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FINANCING BUSINESS SCHOOL EDUCATION: WHAT ARE THE ECONOMIC RETURNS AND IMPLICATIONS FOR AFRICA?

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FINANCING BUSINESS SCHOOL EDUCATION: WHAT ARE THE ECONOMIC RETURNS AND IMPLICATIONS FOR AFRICA?[1] *

Abstract

To be able to finance their physical assets and working capital costs, business schools mainly raise funds from any or a combination of the following: direct funding by the public sector or the government; income from providing educational services; debt (bank and bond); equity by private owners; public-private partnerships; research grants; and private sector endowment funds. This is a financing decision. But, it is the capital budgeting decision that matters! Business schools have to yield positive economic rates of return to become viable and attractive investment propositions; they must also yield positive non-pecuniary benefits. This paper provides a selective survey of the evidence on the core question of the rate of return to university education, and points out policy implications for business school education in Africa.

Key words: financing business school education; economic returns.

INTRODUCTION

The financing of business schools and the related economic returns may be interpreted here in the context of the twofold corporate finance problem: the financing decision and the capital budgeting decision, respectively. In practice the main sources, from which business schools raise funds for their physical assets and working capital costs, include a combination of the following:

- Direct funding from the public sector or the government in terms of grants or full costs
- Income from providing training and related services e.g. fees and charges from students
- Private sector endowment funds and gifts
- Loans or debt (bonds)
- Equity by private owners (otherwise no business school is listed for trading)
- Public-private partnerships
- Research grants

In general, business schools[2] are likely to call upon a combination of almost all the above sources if they are mainly offering undergraduate degrees. Business schools, which are biased towards postgraduate studies (e.g. MBA), are likely to source their own funds and rely less on government grants.

In terms of Africa, the full extent of exploring the above source of funds is limited by the rudimentary nature of the capital markets; for example, bond markets hardly exist in Africa. In addition, to be able to raise the funds, business schools must provide an incentive to the benefactors to part with their funds, especially those benefactors who aim to maximize the returns to investment. On the whole, it may be argued that for individuals contemplating whether to pursue business school education, and for policy makers wanting to know whether to invest in public resources in business school education, the important question is whether business school education benefits individuals and society. At least two interpretations to this question are relevant here: one, is to look at business schools *per se* in terms of whether to enter business school education or not to do so at all; the other is to consider business school education versus alternative specific types of university education.

Specifically, however, the question is of interest to four main parties. First, individuals, who consider business school education to be a good investment, will decide to pursue it, and those who question its profitability will opt for the labour market or other professions. Second, the question is of interest to governments in two ways: governments will invest in business school as a direct way of boosting human capital productivity, and indirectly economic growth; on the part of educational planners and policy makers, the results of these studies support the use of perceived rates of return to business school education in the effort to predict and interpret the private demand for business school education. Third,

employers will invest in business school as a direct way of boosting their employees (human resource management) productivity, and hence boost the organisation's competitiveness and performance. Fourth, for investors interested in setting up business schools will consider the rate of return to business school education: given the high rates of return, the demand for this type of education is higher, thus an interesting business proposition.

But what do we know about the rate of return to education? The literature that considers the return to education, or generally the economics of education, has had three main phases. The first phase started in the early 1960s with estimates of the profitability of investment in education by Baker (1960), for which he later won the Nobel Prize in economic science. The second phase, in the 1970s, witnessed the challenge to the social returns to education by the formulation of the screening hypothesis (e.g. Arrow, 1973). The third phase came in the 1980s with the revival of attempts to estimate the effect of education on economic growth by means of "endogenous" growth theory i.e. the idea that it is investment in human resources which drives economic growth (Lucas, 1988; Romer, 1990). Indeed, the intuitive idea that education involves investment in human capital is now well recognized. However, there are many contested issues on this theme, most importantly the question of how efficient the investment is. There is also the matter that relates to various types of education (from medicine to business and so on) that maximizes returns to investment.

This paper argues that the financing decision is secondary in importance; rather, it is the capital budgeting decision that matters in the sense that business schools have to yield positive economic rates of return to become viable and attractive investment propositions, as well as yield positive non-pecuniary benefits. The paper provides a selective survey of the evidence on the core question of the rate of return to university education, and points out policy implications for business school education in Africa.

In what follows, the paper is structured into four sections. Section 2 considers the theoretical underpinnings of the rate of return to university education. Evidence from the key studies is discussed in Section 3. Section 4 concludes and presents policy implications.

THE RATE OF RETURN TO UNIVERSITY EDUCATION

The Human Capital Theory

Recent empirical studies that seek to quantify the efficiency of investing in higher education tend to rely on the analysis of rates of return to education. The analysis is mainly carried out within the framework of human capital theory (see Becker, 1975), and thus emphasizes education and training as a basis for higher productivity. In the context of financing business schools, the human capital hypothesis posits that there is a significant and positive influence of the economic rate of return to business school education on the candidates' decision to pursue it.

Computation of Rates of Return: Elaborate and Short-Cut Methods

The most widely used approach to estimating the rate of return, which is believed to yield the most accurate estimates is based on the algebraic definition of the rate of return as the discount rate which equates the stream of benefits of an investment project to its stream of costs. The relevant idea is to look at additional (marginal) element: for university education, this is the earnings differential between university graduates and high school graduates.

Perceptions here are very important, because those candidates who consider university education to be a good investment decide to pursue it, and those who question its profitability opt for the labour market.

Thus, the perceived internal rate of return which is based on perceived earnings and costs, is computed as follows:

$$\Sigma(E_t - C_t) / (1 + r)^t \qquad (1)$$

where E_t is the measure of the benefits of higher education which, in the context of undergraduate business school education, is the earnings differential between university graduates and high school graduates; C_t denotes the costs of undergraduate business school education which include both direct costs and opportunity costs (measured by the earnings high school graduates forgo by entering undergraduate business school education); and the summation is from, say, 15 to 60 years. This elaborate method of approximating the rate of return is based on the assumption that discounted earnings over a long period of time do not count much if discounted to the present.

However, Psacharopoulos (1981) describes a simpler way of calculating rates of return to university education as follows:

$$r = (E_h - E_s) / N(E_s + C_h) \qquad (2)$$

where E_h is the annual mean earnings of university graduates; and E_s is the annual mean earnings of high school graduates; and C_h is the direct annual cost of university education; and N is the number of years of the educational investment.

This short-cut method has the advantage that it can be used with already tabulated data on the earnings of workers. However, the method suffers from a drawback in the sense it ignores the fact that age-earnings profiles are concave. The method also focuses on early earnings and this inevitably leads to computation of less accurate rate of return estimates.

Clearly, the elaborate method is superior as an indicator of the long-term profitability of educational investment. The short-cut method has the advantage of being able to adequately capture the short-term perceptions of students regarding the earnings differential between university graduates and high school graduates i.e. the short-term benefits of university education relative to the prospects in the labour markets.

Perceived Rates of Return to Education

A number of studies have calculated private rates of return to university education and attempted to link them to trends in the private demand for university qualifications. However, the literature seems to indicate that most of the evidence on rates of the literature is based on cost and earnings data provided by government authorities or estimated by different authors. Clearly, what is most relevant as a reliable indicator of the profitability of educational investment, for policy work and for the potential students and other stakeholders (who invest in university education), is the *perceived* costs and benefits of *additional* university education; perceived in the sense of being ex-ante rather than ex-post.

Indeed, some recent studies have found perceived rates of return to be realistic and to accurately reflect labour market trends. However, the drawback of this method is that it is difficult to obtain perceived cost and earnings data from individual respondents, in the sense that the fieldwork methods for obtaining the data are quite intensive. For example, Menon

(1987) administered questionnaires to 811 university candidates in Cyprus. The candidates were asked to provide estimates of future expected earnings at three points (point of start of work, after four years of work, age 46) with and without a university degree. Annual earnings were then estimated foe each of the 43 years (17 to 60 years) of the respondents' life up to the age of retirement, based on the expected earnings estimates for the three time points.

However, the methods that calculate the perceived rate of return do not capture the non-monetary benefits of university education. Clearly, as shown in the empirical results obtained by Menon (1997), the respondent's decision to pursue university education is affected by a number of factors, only one of which is economic.

The Logistic Regression Model

One useful way of assessing the rates of return to university education is to compare the differential rates of return of university graduates versus non-university graduates. In this context, the logistic regression model is used in order to capture the dichotomy of the endogenous variable in the sense that the respondents are divided into those planning to enter university versus those planning to work after high school education. The dependent variable is binary in the sense that it takes a value of 1 for those planning to enter university and a value of 0 for those planning to work after high school education. The predicted value of the dependent variable can be interpreted as the likelihood or the probability that an individual will form the intention to enter university, given their characteristics as they are given by the values of the explanatory independent variable. Most importantly, the logistic model can be used to test the prediction of the human capital model, in the sense that economic variables have a significant influence on the educational intentions of respondents; of course non-economic independent variables may be incorporated into the analysis. The policy implication is that we can estimate the probability that an individual with a given set of characteristics will select one alternative rather than the other i.e. going to university rather than opting out.

Kinometrics: Sibling Models and Within-Twin Estimates of Returns to Schooling

Sibling models have been used for within-twin estimation of economic returns to schooling on the grounds that because identical twins have equal ability, within-twin estimates provide a "natural experiment" for estimating the return to schooling by eliminating omitted ability

bias. See, for example, Griliches (1977, 1979), Ashenfelter and Krueger (1994), and Neumark (1999).

However, even when twins are identical, studies on the determinants of socioeconomic success within and between families have noted that there are alternative reasons for schooling differences among twins (see, for example, Jencks and Brown, 1977; and Miller, Mulvey and Martin, 1995).

For that matter, Neumark (1999, p. 144) argues that the starting point for the within-twin estimation of the return to schooling is a model relating the log wage, *ln(w)*, to a linear function of schooling *(S)* and unobserved ability *(A)*, thus:

$$ln(w) = \beta S + \lambda A + \varepsilon \qquad (3)$$

where $plim(S.\varepsilon) = plim(A.\varepsilon) = 0$. A is catchall term for omitted variables that affect wages and may be correlated with schooling. In this context, equation (1) can be interpreted as the regression of log wages on schooling and ability after partialling out other control variables. The main drawback of using this approach to estimating economic rate of return to university education is the apparent lack of consistent data on twins, except in countries when data on siblings are routinely kept. Moreover, the application of this method has been plagued by many econometric problems (especially use of differencing and instrumental variable techniques) mainly involving the attempt to use methods of removing bias within the data (see Angrist and Krueger, 1991; Behrman, Hrubec, Taubman and Wales, 1980; Behrman, Rosenzweig, and Taubman, 1994; Blackburn and Nuemark, 1995; and, Bound, Jaeger and Baker, 1995).

The Mincerian Approach

One approach of studying the rate of return to university education is to estimate a standard earnings equation, following the seminal work by Mincer (1974), hence the Mincerian approach.

$$ln(w) = \alpha S + \phi L + \tau L^2 + \theta H + \varepsilon \qquad (4)$$

where *ln(w)* is the natural logarithm of gross monthly earnings; *S* is years of university education or degree completed; *L* is potential labour market experience (calculated as age minus years of schooling minus 5); L^2 is experience squared; and *H* is the logarithm of hours worked.

However, there are some puzzling questions that remain unanswered. Do students select education on the basis of its profitability over alternative investments i.e. the human capital hypothesis? What are the factors that influence the decision of university students to go for business studies rather than law or social work?

To incorporate the level of education, the Mincerian human capital model is:

$$ln(w) = a + bPrim + cLowSec + dHighSec + fUniv + gT + hT^2 + iHrs + jFam + \varepsilon \quad (5)$$

where *Prim, LowSec, HighSec*, and *Univ* are dummies for education categories; *T* is on-the-job experience; *Hrs* is hours worked; and *Fam* is a family background variable measured by the education of the head of the household. In this specification, the rate of return to the *k*th level of education (r_k) is estimated by subtracting the coefficient of D_{k-1} from that of D_k and dividing by the number of years of schooling at the *k*th level, i.e. $r_k = (b_k - b_{k-1}) / n_k$. For example, the rate of return to university education is calculated as *r(university versus high secondary) = b/*S_p, where S_p is the number of years it takes to complete university education. However, Halvorsen and Palmquist (1980) have argued that the value of the coefficient of a dummy variable in the semilogarithm regression equation is not a good estimate of the effect of that variable on the variable being explained for large values of the coefficient. Thus, the coefficients are first adjusted by $(e^{coefficient})$-1 to correct for this problem.

WHAT DOES THE EVIDENCE TELL US?

Evidence on Cyprus

Menon (1997) estimates perceived rates of return to higher education in Cyprus, and uses the estimates in logistic regression analysis in order to study the effect of economic as well non-economic considerations on the decision of potential entrants to university education. To achieve an accurate measure of perceived rates of return, Menon uses data based wholly

on the candidates' subjective estimates. Thus, the data were collected from candidates who were contemplating entry to university. The results obtained are supportive of human capital theory: it is shown that the mean rate of return to university education is considerably higher than that perceived by the labour market entrants. In addition, the results from logistic analysis show that the perceived rate of return to higher education, as estimated by both the elaborate and short-cut methods, have a significant influence on candidates' intentions to pursue university education.

Table 1: Menon's (1997) estimate of the perceived unadjusted rate of return to university education in Cyprus, using the elaborate and short-cut methods

	Mean (%) Elaborate	Mean (%) Short-cut	S.D. Elaborate	S.D. Short-cut
All respondents	5.7	6.3	0.078	0.082
Intending to work after high school	1.5	2.8	0.076	0.064
Intending to enter university	6.7	7.7	0.075	0.084

Source: Menon (1997, p. 427), Table 1.

Table 1 presents Menon's (1997) descriptive statistics for the perceived rate of return to university education as estimated using the elaborate and short-cut methods. It is shown that, in the case of the elaborate method, the overall mean unadjusted rate of return to university education is 5.7%. It is also interesting to note that candidates who intend to enter university education have a perceived rate of return of 6.7% compared to 1.5% for those intending to work after high school rather than go to university. The estimates obtained using the short-cut methods give a higher overall mean unadjusted perceived rate of return to university education of 6.3%, while the corresponding rate of return for candidates who intend to enter university education is 7.7% and that for candidates intending to work after high school rather than go to university is 2.8%. The estimate of the perceived rate of return obtained using the short-cut method is found to be higher than the corresponding estimate obtained using the elaborate method.

Table 2: Definitions of variables and descriptive statistics in Menon (1997) (*N* = 811)

Variable	Definition	Mean	S.D.
Educational intentions	= 0 for employment = 1 for higher education	0.80	0.40
IRR	Internal rate of return	0.06	0.01
RATE	Short-cut rate of return	0.06	0.01
Sex	= 0 for males = 1 for females	0.56	0.50
Ability	= 0 for low ability = 1 for high ability	0.58	0.50
Socio-economic status (SES)	= 0 for low status = 1 for high status	0.37	0.48
Residence	= 0 for rural residence = 1 for urban residence	0.72	0.45
Specialization	= 0 for vocational = 1 for academic	0.63	0.48

Source: Menon (1997, p. 428), Table 2.

The results of the logistic regression analysis by Menon (1997) are reported in Tables 2 and 3. Table 2 presents the structure of the regression models used, including definition and measurement of dependent and explanatory variables. Two models, which test the human capital hypothesis, are used: Model I uses the elaborate method for estimating the perceived rate of return, while Model II uses the short-cut method for the same purpose. Table 3 presents the full regression results, clearly indicating the logistic coefficients (B), which show the logarithmic odds of the dependent variable associated with a one unit change in the independent variable.

Table 3: Standardised regression coefficients, standard errors, and Wald statistics for Models I and II in Menon (1997)

Independent Variables	*B*	S.E.	Wald
Model I			
Ability	0.71	0.24	9.01**
Specialization	2.31	0.27	73.79***
Sex	1.37	0.23	35.33***
SES	0.66	0.30	4.90*

Residence	0.42	0.24	3.07
IRR	4.52	1.47	9.38**
Constant	-2.55	0.42	37.43
Model II			
Ability	0.64	0.23	7.55**
Specialization	2.38	0.26	84.67***
Sex	1.25	0.23	30.28***
SES	0.70	0.29	5.88*
RATE	8.12	2.02	16.11***
Residence	0.35	0.24	2.26
Constant	-2.59	0.40	41.00***

Notes: For both Models I and II, N=811.
*p <0.05**; **p<0.01; ***p<0.001

Source: Menon (1997, p. 428), Table 3.

It is shown that in both models I and II, economic variables have a positive and statistically significant effect on the intention to enter higher education. The results in Model I suggest that a one unit increase in the perceived rate of return to university education increases the logarithmic odds of the intention to enter higher education by 4.52, while the results in Model II suggest an increase the logarithmic odds of the intention to enter higher education by 8.12. It is also found that Model II, which uses the short-cut measure of perceived rate of return, has a higher level of significance than Model I, which uses the elaborate method. Overall, the main finding of the logistic regression analysis is that there is strong empirical support for the human capital hypothesis, irrespective of whether Model I or Model II is used: there is a positive and significant influence of the perceived rate of return to university education on the candidates' decision to pursue it.

Evidence on Spain

Ramirez and Segundo (1995) provide microeconomic estimates of the returns to education in Spain by estimating wage equation in (4) by sex, class of worker and private/public sectors of employment. The results obtained are reported in Table 4. In general, the results obtained are consistent with those of the literature for other countries. The returns to university education (105%) are much higher among self-employed persons than among wage and salary workers, for whom the returns are 13% and 94%, respectively. For all workers, the returns to university education (140%) are much higher than the corresponding returns to primary school (22%), pre-secondary (36%), and secondary

(69%). This conclusion also holds individually for the wage earners category (column 3), self employed category (column 4), private sector (column 5) and public sector (column 6).

Table 5 reports results for all workers and wage earners, on the basis of their gender, which are consistent with those reported on Table 4. These results are also consistent with the evidence reported in Table 6 where gender classification is made for both the private and public sector. It is shown that in Spain the rate of return to university education is higher in the public sector than in the private sector; and that the rate of return is higher among women than among men regardless of the class of worker and the sector of employment.

Table 4: Earnings equations by class of worker and sector of employment in Spain

	All workers	Wage earners	Self employed	Private sector	Public sector
Constant	8.242	7.295	7.486	7.897	7.875
	(38)	(39)	(11)	(35)	(18)
Primary school	0.222	0.133	0.450	0.112	0.185
	(4.3)	(2.6)	(3.5)	(2)	(1.7)
Pre-secondary	0.357	0.148	0.675	0.232	0.268
	(5.6)	(4.2)	(3.5)	(3.4)	(2)
Secondary	0.691	0.635	0.630	0.617	0.496
	(11)	(10)	(3.1)	(8.8)	(4)
University	1.053	0.941	1.410	0.732	0.811
	(16)	(15)	(6)	(8.7)	(6.9)
Experience	0.046	0.046	0.046	0.048	0.031
	(11)	(13)	(2.7)	(11)	(5.1)
Experience	-0.0006	-0.0006	-0.0006	-0.0006	-0.0004
	(-9)	(-9.2)	(-2.5)	(-8.2)	(-3.8)
Ln hours worked	0.587	0.702	0.689	0.700	0.829
	(11)	(13)	(4.3)	(12)	(7)
N observations	1570	1214	356	896	318
F	81.4	121.1	8.3	62.7	30.3
R	0.26	0.39	0.14	0.33	0.40
Years of schooling	0.083	0.081	0.088	0.069	0.066
	(20)	(22)	(5.7)	(13)	(12)

Notes: The t statistics are in parentheses.

Source: EPA, Encuesta Piloto de Ingresos, 1990; reproduced in Alba-Ramirez and San Segundo (1995, p. 159), Table 4.

Table 5: Earnings equations by class of worker and sex in Spain

	All workers		Wage earners	
	Males	**Females**	**Males**	**Females**
Constant	10.50	7.863	10.080	7.850
	(30)	(28)	(27)	(28)
Primary school	0.236	0.115	0.134	0.096
	(4.2)	(1.1)	(2.6)	(0.8)
Pre-secondary	0.384	0.302	0.221	0.322
	(5.4)	(2.3)	(3.5)	(2.6)
Secondary	0.677	0.685	0.610	0.695
	(9.3)	(5.4)	(9.4)	(5.6)
University	1.002	1.118	0.854	1.103
	(13)	(9)	(9.4)	(9)
Experience	0.048	0.038	0.047	0.038
	(10)	(5.8)	(11)	(6.1)
Experience	-0.0006	-0.006	-0.0006	-0.0004
	(-8)	(-4.7)	(-8.3)	(-4.1)
Ln hours worked	-0.010	0.688	0.142	0.693
	(-0.1)	(9.6)	(1.5)	(9.8)
F	42.2	50.6	60.1	54.9
R	0.21	0.44	0.34	0.50
N observations	1107	463	823	391
Years of schooling	0.077 (15)	0.097 (14)	0.073 (17)	0.098 (15)

Notes: The t statistics are in parentheses.

Source: EPA, Encuesta Piloto de Ingresos, 1990; reproduced in Alba-Ramirez and San Segundo (1995, p. 161), Table 5.

Table 6: Earnings equations by sector of employment and sex in Spain

	Private sector		Public sector	
	Males	**Females**	**Males**	**Females**
Constant	9.691	8.097	10.528	7.040
	(23)	(25)	(15)	(13)
Primary school	0.130	0.014	0.115	0.369
	(0.1)	(0.1)	(1)	(1.8)
Pre-secondary	0.219	0.220	0.225	0.495
	(3.1)	(1.5)	(1.5)	(2.1)
Secondary	0.614	0.696	0.432	0.710
	(8.4)	(3.8)	(3)	(3.2)
University	0.638	0.857	0.739	1.065
	(6.713)	(5.1)	(5.5)	(4.9)
Experience	0.049	0.037	0.040	0.018
	(9.7)	(4.6)	(5)	(2.1)

Experience	-0.0006	-0.0005	-0.0005	-0.0002
	(-7.5)	(-3.2)	(-4)	(-1.3)
Ln hours worked	0.237	0.635	0.110	1.017
	(2.1)	(7.9)	(0.6)	(6.6)
F	34.2	20.6	14.1	24.6
R	0.27	0.36	0.35	0.58
N observations	635	261	188	130
Years of schooling	0.064 (11)	0.080 (8)	0.061 (8.7)	0.075 (9.2)

Notes: The t statistics are in parentheses.

Source: EPA, Encuesta Piloto de Ingresos, 1990; reproduced in Alba-Ramirez and San Segundo (1995, p. 161), Table 6.

To control for sample selection bias, Ramirez and Segundo (1995) obtain Probit estimates of employment status. Table 7 reports in column 1 the results when the dependent variable takes on the value of 1 if the worker is self employed and 0 otherwise. See also Tables 8 and 9.

Table 7: Probit estimates of employment status in Spain

	Coeff. (1)	**t**	**Coeff. (2)**	**t**
Female	0.009	0.1	-0.310	-2.7
Primary	0.241	1.9	0.307	1.6
Pre-secondary	0.106	0.6	0.492	2.1
Secondary	0.060	0.4	1.050	4.7
University	0.191	1.0	1.350	6.2
Age	0.026	7.4	0.022	4.9
Constant	-1.047	-4.6	-2.226	-6.7
Log likelihood	-740.5		-418.1	
N observations	1740		1313	

Notes: 1. In regression 1, the dependent variable takes on 1 if the worker is self-employed. In regression 2, the dependent variable takes on 1 if the worker is employed in the public sector. 2. Eight industry dummies have been included in the regressions. The t statistics are in parentheses.

Source: EPA, Encuesta Piloto de Ingresos, 1990; reproduced in Alba-Ramirez and San Segundo (1995, p. 162), Table 7.

Table 8: The returns to education among self-employed workers after controlling for self-selection, in Spain

	Coeff. (1)		t	Coeff. (2)		t
Experience	0.043		2.63	0.032		1.84
Experience	-0.001		-2.12	-0.000		-1.30
Years of	0.090		5.88			
schooling				0.525		4.03
Primary				0.789		4.05
Pre-secondary				0.695		3.43
Secondary				1.492		6.45
University				0.673		4.25
Ln hours	0.604		3.84	-0.182		-3.07
worked	-0.147		-2.52	7.794		11.33
Mills	7.820	0.15	11.24		0.17	
Constant		356			356	
R						
N observations						

Notes: The t statistics are in parentheses.

Source: EPA, Encuesta Piloto de Ingresos, 1990; reproduced in Alba-Ramirez and San Segundo (1995, p. 163), Table 8.

Table 9: The returns to education among public sector workers after controlling for self-selection, in Spain

	Coeff. (1)		t	Coeff. (2)		t
Experience	0.032		5.13	0.030		4.52
Experience	-0.000		-4.18	-0.000		-3.63
Years of	0.063		8.17			
schooling				0.174		1.65
Primary				0.243		1.82
Pre-secondary				0.460		3.63
Secondary				0.749		5.75
University	0.789		6.82	0.832		7.05
Ln hours	0.003		0.58	0.005		1.06
worked	7.794		17.88	7.927		17.98
Mills		0.42			0.41	
Constant		318			318	
R						
N observations						

Notes: The t statistics are in parentheses.

Source: EPA, Encuesta Piloto de Ingresos, 1990; reproduced in Alba-Ramirez and San Segundo (1995, p. 163), Table 9.

Table 10: Marginal rates of returns to education by educational level, in Spain in 1981 and 1991 (%)

	1981 Total	1981 Women	1981 Men	1991 Total	1991 Women	1991 Men
Lower secondary/primary	8.9	9.1	9.1	4.2	6.6	4.1
Acad. upper sec./lower sec.	4.3	4.6	4.4	6.0	6.2	6.1
Voc. upper sec./lower sec.	3.3	*	2.8	4.8	3.7	5.1
H. ed. (short cycle)/acad. upper sec.	3.9	2.2	4.5	7.3	8.2	7.6
H. ed. (long cycle)/h. ed. (short cycle)	10.1	5.5	9.2	9.3	11.0	8.5

Notes: * Not statistically different from zero.

Source: Vila and Mora (1998, p. 176), Table 4.

The results suggest that university workers and primary school workers are likey to be employed. In column 2 of the same table, results are reported for probit model estimation in which the dependent variable takes on the value of 1 if the worker is employed in the public sector and zero otherwise. In this case, university workers are the most likely to be employed in the public sector.

Table 11: Expected earnings differentials by educational level, in Spain in 1981 and 1991 (%)

Educational level	1981 Total	1981 Women	1981 Men	1991 Total	1991 Women	1991 Men
Lower secondary	30.4	31.3	31.4	13.4	21.7	13.1
Acad. upper secondary	55.0	57.6	56.5	44.2	55.6	44.6
Vocational upper secondary	43.9	*	42.8	37.6	35.9	38.8
Higher ed. (short cycle)	74.2	68.1	79.2	79.6	99.3	81.6
Higher ed. (long cycle)	113.2	87.7	115.3	116.1	148.2	115.4

Notes: * Not statistically different from zero.

Source: Vila and Mora (1998, p. 177), Table 5.

In order to correct for the possibility that there might be self-selection of individuals into educational groups, which may bias the estimates of the rate of return to education investment, the earnings equation is augmented with the inverse Mills ratio. The results are reported in Tables 8 and 9; see also Tables 10 and 11. It is found that the self-selection bias is highest for lower levels of education; thus our results about the rate of return to university education are not very biased.

Evidence on Slovenia

Stanovnik (1997) estimates a Mincerian earnings function on Slovenia's data. The results reported in Table 12 show that the estimated rates of return for all educational levels and for both men and women were rather low in 1978 and 1983. This can be explained by the fact that Slovenia was a tightly regulated labour market with direct state interference and thus small wage differentials. The rates of return to education increased in 1993 due to deregulation of the labour market and overall financial liberalization.

Table 12: Percent increase in earnings for various levels of education in Slovenia

1978	1983	1993
14.3	8.1	25.2
11.7	13.2	23.4
11.0	12.5	-0.2
6.6	7.0	16.5

Source: Stanovnik (1997, p. 448), Table 5.

Evidence on Education and Race: South Africa

The evidence found by Crouch (1996) on South Africa is reported in Table 13, where the measured rates of return are shown for various racial groups, including African, coloured, Indian, white and the entire sample. It is shown that the pattern of rates of return for the white population is characterized by roughly equal rates of return at the margin between various types of education; this suggests adequate allocation of resources for this racial group at all levels.

Table 13: Measured rates of return to education in South Africa (percentages)

	Secondary with historical cost data	Secondary with current cost data	University with current cost data	Technical college with current cost data
African	17	15	9	6
Colored	13	9	6	-
Indian	26	26	9	-
White	10	11	9	10
All	21	19	10	7
All (AP)	13	13	9	11

Source: Crouch (1996, p. 129) Table 4.

However, it is shown that for the African population, there is relatively high returns available in secondary education, significantly lower returns at university, and very low social returns in vocational and technical education. Overall, therefore, the white population is still favoured at the expense of the black population, resulting in differential rates of return to education across the races.

Evidence on Israel

Weisberg (1995) considers one important question with respect to rates of return to education in Israel: are the relative returns to the same educational level higher for 1983 compared to 1974? Do the differences in the returns between the two years increase with higher educational levels?

The evidence obtained by Weisberg (1995) on Israel is reported in Table 14. The results show that returns to education, as compared to the returns to the base group of 0-8 years of schooling, were higher in 1983 than in 1974. This is consistent for all levels of education and for all age groups.

Table 14: Coefficients[1] of earnings returns to education[2]

Age group	9-12	13-16	17+	N
		1974 Mobility survey Years of schooling		
25-29	0.1068*	0.3394	0.1545*	108
30-39	0.1565	0.5553	0.8281	190
40-49	0.3433	0.5123	0.7741	209
50-59	0.2283	0.3719	1.0199	221
60-65	0.1596*	0.2396*	0.2857*	140
Sample size				868
		1983 Census Years of schooling		
25-29	0.2056	0.5322	0.5125	7866
30-39	0.3024	0.8437	1.0976	22.287
40-49	0.3553	0.9346	1.2158	14.089
50-59	0.3735	0.9472	1.3540	12.687
60-65	0.4305	0.9273	1.4286	5484
Sample size				62.413

Notes:

[1] All coefficients are significant at the 0.05 level, except those marked with an asterisk (*).
[2] These standardized earnings returns express differences between the returns of the given educational level and the returns to 0-8 years of schooling, which serves as the reference group. The earnings returns were computed using the coefficients of education variables (b), in the semi-logarithmic earnings equations, for each age-group separately, by the formula: $e^{(h-1)}$. (where b is the appropriate regression coefficient).

Source: Weisberg (1995, p. 150), Table 2.

The mean score of the returns was nearly double in 1983 (m = 0.764) than that in 1974 (m = 0.405). The differences in returns within each of the corresponding sub-groups increased from 1974 to 1983, with the rise in the level of schooling. The difference is greater for higher levels of education, whereas it is minor for the 9-12 years of schooling group.

What Do We Conclude About Rates of Return to Education Throughout the World?

Existing research on rates of return to education throughout the world leads to the following general conclusions (see Pscharopoulus 1989, 1981; Siphambe, 2000):

i. The returns to education are higher in the private sector than the public sector. This result supports the argument that education enhances productivity in the private sector. The result also supports the widespread view that the lower returns in the public sector may be explained by the screening role and compressed pay structure in that sector.
ii. The returns to education decline by level of schooling, thus reflecting diminishing returns to schooling. This means that returns to primary schooling are higher than secondary education, and the latter is higher than returns to university education.
iii. In general, the pattern of rates of return remains stable as countries develop with only relatively minor declines. However, in Botswana it has been shown that as the economy developed and the education system expanded, the rates of return to education fell (Siphambe, 2000).
iv. Rates of return in developing countries, especially Africa, are higher than in advanced market economies.
v. Rates of return to education for females are higher than for males because of their foregone earnings, as reflected by their lower wages. This result emphasizes the point that women are paid less than men despite being on average more highly educated than men.
vi. The evidence from South Africa shows that the white population is still favoured at the expense of the black population, resulting in differential rates of return to education across the races.

However, these conclusions do not show the country specific experience with rates of return to education.

CONCLUSION AND POLICY IMPLICATIONS

In general, the rates of return provide useful input into educational planning and policy making. Therefore, the conclusions from the empirical studies cited in this paper can guide us to contemplate some policy implications. Four policy implications are important in the context of business school education in Africa.

First, the rising pattern of private sector rates of return to education suggests that there is room for private financing of education at the university level, including business school education. In the context of business schools in Africa, a shift of part of the cost burden from the state to the individual and his/her family is not likely to create a disincentive of investing in business school education given the high private rates of education at the

university level. The government can therefore implement a cost recovery programme at the business school education level in the form of grants or loan schemes. It is perhaps not surprising that multilateral donor organizations tend to strongly recommend on universal primary school education, at the lower end of the education system, but insist on cost-recovery and withdraw of government funding at the university level.

Second, the fall in rates of return to university education in Botswana was mainly due to a mismatch between demand and supply for labour during the swings in the country's growth cycle. When supply outstrips demand considerably, business school educational qualifications may be devalued in the labour market. The policy implication is that employment creation has to be pursued vigorously.

Third, the results show that there is serious equity and gender bias in university education. There is therefore need to address the equity and gender issues when private-public partnerships and cost recovery policies are implemented in developing countries, especially where such biases are pronounced. In the context of business school education in Africa, the implementation of cost reduction or cost-sharing schemes must be taken with caution. Government and business school managers must put in place a system to identify those students who, purely on individual need, are eligible for grants rather than loans in order to address gender and equity bias.

Fourth, in the context of business school education in Africa, the policy implications of the evidence from South Africa is that some mechanisms must be designed to reverse the situation where the white population is still favoured at the expense of the black population, resulting in differential rates of return to education across the races. This requires a combination of a shift in budgetary allocation to university education in various parts of the country and the creation of a special endowment fund for talented young black South Africans who wish to pursue business education.

However, caution must be exercised here. To be able to proceed and transform these policy implications into policy recommendations, further empirical research is necessary which will exclusively focus on business schools in African economies. One promising research idea (PRI) is to estimate perceived rather than actual (*ex-ante* rather than *ex-post*) rates of return to business school education in African countries, using both the elaborate and short-cut methods. The estimates would give valuable information in its own right, especially for

policy purposes, by giving a picture of student's perception of the labour market vis-à-vis their career aspirations. In addition the estimates can be used in logistic regression analysis in order to study the effect of economic as well non-economic considerations on the decision of potential entrants to university business school education. The idea is to establish whether (or not) the mean rate of return to business school education estimated by business school candidates is considerably higher than that perceived by labour market entrants, and thus whether human capital theory hold for Africa with respect to business school education. The second promising research idea is to fully incorporate a measure of the "culture factor" into existing models that seek to explain not only the behaviour of university applicants but also the equity and gender bias, and hence the economic rates of return to university education in Africa. So factor, existing theoretical and empirical studies have neither controlled for, nor duly incorporated, the culture factor. Existing trends also suggest that there are other factors, such as technical change and globalisation, which are important but which have not been incorporated into existing models.

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Notes

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[2] Business school education is different from other types of university education in the sense that it has two clearly identifiable tiers. Tier I relates to undergraduate business school education which admits applicants after their high school education. Tier II comprises postgraduate education, especially at the MBA level, which takes on a substantial number of people who are crossing from other disciplines (such as law and engineering) to business education.