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Returns to Investment in Education

A Global Update

George Psacharopoulos

Primary education continues to yield high returns in developing countries, and the returns decline by the level of schooling and a country's per capita income.

This paper is a product of the Office of the Director, Latin America and the Caribbean Region. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact George Psacharopoulos, room I4-187, extension 39243 (January 1993, 60 pages).

Psacharopoulos updates compilations of rate of return estimates to investment in education published since 1985 — and discusses methodological issues surrounding those estimates.

Some key world patterns:

- Among the three main levels of education, primary education continues to exhibit the highest social profitability in all world regions.
- Private returns are considerably higher than social returns because of the public subsidization of education. The degree of public subsidy increases with the level of education, which is regressive.
- Social and private returns at all levels generally decline by the level of a country's per capita income.
- Overall, the returns to female education are higher than those to male education, but at individual levels of education the pattern is more mixed.
- The returns to the academic secondary school track are higher than the vocational track — since unit cost of vocational education is much higher.
- The returns for those who work in the private (competitive) sector of the economy are

higher than in the public (noncompetitive) sector. And the returns in the self-employment (unregulated) sector of the economy are higher than in the dependent employment sector.

Controversies in the literature are discussed in the light of the new evidence. The undisputable and universal positive correlation between education and earnings can be interpreted in many ways. The causation issue on whether education really affects earnings can be answered only with experimental data generated by randomly exposing different people to various amounts of education. Given the fact that moral and pragmatic considerations prevent the generation of such pure data, researchers have to make do with indirect inferences or natural experiments. Some have been attempted.

Psacharopoulos looks at the research on overeducation or surplus schooling.

The conclusions reinforce earlier patterns. They confirm that primary education continues to be the number one investment priority in developing countries. They also show that educating females is marginally more profitable than educating males, that the academic secondary school curriculum is a better investment than the technical/vocational track, and that the returns to education obey the same rules as investment in conventional capital — that is, they decline as investment is expanded.

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**RETURNS TO INVESTMENT IN EDUCATION:
A GLOBAL UPDATE**

by

George Psacharopoulos

Latin America and the Caribbean Region

The World Bank

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I. Introduction

Compilations of rate of return estimates to investment in education have appeared in the literature since the early seventies (see Psacharopoulos 1973, 1981 and 1985). This is a further update taking into account work that has been published since 1985, including earlier pieces that came only lately to my attention.

After discussing some methodological issues surrounding rate of return estimates, updated world patterns are presented. Controversies in the literature are discussed in the light of the new evidence. The final section discusses the implications of the findings for educational policy.

II. Methodological Issues

Estimates of the profitability of investment in education can be arrived at using two different basic methods which, in theory at least, should give very similar results: (a) the "full" or "elaborate" method, and (b) the "earnings function" method, which has two variants.¹ Understanding the estimation method is important for interpreting rate of return

¹ I skip the "short-cut" and the "net present value" methods as these are now used less frequently in the literature. For a fuller discussion of the different rate of return estimation methods, see Psacharopoulos and Ng (1992).

patterns. The method adopted by various authors is often dictated by the nature of the available data.

The elaborate method amounts to working with detailed age-earnings profiles by level of education and finding the discount rate that equates a stream of education benefits to a stream of educational costs at a given point in time. The annual stream of benefits is typically measured by the earnings advantage of a graduate of the educational level to which the rate of return is calculated, and the earnings of a control group of graduates of a lower educational level. The stream of costs consists of the foregone earnings of the individual while in school (measured by the mean earnings of graduates of the educational level that serves as control group) in a private rate of return calculation, augmented by the true resource cost of schooling in a social rate of return calculation. Private rates of return are used to explain people's behavior in seeking education of different levels and types, and as distributive measures of the use of public resources. Social rates of return, on the other hand, can be used to set investment priorities for future educational investments.

The "basic earnings function" method is due to Mincer (1974) and involves the fitting of a semi-log ordinary least squares regression using the natural logarithm of earnings as the dependent variable, and years of schooling and potential years of labor market experience and its square as independent variables. In this semi-log earnings function specification the coefficient on years of schooling can be interpreted as the average private

rate of return to one additional year of education, regardless of the educational level to which this year of schooling refers to.

The "extended earnings function" method can be used to estimate returns to education at different levels by converting the continuous years of schooling variable into a series of dummy variables referring to the completion of the main schooling cycles, i.e. primary, secondary and higher education, or referring to drop outs of these levels, or even to different types of curriculum (say, vocational versus general) within a given level. After fitting such extended earnings function the private rate of return to different levels of education can be derived by comparing adjacent dummy variable coefficients.

The discounting of actual net age-earnings profiles is the most appropriate method (among those listed above) for estimating the returns to education because it takes into account the most important part of the early earnings history of the individual.² But this method is very thirsty in terms of data -- one must have a sufficient number of observations in a given age-educational level cell for constructing "well-behaved" age-earnings profiles, i.e. non-crossing and concave to the horizontal axis). This is still a luxury in many empirical investigations, hence researchers have resorted to less data-demanding methods.

² To purists, the best method would be the net present value. The popularity of this method has declined because net present values are not easily comparable across countries and currencies.

Hence, authors have found it increasingly convenient to estimate the returns to education based on the Mincerian earnings function method. Although easy to use, there are several pitfalls in using this method. First, in most applications, only the overall rate of return to the typical year of schooling is reported (i.e., the coefficient of years of schooling in the semi-log earnings function). Very few authors go to the trouble of specifying the education variable as a string of dummies in order to estimate the marginal effect of each level of education on earnings. But even authors who do this often label the coefficients of these dummy variables "returns to education", whereas these are marginal wage effects, not rates of return to investment in education. The "returns" notion necessitates taking into account the cost of education, whether private or social, and relating this cost to the wage effect.³

Second, there is an important asymmetry between computing the returns to primary education and those to the other levels. Primary school children, mostly aged 6 to 12 years, do not forego earnings during the entire length of their studies. Hence it is a mistake to mechanically assign to them six years of foregone earnings as part of the cost of their education. When using the full discounting method, it is very easy to assign, say, only three years of opportunity cost to primary education (although it is rare for authors to have actually done this). But when using the basic earnings function method, foregone earnings are automatically imputed to the rate of return calculation for the full length of one's schooling

³ It is noted that in the extended (dummy) specification each education coefficient has to be related to the one referring to the previous educational level and divided by the number of years of incremental years of schooling separating the two levels in order for the result to be interpreted as a rate of return.

cycle. Hence such estimates grossly underestimate the average rate of return to schooling. Of course in the extended earnings function it is easy to allow for differential duration of opportunity costs by assigning one, two, or three years of foregone earnings to primary school graduates.

Finally, Dougherty and Jimenez (1991) have rightly pointed out that the above specification imposes the wrong age-earnings profile to young workers, thus biasing the rate of return calculation, especially for primary education. But the earnings function method has gained popularity because its ease of estimation.

III. Update Scope and Sources

Given the growth of the literature, the compilation of returns to education has become untractable. For example, rates of return have been estimated for such diverse groups as mainland Chinese working in Hong Kong (Chung 1989), or Mexican Americans and their Anglo counterparts who graduated from Pan American University (Raymond and Sesnowitz, 1983). The selection of the results that follow is based on whether the author(s) of an original work has(ve) reported the returns to education based on any one of the standard methodologies described above. This has eliminated works that (a) even having "returns to education" in their title (such as Suarez 1987, Stelcner, Arriagada and Mook 1987), the

reported results do not allow a ready estimation of the returns to education; (b) works that have included too many variables in the fitted earnings function, other than human capital variables, and have biased the returns to education reporting earnings functions only within occupations, (e.g., Monson, 1979) or even within levels of schooling, (Newman, 1991) and thus artificially biasing downwards the returns to education -- a point made by Becker nearly twenty years ago and still ignored by many authors (see Becker, 1964); and (c) works that have wrongly reported the returns to primary education by tacitly assigning foregone earnings to those aged 6, 7 and 8 years old (such as Glewwe, 1991). Preference has been given to reporting returns based on the "full method".

The material is organized into two sets of tables. First, the Annex contains master tables of the latest rate of return evidence for individual countries, formatted according to different dimensions representing issues in the literature. Text tables provide only cross-country averages along these dimensions.

Given the large number of sources, only new citations are given in the references section. When "see Psacharopoulos (1985)" is listed as a source of a rate of return estimate, the reader should consult that earlier publication in order to trace the true original reference containing the cited estimate.

IV. World Patterns

Table 1 shows that among the three main levels of education, primary education continues to exhibit the highest social profitability in all world regions. The lowest social rate of return average referring to higher education in OECD countries (8.7 percent) is close to the (long term) opportunity cost of capital. This means that the profitability of human and physical capital, at the margin, has reached virtual equilibrium.

As depicted in Figure 1, private returns are considerably higher than social returns because of the public subsidization of education. The degree of public subsidy increases with the level of education considered, which has regressive policy implications.

Table 1

**Returns to Investment in Education by Level (percent)
Full Method, Latest Year, Regional Averages**

Country	Social			Private		
	Prim.	Sec.	Higher	Prim.	Sec.	Higher
Sub-Saharan Africa	24.3	18.2	11.2	41.3	26.6	27.8
Asia*	19.9	13.3	11.7	39.0	18.9	19.9
Europe/Middle East/North Africa*	15.5	11.2	10.6	17.4	15.9	21.7
Latin America/Caribbean	17.9	12.8	12.3	26.2	16.8	19.7
OECD	14.4	10.2	8.7	21.7	12.4	12.3
World	18.4	13.1	10.9	29.1	18.1	20.3

* Non-OECD.

Source: Table A-1.

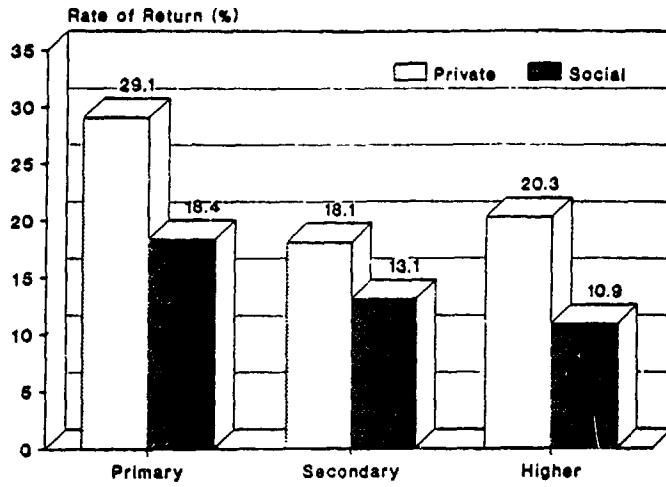


Figure 1. Returns to Investment in Education by Level, Latest Year

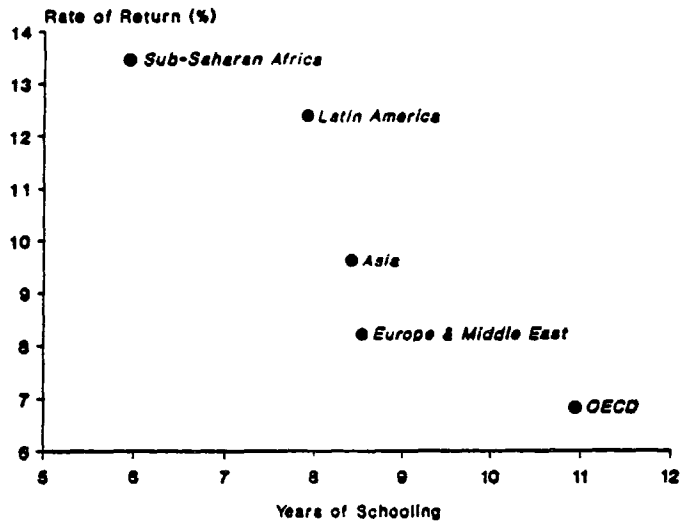


Figure 2. Mincerian Returns and Mean Years of Schooling

Diminishing returns. As shown in Tables 2 and 3, and depicted in Figures 2, 3 and 4, social and private returns at all level largely decline by the level of the country's per capita income. This is another reflection of the law of diminishing returns to the formation of human capital at the margin. The same overall declining pattern is detected (although less neatly) regarding the Mincerian returns to education (Table 4 and Figure 5).

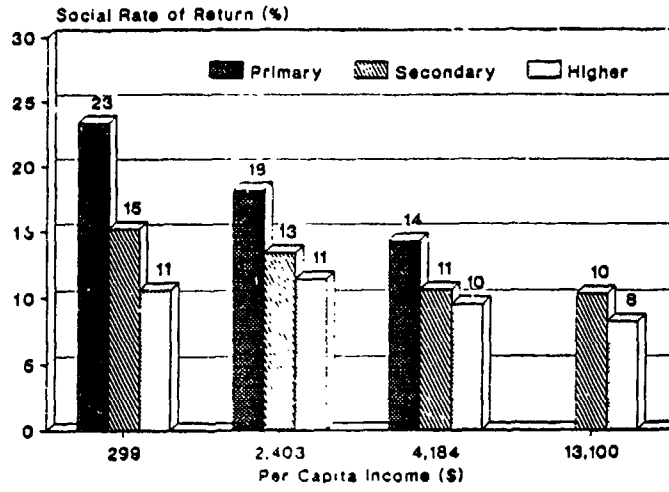


Figure 3. Social Returns to Investment in Education by Income Level

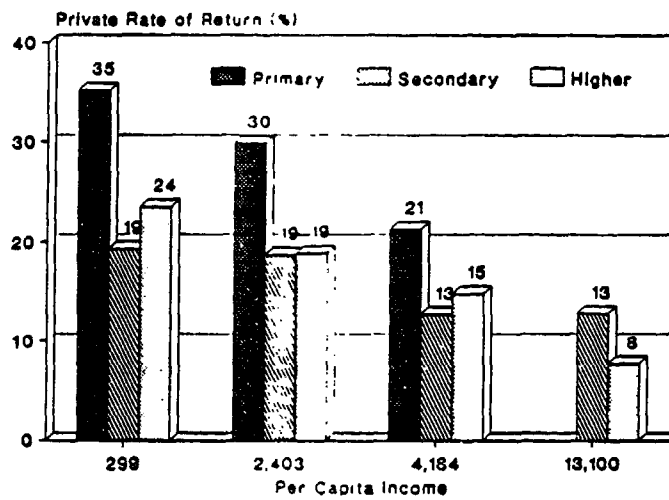


Figure 4. Private Returns in Investment in Education by Income Level

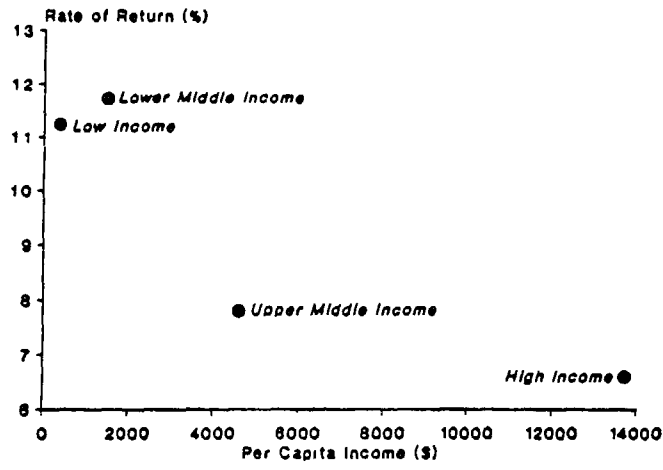


Figure 5. Mincerian Returns by Income Level

Table 2
Returns to Investment in Education by Level (percent)
Full Method, Latest Year
Averages by Per Capita Income Group

Country	Mean per Capita (US\$)	Social			Private		
		Prim.	Sec.	Higher	Prim.	Sec.	Higher
Low Income (\$610 or less)	299	23.4	15.2	10.6	35.2	19.3	23.5
Lower Middle Income (to \$2,449)	1,402	18.2	13.4	11.4	29.9	18.7	18.9
Upper Middle Income (to \$7,619)	4,184	14.3	10.6	9.5	21.3	12.7	14.8
High Income (\$7,620 or more)	13,100	n.a.	10.3	8.2	n.a.	12.8	7.7
World	2,020	20.0	13.5	10.7	30.7	17.7	19.0

Source: Table A-1.

Table 3
The Coefficient on Years of Schooling: Mincerian Mean Rate of Return

Country	Mean Per Capita Income (US\$)	Years of Schooling	Coefficient (percent)
Low Income (\$610 or less)	301	6.4	11.2
Lower Middle Income (to \$2,449)	1,383	8.4	11.7
Upper Middle Income (to \$7,619)	4,522	9.9	7.8
High Income (\$7,620 or more)	13,699	10.9	6.6
World	3,665	8.7	10.1

Source: Table A-2.

Table 4
The Coefficient on Years of Schooling: Mincerian Rate of Return
Regional Averages

Country	Years of Schooling	Coefficient (percent)
Sub-Saharan Africa	5.9	13.4
Asia*	8.4	9.6
Europe/Middle East/North Africa*	8.5	8.2
Latin America/Caribbean	7.9	12.4
OECD	10.9	6.8
World	8.4	10.1

* Non-OECD.

Source: Table A-2.

Returns over time. The declining pattern of the returns to education is also observed over time (Tables 5 and 6) where all social returns have declined between 2 and 8 percentage points on average in a 15 year period. It is of interest, however, that the returns to higher education have increased by about 2 percentage points during this period, i.e. university graduates were able not only to maintain their position in, but also increase, the appropriation of public funds.

Table 5
Change in the Returns to Investment in Education over a 15 Year Period: Full Method
(Percentage Points)

Educational Level	Social	Private
Primary	-8.2	-2.0
Secondary	-5.7	-1.9
Higher	-1.7	1.7

Source: Table A-9.1.

Table 6
Change in the Returns to Education over a 12 Year Period: Mincerian Method

Returns to Education (% points)	-1.7
Mean Years of Schooling	2.4

Source: Table A-10.1

Males vs. females. Table 7 and Figure 6 confirm that, overall, the returns to female education are higher than those for males. Individual levels of education show a more mixed pattern. One issue in the literature regarding the returns to education for men relative to women is whether female estimates have been adjusted for selectivity bias, i.e. by taking into account the prior decision of a woman on whether to participate or not in the labor force (see Heckman, 1979). As summarized in Table 8 (based on 22 case studies in Latin American countries using the same correction methodology, Psacharopoulos and Tzannatos, 1992a, 1992b), selectivity correction does not in fact influence much the rate of return estimate for females, and the returns experienced by females, whether corrected or not, exceed those for males by more than one percentage point.

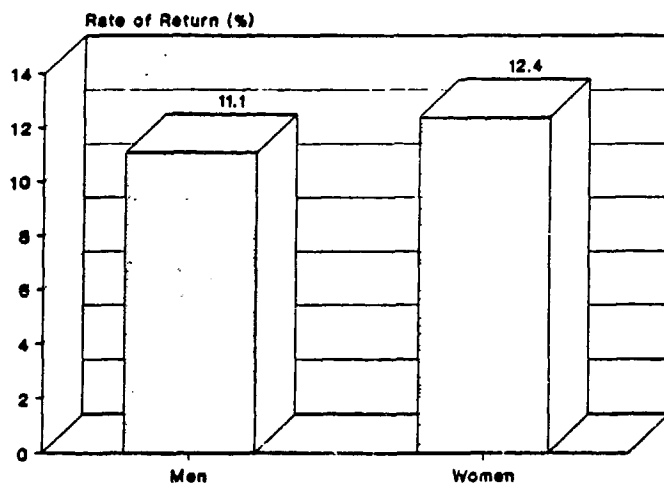


Figure 6. Mincerian Returns to Education by Gender

Table 7
Returns to Education by Gender

Educational Level	Men	Women
Primary	20.1	12.8
Secondary	13.9	18.4
Higher	13.4	12.7
Overall ^a	11.1	12.4

^a Mincerian method.

Source: Table A-3.

Table 8
Selectivity Correction on the Returns to Education by Gender

Selectivity Correction	Males	Females
No	11.3	12.7
Yes	11.3	12.6

Source: Table A-4.

Secondary school curriculum. Doubts have been repeatedly raised regarding the economic profitability of vocational education (for a review see Psacharopoulos, 1987). One type of vocational education that has been singled out as an issue, is the separate vocational/technical track of secondary schools (McMahon 1988). Table 9 (also depicted in Figure 7), confirms the earlier (counter-intuitive) finding that the returns to the academic/general secondary school track are higher than the vocational track. The difference between the profitability of the two subjects is more dramatic regarding the social returns because of the much higher unit cost of vocational/technical education.

What is often forgotten in vocational education discussions is that there exist strong education-training complementarities. Psacharopoulos and Velez (1992b), using Colombian data, found a strong positive interaction between training and years of formal education in determining earnings. They found that training really has an effect on earnings after a worker has 8 years of formal education.

In a more macro exercise, Mingat and Tan (1988) examined the economics of training provided under 115 physical capital investments. They found that such training was particularly productive when a country's educational system is highly developed. According to their most conservative estimate, the rate of return to training can be of the order of 20 percent, if 50 percent of the country's adult population is literate.

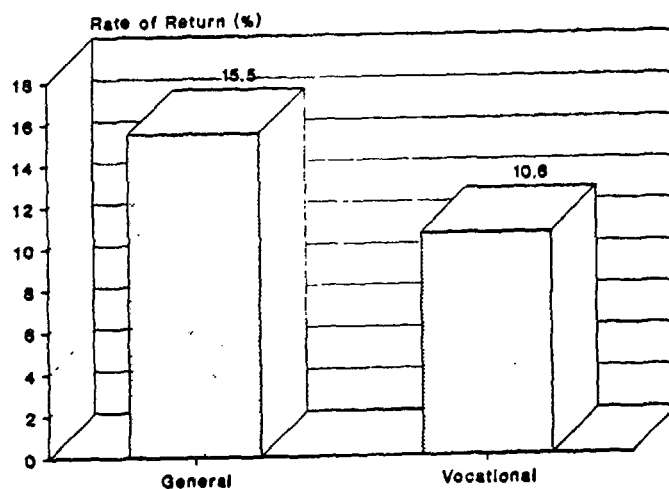


Figure 7. Social Returns to Secondary Education by Curriculum Type

Table 9
Returns to Secondary Education by Curriculum Type

Curriculum Type	Rate of Return	
	Social	Private
Academic/General	15.5	11.7
Technical/Vocational	10.6	10.5

Source: Table A-5.

Higher education faculty. Table 10 shows a large variation between the returns to higher education faculties, the lowest social returns being for physics, sciences and agronomy, and the highest private returns for engineering, law and economics.

Table 10
Returns to Higher Education by Faculty

Subject	Social	Private
Agriculture	7.6	15.0
Soc. Science, Arts & Human.	9.1	14.6
Economics & Business	12.0	17.7
Engineering	17.1	19.0
Law	12.7	16.8
Medicine	10.0	17.7
Physics	1.8	13.7
Sciences	8.9	17.0

Source: Table A-6.

Sector of employment. Table 11 (also depicted in Figure 8) shows that the returns to the private/competitive sector of the economy are higher for those who work in the public/non-competitive sector. Table 12 shows that the returns to the self-employment/unregulated sector of the economy are higher than the dependent employment sector. These findings lend support in using labor market earnings as a proxy for productivity in estimating the returns to education.

Table 11

Returns to Higher Education by Economic Sector (percent)

Economic Sector	Rate of Return
Private	11.2
Public	9.0

Source: Table A-7.

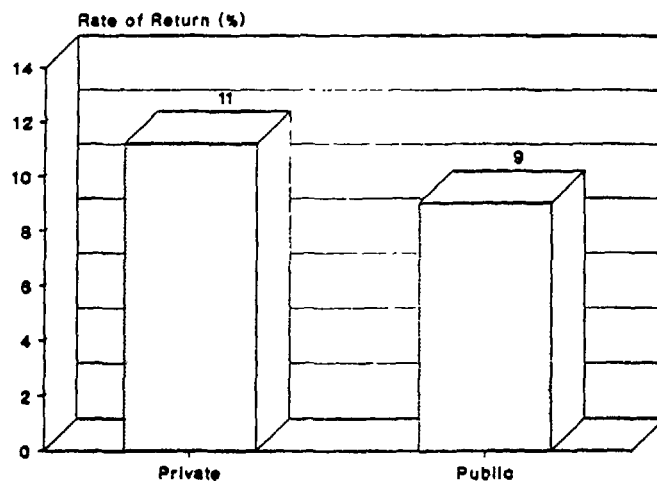


Figure 8. Returns to Education by Sector of Employment

Table 12
Returns to Education in Self vs. Dependent Employment

Employment Type	Rate of Return
Self Employment	10.8
Dependent Employment	12.2

Source: Table A-8.

The sector of employment relates to the so-called, although now abated, labor market segmentation literature. Testing of this elusive hypothesis has continued in the 1980s. The difficulty in identifying labor market duality is due to the fact that scarce longitudinal data on how people with different levels of education move from low-pay to high-pay sectors on jobs are required. Cross-sectional data, the most widely available data type, are not suitable for testing this hypothesis. But even continuing on this tradition, Dabos and Psacharopoulos (1991) analyzed the earnings of Brazilian males in 1980 and found sizeable returns to education across labor market "segments", especially among rural workers and the self-employed. This finding was upheld even after correcting for dependent variable selectivity bias regarding who enters a particular economic sector.

If self-employment is defined as a distinct "sector" of the labor market, Blau (1986) using Malaysian data, rejected the hypothesis that the self-employed earn less than wage employees. Similarly, Speare and Harris (1986), using Indonesian data, found little segmentation between the modern and informal sectors.

V. Controversies

Several critiques of the rate of return concept have been published during the 1980s, many of them repeating points made in the nascent economics of education literature in the early 1960s, e.g., Klees (1986), Leslie (1899), Behrman and Birdsall (1987), Behrman (1987).

On the issue of whether or not earnings really reflect productivity, Chou and Lau (1987) repeated the Jamison and Lau (1982) production function methodology for Thailand and upheld the results. They found that one additional year of schooling adds about 2.5 percent to farm output. Phillips and Marble (1986) fitted an agricultural production function using Guatemalan data and found that four years of education increase agricultural productivity. Lau, Jamison and Louat (1991) introduced education in an aggregate production function and found its effect varies considerably across countries and regions. In East Asia, for example, one additional year of education contributed over three percent to real GDP. Azhar (1991) fitted a wheat and rice production function in Pakistan and found that education enhances the utilization of existing inputs (worker effect or technical efficiency aspect).

On the much debated in the seventies screening hypothesis, Katz and Ziderman (1980), using Israeli data, found strong screening effects at work. But Cohn, Kiker and Oliveira (1987), using United States data, found no empirical support for the screening

hypothesis. Also, Boissiere, Knight and Sabot (1985) found strong support for the human capital hypothesis in explaining earnings differentials in Kenya and Tanzania.

On the interactions between education, earnings and ability, Chou and Lau (1987) introduced Raven's progressive matrices as proxies for genetic ability in an agricultural production function in Thailand and found that the effect of education on farm productivity is upheld. Bound, Griliches and Hall (1986), using United States data, found no significant effect of ability on earnings. Psacharopoulos and Velez (1992a) in a study on Colombia introduced reasoning ability (measured by means of Raven's matrices) and the coefficient of years of schooling was reduced from 10.5 to 9.4 percent. Also Glewwe (1991), using the Raven matrices variable in an earnings function in Ghana, failed to register an effect different than zero in the earnings determination process. Willis (1986), after an exhausting review of the literature, concluded that the complexity of the econometric and theoretical issues surrounding the ability-education-earnings nexus is such that it is difficult to reach any firm conclusion about the size or even the direction of the bias.

The crux of the matter is that the undisputable and universal positive correlation between education and earnings can be interpreted in many different ways.⁴ As Ashenfelter (1991) put it, the causation issue on whether education really affects earnings can only be answered with experimental data generated by exposing at random different people to various amounts of education. Given the fact that moral and pragmatic considerations prevent the

⁴ For a superb treatise in this respect, see Blaug (1972).

generation of such pure data, researchers will have to make do with indirect inferences or natural experiments. Three recent papers report the results of using natural experiments in order to assess the effect of selectivity bias on the returns to education. One example of such a natural experiment was carried out with identical twins who were separated early in life and received different amounts of education (as to control for differences in genetic ability). Ashenfelter and Krueger (1992) used such sample of twins and found no bias in the estimated returns to schooling. On the contrary, they found that measurement errors in self-reported schooling differences result in a substantial underestimation from conventionally estimated returns to investment in education.

Another natural experiment refers to the fact that many young people in the United States in the early seventies received more schooling than others as a result of the Vietnam drafting lottery. Those who were likely to be drafted enrolled in school in order to defer military service. By comparing the groups of those with more and less schooling among this cohort of workers, Angrist and Krueger (1992) found that a rate of return to the extra years of schooling was 10 percent higher than conventional rate of return estimates.

The third natural experiment stems from compulsory school attendance laws. In the United States, those born early in a calendar year start school at an older age relative to those who are born later in the same year, and hence can leave school after completing less years of education. By comparing these two groups, Angrist and Krueger (1991) found a very similar rate of return to investment in education to the one conventionally estimated.

The issue of the returns to investment in the quality rather than quantity of education continues to be the holy grail and research frontier in this field.⁵ Card and Krueger (1992) examined the effect of school quality on the returns to education using United States 1980 census data. Quality was measured by the student-teacher ratio, the average term length and the relative pay of teachers. They found that persons educated in states with higher quality schools exhibit higher returns to additional years of schooling. For example, a decrease in class size from 30 to 25 pupils per teacher is associated with a 0.4 percentage point increase in the returns to education. In another paper, Card and Krueger (1992) found that improvements in the quality of education blacks receive explain 20 percent of the narrowing of the black-white earnings gap in the United States between 1960 and 1980.

Several books and papers have appeared in the literature in the last 15 years claiming that there might be something called "overeducation" in the labor markets, in the United States and in other countries. Different authors have defined it differently.⁶ For example, Freeman (1976) defined it as a falling private rate of return to college education in the United States. Rumberger (1981, 1987) cites unrealized expectations, the discrepancy between the educational attainment of workers and the educational requirements of their jobs, or simply "surplus schooling". Surplus schooling is defined as the number of years completed minus years of schooling required by the job, the latter determined from the

⁵ See Solmon (1985) for a useful review of the concepts involved.

⁶ For a review see Patrinos (1992), and for a recent exchange Cohn (1992), Gill and Solberg (1992) and Verdugo and Verdugo (1992).

Dictionary of Occupational Titles, or as subjectively reported by the worker. Using this definition, Rumberger finds that the incidence of overeducation in the US increased between 1960 and 1976.

Beyond Cohn's (1992) challenge to the surplus schooling thesis, the notion of overeducation might be mechanical and mislead policy. From what point of view can there really be "overeducation"? From the private point of view, one can talk about rates of return below a market level. But if people are willing to invest in their education, in spite of low private returns, they must be deriving some value other than monetary. And if they finance their own education, this is a zero sum game from the point of view of social policy. These people are not overeducated in any bureaucrat's sense. They are rightly educated according to themselves. One cannot deny people's chance to undertake more education for probable social advancement, or even sheer consumption, if people pay for their own education.

From the social view point there would clearly be a problem if public resources were used to finance a level or type of education that has a social rate of return below the opportunity cost of capital, or if the extra social resources invested in someone's "surplus schooling" does not have a productivity counterpart. As shown above, this has not been demonstrated by any of the "overeducation" or screening literature. Also, as shown in the above international comparison, and in more detail for the United States (Kosters, 1990), the premium associated with university studies has been increasing over time. Thus it might be myopic to use norms of years of schooling for specific occupations and say that, because

he/she mainly types, a secretary does not need more than secondary education; or because farmers mainly deal with the soil, they do not need to have schooling beyond primary education.

Another debated issue in the literature has been the role of socioeconomic background. Card and Krueger (1990) find that, holding school quality constant, there is no evidence that parental income or education affects state-level returns to education. But Newman (1991), using Israeli data found that the returns to schooling are higher to those coming from more favorable socioeconomic backgrounds.

Of course education and health interact. For example, Gomes-Neto and Hanushek (1992) find that in Northeast Brazil good student health (defined as good nutrition and visual acuity) lead to better education performance in terms of achievement and promotion.

VI. Conclusion

The results of this update are fully consistent with and reinforce earlier patterns. Namely, primary education continues to be the number one investment priority in developing countries, educating females is marginally more profitable than educating males, the academic secondary school curriculum is a better investment than the technical/vocational track, and the returns to education obey the same rules as investment in conventional capital, i.e. they decline as investment is expanded.

Regarding equity considerations, the update has upheld the strong position of university graduates in maintaining their private advantage by means of public subsidization at this level of education.

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Table A-1
Returns to Investment in Education by Level (percent)
Full Method, Latest Year

Country	Year	Social			Private			Source
		Prim.	Sec.	Higher	Prim.	Sec.	Higher	
Argentina	1989	8.4	7.1	7.6	10.1	14.2	14.9	Psacharopoulos and Ng (1992)
Australia	1976			16.3		8.1	21.1	See Psacharopoulos (1985)
Austria	1981					11.3	4.2	See Psacharopoulos (1985)
Bahamas	1970		20.6			26.1		See Psacharopoulos (1985)
Belgium	1960		17.1	6.7		21.2	8.7	See Psacharopoulos (1985)
Bolivia	1989	9.3	7.3	13.1	9.8	8.1	16.4	Psacharopoulos and Ng (1992)
Botswana	1983	42.0	41.0	15.0	99.0	76.0	38.0	See Psacharopoulos (1985)
Brazil	1989	35.6	5.1	21.4	36.6	5.1	28.2	Psacharopoulos and Ng (1992)
Canada	1985		10.6	4.3		20.7	8.3	Vaillancourt (1992), Table 7
Chile	1989	8.1	11.1	14.0	9.7	12.9	20.7	Psacharopoulos and Ng (1992)
Colombia	1989	20.0	11.4	14.0	27.7	14.7	21.7	Psacharopoulos and Ng (1992)
Costa Rica	1989	11.2	14.4	9.0	12.2	17.6	12.9	Psacharopoulos and Ng (1992)
Cyprus	1979	7.7	6.8	7.6	15.4	7.0	5.6	See Psacharopoulos (1985)
Denmark	1964			7.8			10.0	See Psacharopoulos (1985)
Dominican Rep.	1989				85.1	15.1	19.4	Psacharopoulos and Ng (1992)
Ecuador	1987	14.7	12.7	9.9	17.1	17.2	12.7	Psacharopoulos and Ng (1992)
El Salvador	1990	16.4	13.3	8.0	18.9	14.5	9.5	Psacharopoulos and Ng (1992)
Ethiopia	1972	20.3	18.7	9.7	35.0	22.8	27.4	See Psacharopoulos (1985)
France	1976					14.8	20.0	Jarousse (1985/86), p.37
Germany	1978					6.5	10.5	See Psacharopoulos (1985)
Ghana	1967	18.0	13.0	16.5	24.5	17.0	37.0	See Psacharopoulos (1985)
Great Britain	1978		9.0	7.0		11.0	23.0	See Psacharopoulos (1985)
Greece	1977	16.5	5.5	4.5	20.0	6.0	5.5	See Psacharopoulos (1985)
Guatemala	1989				33.8	17.9	22.2	Psacharopoulos and Ng (1992)
Honduras	1989	18.2	19.7	18.9	20.8	23.3	25.9	Psacharopoulos and Ng (1992)
Hong Kong	1976		15.0	12.4		18.5	25.2	See Psacharopoulos (1985)
India	1978	29.3	13.7	10.8	33.4	19.8	13.2	See Psacharopoulos (1985)
Indonesia	1989		11.0	5.0				McMahon and Boediono (1992), Table 7
Iran	1976	15.2	17.6	13.6		21.2	18.5	See Psacharopoulos (1985)
Israel	1958	16.5	6.9	6.6	27.0	6.9	8.0	See Psacharopoulos (1985)
Italy	1969					17.3	18.3	See Psacharopoulos (1985)
Ivory Coast	1984				25.7	30.7	25.1	Komenan (1987), p.25
Jamaica	1989	17.7	7.9		20.4	15.7		Psacharopoulos and Ng (1992)
Japan	1976	9.6	8.6	6.9	13.4	10.4	8.8	See Psacharopoulos (1985)
Kenya	1980		10.0			16.0		Knight and Sabot (1987), p.260
Lesotho	1980	10.7	18.6	10.2	15.5	26.7	36.5	See Psacharopoulos (1985)
Liberia	1983	41.0	17.0	8.0	99.0	30.5	17.0	See Psacharopoulos (1985)
Malawi	1982	14.7	15.2	11.5	15.7	16.8	46.6	See Psacharopoulos (1985)
Malaysia	1978					32.6	34.5	See Psacharopoulos (1985)
Mexico	1984	19.0	9.6	12.9	21.6	15.1	21.7	Psacharopoulos and Ng (1992)

Continued --

Table A-1 (continued)

Country	Year	Social			Private			Source
		Prim.	Sec.	Higher	Prim.	Sec.	Higher	
Morocco	1970	50.5	10.0	13.0				See Psacharopoulos (1985)
Nepal	1982					15.0	21.7	USAID (1988), p 2-162
Netherlands	1965		5.2	5.5		8.5	10.4	See Psacharopoulos (1985)
New Zealand	1966		19.4	13.2		20.0	14.7	See Psacharopoulos (1985)
Nigeria	1966	23.0	12.8	17.0	30.0	14.0	34.0	See Psacharopoulos (1985)
Norway	1966		7.2	7.5		7.4	7.7	See Psacharopoulos (1985)
Pakistan	1975	13.0	9.0	8.0	20.0	11.0	27.0	See Psacharopoulos (1985)
Panama	1989				5.7	21.0	21.0	Psacharopoulos and Ng (1992)
Papua N.G.	1986	12.8	19.4	8.4	37.2	41.6	23.0	McGavin (1991), p.215
Paraguay	1990	20.3	12.7	10.8	23.7	14.6	13.7	Psacharopoulos and Ng (1992)
Peru	1990				13.2	6.6	40.0	Psacharopoulos and Ng (1992)
Philippines	1988	13.3	8.9	10.5	18.3	10.5	11.6	Hossain and Psacharopoulos (1992)
Puerto Rico	1959	24.0	34.1	15.5	68.2	52.1	29.0	See Psacharopoulos (1985)
Rhodesia	1960	12.4						See Psacharopoulos (1985)
Senegal	1985	23.0	8.9		33.7	21.3		Mingat and Jarousse (1985), p.52
Sierra Leone	1971	20.0	22.0	9.5				See Psacharopoulos (1985)
Singapore	1966	6.6	17.6	14.1		20.0	25.4	See Psacharopoulos (1985)
Somalia	1983	20.6	10.4	19.9	59.9	13.0	33.2	See Psacharopoulos (1985)
South Africa	1980	22.1	17.7	11.8				Trotter (1984), p.75
South Korea	1986		8.8	15.5		10.1	17.9	Ryoo (1988), p.158
Spain	1971	17.2	8.6	12.8	31.6	10.2	15.5	See Psacharopoulos (1985)
Sri Lanka	1981					12.6	16.1	Sahn and Aldeman (1988), p.166
Sudan	1974		8.0	4.0		13.0	15.0	See Psacharopoulos (1985)
Sweden	1967		10.5	9.2			10.3	See Psacharopoulos (1985)
Taiwan	1972	27.0	12.3	17.7	50.0	12.7	15.8	See Psacharopoulos (1985)
Tanzania	1982		5.0					See Psacharopoulos (1985)
Thailand	1970	30.5	13.0	11.0	56.0	14.5	14.0	See Psacharopoulos (1985)
Tunisia	1980					13.0	27.0	Bonattour (1986), p.15
Turkey	1968			8.5		24.0	26.0	See Psacharopoulos (1985)
Uganda	1965	66.0	28.6	12.0				See Psacharopoulos (1985)
Upper Volta	1982	20.1	14.9	21.3				See Psacharopoulos (1985)
United States	1987		10.0	12.0				McMahon (1991), Table1
Uruguay	1989	21.6	8.1	10.3	27.8	10.3	12.8	Psacharopoulos and Ng (1992)
Venezuela	1989	23.4	10.2	6.2	36.3	14.6	11.0	Psacharopoulos and Ng (1992)
Yemen	1985	2.0	26.0	24.0	10.0	41.0	56.0	USAID (1986), T.235
Yugoslavia	1986	3.3	2.3	3.1	14.6	3.1	5.3	Bevc (1989), p.6
Zambia	1983			5.7			19.2	Colel (1988), p.11
Zimbabwe	1987	11.2	47.6	-4.3	16.6	48.5	5.1	Bennell and Malaba (1991) T.3

Table A-2
The Coefficient on Years of Schooling: Mincerian Rate of Return, Latest Year

Country	Year	Mean Years of Schooling	Coefficient (percent)	Source
Argentina	1989	9.1	10.3	Psacharopoulos and Ng (1992)
Australia	1987	9.7	5.4	Lorenz and Wagner (1990), pp.13-14
Austria	1981		11.6	See Psacharopoulos (1985)
Bolivia	1989	10.1	7.1	Psacharopoulos and Ng (1992)
Botswana	1979	3.3	19.1	Lucas and Stark (1985), p.917
Brazil	1989	5.3	14.7	Psacharopoulos and Ng (1992)
Burkina Faso	1980		9.6	Ram and Singh (1988), p.421
Canada	1981	13.2	5.2	Lorenz and Wagner (1990), pp.13-14
Chile	1989	8.5	12.0	Psacharopoulos and Ng (1992)
China	1985	3.0	5.0	Jamison and van der Gaag (1987), p.163
Colombia	1989	8.2	14.0	Psacharopoulos and Ng (1992)
Costa Rica	1989	6.9	10.9	Psacharopoulos and Ng (1992)
Cote d'Ivoire	1986	6.9	20.1	van der Gaag and Vijverberg (1989), p.374
Cyprus	1984	9.5	11.0	Demetriades and Psacharopoulos (1987), p.599
Dominican Rep.	1989	8.8	9.4	Psacharopoulos and Ng (1992)
Ecuador	1987	9.6	11.8	Psacharopoulos and Ng (1992)
El Salvador	1990	6.9	9.7	Psacharopoulos and Ng (1992)
Ethiopia	1972	6.0	8.0	See Psacharopoulos (1985)
France	1977	6.2	10.0	Jarousse and Mignat (1986), p.11
Germany	1987	10.1	4.9	Lorenz and Wagner (1990), pp.13-14
Ghana	1989	10.0	8.5	Glewwe (1991), p.13
Great Britain	1987	11.8	6.8	Lorenz and Wagner (1990), pp.13-14
Greece	1987	10.0	2.7	Lambropoulos and Psacharopoulos (1992), Table 7
Guatemala	1989	4.3	14.9	Psacharopoulos and Ng (1992)
Honduras	1989	6.5	17.6	Psacharopoulos and Ng (1992)
Hong Kong	1981	9.1	6.1	See Psacharopoulos (1985)
Hungary	1987	11.3	4.3	Lorenz and Wagner (1990), pp.13-14
India	1980	16.8	4.9	Rao and Datta (1989), p.377
Indonesia (Java)	1981	5.0	17.0	Byron and Takahashi (1989), p.115
Iran	1975		11.6	See Psacharopoulos (1985)
Israel	1979	11.2	6.4	Lorenz and Wagner (1990), pp.13-14
Italy	1987	10.7	2.3	Lorenz and Wagner (1990), pp.13-14
Jamaica	1989	7.2	28.8	Psacharopoulos and Ng (1992)
Japan	1975	11.1	6.5	Hill (1983), p.467
Kenya	1970	3.5	16.4	See Psacharopoulos (1985)
Korea, South	1986	8.0	10.6	Ryoo (1988), p.160
Kuwait	1983	8.9	4.5	Al-Qudsi (1989), p.270
Malaysia	1979	15.8	9.4	Chapman and Harding (1985), p.366
Mexico	1984	6.6	14.1	Psacharopoulos and Ng (1992)
Morocco	1970	2.9	15.8	See Psacharopoulos (1985)
Netherlands	1983	9.5	7.4	Lorenz and Wagner (1990), pp.13-14

Continued --

Table A-2 (continued)

Country	Year	Mean Years of Schooling	Coefficient (percent)	Source
Nicaragua	1978	6.5	9.7	Behrman, Wolfe and Blau (1985), p.11
Pakistan	1979	8.6	9.7	Shabbir (1991), p.12
Panama	1990	9.2	13.7	Psacharopoulos and Ng (1992)
Paraguay	1990	9.1	11.5	Psacharopoulos and Ng (1992)
Peru	1990	10.1	8.1	Psacharopoulos and Ng (1992)
Philippines	1988	9.0	8.0	Hossain and Psacharopoulos (1992)
Poland	1986	11.1	2.9	Lorenz and Wagner (1990), pp.13-14
Portugal	1985	9.5	10.0	Kiker and Santos (1991), p.192
Singapore	1974	8.5	13.4	Liu and Wong (1981), p.280
South Vietnam	1964		16.8	See Psacharopoulos (1985)
Sri Lanka	1981	4.5	7.0	See Psacharopoulos (1985)
Sweden	1974	12.4	6.7	See Psacharopoulos (1985)
Switzerland	1987	11.0	7.9	Lorenz and Wagner (1990), pp.13-14
Taiwan	1972	9.0	6.0	See Psacharopoulos (1985)
Tanzania	1980		11.9	See Psacharopoulos (1985)
Thailand	1971	4.1	10.4	See Psacharopoulos (1985)
Tunisia	1980	4.8	8.0	Bonattour (1986), p.15
United Kingdom	1975	13.0	8.0	See Psacharopoulos (1985)
United States	1987	13.6	9.8	Lorenz and Wagner (1990), pp.13-14
Uruguay	1989	9.0	9.7	Psacharopoulos and Ng (1992)
Venezuela	1989	9.1	8.4	Psacharopoulos and Ng (1992)

Table A-3
Returns to Education by Level of Education and Gender

Country	Year	Educational Level	Men	Women	Source
Argentina	1985	Overall	9.1	10.3	Kugler and Psacharopoulos (1989), p.356
Argentina	1989	Overall	10.7	11.2	Psacharopoulos and Ng (1992)
Austria	1981	Overall	10.3	13.5	See Psacharopoulos (1985)
Bolivia	1989	Overall	7.3	7.7	Psacharopoulos and Ng (1992)
Botswana	1975	Overall	16.4	18.2	Lucas (1975), p.159
Brazil	1980	Overall	14.7	15.6	Stelcner et al. (1992), Table 15
Brazil	1989	Overall	15.4	14.2	Psacharopoulos and Ng (1992)
Chile	1987	Overall	13.7	12.6	Gill (1992a), Tables 6 and 7
Chile	1989	Overall	12.1	13.2	Psacharopoulos and Ng (1992)
China	1985	Overall	4.5	5.6	Jamison and van der Gaag (1987), p.163
Colombia	1973	Overall	18.1	20.8	Schultz (1988), p.600
Colombia	1973	Overall	18.1	20.8	See Psacharopoulos (1985)
Colombia	1973	Overall	10.3	20.1	See Psacharopoulos (1985)
Colombia	1988	Overall	11.1	9.7	Psacharopoulos and Velez (1992a), Table 6
Colombia	1989	Overall	14.5	12.9	Psacharopoulos and Ng (1992)
Costa Rica	1974	Overall	14.7	14.7	See Psacharopoulos (1985)
Costa Rica	1989	Overall	10.1	13.1	Yang (1992), Table 5
Costa Rica	1989	Overall	10.5	13.5	Psacharopoulos and Ng (1992)
Cyprus	1984	Overall	8.9	12.7	Demetriades and Psacharopoulos (1987), p.599
Dominican Rep.	1989	Overall	7.8	12.0	Psacharopoulos and Ng (1992)
Ecuador	1987	Overall	11.4	10.7	Gomez and Psacharopoulos (1990), p.222
Ecuador	1987	Overall	9.8	11.5	Psacharopoulos and Ng (1992)
El Salvador	1990	Overall	9.6	9.8	Psacharopoulos and Ng (1992)
Germany	1974	Overall	13.1	11.2	See Psacharopoulos (1985)
Germany	1977	Overall	13.6	11.7	See Psacharopoulos (1985)
Greece	1977	Overall	4.7	4.5	See Psacharopoulos (1985)
Guatemala	1989	Overall	14.2	16.3	Psacharopoulos and Ng (1992)
Honduras	1989	Overall	17.2	19.8	Psacharopoulos and Ng (1992)
India	1978	Overall	5.3	3.6	Tilak (1990), pp.135-136
Ivory Coast	1984	Overall	11.1	22.6	Komenan (1987), p.39
Jamaica	1989	Overall	12.3	21.5	Scott (1991b), Table 5
Jamaica	1989	Overall	28.0	31.7	Psacharopoulos and Ng (1992)
Malaysia	1979	Overall	5.3	8.2	Chapman and Harding (1988), p.366
Mexico	1984	Overall	13.2	14.7	Steele (1992), Table 4
Mexico	1984	Overall	14.1	15.0	Psacharopoulos and Ng (1992)
Nicaragua	1978	Overall	8.5	11.5	Behrman, Wolfe and Blau (1985), p.13
Panama	1989	Overall	9.7	11.9	Arends (1992), Table 6
Panama	1989	Overall	12.6	17.1	Psacharopoulos and Ng (1992)
Paraguay	1990	Overall	10.3	12.1	Psacharopoulos and Ng (1992)
Peru	1985	Overall	11.5	12.4	Khandker (1992), Table 6
Peru	1990	Overall	8.5	6.5	Psacharopoulos and Ng (1992)

Continued -

Table 3 (continued)

Country	Year	Educational Level	Men	Women	Source
Philippines	1988	Overall	12.4	12.4	Hossain and Psacharopoulos (1992)
Portugal	1977	Overall	7.5	8.4	See Psacharopoulos (1985)
Portugal	1985	Overall	9.4	10.4	Kiker and Santos (1991), p.192
South Korea	1976	Overall	10.3	1.7	See Psacharopoulos (1985)
South Korea	1980	Overall	17.2	5.0	See Psacharopoulos (1985)
Sri Lanka	1981	Overall	6.9	7.9	See Psacharopoulos (1985)
Thailand	1972	Overall	9.1	13.0	See Psacharopoulos (1985)
Uruguay	1989	Overall	9.0	10.6	Psacharopoulos and Ng (1992)
Venezuela	1976	Overall	9.9	13.5	See Psacharopoulos (1985)
Venezuela	1987	Overall	10.0	13.1	Psacharopoulos and Alam (1991), p.32
Venezuela	1989	Overall	9.1	11.1	Winter (1992), Table 4
Venezuela	1989	Overall	8.4	8.0	Psacharopoulos and Ng (1992)
Yugoslavia	1976	Overall	5.8	6.6	Bevc (1991), p.204
Yugoslavia	1986	Overall	4.9	4.8	Bevc (1991), p.204
Mean			11.1	12.4	
Puerto Rico	1959	Primary	27.5	18.4	See Psacharopoulos (1985)
Taiwan	1982	Primary	8.4	16.1	See Psacharopoulos (1985)
Indonesia	1982	Primary, Soc	19.0	17.0	USAID (1986), Table 2.122
Great Britain	1841	Literacy	24.5	3.5	Mitch (1988), p.563
Great Britain	1871	Literacy	19.0	9.0	Mitch (1988), p.563
Mean			20.1	12.8	
France	1969	Secondary	13.9	15.4	See Psacharopoulos (1985)
France	1976	Secondary	14.3	16.2	See Psacharopoulos (1985)
Great Britain	1971	Secondary	19.0	8.0	See Psacharopoulos (1985)
Indonesia	1982	Secondary	23.0	11.0	USAID (1986), Table 2.122
Indonesia	1986	Secondary	11.0	16.0	McMahon, Jung and Boediono (1992), Table 1
Puerto Rico	1959	Secondary	27.3	40.8	See Psacharopoulos (1985)
South Korea	1971	Secondary	13.7	16.9	See Psacharopoulos (1985)
Sri Lanka	1981	Secondary	12.6	35.5	Sahn and Aldeman (1988), p.166
Canada	1980	Secondary	2.0	6.0	Vaillancourt and Henriques (1986), p.49
Canada	1985	Secondary	10.6	18.6	Vaillancourt (1992), Table 7
Mean			13.9	18.4	
Australia	1976	University	21.1	21.2	See Psacharopoulos (1985)
Canada	1980	University, Priv.	5.5	10.5	Vaillancourt and Henriques (1986), p.49
Canada	1985	University	8.3	18.8	Vaillancourt (1992), Table 7
France	1969	University	22.5	13.8	See Psacharopoulos (1985)
France	1976	University	20.0	12.7	See Psacharopoulos (1985)
France	1976	University	20.0	12.7	Jarousse (1985/86), p.37
Great Britain	1971	University	8.0	12.0	See Psacharopoulos (1985)
Indonesia	1982	University	10.0	9.0	USAID (1986), Table 2.122
Indonesia	1986	Univ., Soc.	9.0	10.0	World Bank (1991), p.179
Japan	1976	University	6.9	6.9	See Psacharopoulos (1985)

Continued -

Table A-3 (continued)

Country	Year	Educational Level	Men	Women	Source
Japan	1980	University	5.7	5.8	See Psacharopoulos (1985)
Puerto Rico	1959	University	21.9	9.0	See Psacharopoulos (1985)
South Korea	1971	University	15.7	22.9	See Psacharopoulos (1985)
Mean			13.4	12.7	

Table A-4
The Effect of Selectivity Correction on the Returns to Education by Gender

Country	Year	Male	Female		Source
		Uncorrected	Uncorrected	Corrected	
Argentina	1985	9.1	10.7	10.9	Ng (1992), Table 5
Bolivia	1989	7.1	6.3	6.5	McKinnon Scott (1992a), Table 6
Chile	1987		12.6	11.9	Gill (1992a), Table 6
Colombia	1980		15.7	17.4	Magnac (1992), Tables 11 and 12
Colombia	1981	12.1	13.5	15.5	Magnac (1992), Tables 11 and 12
Colombia	1982	12.6	13.2	15.2	Magnac (1992), Tables 11 and 12
Colombia	1983	12.9	13.9	16.1	Magnac (1992), Tables 11 and 12
Colombia	1984	13.2	14.4	16.9	Magnac (1992), Tables 11 and 12
Colombia	1985	13.3	13.6	15.1	Magnac (1992), Tables 11 and 12
Colombia	1988	12.0	11.2	9.9	Velez and Winter (1992), Table 5
Costa Rica	1989	10.1	13.1	12.9	Yang (1992), Table 5
Ecuador	1987	9.7	9.0	9.1	Jakubson and Psacharopoulos (1992), Table 4
Guatemala	1989	14.3	16.4	14.6	Arends (1992a), Table 6
Honduras	1989	14.1	13.2	11.5	Winter and Gindling (1992b), Table 7
Jamaica	1989	12.3	21.5	20.2	McKinnon Scott (1992b), Table 5
Mexico	1984	13.2	14.7	10.9	Steele (1992), Table 4
Panama	1989	9.7	11.9	9.8	Arends (1992b), Table 6
Peru	1985	11.5	12.4	13.1	Khandker (1992), Table 6
Peru	1990	9.2	8.2	7.7	Gill (1992b), Tables 6 and 7
Uruguay	1989	9.9	11.1	11.2	Arends (1992c), Table 5
Venezuela	1987	10.6	12.2	11.3	Cox and Psacharopoulos (1992), Table 4
Venezuela	1989	9.1	11.1	10.1	Winter (1992), Table 4
Mean		11.3	12.7	12.6	

Table A-5
Returns to Secondary Education by Curriculum Type

Country	Year	Academic/General		Technical/Vocational		Source
		Social	Private	Social	Private	
Argentina	1989		12.3		11.0	Psacharopoulos and Ng (1992)
Bolivia	1989		6.6		10.4	Psacharopoulos and Ng (1992)
Botswana	1986	35.0		25.0		Hinchliffe (1990), p.403, Brigades
Brazil	1980		12.0		10.0	Dougherty and Jimenez (1991), p.95
Cameroon	1985			6.9	9.9	Paul (1990), p.407
Canada	1980	9.5		2.0		Vaillancourt and Henriques (1986), p.491
Chile	1989		9.4		13.1	Psacharopoulos and Ng (1992)
Colombia	1981	9.1		10.0		See Psacharopoulos (1985)
Costa Rica	1989		11.8		12.3	Psacharopoulos and Ng (1992)
Cote d'Ivoire	1985			3.9	15.8	Grootaert (1990), p.319
Cyprus	1975	10.5		7.4		See Psacharopoulos (1985)
Cyprus	1979	6.8		5.5		See Psacharopoulos (1985)
Dominican Rep.	1989		10.8		10.3	Psacharopoulos and Ng (1992)
France	1970	10.1		7.6		See Psacharopoulos (1985)
France	1977	8.1		5.4	11.0	Jarousse and Mignat (1988), p.6
Honduras	1989		19.8		28.1	Psacharopoulos and Ng (1992)
Indonesia	1978	32.0		18.0		See Psacharopoulos (1985)
Indonesia	1982	23.0		19.0		USAID (1986), Table 2-122
Indonesia	1986	19.0		6.0		World Bank (1991), p.179
Indonesia	1986	12.0		14.0		McMahon and Jung (1989), pp.21-22, Senior
Indonesia	1986	11.0		9.0		McMahon and Jung (1989), .21-22, Junior
Liberia	1983	20.0		14.0		See Psacharopoulos (1985)
Mexico	1984		12.4		12.3	Psacharopoulos and Ng (1992)
Panama	1989		15.0		9.9	Psacharopoulos and Ng (1992)
Peru	1985		6.0		5.9	Bellew and Mook (1990), p.372, Private
Peru	1990		4.0		6.4	Psacharopoulos and Ng (1992)
Taiwan	1970	26.0		27.4		See Psacharopoulos (1985)
Tanzania	1982	6.3		3.7		See Psacharopoulos (1985)
Togo	1985			4.0	6.3	Paul (1990), p.407
Uruguay	1989		8.2		10.2	Psacharopoulos and Ng (1992)
Venezuela	1975	14.3		17.6		Psacharopoulos and Steir (1988), p.330
Venezuela	1984	10.5		12.0		Psacharopoulos and Steir (1988), p.330
Venezuela	1989		8.9		13.1	Psacharopoulos and Ng (1992)
Mean		15.5	10.6	11.7	10.5	

Table A-6
Returns to Higher Education by Subject

Country	Year	Subject	Social	Private	Source
Brazil	1962	Agriculture	5.2		See Psacharopoulos (1985)
Brazil	1980	Manag./Agric.		16.0	Dougherty and Jimenez (1991), p.95
Colombia	1976	Agronomy	16.4	22.3	See Psacharopoulos (1985)
Greece	1977	Agronomy	2.7	3.1	See Psacharopoulos (1985)
India	1971	Agriculture		16.2	Shortlidge (1974), p.21
Iran	1964	Agriculture	13.8	27.4	See Psacharopoulos (1985)
Malaysia	1968	Agriculture		9.8	See Psacharopoulos (1985)
Norway	1966	Agriculture	2.2		See Psacharopoulos (1985)
Philippines	1969	Agriculture	5.0	5.0	See Psacharopoulos (1985)
South Korea	1980?	Agriculture		16.0	Ryoo (1988), p.184
Thailand	1987	Agriculture	8.2	19.0	Thailand (1987)
Mean			7.6	15.0	
Brazil	1980	Social Sciences		8.0	Dougherty and Jimenez (1991), p.95
Great Britain	1967	Social Sciences	13.0		See Psacharopoulos (1985)
Great Britain	1971	Social Sciences	11.0	48.0	See Psacharopoulos (1985)
Canada	1985	Arts	3.8	4.0	Stager (1989), p.74
Canada	1985	Social Sciences	8.8	10.8	Vaillancourt (1992), Table 10
Canada	1985	Humanities	-0.1	0.7	Vaillancourt (1992), Table 10
France	1976	Humanities		2.9	Jarousse (1985/86), p.38
Great Britain	1967	Arts	13.5		See Psacharopoulos (1985)
Great Britain	1971	Arts	7.0	26.0	See Psacharopoulos (1985)
India	1961	Humanities	12.7	14.3	See Psacharopoulos (1985)
Iran	1964	Humanities	15.3	20.0	See Psacharopoulos (1985)
Norway	1966	Arts	4.3		See Psacharopoulos (1985)
South Korea	1980?	Social Sciences		16.6	Ryoo (1988), p.184
Thailand	1987	Humanities	11.2	15.9	Thailand (1987), pp.6-35
Venezuela	1984	Humanities		8.0	Psacharopoulos and Steier (1988), p.330
Mean			9.1	14.6	
Belgium	1967	Economics	9.5		See Psacharopoulos (1985)
Brazil	1962	Economics	16.1		See Psacharopoulos (1985)
Canada	1967	Economics	9.0	16.3	See Psacharopoulos (1985)
Canada	1985	Commerce	11.4	13.1	Stager (1989), p.74
Colombia	1976	Economics	26.2	32.7	See Psacharopoulos (1985)
Denmark	1964	Economics	9.0		See Psacharopoulos (1985)
Greece	1977	Economics and Pol.	4.4	5.4	See Psacharopoulos (1985)
Iran	1964	Economics	18.5	23.9	See Psacharopoulos (1985)
Norway	1966	Economics	8.9		See Psacharopoulos (1985)
Philippines	1969	Economics	10.5	14.0	See Psacharopoulos (1985)
South Korea	1980?	Business		20.6	Ryoo (1988), p.184
Sweden	1967	Economics	9.0		See Psacharopoulos (1985)
Venezuela	1984	Economics		15.7	Psacharopoulos and Steier (1988), p.330
Mean			12.0	17.7	

Continued --

Table A-6 (continued)

Country	Year	Subject	Social	Private	Source
Canada	1985	Architecture	4.5	6.0	Stager (1989), p.74
Canada	1985	Engineering	111.7	23.0	Vaillancourt (1992), Table 10
Brazil	1962	Engineering	17.3		See Psacharopoulos (1985)
Canada	1967	Engineering	2.0	4.5	See Psacharopoulos (1985)
Canada	1985	Engineering	11.7	14.0	Stager (1989), p.74
Colombia	1976	Engineering	24.8	33.7	See Psacharopoulos (1985)
Denmark	1964	Engineering	8.0		See Psacharopoulos (1985)
France	1974	Engineering		17.5	Mingat and Eicher (1983), p.214
Great Britain	1967	Engineering	11.4		See Psacharopoulos (1985)
Great Britain	1971	Eng. and Technol	6.0	32.0	See Psacharopoulos (1985)
Greece	1977	Engineering	8.2	12.2	See Psacharopoulos (1985)
India	1961	Engineering	16.6	21.2	See Psacharopoulos (1985)
Iran	1964	Engineering	18.2	30.7	See Psacharopoulos (1985)
Malaysia	1968	Engineering		13.4	See Psacharopoulos (1985)
Norway	1966	Engineering	8.7		See Psacharopoulos (1985)
Philippines	1969	Engineering	5.0	15.0	See Psacharopoulos (1985)
South Korea	1980?	Engineering		20.0	Ryoo (1988), p.184
Sweden	1967	Engineering	7.5		See Psacharopoulos (1985)
Thailand	1987	Engineering	19.7	22.0	Thailand (1987), pp.6-35
Venezuela	1984	Engineering		20.3	Psacharopoulos and Steier (1988), p.330
Mean			17.1	19.0	
Belgium	1967	Law	6.0		See Psacharopoulos (1985)
Brazil	1962	Law	17.4		See Psacharopoulos (1985)
Canada	1985	Law	11.6	13.6	Stager (1989), p.74
Colombia	1976	Law	22.7	28.3	See Psacharopoulos (1985)
Denmark	1964	Law	10.0		See Psacharopoulos (1985)
France	1970	Law/Economics		16.7	See Psacharopoulos (1985)
France	1976	Law/Economics		14.3	Jarousse (1985/86), p.38
France	1974	MA. Law/Econ.		16.7	Mingat and Eicher (1983), p.214
Greece	1977	Law	12.0	13.8	See Psacharopoulos (1985)
Norway	1966	Law	10.6		See Psacharopoulos (1985)
Philippines	1969	Law	15.0	18.0	See Psacharopoulos (1985)
Sweden	1967	Law	9.5		See Psacharopoulos (1985)
Thailand	1987	Law	12.2	15.4	Thailand (1987), p.6-35
Venezuela	1984	Law		14.1	Psacharopoulos and Steier (1988), p.330
Mean			12.7	16.8	
Australia	1973	Medicine		12.2	Davis (1977), p.310
Belgium	1967	Medicine	11.5		See Psacharopoulos (1985)
Brazil	1962	Medicine	11.9		See Psacharopoulos (1985)
Canada	1985	Medicine	17.2	21.6	Stager (1989), p.74
Canada	1985	Health Sciences	-0.7	9.2	Vaillancourt (1992), Table 10
Colombia	1976	Medicine	23.7	35.6	See Psacharopoulos (1985)
Denmark	1964	Medicine	5.0		See Psacharopoulos (1985)

Continued - -

Table A-6 (continued)

Country	Year	Subject	Social	Private	Source
France	1974	Doct. Medicine		24.1	Mingat and Eicher (1983), p.214
France	1976	Medicine		12.6	Jarousse (1985/86), p.38
Malaysia	1968	Medicine		12.4	See Psacharopoulos (1985)
Norway	1966	Medicine	3.1		See Psacharopoulos (1985)
Sweden	1967	Medicine	13.0		See Psacharopoulos (1985)
Thailand	1987	Medicine	5.4	13.8	Thailand (1987), pp.6-35
Mean			10.0	17.7	
Great Britain	1957	Physics		20.0	Wilson (1985), p.197
Great Britain	1961	Physics		19.5	Wilson (1985), p.197
Great Britain	1965	Physics		18.5	Wilson (1985), p.197
Great Britain	1968	Physics		15.5	Wilson (1985), p.197
Great Britain	1977	Physics		10.0	Wilson (1985), p.197
Great Britain	1980	Physics		10.0	Wilson (1985), p.197
Greece	1977	Physics and Math.	1.8	2.1	See Psacharopoulos (1985)
Mean			1.8	13.7	
Belgium	1967	Sciences	8.0		See Psacharopoulos (1985)
Brazil	1980	Sciences		20.0	Dougherty and Jimenez (1991), p.95
France	1974	Sciences (M.A.)		12.3	Mingat and Eicher (1983), p.214
France	1970	Sciences		12.3	See Psacharopoulos (1985)
Great Britain	1967	Sciences	11.0		See Psacharopoulos (1985)
Great Britain	1971	Sciences	7.0	38.0	See Psacharopoulos (1985)
Norway	1966	Sciences	6.2		See Psacharopoulos (1985)
Thailand	1987	Sciences	9.5	19.5	Thailand (1987), p.6-35
Venezuela	1984	Sciences		10.9	Psacharopoulos and Steier (1988), p.330
Mean			8.9	17.0	

Table A-7
Returns to Education by Economic Sector

Country	Year	Private	Public	Source
Argentina	1985	9.6	7.0	Kugler and Psacharopoulos (1989), p.356
Argentina	1989	11.1	8.9	Psacharopoulos and Ng (1992)
Australia	1981	6.4	6.7	McNabb and Richardson (1986), Table 3
Australia	1982	6.4	6.7	McNabb and Richardson (1989), p.66
Bolivia	1989	8.7	6.7	Psacharopoulos and Ng (1992)
Brazil	1970	19.3	14.9	See Psacharopoulos (1985)
Brazil	1989	15.0	11.4	Psacharopoulos and Ng (1992)
Chile	1989	11.4	11.2	Psacharopoulos and Ng (1992)
Colombia	1984	10.6	9.5	Psacharopoulos, Arriagada and Velez (1991), Table 4
Colombia	1988	11.0	11.3	Psacharopoulos and Velez (1992), Table 5
Colombia	1975	14.6	13.4	See Psacharopoulos (1985)
Colombia	1978	11.7	12.9	See Psacharopoulos (1985)
Colombia	1989	13.7	11.9	Psacharopoulos and Ng (1992)
Costa Rica	1982	9.2	8.1	Gindling (1991) p.597
Costa Rica	1989	9.3	8.5	Psacharopoulos and Ng (1992)
Cote d'Ivoire	1984	10.8	11.2	Komenan (1987), p.51
Ecuador	1987	11.5	7.4	Gomez and Psacharopoulos (1990), p.222
Ecuador	1987	11.3	7.1	Psacharopoulos and Ng (1992)
El Salvador	1990	9.4	6.2	Psacharopoulos and Ng (1992)
France	1977	11.5	7.9	Jarrousse and Mignat (1986), p.26
Ghana	1989	7.1	7.4	Glewwe (1981), p.13
Greece	1975	4.8	6.4	Lambropoulos and Psacharopoulos (1992), Table 7
Greece	1975	15.1	15.9	Lambropoulos and Psacharopoulos (1992), Table 5
Greece	1977	7.0	6.2	Psacharopoulos (1985)
Greece	1977	6.8	7.3	Lambropoulos and Psacharopoulos (1992), Table 7
Greece	1981	13.7	10.7	Lambropoulos and Psacharopoulos (1992), Table 5
Greece	1981	4.3	4.0	Lambropoulos and Psacharopoulos (1992), Table 7
Greece	1985	10.2	7.4	Lambropoulos and Psacharopoulos (1992), Table 5
Greece	1985	3.9	3.3	Lambropoulos and Psacharopoulos (1992), Table 7
Guatemala	1977	12.7	10.6	See Psacharopoulos (1985)
Guatemala	1989	14.1	8.7	Psacharopoulos and Ng (1992)
Honduras	1989	17.4	12.3	Psacharopoulos and Ng (1992)
Jamaica	1989	24.9	16.0	Psacharopoulos and Ng (1992)
Japan	1970	19.3	6.5	See Psacharopoulos (1985)
Malaysia	1978	22.5	17.7	See Psacharopoulos (1985)
Mexico	1984	11.0	6.7	Psacharopoulos (1991), Table 5
Mexico	1984	15.4	8.0	Psacharopoulos and Ng (1992)
Pakistan	1975	7.6	7.4	See Psacharopoulos (1985)
Panama	1989	12.2	11.0	Psacharopoulos and Ng (1992)
Paraguay	1990	11.9	8.3	Psacharopoulos and Ng (1992)
Peru	1990	9.0	9.0	Psacharopoulos and Ng (1992)
Philippines	1988	8.6	6.4	Hossain and Psacharopoulos (1992)

Continued --

Table A-7 (Continued)

Country	Year	Private	Public	Source
Portugal	1977	8.0	4.9	See Psacharopoulos (1985)
Portugal	1985	8.1	7.2	Kiker and Santos (1991), p.192
Tanzania	1980	14.2	10.7	See Psacharopoulos (1985)
United Kingdom	1975	8.7	6.3	See Psacharopoulos (1985)
United States	1978	9.4	9.2	Cohn, Kiker and Oliveira (1987), p.292
Uruguay	1989	10.5	5.7	Psacharopoulos and Ng (1992)
Venezuela	1984	11.1	10.6	See Psacharopoulos (1985)
Venezuela	1975	10.4	8.5	Psacharopoulos and Steir (1988), p.327
Venezuela	1984	9.8	9.7	Psacharopoulos and Steir (1988), p.327
Venezuela	1987	10.3	10.1	Psacharopoulos and Alam (1991), p.31
Venezuela	1989	9.7	6.6	Psacharopoulos and Ng (1992)
Mean		11.2	9.0	

Table A-8
Returns to Education in Self vs. Dependent Employment

Country	Year	Self	Dependent	Source
Australia	1981	4.6	6.4	McNabb and Richardson (1986), p.17
Australia	1982	5.9	7.0	McNabb and Richardson (1989), p.70
Brazil	1980	13.8	14.7	Stelchner et al. (1991), Table 15
Brazil	1980	18.3	15.7	Dabos and Psacharopoulos (1991), Table 12
Colombia	1981	12.0	15.1	Magnac (1991), Table 13
Colombia	1982	12.9	15.1	Magnac (1991), Table 13
Colombia	1983	13.1	15.8	Magnac (1991), Table 13
Colombia	1984	12.9	14.7	Magnac (1991), Table 13
Colombia	1984	12.9	10.6	Psacharopoulos, Arriagada and Velez (1991), Table 4
Colombia	1985	11.0	15.6	Magnac (1991), Table 13
Ecuador	1987	7.4		Gomez and Psacharopoulos (1990), p.222
Peru	1990	9.5	9.1	Gill (1991b), Table 9
United States	1978	9.0	8.6	Cohn, Kiker and Oliveira (1987), p.292
Venezuela	1987	7.7	10.0	Psacharopoulos and Alam (1991), p.31, 36
Mean		10.8	12.2	

Table A-9
Returns to Investment in Education by Level
Over-Time: Full Method

Country	Year	Social			Private			Source
		Prim.	Sec.	Higher	Prim.	Sec.	Higher	
Australia	1969				14.0	13.9	See Psacharopoulos (1985)	
Australia	1976				8.1	21.1	See Psacharopoulos (1985)	
Brazil	1970				24.7	13.9	See Psacharopoulos (1985)	
Brazil	1980				11.0	16.0	Dougherty and Jimenez (1991), p.95	
Brazil	1989	35.6	5.1	21.4	36.6	5.1	28.2 Psacharopoulos and Ng (1992)	
Canada	1960			14.9			17.4 Stager (1989), p.74	
Canada	1985			12.1			14.0 Stager (1989), p.74	
Chile	1960	17.2	10.6	11.6	33.1	12.5	6.8 Riveros (1990), p.117	
Chile	1985	12.4	9.2	10.3	27.6	11.0	6.9 Riveros (1990), p.117	
Chile	1989	8.1	11.1	14.0	9.7	12.9	20.7 Psacharopoulos and Ng (1992)	
Cyprus	1975		10.5	9.7		11.6	8.6 See Psacharopoulos (1985)	
Cyprus	1979		6.8	7.6		7.0	5.6 See Psacharopoulos (1985)	
France	1962					11.5	9.3 See Psacharopoulos (1985)	
France	1976					14.8	20.0 Jarousse (1985/86), p.37	
Germany	1964						4.6 See Psacharopoulos (1985)	
Germany	1978						10.5 See Psacharopoulos (1985)	
Great Britain	1841	24.5					Mitch (1988), p.560, 563	
Great Britain	1871	19.0					Mitch (1988), p.560, 563	
Great Britain	1971			10.0			Glennester and Low (1990), p.67	
Great Britain	1971			7.0			See Psacharopoulos (1985)	
Greece	1962		6.3	13.7		7.2	14.0 See Psacharopoulos (1985)	
Greece	1977		5.5	4.5		6.0	5.5 See Psacharopoulos (1985)	
India	1965	13.4	15.5	10.3	17.3	18.8	16.2 See Psacharopoulos (1985)	
India	1978	29.3	13.7	10.8	33.4	19.8	13.2 See Psacharopoulos (1985)	
Indonesia	1978		16.2	14.8			See Psacharopoulos (1985)	
Indonesia	1989		11.0	5.0			McMahon and Boediono (1992), Table 7	
Iran	1972	34.0	11.5	15.0			See Psacharopoulos (1985)	
Iran	1976	15.2	17.6	13.6			See Psacharopoulos (1985)	
Japan	1967						10.5 See Psacharopoulos (1985)	
Japan	1980						8.3 See Psacharopoulos (1985)	
Malawi	1978		15.1				See Psacharopoulos (1985)	
Malawi	1982		15.2				See Psacharopoulos (1985)	
Mexico	1963	25.0	17.0	23.0	32.0	23.0	29.0 See Psacharopoulos (1985)	
Mexico	1984	19.0	9.6	12.9	21.6	15.1	21.7 Psacharopoulos and Ng (1992)	
Pakistan	1975				20.0	11.0	27.0 See Psacharopoulos (1985)	
Pakistan	1979				4.0	5.6	6.3 Khan and Irfan (1985), p.675	
Papua N.G.	1979	19.9	13.9	1.0	29.4	17.6	11.4 McGavin (1991), p.215	
Papua N.G.	1986	12.8	19.4	8.4	37.2	41.6	23.0 McGavin (1991), p.215	

Continued --

Table A-9 (continued)

Country	Year	Social			Private			Source
		Prim.	Sec.	Higher	Prim.	Sec.	Higher	
Peru	1972		19.8	16.3				See Psacharopoulos (1985)
Peru	1985		5.9	9.3				Moock and Bellew (1988), p.29
Peru	1990				13.2	6.3	39.7	Psacharopoulos and Ng (1992)
Philippines	1971	7.0	6.5	8.5	9.0	6.5	9.5	See Psacharopoulos (1985)
Philippines	1985	11.9	12.9	13.3	18.2	13.8	14.0	Tan and Paqueo (1989), p.248
Philippines	1988	13.3	8.9	10.5	18.3	10.5	11.6	Hossain and Psacharopoulos
South Korea	1967		9.0	5.0				See Psacharopoulos (1985)
South Korea	1986		8.8	15.5				Ryoo (1988), p.158
Taiwan	1970		26.5	15.0		17.6	18.4	See Psacharopoulos (1985)
Taiwan	1972		12.3	17.7		12.7	15.8	See Psacharopoulos (1985)
Tanzania	1980		11.0					Knight and Sabot (1987), p.260
Tanzania	1982		5.0					See Psacharopoulos (1985)
Thailand	1970			11.0			14.0	See Psacharopoulos (1985)
Thailand	1985			13.5			21.9	Thailand (1987), p.6-33
Tunisia	1977					17.0	24.1	Bonattour (1986), p.15
Tunisia	1980					13.0	27.0	Bonattour (1986), p.15
Upper Volta	1970	25.9	60.6					See Psacharopoulos (1985)
Upper Volta	1982	20.1	14.9					See Psacharopoulos (1985)
United States	1939		18.2	10.7				See Psacharopoulos (1985)
United States	1987		10.0	12.0				McMahon (1991), Table1
Uruguay	1972		3.6			4.8	5.4	Indart (1981), p.23
Uruguay	1979		9.9			11.6	20.0	Indart (1981), p.23
Uruguay	1989	21.6	8.1	10.3	27.8	10.3	12.8	Psacharopoulos and Ng (1992)
Venezuela	1957	82.0	17.0	23.0		18.0	27.0	See Psacharopoulos (1985)
Venezuela	1989	23.4	10.2	6.2	36.3	14.6	11.0	Psacharopoulos and Ng (1992)
Yugoslavia	1969	9.3	15.4	2.8	7.6	15.3	2.6	See Psacharopoulos (1985)
Yugoslavia	1986	3.3	2.3	3.1	14.6	3.1	5.3	Bevc (1989), p.6

Table A-9.1
Absolute Change in the Returns to Investment in Education by Level
Over-Time: Full Method (Percentage Points)

Country	Period (Years)	Social			Private		
		Prim.	Sec.	Higher	Prim.	Sec.	Higher
Australia	7				-5.9		7.2
Brazil	19				-19.6		14.3
Canada	25			-2.3			-3.4
Chile	29	-9.1	0.5	2.4	-23.4	0.4	13.9
Cyprus	4		-3.7	-2.1		-4.6	-3.0
France	14					3.3	10.7
Germany	14						5.9
Britain	30	-5.5					
Greece	15		-0.8	-9.2		-1.2	-8.5
India	13	15.9	-1.8	0.5	16.1	1.0	-3.0
Indonesia	11		-5.2	-9.8			
Iran	4	-18.8	6.1	-1.4			
Japan	9						-5.5
Malawi	4		0.4			-18.5	
Mexico	21	6.0	-7.4	-10.1	-10.4	-7.9	-2.0
Pakistan	4				-16.0	-5.4	-9.3
Papua N.G.	7	-7.1	5.5	7.4	7.8	24.0	11.6
Peru	13		-13.9	-7.0			
Philippines	17	6.3	2.4	2.0	5.1	4.0	2.1
South Korea	19		-0.2	10.5			
Taiwan	2		-14.2	2.7		-4.9	-2.6
Tanzania	2		-6.0				
Thailand	15			2.5			7.9
Tunisia	3					-4.0	2.9
Upper Volta	12	-5.8	-45.7				
United States	48		-8.2	1.3			
Uruguay	17		4.5			5.5	7.4
Venezuela	32	-58.6	-6.8	-16.8		-3.4	-16.0
Yugoslavia	17	-6.0	-13.1	0.3	7.0	-12.2	2.7
Mean	15.0	-8.3	-5.7	-1.7	-2.0	-1.9	1.7

Source: Table A-9.

Table A-10
The Coefficient on Years of Schooling: Mincerian Rates of Return (over time)

Country	Year	Mean Years of Schooling	Coefficient (percent)	Source
Australia	1981		8.4	See Psacharopoulos (1985)
Australia	1987		5.4	Lorenz and Wagner (1990), pp.13-14
Botswana	1975		16.5	Lucas (1985), p.159
Botswana	1979		19.1	Lucas and Stark (1985), p.917
Brazil	1970		19.2	See Psacharopoulos (1985)
Brazil	1980		14.1	Tannen (1991), p.572
Brazil	1989	5.3	14.7	Psacharopoulos and Ng (1992)
Canada	1971		5.2	See Psacharopoulos (1985)
Canada	1981		5.2	Lorenz and Wagner (1990), pp.13-14
Chile	1960	7.6	11.2	Riveros (1990), p.115
Chile	1987	9.8	13.7	Gill (1991a), Table 7
Chile	1989	8.5	12.0	Psacharopoulos and Ng (1992)
China	1985		5.0	Jamison and van der Gaag (1987), p.163
China	1986		3.7	Byron and Manalota (1990), p.790
Colombia	1965		17.3	See Psacharopoulos (1985)
Colombia	1988		10.5	Psacharopoulos and Velez (1992), Table 4
Colombia	1989	8.2	14.0	Psacharopoulos and Ng (1992)
Costa Rica	1974		15.0	See Psacharopoulos (1985)
Costa Rica	1989	6.9	10.9	Psacharopoulos and Ng (1992)
Cote d'Ivoire	1984	4.5	11.3	Komenan (1987), p.22
Cote d'Ivoire	1986	6.9	20.1	van der Gaag and Vijverberg (1989), p.374
Cyprus	1975		12.5	See Psacharopoulos (1985)
Cyprus	1984		11.0	Demetriades and Psacharopoulos (1987), p.599
El Salvador	1975		17.0	See Psacharopoulos (1985)
El Salvador	1977		7.7	Anderson (1988), p.282
El Salvador	1990	6.9	9.7	Psacharopoulos and Ng (1992)
France	1962		10.8	See Psacharopoulos (1985)
France	1977		10.0	Jarousse and Mignat (1986), p.11
Germany	1974		12.1	See Psacharopoulos (1985)
Germany	1987		4.9	Lorenz and Wagner (1990), pp.13-14
Greece	1960	3.1	9.2	Lambropoulos and Psacharopoulos (1992), Table 7
Greece	1987	10.0	2.7	Lambropoulos and Psacharopoulos (1992), Table 7
Guatemala	1975		10.8	See Psacharopoulos (1985)
Guatemala	1989	4.3	14.9	Psacharopoulos and Ng (1992)
Hong Kong	1976		6.3	See Psacharopoulos (1985)
Hong Kong	1981		6.1	See Psacharopoulos (1985)
Italy	1977	15.2	4.5	Antonelli (1980), p.170
Italy	1987	10.7	2.3	Lorenz and Wagner (1990), pp.13-14
Japan	1970		7.3	See Psacharopoulos (1985)
Japan	1975		6.5	Hill (1983), p.467

Continued -

Table A-10 (continued)

Country	Year	Mean Years of Schooling	Coefficient (percent)	Source
Korea, South	1974		13.0	Ryoo (1988), p.160
Korea, South	1986		10.6	Ryoo (1988), p.160
Kuwait	1972	3.0	8.4	Al-Qudsi (1985), p.126
Kuwait	1983	8.9	4.5	Al-Qudsi (1989), p.270
Malaysia	1970		14.0	See Psacharopoulos (1985)
Malaysia	1979		9.4	Chapman and Harding (1985), p.366
Mexico	1963		15.0	See Psacharopoulos (1985)
Mexico	1984	6.6	14.1	Psacharopoulos and Ng (1992)
Pakistan	1975		7.4	See Psacharopoulos (1985)
Pakistan	1979		9.7	Shabbir (1991), p.12
Panama	1983	7.7	12.1	Heckman and Hotz (1986), p.512
Panama	1989	9.2	13.7	Psacharopoulos and Ng (1992)
Peru	1985	8.2	11.5	Khandker (1991), Table 6
Peru	1990	10.1	8.1	Psacharopoulos and Ng (1992)
Philippines	1982		8.0	Tan and Paqueo (1989), pp.246-7
Philippines	1985		8.1	Tan and Paqueo (1989), pp.246-7
Philippines	1988	9.0	8.0	Hossain and Psacharopoulos (1992)
Portugal	1977		9.1	See Psacharopoulos (1985)
Portugal	1985		10.0	Kiker and Santos (1991), p.192
Tunisia	1977		12.3	Bonattour (1986), p.15
Tunisia	1980		8.0	Bonattour (1986), p.15
United Kingdom	1972		9.7	See Psacharopoulos (1985)
United Kingdom	1987		6.8	Lorenz and Wagner (1990), pp.13-14
United States	1959		10.7	See Psacharopoulos (1985)
United States	1987		9.8	Lorenz and Wagner (1990), pp.13-14
Venezuela	1975	4.6	13.7	Psacharopoulos and Steir (1988), p.325
Venezuela	1989	9.1	8.4	Psacharopoulos and Ng (1992)

Table A-10.1
Absolute Change in the Coefficient on Years of Schooling:
Mincerian Rates of Return (Over Time)

Country	Period (Years)	Mean Years of Schooling	Coefficient (percentage points)
Australia	6		-3.0
Botswana	4		2.6
Brazil	19		-4.5
Canada	10		
Chile	29	0.9	0.8
China	1		-1.3
Colombia	24		-3.3
Costa Rica	15		-4.1
Cote d'Ivoire	2	2.4	8.8
Cyprus	9		-1.5
El Salvador	15		-7.3
France	15		-0.8
Germany	13		-7.2
Greece	27	6.9	-6.5
Guatemala	14		4.1
Hong Kong	5		-0.2
Italy	10	-4.5	-2.2
Japan	5		-0.8
Korea, South	12		-2.4
Kuwait	11	5.9	-3.9
Malaysia	9		-4.6
Mexico	21		-0.9
Pakistan	4		2.3
Panama	6	1.5	1.6
Peru	5	1.9	-3.4
Philippines	6		0.0
Portugal	8		0.9
Tunisia	3		-4.3
United Kingdom	15		-2.9
United States	28		-0.9
Venezuela	14	4.5	-5.3
Mean	11.8	2.4	-1.7

Source: Table A-10.

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