demand for Ghana

This section presents information on rate of return estimates for Ghana, together with information on enrolment in courses offered by Ghanaian universities, particularly University of Ghana, and information on areas of potential demand for skills. Admittedly, this information is neither comprehensive nor up-to-date. However, it provides an insight into the failure of the expansion in university education to boost economic growth, as has happened in the newly industrialised Asian countries. The rate of return estimates in table 1 are in line with stylised facts: the social rate of return is highest for primary school education, followed by that of secondary school education. There are no estimates of the social rate of return for university education consistent with those reported in table 1. However, if Ghana is typical, the social rate of return for university education would be lower than that for secondary education¹². In addition, at each level of education, the rate of return is higher for females than for males. The social rate of return as calculated is overstated for many of the most popular university courses that have little or no relevance to the skill needs of the economy. If the rate of return were properly estimated for specific courses, the social rate of return to some courses will be zero or close to zero. This statement is based on the disparity between the areas of enrolment by final

year graduates and the potential sources of demand for graduates labour (Boateng & Ofori-Sarpong 2002). This view is not to deny the role university education plays in economic development but rather to make the point that the type of education is also very important. There is evidence from World Bank (2002: p12) that suggests that one of the reasons for South Korea's faster economic growth compared to Ghana, is that the expansion of South Korea's universities from the 1970s produced increasing numbers of graduates with the skills needed for the growth of that country's economy.¹³ In contrast, the number of students in Ghanaian universities increased from the 1970s. However, a high proportion of these students continue to undertake courses that have little or no relevance for economic growth.

Figure 2 shows that between 1994 and 2000 about 70 percent of all Ghanaian university students graduated in Arts courses. A more detailed breakdown, available for only the University of Ghana for 2001 and 2002, presented in table 2 shows that over 40 percent of final year students were enrolled in courses such as linguistics, religious studies, philosophy and sociology. Since there is no reason to believe that these two years are unique, the main inference to be drawn from this information is that Ghanaian universities are still producing graduates for the public sector, which end up employing the bulk of graduates as can be seen from table 3, despite the fact that the proportion

of the labour force employed in this sector is falling (Figure 1). Another inference that could be drawn from the information in these tables is that university education in Ghana is seen by many students taking these courses more as a means of acquiring credentials to boost their chances of employment in a declining but higher-paying public sector. While this behaviour may be optimal from the individual graduate's perspective, it is not optimal from the country's viewpoint.

Will a continuation of this pattern produce the skilled workforce needed to make the economy to be successful in an increasing globalized world? If the answer is no, the next policy question is, should courses deemed not to be beneficial to economic growth be discouraged? And if so, how should it be done? We do not suggest that all Arts degree lack vocational content nor are we suggesting that courses with little or no vocational content should be removed from the university curriculum. There is a place for the liberal arts, and for knowledge for its own sake in universities. What is at issue is the large proportion of students graduating with these courses every year. The current university curriculum flies in the face of the desire by governments to boost economic growth, and the increasing awareness of the need for more science and technology education.¹⁴

CONCLUSION

We have argued that university education in Ghana has increased significantly but this increase has not had any impact on the growth of the economy. Anecdotal evidence points to the type of university education as the culprit. The social rate of return to university education, as currently calculated, is generic and illusory for the most popular courses currently undertaken by graduates from Ghanaian universities. With increasing technology and science content of internationally traded goods, there is a need to change the focus of curriculum of the universities. It is difficult to see how producing hundreds of graduates in linguistics, archaeology, religious studies, classics and like subjects will promote the growth of the Ghanaian economy. Continuing with the current curriculum in both the universities and the secondary schools will be a very expensive and wasteful way of producing graduates, many of whom, by virtue of the shrinking size of the public sector, would end up being unemployed. It is therefore disappointing to find that the curriculum of new universities in Ghana is no better than that of the established universities.¹⁵

While African governments cannot force students to undertake particular courses, they do have some influence over courses undertaken by university students through subsidies and scholarships they provide. In the short run, these scholarships and subsidies

could be used to provide an incentive for students to pursue sciences and technology courses or other courses that drive productivity growth. In the long run,

this policy would need to be implemented simultaneously with curriculum reform at secondary school level and more importantly, at the university level.

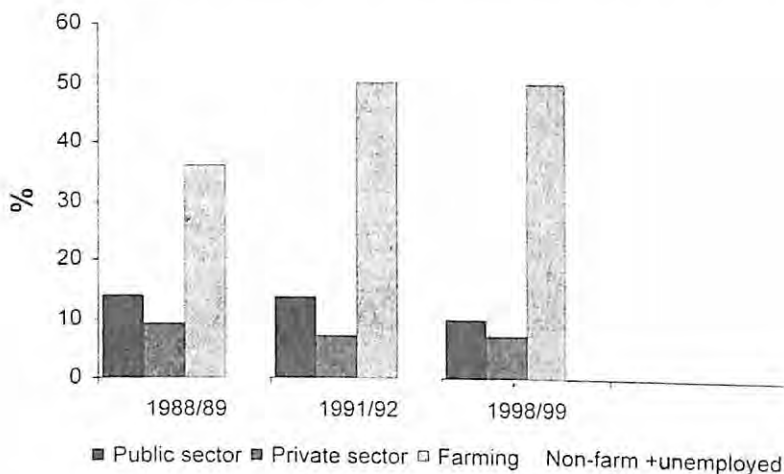


Figure 1: Labour force by employment type

Table 1: Recent rate of return estimates for Ghana (1992)

Level of education	Private rate of return (%)	Social rate of return (%)
Primary education		
All	28	19
male	17.2	11.7
female	38.6	25.6
Secondary education		
All	12	10
male	9.6	7.3
female	17.3	13.7

Source: World Bank (1996), Basic Education Sector Improvement Program, Report No. 15570-GH.

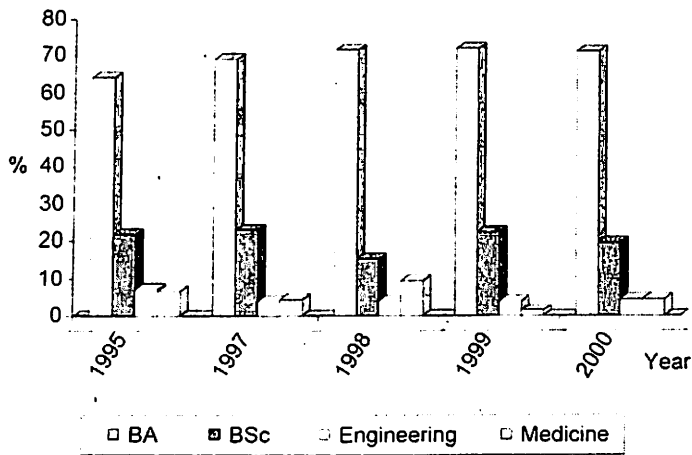


Figure 2 : Final year enrollment in Ghanaian universities

Table 2: Share of selected courses in final year registration at The University of Ghana

Course	2001	2002
Archaeology	23	14
Linguistics	58	66
Philosophy	54	61
Political science	313	259
Psychology	114	172
Sociology	247	315
Religious study	158	136
Sub-total	967	1023
% of all course	42	40
Registration for all courses	2327	2561

Source: University of Ghana (2004)

Table 3: Distribution of tertiary graduates and labour force by employment type (%)

	1988/89		1998/99	
	Tertiary graduates	Total labour force	Tertiary graduates	Total labour force
Public sector	66.7	14.0	74.4	6.4
Formal private sector	15.6	6.3	15.4	6.0
Self-employed	17.8	79.7	10.2	87.5
Unemployed	0	0.8		0.5

Note: means unavailable

Source: Boateng and Ofori-Sarpong (2002)

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