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Using and Abusing Rates of Return:
A Critique of the World Bank's 1995 Education
Sector Review

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discussion and critical comment

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**USING AND ABUSING RATES OF RETURN : A CRITIQUE OF THE WORLD
BANK'S 1995 EDUCATION SECTOR REVIEW**

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I. INTRODUCTION

As is the case nowadays with so many areas of development policy, the World Bank is playing an increasingly influential role in shaping the education policy agendas of governments in developing countries as well as those of the donor agencies. To some extent, this is a consequence of the Bank's own rapidly growing financial involvement in the education sector. Lending for education projects has grown eightfold during the last twenty years. In 1994, this amounted to almost US\$2.0 billion, over 25 per cent of all bilateral and multilateral donor assistance to education in developing countries. As the Bank itself admits, this "volume of finance gives it a leadership role among donors" (IBRD,1995:112). However, the Bank's role is not only financial but also intellectual. In particular, a rapidly growing proportion of policy-related education research is now being undertaken either by the Bank's own professional staff of economists, educationalists and other human resource development specialists or by consultants and contract researchers.

In short, what the Bank has to say about education policy in developing countries is, like it or not, extremely important and must, therefore, be scrutinised very carefully. It is precisely for this reason that the World Bank's recently published Education Sector Review, "Priorities and Strategies for Education" is such a key document not just for the Bank itself but for all other stakeholders involved with educational provision in developing countries.¹ Indeed, the Review states quite explicitly that the Bank sees its main role as providing "advice designed to help governments develop their own education policies suitable for the circumstance of their own countries" (p.112).²

Most of the policy issues and priorities that so preoccupied the authors of the Bank's previous Education Sector Policy Papers in 1970, 1974 and 1980 are revisited and reaffirmed in this latest Review. However, one very notable difference is the much greater emphasis given to measuring the outcomes of education expenditures. Giving "greater attention to learning and labour market outcomes" is singled out as one of the "six key reforms" where the Bank believes the roles of governments needs to be redefined and a whole chapter of the Review is devoted to this issue.³

In considering economic (as opposed to learning) outcomes, pride of place is given to rates of return analysis. "Economic analysis in general and rates of return analysis in particular is a diagnostic tool with which to start the process of setting priorities and considering alternative

ways of achieving objectives within a sectoral approach" (p.61). Whereas rates of return are mentioned only once in the 1980 Sector Policy Paper, the Review, in its 114 pages, refers specifically to rates of return to education (henceforth RORE) of one sort or another over 30 times in order to substantiate, support and qualify a number of key statements about different types of educational investments and the appropriate roles of the public and private sectors. In particular, the following three key policy reforms rely very heavily on rates of return analysis for their intellectual credibility: a higher priority for education; public investment focused on basic education, coupled with more reliance on household financing for higher education; and a greater attention to outcomes.⁴

The purpose of this paper is twofold. First, to examine in some detail how the Review draws on RORE research to support the two main substantive policy recommendations concerning the overall level of government support to education and funding priorities within the education sector itself. And secondly, to question the role of RORE analysis as an economic tool to measure both the *ex post* and *ex ante* outcomes of education investments. There are, of course, a wide range of other policy issues dealt with by the Review that are not directly related to rates of return research that extend beyond the limited objectives of this paper.

II. A HIGHER PRIORITY FOR EDUCATION

Chapter I of the Review provides a brief overview of the role of education in promoting consistently high and sustainable economic growth and in alleviating poverty. This discussion underpins the first of the six key policy reforms recommended by the Review, namely that education "deserves a higher priority from governments as a whole" (p. 60). Surprisingly, just what is meant by "higher priority" or "more attention" is never precisely specified but the Review states authoritatively that social rates of return to education are "very high" in low and middle income developing countries and certainly exceed the long run opportunity costs of capital (which, according to the Review, is "usually estimated at 8-10 per cent" (p.3)). The policy implication would appear to be, therefore, that governments should invest more in education, if necessary, by reallocating resources from other, socially less profitable areas of public expenditure.

The Review reproduces George Psacharopoulos' widely cited and generally accepted social and private ROREs by main level of education (viz primary, secondary, and higher) and geographical region (See Psacharopoulos, 1994). However, a cursory examination of the full-method⁵ ROREs for each individual country that Psacharopoulos himself uses to calculate

aggregate estimates shows that educational investments are far from being so universally profitable. Among the 45 developing countries where data are available, 29 (64.4 per cent) have social ROREs to at least one level of education that are 10 per cent or lower and, in all but one country, at least one education level has a social RORE below 15 per cent. While the alternative Mincerian method overestimates ROREs (because the direct costs of education are not included), in only 25 of the 62 countries where studies have been undertaken does the coefficient on the years of schooling variable exceed 10 per cent. Thus, even if it is assumed that the country RORE estimates presented by Psacharopoulos are accurate, it is still not the case that ROREs are universally "very high" in middle and low income developing countries either in absolute terms or in relation to the social opportunity costs of capital.

Taking into account the serious theoretical and empirical deficiencies of many RORE studies for developing countries further calls into question the Review's conclusions about the overall social profitability of education investments (See Bennell 1995a and 1996). In particular, omitted variable and sample selectivity biases result in ROREs that are frequently seriously over-estimated. The first of these estimate biases is endemic because good quality data are rarely available in developing countries that enable the net income benefits arising from specific educational investments to be properly adjusted for a variety of other factors that independently influence individual incomes. Most critical among these are natural ability, socio-economic background, and economic sector. Another obvious adjustment variable that is frequently not included in RORE calculations is the incidence of unemployment among the relevant group of student graduates. If youth unemployment is high, failure to take this into account seriously biases RORE estimates upwards.

It is also important to emphasise that even where studies do attempt to make these income adjustments, for the sake of methodological consistency, Psacharopoulos presents (wherever possible) unadjusted country ROREs in his global reviews. But, as Table 1 clearly shows, the differences between adjusted and unadjusted ROREs can be very large indeed. For example, in five out of the six countries where data are available (ie. Ethiopia, India, Kenya, Pakistan and Thailand), the inclusion of key adjustment factors reduces social ROREs to primary education by at least one-third.⁶

Similar adjustment issues arise with regard to education costs. In particular, the opportunity costs of attendance at primary schools are usually under-estimated mainly because the prevailing wage rates for the relevant age cohorts are used rather than the value of production actually forgone. In low income developing economies where subsistence household

Table 1 : Unadjusted and adjusted social ROREs by level of education in selected countries.

Country	Year Data	Unadjusted				Adjusted			
		P	LS	US	H	P	LS	US	H
Ethiopia	1972	20.3	28.6	18.7	9.7	14.7	24.6	14.5	8.9
Ghana	1969	-	11.5	18.0	16.5	-	11.5	17.6	15.4
Kenya	1969	21.7	23.6	14.7	8.8	5.0	15.0	15.0	9.0
Nigeria	1969	-	11.0	22.0	17.0	-	6.0	20.0	16.0
Tanzania	1985	-	-	-	-	-	(5.0)	-	-
India	1978	29.3	19.8	13.8	12.2	7.0	6.3	1.6	6.3
Pakistan	1975	14.0	(10.0)		9.0	10.0	(8.0)		7.0
Philippines	1972	7.0	(6.5)		8.5	5.0	(6.0)		7.5
Thailand	1970	87.5	(45.1)		22.0	34.3	(14.9)		9.3

Sources: Bennell, 1996 (Africa) and Bennell, 1995a (Asia).

production typically predominates, this is a major factor which strongly influences parental decisions about schooling for their children. In over one half of the country studies in both Sub-Saharan Africa and Asia that Psacharopoulos uses to calculate aggregate ROREs, their authors assume that the opportunity cost of primary education is zero or close to zero. However, even seemingly minor changes in opportunity costs for primary education can dramatically effect ROREs. In sub-Saharan Africa, for example, Table 2 shows that if it is assumed that opportunity costs are zero then the aggregate social RORE to primary education for the seven African countries under scrutiny is almost 100 per cent. If, on the other hand, it is assumed that opportunity costs are one-third of the wage income of individuals with no education, this reduces the aggregate RORE to just 30.2 per cent.

Sample selectivity bias is also a serious problem in most RORE studies in developing countries. This is because the wage incomes of individuals working in the formal sector are usually taken as the indicator of benefit arising from educational investments. However, in the large majority of low and even middle income developing countries, only a small proportion of the economically active population are in wage employment. Most are engaged in household production in rural areas where, typically, per capita incomes are much lower than formal sector wage levels. Thus, using the wage incomes of the small majority of school leavers who manage to find a proper job in the formal sector could seriously bias ROREs upwards.

Table 2 : Rates of return to primary education by level of income forgone

Country	Income forgone in primary education as % of no education income					
	0.0	5.0	10.0	20.0	33.3	50.0
Burkina Faso	200.0	85.4	54.3	31.4	20.1	13.8
Liberia	162.7	138.9	121.2	96.5	76.0	60.0
Botswana	56.7	50.1	44.8	37.1	30.1	24.4
Uganda	117.0	49.0	31.0	17.9	11.4	7.9
Ethiopia	106.7	92.1	81.0	65.3	51.2	41.2
Somalia	25.5	81.2	18.1	14.0	11.4	8.4
Malawi	14.7	-	-	-	11.1	-
Average	97.6	72.8	58.4	43.7	30.2	26.0

Source: Bennell, 1996.

Finally, reliance on very out of date cross sectional survey data is another major weakness of many RORE studies. Among the studies cited by Psacharopoulos, 62 and 24 per cent use data that are over ten and twenty years old respectively. Except for a handful of high performing economies, the scarcity values of education at all levels have generally declined quite appreciably since the 1960s and 1970s, especially in sub-Saharan Africa where the real value of most wage incomes is typically only one-third to one-half of their levels at political independence. Consequently, including old RORE studies also seriously biases upwards social and private ROREs.

The inclusion of a variety of educational externalities would undoubtedly increase social ROREs to all levels of education. However, with regard to conventional RORE methodologies, (which are generally unable to take into account the value of these externalities), an equally plausible proposition is that, if all the above biases are taken into consideration, currently prevailing social ROREs could be well below the social opportunity costs of capital in the majority of developing countries.

II. PUBLIC INVESTMENT FOCUSED ON BASIC EDUCATION, COUPLED WITH MORE RELIANCE ON HOUSEHOLD FINANCING FOR HIGHER EDUCATION

The Review reiterates (at least six times) the now conventional wisdom concerning the relative profitability of the three main levels of education: "In general, rates of return are highest for primary education, followed by secondary and then higher, in economies with less than universal primary and secondary education" (p.3). Consequently, "because rates of return to investments in basic education are basically (sic) greater than those to higher education in low and middle income countries, basic education (primary and lower secondary) ought usually to be the top priority for public spending in education" (p.31).

With most governments already committing well over three-quarters of their recurrent education budgets to primary and secondary education, it could be argued that this policy recommendation amounts to little more than preaching to the converted.⁷ What is clear, however, is that in comparison to the 1980 Sector Policy Paper, the Review places far more emphasis on basic education as the number one priority for government spending and concomitantly de-emphasises the relative importance of public funding of higher education and vocational education and training of whatever type. Whereas in 1980 it was clearly stated that the Bank's "more recent concern about expanding basic and primary education (sic), does not reduce its interest in developing critical manpower" (IBRD,1980:9), the Review endorses the Bank's current aversion to the public funding of most forms of vocational education and training and the promotion of maximum cost recovery measures for higher education.

For the World Bank, therefore, the really critical policy challenge is to increase even further the share of public expenditure allocated to basic education by reducing the level of subsidisation to higher education. "Spending more public funds per higher education student than per primary student is inefficient in most countries because social rates of return are generally lower to higher education than to primary education" (p.38). It is also inequitable because "higher education students come disproportionately from richer families." (p.38).

In support of these policy recommendations, the Review draws on three types of evidence from RORE research: (i) aggregate ROREs by level of education for each of the main geographical areas; (ii) comparative studies of ROREs to general academic and technical secondary education; and (iii) the degree of subsidisation of different levels of education. We shall consider each of these in turn.

(i) ROREs by level of education

The very first table⁸ in the Review presents Psacharopoulos' most recent (1994) set of aggregate ROREs by level of education and geographical region.⁹ As has been done so often during the last fifteen years or so, these figures are treated as seemingly incontrovertible evidence of the superiority of primary education as the most socially profitable level of education in developing countries. However, even if one is prepared to accept the RORE country estimates at their (mainly unadjusted) face value, it is still not the case that the ROREs to primary education are highest in most developing countries. It can be observed in Table 3 that among the 34 (developing) country studies that have complete sets of social ROREs by level of education, in only half of them is the social RORE to primary education significantly (ie. more than two percentage points) higher than either secondary or higher education.

The pervasiveness of any universal pattern of ROREs by level of education is undermined still further once the various data and methodology problems discussed earlier are taken into account. For the following reasons, most studies seriously overestimate ROREs to primary education while at the same time under-estimate ROREs to higher education. First, the inclusion of the full range of income and costs adjustment factors tends to lower primary ROREs considerably more than the corresponding rates of return to secondary and higher education. Natural ability, in particular, tends to be more important as an explanatory factor for income variations among individuals with basic education than it does among those with upper secondary and higher education.¹⁰ Adjusting for labour force participation, unemployment, mortality, and drop-out and repetition rates usually have similar differential impacts on ROREs by level of education. The fact also that in most countries the large majority of primary school leavers are employed in relatively low income earning activities in smallholder agriculture and the informal sector whereas most higher education graduates do eventually find some form of wage employment must also be taken into consideration.

Secondly, assumptions about the opportunity costs of each level of education usually bias ROREs in favour of primary education. As mentioned earlier, in the absence of hard data, the majority of RORE country studies ignore the actual value of the contributions made by school children to household production and rely instead on the prevailing wage rates in the relevant age cohorts. For most countries, this rate is taken to be zero for primary education. In contrast, the opportunity costs of higher education are assumed to be the average wage incomes of upper secondary school leavers in the 18-25 age cohort. These are rarely adjusted

Table 3 : Rates of return to primary education vis-à-vis other education levels in developing countries, various years.

RORE to primary education		
REGION	HIGHEST	NOT SIGNIFICANTLY HIGHER *
<u>Sub-Saharan Africa</u>	Liberia Nigeria South Africa Uganda (4)	Botswana Burkina Faso Ethiopia Ghana Lesotho Malawi Sierra Leone Somalia Zimbabwe (9)
<u>Latin America and Caribbean</u>	Brazil Columbia El Salvador Mexico Paraguay Uruguay Venezuela (7)	Argentina Bolivia Chile Costa Rica Ecuador (S) Honduras Puerto Rico (7)
<u>North Africa and Middle East</u>	Morocco (1)	Iran Yemen (2)
<u>Asia</u>	India Pakistan Philippines Taiwan Thailand (5)	Papua New Guinea Singapore (2)
GRAND TOTAL:	(17)	(17)

Source: Extracted from Psacharopoulos, 1994.

Notes: * Not more than two percentage points.

for unemployment despite the fact that it is well known that genuine open unemployment is concentrated among educated school leavers in most developing countries (see Turnham, 1993). If, in fact, unemployed upper secondary school leavers in a particular country are: (i) at least equal in number to total higher education enrolments; (ii) are as equally productive workers as higher education students in the jobs available for secondary school leavers; and (iii) remain unemployed for at least the duration of higher education courses, then the opportunity costs of higher education are effectively zero. In other words, enrolling in higher education does not seriously reduce societal income when there already exists a large pool of similarly educated individuals who are openly unemployed and are actively looking for jobs. The same argument (which is merely a direct application of the job competition model) applies for secondary education although children at this level are more likely to be involved in household production activities. Significantly reducing or even eliminating opportunity costs to higher and, to a lesser extent, secondary education has a dramatic (upward) effect on social ROREs because these costs typically comprise between one-half and two-thirds of total education costs.

One suspects that the Review's toning down of the World Bank's very strong emphasis on primary education during the 1980s and early 1990s coupled with the broadening of the central priority focus to include lower secondary education is partly the consequence of a growing uneasiness among Bank economists with the flimsiness of the available RORE evidence. Certainly, from the early 1980s onwards, Bank lending for primary education increased very rapidly while the proportion of total lending allocated to secondary education declined. Most other donors followed the Bank's lead and shifted their own education programmes towards much greater support for primary education. The 1995 Review's renewed emphasis on lower secondary education as part of basic education represents therefore a clear reorientation of priorities with the Bank now seeking to re-establish lower secondary education as a central and rapidly growing part of its overall education portfolio. Interestingly, though, the Review does not present any evidence to show that the social ROREs to lower secondary education are relatively attractive and thus justify higher priority. Certainly, the limited RORE evidence that is available does not provide unambiguous support for lower secondary education as a first priority investment (see Table 4).

The Review is also mainly silent about upper secondary education. The only recommendation that is made with respect to this level of schooling concerns cost recovery: "Since upper secondary school graduates will have higher earnings than those who leave school earlier, the selective charging of fees for public secondary schooling (sic) can help to increase enrolments" (p.71).¹¹ And yet, it is clear that with rapidly escalating job competition for formal sector jobs

in most developing countries, it is access to upper secondary schooling that subsequently determines an individual's subsequent chances of obtaining higher education. This factor coupled with its relatively short duration (2-3 years) yields social ROREs that are frequently the highest among the four main education levels (see Table 4). If, as the Review so repetitively argues, social ROREs are to be the main criterion for public sector resource allocations to education, then upper secondary education could well be a very high priority in many developing countries.

Table 4 : Social rates of return to primary, lower and upper secondary and university education.

Country	Year Data	Primary	Lower Secondary	Upper Secondary	University
AFRICA					
Botswana	1983	42.0	41.0	62.0	15.0
Burkina Faso	1982	20.1	18.4	5.8	21.3
Ethiopia	1971	20.3	28.6	18.7	9.7
Kenya	1966	5.0	15.0	15.0	9.0
Malawi	1982	14.7	21.2	15.2	11.5
Senegal	1985	23.0	7.7	12.0	8.9
Zambia	1983	8.3	37.6	47.3	5.7
Zimbabwe	M 1986	11.3	22.8	61.5	1.9
ASIA					
Indonesia	1989	-	14.0	11.0	5.0
	1978	-	0.5	19.0	-
	1978	21.9	10.8	29.3*	14.8
South Korea	M 1986	-	2.5	8.8	11.2
	F 1986	-	-2.7	7.2	11.8
	1973	15.5	14.4	12.2	8.8
	1971	-	8.2	14.6	9.3
Thailand	1970	17.0†	10.0	10.0	7.0

Source: Bennell, 1996 and Bennell 1995a.

Notes: M = males; F = females.

* Upper secondary versus primary education.

† Average of ROREs for lower and upper primary.

With relatively high social ROREs to basic education, the Review recommends that "basic education ought to be the priority for public spending in those countries that have yet to achieve near universal enrolment at this level" (p.31). By implication, therefore, "countries that

achieve near universal enrolment at this level" (p.31). By implication, therefore, "countries that have achieved universal basic education are likely to consider upper secondary and higher education as priorities for new public spending" (p.64).¹² Again, one suspects that the linking of ROREs with enrolments in this way is symptomatic of a certain unease among the Review authors with relying too much on education cost-benefit analysis and RORE estimates in particular in establishing educational priorities. Strictly speaking, as long as one level of education has a higher social RORE than another then, regardless of their respective enrolment ratios, the former should receive higher priority in the allocation of new investment resources. Certainly, the repeated implication made by the Review that there is any correlation between ROREs and enrolment ratios is quite incorrect.¹³

In essence, underpinning the Review's approach to education priorities appears to be little more than a simple, sequential imperative that the overriding priority is to achieve universal enrolments at primary and then lower secondary education after which governments can give greater attention to upper secondary and higher education as well as, more generally, seeking to improve educational quality at all levels. In a similar vein, the Review recommends that countries should follow "the East Asian pattern of focusing public spending on lower levels of education and of increasing its internal efficiency" (p.40).¹⁴ However, it is significant that the Review makes no attempt to relate this allegedly East Asian pattern of education resource allocation with any supportive pattern of social ROREs by level of education. As usual, the data are fragmentary, but it can be observed in Table 5 that only in two of the eight

Table 5 : Social rates of return by level of education in the East Asian 'miracle' countries

Country	Year data	Social			Private		
		Primary	Secondary	Higher	Primary	Secondary	Higher
Hong Kong	1976	-	15.0	12.4	-	18.5	25.2
Singapore	1970	6.6	17.6	14.1	-	20.00	25.4
South Korea	1986	-	8.8	15.5	-	10.1	17.9
Taiwan	1972	27.0	12.3	17.7	50.0	12.7	15.8
Japan	1976	9.6	8.6	6.9	13.4	10.4	8.8
Indonesia	1989	-	11.0	5.0	-	-	-
Thailand	1970	17.0	10.0	7.0	27.0	11.0	11.0
Malaysia	1978	-	-	-	-	32.6	34.5

Source: Psacharopoulos, 1994.

Note: The ROREs for Thailand presented in the 1994 update are incorrect.

"miracle" East Asian countries (Taiwan and Thailand) do the ROREs by level of education straightforwardly correspond with a basic education first policy.

Finally, it would also appear that governments worldwide pay little or no attention to patterns of ROREs in deciding education priorities. The Review presents data that show that, even though social ROREs to primary education are highest in all (developing country) regions, during the 1980s the allocations of public recurrent expenditure to primary education fell everywhere (except South Asia) and correspondingly increased for secondary and/or higher education. In fact, in only South Asia does the change in public sector resource allocations to education in any way correspond to policy recommendations based on social ROREs by level of education. Faced with this reality (about which no explanations are proffered), it would appear that the Review adopts a more pragmatic, less purist approach by effectively making enrolment levels for basic education the dominant criterion for educational resource allocations.

(ii) Comparative rates of return to general and vocational secondary education.

The Review states unequivocally that "comparative evaluations of earlier more differentiated, general and vocational secondary school curriculum indicated clearly that the rates of return was much higher to investments in general than in vocational secondary education" (p.8). Psacharopoulos' 1987 review of comparative ROREs to academic and vocational secondary education is cited as the supportive reference for this unambiguous statement (See Psacharopoulos, 1987).

A detailed examination of the original studies that calculated RORE estimates for these types of education reveals that in the majority of countries the social ROREs to specialist vocational secondary schools are as high if not higher than the corresponding ROREs to general secondary education (see Table 6).¹⁵ RORE estimates for vocational education are also beset with identical data and methodology problems as those for general academic education. However, a particularly serious weakness is that where secondary education enrolment ratios are low (as is typically the case in low income developing countries), more able students are generally attracted and are able to gain admission to general academic secondary schools while less able, often poorer students are either streamed into vocational education or vocational education schools are chosen very much as a second-best option. It is obvious that simply comparing the ROREs of these two groups of students without making adjustments for their

differing population characteristics is likely to result in ROREs to general education that are strongly biased upwards. Needless to say, almost all of the RORE studies that have been undertaken are based on unadjusted comparisons of this kind (See Bennell, 1995b).

Table 6 : Social ROREs to general academic and vocational secondary education

Country	Year Data	Rates of Return	
		Academic	Vocational
<u>Psacharopoulos 1994 Review</u>			
Botswana *	1986	20.0	26.0
Colombia	1981	9.1	10.0
Indonesia	1986	12.0	14.0
Liberia	1983	20.0	14.0
Taiwan	1970	26.0	27.4
Tanzania	1982	6.3	3.7
Venezuela	1984	10.5	12.0
Mean:		14.8	15.3
<u>Other Studies</u>			
Brazil	1978	23.0	13.0
Colombia (male)	1965	26.5	35.4
Colombia (female)	1965	13.5	39.8
South Korea	1980	9.0	8.1
Philippines	1967	21.0	11.0
Thailand	1965	10.0	8.0
Mean:		17.2	19.2

Source: Bennell, 1995b.

Notes: Shading indicates studies where secondary general education is not significantly higher (i.e. more than two percentage points) than vocational secondary education.

Where more than one RORE set per country (i.e. Indonesia and Venezuela), the most recent estimates have been used.

* Botswana ROREs presented in the 1994 global update are incorrect.

The Review's sole recommendation for vocational education and training (VET) is breathtakingly simple: "Vocational and technical skills are best imparted in the workplace, with the direct involvement of the private sector in their provision, financing and governance, and preceded by general education" (p.49). This is in marked contrast to the 1980 Education Sector Policy Paper where it is stated that "to promote economic growth, it is essential to have a trained labour force equipped to handle technical and managerial problems...It is often necessary to provide vocational training in specialised skills when single employers lack the technical expertise, or find it uneconomic to employ training specialists" (*op.cit*:46). No doubt, much of the thinking behind the Review's dismissal of large scale government funding and direct provision of VET is based on the analysis and recommendations of the Bank's 1991 Policy Paper on VET which adopts a strongly market driven, enterprise based approach to training policy. But, significantly, even the authors of this paper are forced to admit that "in economies where the modern sector is small, economic policies distort the marketplace, and private training capacity is weak, the central government must play the central role in financing and providing training" (IBRD, 1991:265).

During the late 1970s, total Bank lending for vocational secondary and vocational post-secondary exceeded that for primary and general secondary. By 1990-94, however, the share of VET in total education sector lending had fallen from around 28 per cent in 1975-80 to little more than 5 per cent. It is clear, therefore, that the Review has to provide some justification for this dramatic shift of funding away from all forms of VET in support of basic education. Nonetheless, the Review's one line dismissal of the role of government with respect to VET hardly provides a meaningful basis for policy discussion of what is an extremely important and complex area of education provision.

(iii) The degree of subsidisation

The Review states that "the gap between the private and social returns to education is generally much greater in higher education than in basic education ie. the subsidy to the student is greatest compared to future earnings. This inefficiency can be overcome by charging the student, either from current family income or from future earnings by means of a loan scheme or through the tax system" (p.43). Once again, however, a cursory examination of RORE country estimates, flawed as they are, reveals that this assertion is not supported by the available evidence. Table 7 shows that, if a private-social RORE gap of at least five percentage points is taken as the yardstick, then among the 29 developing countries for which the

necessary data are available, in only 10 of them is the gap for higher education "much greater". What is perhaps even more striking is that the corresponding gap for primary education is "much greater" in an equal number of countries.

The subsidisation index¹⁶ for each level of education is also presented in Table 7. Using this index (and once again taking the RORE country estimates at their face value), in a majority of countries higher education appears to be most heavily subsidised. This conclusion needs, however, to be heavily qualified. First, there is a very sizeable minority of countries (ie. slightly more than one-third of the total), where this is not true. The large concentration of these countries in Asia is particularly noticeable. Second, given the enormous margins of error in calculating ROREs, there is another group of around eight countries where it is not possible to state with any real confidence that the differences in subsidisation rates between higher education and primary and/or secondary education are large enough to make any major policy inferences.¹⁷

This leaves only 10 countries (34.5 per cent of the total) where the level of subsidisation to higher education appears to be markedly higher. Six of these countries are in Africa. Indeed, the Review states that "the level of subsidisation of higher education is most acute in Africa" (p.31). However, in four of these countries (Ethiopia, Ghana, Lesotho, and Nigeria), the RORE estimates are derived from survey and other data from the 1960s and early 1970s. Not only has the scarcity value of university graduates fallen dramatically since then but generalised economic decline has meant that real incomes have plummeted as well. It is highly likely, therefore, that private ROREs to higher education have declined equally dramatically as has the gap between the social and private ROREs for this level of education.

More generally, observations of this kind call into question the Review's key assertion that high private ROREs to higher education "justify self-financing by families or students" (p.30). An equally plausible counter-proposition is that the almost universal failure to date of African governments to introduce significant cost-recovery measures for higher education stems in large part from the very low private ROREs rates to university education as graduates have filtered down into low paying occupations (particularly teaching among arts and humanities students) and real incomes in the public sector have fallen to a fraction of what they were during the 1960s and 1970s.

Third, even if it is accepted that private ROREs are as high as the Review alleges, just what scope actually exists for cost recovery measures at the higher education level. In other words, what sort of resources could be realistically generated for reallocation to basic education? The

Table 7: Private-social RORE gaps and subsidisation indexes by level of education

Region and Country	Primary		Secondary		Higher	
	Gap	Sub. Index	Gap	Sub. Index	Gap	Sub. Index
Asia and Middle East						
India	4.1	114	6.1	144	2.4	122
Pakistan	7.0	154	2.0	122	19.0	338
Papua New Guinea	24.4	291	22.2	214	14.6	274
Philippines	5.0	138	1.6	118	1.1	111
Taiwan	23.0	185	0.4	103	-1.9	-0.9
Thailand	25.5	184	1.5	215	3.0	127
Yemen	8.0	500	15.0	158	32.0	233
Africa						
Botswana	57.0	236	35.0	185	23.0	253
Ethiopia	14.7	172	4.1	122	17.7	283
Ghana	6.5	136	4.0	131	20.5	224
Lesotho	4.8	145	8.1	144	17.9	196
Liberia	58.0	242	13.5	179	9.0	213
Malawi	1.0	107	1.6	111	35.1	405
Nigeria	7.0	130	1.2	109	17.0	200
Somalia	39.3	291	2.6	125	13.3	167
Zimbabwe	5.4	148	0.9	102	9.4	219
Latin America and Caribbean						
Bolivia	0.5	105	0.8	110	3.3	125
Brazil	1.0	103	0.0	100	6.8	132
Chile	1.6	120	1.8	116	6.7	148
Colombia	7.7	139	3.3	129	7.7	155
Costa Rica	1.0	109	3.2	122	3.9	143
Ecuador	2.4	116	4.5	135	2.8	128
El Salvador	2.4	115	1.2	109	1.5	119
Honduras	0.7	104	3.6	118	7.0	137
Mexico	2.6	114	5.5	157	0.2	168
Paraguay	3.4	117	1.9	115	2.9	127
Puerto Rico	44.2	284	18.0	153	13.5	187
Uruguay	6.2	129	2.2	127	2.5	124
Venezuela	12.9	155	4.4	143	4.8	177

Source : Computed from Psacharopoulos, 1994.

Notes: Shading indicates country studies where private-social RORE gap to higher education is smaller than or equal to corresponding gaps for either primary or secondary education.

answer is almost certainly relatively little, at least in the short-medium term. Even in countries (such as Chile and South Korea) where cost recovery policies for higher education have been pursued most successfully, student fees never amount to more than 25 per cent of total operating expenditures. The corresponding figure for the industrialised countries taken as a whole was barely 10 per cent in 1990 (See Albrecht and Ziderman, 1992). Even if 25 per cent was politically attainable, once other non-instructional costs have been excluded, this would amount to no more than 2-4 per cent of total public recurrent expenditure on education in most countries.

Furthermore, not all higher education students and their families have the ability and/or willingness to pay, either directly or indirectly through loan schemes. The Review argues that "in most countries, (higher education) students come from relatively well off backgrounds and have high earning prospects, and so the bulk of financial assistance should be provided through loans rather than scholarships" (p.72) and conversely, "relatively fewer poor children attend secondary and higher education institutions" (p.36).¹⁸ Evidence from three Asian and three South American countries is presented to support these related assertions. Significantly, only one of this group (India) is a low income country. Certainly in Africa, virtually no recent empirical evidence is available (i.e. less than ten years old) that substantiates either of the Review's two key assertions that the majority of students are from relatively well off backgrounds and that their earning prospects are high.

Recent research in Zimbabwe highlights the need for caution in making bold assertions of this kind. Table 8 shows that students with professional family backgrounds comprised 34 per cent of the first year student intakes into the country's only university in 1990. With professionals comprising no more than 5 per cent of the economically active population, this group of students were massively over-represented (by a factor of around seven). However, the fact remains that the majority of students still came from peasant and working class family backgrounds. Even among the professional group, over 60% were the sons and daughters of school teachers. While those who have wage employment in Zimbabwe are relatively privileged, this does not automatically mean that their incomes are sufficient to cope with the financial burden of direct user charges or even a loan scheme.¹⁹ Even for Zimbabwean professionals, a loan covering 25 percent of the recurrent costs of university education would have been equivalent to almost 20 per cent of their annual median income in 1990 (see Table 8). For the lower income occupational groups, this rises to nearly 50 percent for semi-unskilled workers and nearly 200 per cent for peasant farmers. In short, therefore, even a government strongly committed to cost recovery would have no real alternative but to continue to meet all or most of the instruction costs of a very high proportion of higher

education students. This would significantly reduce potential expenditure savings from any cost recovery programme to probably well below two per cent of total public expenditure on education.

In the African context, Zimbabwe is somewhat of a special case because a relatively large proportion of the workforce is in wage employment (around 45 per cent according to the 1986-87 Labour Force Survey) and wage incomes (especially for professional and skilled workers) are high by African standards. Thus, the scope for cost recovery measures in elsewhere in Africa and other low income countries is likely to be even more limited.

Table 8: Socio-economic background of first year university students at University of Zimbabwe, 1990

Socio-economic background	% students	Father's median gross annual income (\$Z)	25% cost recovery as % income
Professional of which:	33.9		
Teachers	21.0	11,166	26.9
Other	12.9	16,049	18.7
Middle level of which:	25.4		
Mental	14.6	10,348	29.0
Manual	10.8	9,794	30.6
Semi-unskilled	17.0	6,392	46.9
Peasant farmers	17.6	1,538	195.1
Other: Self-employed	4.1	-	-
Retired	1.8	-	-

Source: Bennell and Ncube, 1994.

III GREATER ATTENTION TO OUTCOMES

The Review's recommendation that policy makers should pay more attention to economic and learning outcomes is not new. The 1991 VET Policy Paper also calls for "market oriented" manpower planning with primary reliance being placed on a limited number of labour market indicators or signals. These include changes in wages levels and inter-occupation/qualification

wage levels, unemployment and vacancy rates and, of course, social and private rates of return estimates for well defined groups of trainees (see also Psacharopoulos, 1994b).

While it is being claimed that "labour market analysis" of this kind is an altogether novel approach to education planning, for those familiar with the intellectual and policy debates of the last thirty years or so, it is clear that this is merely a slight recasting of the long standing and still largely unresolved debate between the adherents of the rates of return and the traditional manpower requirements approaches to education planning.

A thorough economic assessment of education outcomes is undeniably important for effective policy making. What is much less clear though is both the desirability and feasibility of relying so heavily on rates of return analysis in any priority setting process. The Review does indeed admit that there are numerous problems with deriving accurate, up to date ROREs. In particular, "rates of return are slow to respond to new developments in labour markets" (p.62) and, even more serious still, "they are not relevant when labour markets are not competitive or does not exist" (p.65) and "earnings do not reflect marginal productivity" (p.3).²⁰ Thus, it is "prudent to exercise caution and use good judgement when applying cost-benefit analysis" (p.62). At best, this framework "provides a key diagnostic tool that points policy makers in certain directions rather than a precision indicator for the setting of priorities" (p.62).

Because rate of return analysis is such an imprecise tool, the fundamental problem with even this very qualified commitment to ROREs is that education policy makers in developing countries could well be pointed in completely wrong directions. Deriving accurate, properly adjusted RORE estimates requires both very comprehensive and detailed data and high quality analytical econometric skills that are rarely available in low income and even middle income developing countries. In practice, many of the methodological problems are so intractable that there is little way of telling to what extent ROREs are biased upwards or downwards.

It is equally clear that the kind of economic analysis being advocated by the Review has rarely if ever been relied upon by education policy makers in OECD or the East Asian miracle countries. According to Psacharopoulos' 1994 global update, full method ROREs by level of education only appear to be available in three OECD countries (Greece, Japan and Spain) and all date from the 1970s. Closer to home, the Review says nothing about the rates of return or other economic outcomes of the World Bank's own multi-billion project portfolio in the education and training sectors. The 1980 Education Policy Paper did at least try to reach some broad conclusions about the effectiveness and efficiency of Bank interventions, albeit in a very cursory and general manner. The simple truth of the matter is that the Bank rarely evaluates

its own education investments in the way it is prescribing for others. For most projects, a minimum requirement for any evaluation of outcomes would be a fairly detailed tracer survey. While these surveys are relatively straightforward to design and implement, very few have ever been undertaken in developing countries mainly because they are often too costly and/or time consuming. Furthermore, while income and placement rate data from tracer surveys can be used to calculate ROREs, this can only be done using the shortcut method which is too crude and unreliable to make sensible investment decisions.

Another major weakness of the proposed emphasis on economic outcomes is that ex post ROREs for broad levels of education are, in fact, of little help in making ex ante decisions about specific education investments. The Review, on the other hand, is insistent that these type of ROREs are useful as general pointers in the process of establishing overall sub-sectoral priorities for education. In reality, however, the key decisions facing policy makers are about how to allocate incremental resources to education ie. at the margin. If, for example, a particular initiative to increase the efficiency of university education by cutting staff-student ratios and improving library facilities could significantly reduce unit costs per student as well as result in better quality graduates then this could well yield a social rate of return that is not only considerably higher than the average, ex post social RORE to university education as a whole but quite possibly the social ROREs to primary and secondary education as well. In its discussion of school-based vocational education, the Review itself makes a very similar point but fails to draw out the far reaching implications this has for the role of rate of return analysis in the priority setting process.

Having admitted that ROREs are of limited value in the priority setting process, the Review immediately proceeds as follows: "once priorities have been set and financing arrangements put in place, it is necessary to pay close attention to the costs of education investments and to attempt to reduce unit costs by improving efficiency. Cost-effectiveness analysis is necessary for this, comparing alternative ways of achieving the same result" (p.63) (underlining added). Implicit in this statement is the privileging of ex post ROREs by level of education as the key investment criterion and the effective exclusion of ex ante rates of return analysis for specific educational interventions. It is quite simply incorrect to argue that priorities for individual education investments can be established without at the same time paying close attention to their respective costs. The "result" (ie. the benefit) of a project or other kind of intervention can never form the sole basis for an investment decision. Cost-effectiveness analysis forms only a part of the ex ante evaluation of a specific investment proposal. More generally, this highlights the vagueness of the Review in addressing the central issue of how, in operational

terms, educational priorities should be set given that ex post ROREs can at best only act as broad indicators or general pointers.

IV CONCLUSION

In conclusion, the way in which rates of return analysis and evidence is used in the Education Sector Review to support key policy recommendations is seriously flawed. The foregoing discussion has identified a variety of both theoretical and empirical reasons why aggregate regional ROREs are particularly problematic. Even if the available ROREs for individual countries are accurate indicators of investment performance in the education sector, it is still the case that the intra-regional variations in these estimates are still enormous. Consequently, comparing aggregate ROREs for entire continents makes little sense. More generally, this calls into question the value of regional statistical indicators for all types of educational inputs and outputs which feature so centrally in the Review's analysis.

The Review's heavy reliance on rates of return is in many ways surprising because, in recent years, there have been strong indications that the World Bank along with the other major aid agencies have been placing much less emphasis on conventional RORE analysis in the appraisal and evaluation of human resource investments (and education in particular) and focusing far more on the very significant positive externalities arising from these investments, in particular with respect to girls and women.

Certainly, rates of return analysis has a potentially useful role to play in educational policy making in developing countries. However, it is essential that the very serious theoretical and empirical limitations of this type of analysis are clearly and fully recognised.

END NOTES

1. The major commitment of staff time and other resources to the Review process is a clear indication of the importance attached by the Bank to this policy document. It was written by a four person team (led by Nicholas Burnett) in the Economic and Social Policy Department. Fifteen other Bank staff and consultants made "major contributions" and "helpful comments on earlier drafts" were made by 19 individuals. In addition, a 17 member Bankwide Advisory Panel "provided invaluable assistance" and as well as an "external panel" consisting of ministers, senior officials and academics from 16 countries. Five editors prepared the Review for publication.

2. The Review somewhat disingenuously discounts the extent of World Bank policy leverage in developing countries arguing that total Bank lending only amounts to 0.6 per cent of total resource commitments to education (see p. 112). It is clear, however, that the Bank does exercise very considerable influence over government education policies (especially in very poor countries) that directly stems from its direct and indirect control of external resources.

3. Another interesting difference is the much greater number of references directly drawn upon or referred to in support of the Review's policy recommendations. The 1980 Policy Paper had barely 50 references whereas the 1995 Review has almost 300 (of which around one third are authored by Bank staff or consultants).

4. The other three key policy recommendations are greater attention to equity, greater household involvement, and more autonomous institutions. Rates of return analysis is not directly deployed in support of any of these recommendations.

5. ROREs can be derived using one of three basic methodologies. When individual earnings data are available (usually from Labour Force or Household Surveys or Population Censuses) to construct age-earnings profiles for each level of education, the standard internal rates of return equation can be used. The internal rate of return for a particular education or training investment is that rate of return that equalises the present value of expected benefits with the present value of costs or alternatively the rate of interest at which the difference between discounted benefits and costs is zero.

$$\sum_{t=0}^{t=n} \frac{Bt}{(1+r)^t} = \sum_{t=-p}^{t=0} \frac{C^t}{(1+r)^t}$$

where n is the number of years of post-education working life; and p is the number of years of education.

The short cut method is employed when the only earnings data available are average incomes by level of education. RORs are derived using the following equation:

$$r_s = w_s - w_{s-1} / t_s (c_s + w_{s-1})$$

where r_s is the rate of return to educational level s over education level s-1 as the control group; w_s and w_{s-1} are the mean annual salaries of graduates with s and s-1 level of education, respectively; c is the annual cost of per student of educational level s, and t_s is the

number of years for educational level s . It is argued that this method gives reasonably accurate ROREs when the post-education period is relatively long (at least thirty years) and where the pre- and post-education differentials remain relatively constant over time.

The basic Mincerian earnings function method takes the following form.

$$\ln y = b_0 + b_1s + b_2e + b_3e^2$$

where y is individual income; s is years of schooling; and e is years of work experience.

The extended earnings function method is used to estimate RORs by level of education by converting the continuous years of schooling variable into a series of dummy variables for each educational level. Additional independent variables such as ability, socio-economic background, and work characteristics can also be included in the earnings function.

6. Almost all the RORE estimates for South America and the Caribbean presented in Psacharopoulos' 1995 global review have been estimated by himself and his associate Ng. However, unadjusted ROREs are not presented in their paper (See Psacharopoulos and Ng, 1992).

7. Interestingly, the Review states that "the subsectoral allocation of (Bank) lending will usually follow countries' own resource allocation priorities. Primary and lower secondary education will therefore (sic) continue to be the highest priority sectors in the Bank's educational lending to countries" (p.99). Again, this is somewhat disingenuous. Certainly, lower secondary education has not been one of the Bank's highest priority sub-sectors in the recent past.

8. The Review contains a total of 18 tables and 26 figures.

9. This is because the range of natural abilities among students at the basic education level is generally greater than at the upper secondary and higher education levels.

10. Three similar reviews were published by Psacharopoulos in 1973, 1980 and 1985.

11. It is noticeable however that cost recovery for upper secondary education does not get the same headline treatment as higher education does.

12. In terms of the Bank's own educational priorities, this is clearly a very agnostic statement.

13. The Review's discussion of the relationship between gross enrolment ratios and the percentage of GNP allocated to education as an indicator of resource efficiency is equally confused. The Review argues that countries that have relatively low GERs but allocate the roughly same proportion of GNP to education as other countries are guilty of spending public resources inefficiently. However, the cost of education provision (per student) varies so much between countries, that is quite incorrect to use the proportion of GNP devoted to education as an indicator of efficiency.

14. The evidence presented in support of this alleged pattern both in the Review and the Bank's recent East Asia Miracle Study (See IBRD, 1993) is far from convincing. Data for only

one year late on in the development process (ie. 1985) are presented, and there is very considerable inter-country variation among the miracle countries themselves with respect to their budgetary allocations to higher education (ranging from 31 per cent in Singapore to 9 per cent in Indonesia). According to the Review's own figures, for the East Asia and Pacific region as a whole, the percentage allocation of public recurrent expenditure devoted to tertiary education was 14.8 per cent in 1990, higher than South Asia (13.9 per cent) and only slightly lower than the Middle East And North Africa region (16.1 per cent) and Europe and Central Asia (15.9 per cent).

15. This conclusion is further reinforced if the country studies where data are particularly poor viz Brazil and Liberia are excluded. This leaves only Philippines and Tanzania where ROREs to general secondary education are more than two percentage points greater than for vocational secondary education.

16. The rate of subsidisation for any particular level of education is $100 \cdot (\text{private RORE} - \text{social RORE}) / \text{social RORE}$.

17. The criterion for the selection of this group of countries is where the difference between the subsidisation indexes of primary and secondary and/or higher education is less than 20 percentage points.

18. In discussing "inequitable public spending", the Review argues that in "developing countries as a whole, 71 per cent of school-age children (those with primary or no schooling (sic)) share only 22 per cent of overall public resources, whereas 6 per cent (those with higher education) get 39 per cent of public resources" (p.36). But, clearly, because higher education is always far more costly than general schooling and not all children can progress to higher education, this type of funding inequity is largely unavoidable. As they stand, these figures do not show, as is implied in the Review, that rich households benefit more from higher education than poor ones.

19. Data are not available, but it is well known that the political, business, and professional elites in many African countries send their children to schools and universities in North America and Europe. Consequently, they will be unaffected by any cost recovery measures.

20. These three criticisms alone largely invalidate rates of return analysis in most developing countries where the public sector continues to dominate labour markets for professional and middle level occupations.

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