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# STUDENT EXPECTATIONS AND LABOUR MARKET PERFORMANCE: THE CASE OF THE PHILIPPINES

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**ABSTRACT**

This article uses individual data on 10,000 higher education students and 5,000 graduates in the Philippines in 1977 to assess the *ex ante* student perceptions of the labour market against actual labour market outcomes. A comparison of mean expected and actual earnings by various sample characteristics reveals a high degree of realism from the students' viewpoint. Individual self-assessed foregone earnings are used to estimate the *ex ante* returns to higher education and to investment in particular fields of specialization. The expected returns are close to the actual returns. Expected and actual waiting time to first job are of a short duration and a sharply declining function of age. Family background and college performance strongly influence the expected and actual labour market outcomes. The policy implications of the results are briefly discussed.

## I. Introduction

Labour market analyses related to educational planning gain considerable insight when the population under study is not restricted to the world of work but also extends to those in school. Student perceptions about labour market outcomes are important for a number of reasons related to labour supply and policies geared to affect the social demand for education. The fundamental neoclassical assumption on investment in human capital is that the student acts "as if" he knew the labour market outcome of his decision to continue to higher education or to follow a given field of specialization. Information on expected earnings by students and comparison with the actual reward structure can lead to conclusions on the degree of realism of student expectations. The *ex post* evaluation of students' expectations is not only of theoretical interest. In cases where grossly unrealistic expectations

are discovered one could devise an information system transmitting directly actual labour market information to the students and their families, thus avoiding later disappointment if not unemployment.

The purpose of this article is to assess the *ex ante* student perceptions of labour market outcomes in the Philippines, against actual labour market information from working graduates [1].

The data refer to two large files with individual information on nearly 10,000 higher education students and 5,000 graduates in the Philippines in 1977. We shall name these the "students file" and the "graduates file", respectively.

Section II defines the main variables used in the analysis and presents the basic distributions and characteristics of the data sets. Section III presents evidence on some controversial themes in educational planning, such as graduate unemployment, the degree of uncertainty of expected earnings, and public versus private sector pay. Section IV contains the results of regression analysis attempting to explain various dimensions of expected student earnings, actual graduate earnings and waiting time to first job. Section V gives a contrast between expected and actual returns to college education by bringing together information from the students and graduates files as well as from the results of other studies. The final section gives an account of what we might have learned from this study.

## II. Basic Characteristics of the Data Sets

The data were collected in the context of IIEP's project on Higher Education and Employment. Individual questionnaires were distributed to random samples of students of higher education institutions and employees with post-secondary educational qualifications in all parts of the country and in all sectors of the economy. This larger data set, including a file on employers, has already been used in a more comprehensive report on this project and the reader is referred to it for information on the questionnaire, the sampling design and the basic distributions (Sanyal et al., 1979; Psacharopoulos and Sanyal, 1981).

The analysis reported in this article uses only a small number of the original variables, most of which have been transformed or recoded into a continuous or dummy form to suit the statistical analysis. Although the total number of observations is $N = 9{,}105$ for the students file and $N = 4{,}655$ for the graduates file, statistical analyses using missing variables cases were necessarily conducted on the basis of less observations than these maxima. The samples are roughly equally divided between the two sexes.

## THE LEVEL OF INITIAL EARNINGS

Students were asked to state their expected gross monthly earnings at the start of their career (having finished the course for which they are currently enrolled), five and ten years thereafter ($Y_0$, $Y_5$ and $Y_{10}$, respectively). The expected growth of earnings for the students is higher than that of the graduates (Tables I and II) where the growth of earnings between 1973 and 1977 is much more modest. However, given the fact that the mean age of the student sample is 20.5 and the graduates 32.6, the expected initial mean student earnings of 678 pesos per month compare very realistically with the actual graduate earnings from the main job of 723 pesos per month. In the statistical analysis that follows we have preferred to work with graduate earnings from all jobs ($Y$, mean = 806 pesos per month). A disaggregation of graduate earnings by age gives a striking similarity between student expected earnings (678 pesos) and actual graduate earnings (666 pesos) corresponding to the 25–29 age group, i.e., the age group that is nearer to the beginning of their career.

TABLE I

Means of Selected Variables from the Students File

| Variable | Symbol | Mean |
|---|---|---|
| Expected monthly earnings (pesos) | | |
| – upon graduation | $Y_0$ | 678 |
| – after 5 years | $Y_5$ | 1,749 |
| – after 10 years | $Y_{10}$ | 3,690 |
| Earnings of working students | $Y_s$ | 452 |
| Self-assessed foregone earnings | $Y_{for}$ | 498 |
| Waiting time (in months) to first job | $T_{wait}$ | 4.04 |

TABLE II

Means of Selected Variables from the Graduates File

| Variable | Mean |
|---|---|
| Actual monthly earnings (pesos) | |
| – in 1973 | 473 |
| – in 1976 | 647 |
| – in 1977 from main job | 723 |
| – in 1977 from all jobs ($Y$) | 806 |
| Waiting time (in months) to first job | 6.3 |

## THE SEX DIFFERENTIAL

The perceived and actual sex differentials are strikingly similar:

– expected male to female advantage ten years after graduation: 37%
– actual male to female advantage from graduates file: 35%

Given the fact that these statistics roughly correspond to similarly aged students and graduates, one must conclude that the two sexes perceive remarkably well their future relative rewards.

## FOREGONE EARNINGS

This data set is extremely rich in the sense it permits an objective and an *ex ante* assessment of the opportunity cost of student time. On the objective side there exist about 1,100 working students who reported a mean value of 452 pesos actual monthly earnings ($Y_s$). Therefore, we might consider this figure to be the foregone earnings of students who do not work. Also, this information checks nicely with the graduates file where those aged 24 or less report earnings between 349 and 525 pesos.

However, *all* students, i.e. whether they were working or not, were asked: "If you were working instead of going to school, how much do you think would be your monthly income?"

The answer to this question ($Y_{for}$) permits not only a check of its realism, but also the assignment to each student of an individual indirect cost component [2]. This is very important because each student must differ in the opportunity cost of his time because of differential abilities and/or personal or family financial conditions. The mean value of this variable is 498 pesos which again checks nicely with the actual working students' earnings (452 pesos) and the actual young graduates' earnings (349 to 525 pesos). Also, students' self-assessed foregone earnings are strictly increasing by the student's age, exactly in the manner assumed in human capital rate of return calculations.

## PARENTS' INCOME

Reported father's and mother's income in the two files is very consistent in terms of level and structure:

| | Students file | Graduates file |
|---|---|---|
| Father's income | 1,478 | 1,132 |
| Mother's income | 960 | 881 |

The lower level of incomes in the graduates file relative to the students file is due to the fact that the two cohorts are separated by twelve years, hence the graduates' parents profiles are on their declining segment. In terms of structure, the students' parents' earnings sex differential (35%) is nearly identical to the one perceived by the students (37%).

SOURCES OF COLLEGE FINANCE

The vast majority (93.5%) of students are family or self-supported while studying in college, as have been the graduates in the past (92.5%).

SECTOR OF EMPLOYMENT

Whereas 33.2% of the graduates are actually employed in the public sector, 44.9% of students have aspirations of finding employment in the public sector. The large discrepancy in this statistic between the two files might indicate a genuine shift of aspirations towards public sector employment.

SELF-ASSESSED COLLEGE PERFORMANCE

Students and graduates were asked to categorize themselves in terms of excellent, above average, average, below average and poor college performance. There exist no marked discrepancies between the two files in this respect, most respondents placing themselves in the "average" category.

WAITING TIME TO FIRST JOB

Students and graduates were asked how long they expected or had actually waited to get their first job after actively looking for employment. The mean value of this statistic is 4.0 months in the students file and 6.3 months in the graduates file. Although this statistic is one of the dependent variables in the statistical analysis in this article, two preliminary remarks are in order. First, the order of waiting until getting a job (4–6 months) is not so excessive as to be labelled unemployment. Search time might be a more appropriate definition. Second, the 2.3 months difference between actual waiting experience and expected search time might be interpreted as either student optimism regarding employment, or that the employment situation in the Philippines has improved in the last twelve years, especially in the light of the opening up of the overseas employment.

THE FIELD OF STUDY

A comparison of the distributions of the twelve fields of specialization

TABLE III

Expected Student Earnings by Field of Study and Actual Graduate Earnings, Aged 29 or Less

| Characteristic | Actual earnings | Initial $Y_0$ | After 5 years $Y_5$ | After 10 years $Y_{10}$ |
|---|---|---|---|---|
| Agriculture | 636 | 584 | 1,079 | 2,198 |
| Commerce | 579 | 603 | 1,469 | 3,128 |
| Engineering | 912 | 827 | 2,250 | 5,043 |
| Food and Nutrition | 499 | 547 | 1,128 | 2,031 |
| Law | 1,098 | 1,404 | 4,310 | 6,274 |
| Humanities | 584 | 528 | 1,140 | 2,285 |
| Physical Sciences | 637 | 856 | 2,779 | 5,216 |
| Social Sciences | 771 | 669 | 1,673 | 3,846 |
| Medicine | 500 | 687 | 1,758 | 3,471 |
| Fine Arts | 662 | 744 | 2,637 | 6,805 |
| Teacher Education | 495 | 459 | 877 | 1,596 |
| Liberal Arts | 580 | 699 | 2,258 | 5,460 |
| Whole sample | 613 | 678 | 1,749 | 3,690 |

in the two files shows a remarkable over time stability in field choice, the dominant one being business and commerce. The humanities and liberal arts proportions are identical in the two cohorts, while the major shifts are away from food and nutrition, law, teaching and sciences, and towards social sciences and medicine.

## SPECIALIZATION AND EARNINGS

Table III presents a disaggregation of expected and actual earnings by field of college specialization for those aged 29 or less. Law is at the top of the list in both tables and agriculture, food and nutrition and teaching among the last in the earnings hierarchy. Student expectations reflect the real structure of earnings fairly well.

## OTHER EARNINGS DIMENSIONS

Those students who are already married expect a considerable initial earnings advantage over their classmates who are single. This relative advantage diminishes five and ten years after graduation.

Expected student earnings at all career levels are strictly stratified according to self-assessed college performance, and this checks nicely with actual graduate earnings. Clearly, the academically more able students correctly discount their future position in the earnings hierarchy.

TABLE IV

Actual Monthly Earnings by Sex and Educational Qualification (Graduates File)

| Educational qualification | Male earnings (in pesos) | Female earnings | Male earnings[1] advantage (%) |
|---|---|---|---|
| Vocational degree | 592 | 428 | 27.7 |
| Bachelor's | 968 | 613 | 36.7 |
| Post-graduate (MA or Ph.D.) | 2,003 | 1,148 | 42.7 |

The highest expected earnings in the students file correspond to those who plan to be self-employed after graduation, next come those who plan to work in the private sector of the economy and last those in government service.

THE EDUCATIONAL LEVEL DIFFERENTIAL

Lastly, the graduates sample contains employees ranging from those who have not yet obtained their college degree (although with some vocational qualifications) to 20 observations with Ph.Ds. As in every other country, mean earnings strictly follow the degree hierarchy:

| | |
|---|---|
| – vocational qualification | 566 (pesos) |
| – Bachelor's degree | 782 |
| – Master's | 1,054 |
| – Doctorate | 2,451 |

And as is the case in practically every country of the world, the male earnings advantage coefficient increases with the level of qualification because of stronger competition for top jobs at the higher occupational echelons to which those with post-graduate degrees qualify (Table IV).

## III. Evidence on Some Controversial Themes

After the above preliminary remarks, let us have a closer look at some themes related to educational planning such as graduate unemployment, the uncertainty of expected earnings and public versus private sector pay.

JOB SEARCH RATHER THAN UNEMPLOYMENT?

As mentioned above, one of the features of the surveys reported here

is the collection of information on actual and expected time between graduation and finding a job. The time elapsed between graduation (and actively looking for a job) and employment could be given a double interpretation. The most obvious and often cited one is "graduate unemployment". The other one is "job search". The unemployment thesis stems from the intuitive view that the increased output of university graduates experience difficulty in finding a job and thus remain unemployed. The job search thesis says that it is essential for the graduate to shop around some time after graduation before committing himself or herself to an "escalator" corresponding to a given career. Alternatively, the two theses would respectively refer to the involuntary versus voluntary character of unemployment.

The distinction between the two theses is far from being academic. Acceptance of the involuntary unemployment thesis would mean correcting

TABLE V

The Distribution of Actual Waiting Time After Actively Looking for a Job (Graduates File)

| Waiting time (in months) | Number of graduates ($N$) | Relative frequency (%) | Cumulative frequency (%) |
|---|---|---|---|
| 0 | 4 | 0.2 | 0.2 |
| 1 | 721 | 39.7 | 39.9 |
| 2 | 269 | 14.8 | 54.7 |
| 3 | 163 | 9.0 | 63.6 |
| 4 | 79 | 4.3 | 68.0 |
| 5 | 56 | 3.1 | 71.1 |
| 6 | 108 | 5.9 | 77.0 |
| 7 | 29 | 1.6 | 78.6 |
| 8 | 18 | 1.0 | 79.6 |
| 9 | 14 | 0.8 | 80.4 |
| 10 | 12 | 0.7 | 81.0 |
| 11 | 6 | 0.3 | 81.4 |

TABLE VI

The Distribution of Expected Waiting Time Between Graduation and First Job (Students File)

| Waiting time | Per cent expecting to wait |
|---|---|
| 3 months or less | 51 |
| 3–6 months | 35 |
| 7–12 months | 10 |
| Over 1 year | 4 |

downwards any social efficiency measure pertaining to investment in education. Acceptance of the voluntary job search thesis would correspond to a boosting of the social efficiency measure because of the better graduate choice hence more efficient resource allocation. Empirically, it is not easy to make a distinction between the two theses. However, a distinction between the concepts of *incidence* and *duration* of unemployment can throw some light on this controversial issue (see Psacharopoulos, 1980). It is a well known fact that the incidence of unemployment is high among young university graduates. This high initial incidence becomes a social problem only when it persists, i.e., its duration is long. It is very unfortunate that casual observers of the unemployment situation in developing (and also in advanced) countries are impressed by its high incidence among young people. However, all empirical investigations of the time distribution of unemployment point to the fact that its duration is short.

The Philippines makes no exception to this pattern. The mean expected waiting time in the students file is 4.0 months and the actual mean waiting time in the graduates file is 6.3 months. These means perhaps conceal the sharpness of the declining unemployment incidence as a function of time. Table V shows the lower tail of the distribution in the graduates file where more than one half of the job seekers found employment within two months after graduation. Student expectations regarding waiting time between graduation and first job exhibit a similar pattern, more than one half expecting to find a job within three months (see Table VI). Disaggregations of the expected waiting time by sex and marital status show that males have a slightly higher search time relative to females, perhaps reflecting the fact

TABLE VII

Waiting Time by (i) Educational Qualification, (ii) by Actual Time (Graduates File) and Anticipated Time (Students File) According to Self-Assessment of College Performance

| (i) Educational Qualification | Mean waiting time (months) |
|---|---|
| Vocational degree | 10.5 |
| Bachelor's degree | 6.2 |
| Post-graduate | 3.2 |

| (ii) Self-assessment of college performance | Actual waiting time (graduates file) | Expected waiting time (students file) |
|---|---|---|
| Excellent | 2.5 | 3.5 |
| Above average | 4.7 | 3.5 |
| Average | 6.8 | 4.2 |
| Below average | 9.8 | 4.9 |

that male occupations are more diverse and require a lengthier search process. Married persons exhibit a shorter search period, perhaps because of the urgency of family financial commitments. In terms of absolute search time the difference between high and low waiting time is of the order of three months.

More or less similar features are observed when disaggregating the actual graduate waiting time, although now it is the married group that has searched longer, and it is sciences that claim the shortest waiting time and teaching the longest. Actual waiting time, as experienced by the graduates, is neatly stratified by the level of educational qualification and self-assessed college performance (Table VII). The information from the students file (Table VII (ii)) is consistent in ranking with the actual experience of the graduates although more optimistic in terms of the sharpness of the decline of absorption as a function of college performance.

## A TRADEOFF BETWEEN EARNINGS AND JOB SEARCH?

Table VIII gives a striking validation of two propositions of economic theory from the students file. The first proposition says that graduates revise demands for their "reservation" wage with time elapsed since first looking for a job. Although we have no information on the initial salary demands of the students, those who plan to search longer are willing to accept lower initial earnings relative to those who expect to find a job within a shorter time span.

The second proposition is that those who spend more time looking for a job, other things being equal, lose employment experience, i.e., an important form of human capital, and therefore have thereafter permanently reduced earnings. This proposition, which has been documented with high

TABLE VIII

Expected Salary by Waiting Time to First Job (Students File)

| Expected waiting time | Initial salary $Y_0$ | After 5 years $Y_5$ | After 10 years $Y_{10}$ |
|---|---|---|---|
| Less than 3 months | 705 | 1,867 | 3,839 |
| 3–6 months | 666 | 1,627 | 3,412 |
| 7–12 months | 640 | 1,703 | 3,683 |
| Over 1 year | 596 | 1,507 | 3,463 |
| Overall | 681 | 1,752 | 3,659 |

quality longitudinal U.S. data (Ellwood, 1979; Psacharopoulos, 1981), is fully supported by reading horizontally the lines of Table VIII.

## THE UNCERTAINTY OF EXPECTED EARNINGS

Just as with any statistic relating to the future, student expected earnings are associated with a degree of uncertainty which increases the farther away in time the prediction refers. Evidence for this fact is provided by the number of students *not* reporting future expected earnings (Table IX).

Another measure of uncertainty is the variance of mean expected earnings relative to the increasing means as one moves away from the origin. A disaggregation of expected earnings by sex (Table X) shows the interesting fact that for males there exists more uncertainty (as measured by the coefficient of variation) about initial earnings, whereas the opposite is the case for female students. This might be explained by the fact that males initially

Table IX

Expected Earnings at Three Points in Time in the Student's Career

| Career point | | Mean earnings (pesos) | Reporting students ($N$) | Missing cases |
|---|---|---|---|---|
| Initial | $Y_0$ | 678 | 8,645 | 460 |
| After 5 years | $Y_5$ | 1,749 | 8,256 | 849 |
| After 10 years | $Y_{10}$ | 3,690 | 7,851 | 1,254 |

Note: (Reporting students) + (Missing cases) = 9,105 (sample size).

TABLE X

Expected Earnings by Sex and Coefficient of Variation at Three Career Points (Students File)

| Sex/career point | | Expected earnings (pesos) | Coefficient of variation |
|---|---|---|---|
| Males | | | |
| Initial earnings | $Y_0$ | 826 | 1.97 |
| After 5 years | $Y_5$ | 2,241 | 1.52 |
| After 10 years | $Y_{10}$ | 4,654 | 1.37 |
| Females | | | |
| Initial earnings | $Y_0$ | 563 | 1.17 |
| After 5 years | $Y_5$ | 1,365 | 1.45 |
| After 10 years | $Y_{10}$ | 2,931 | 1.53 |

compete for a wider array of jobs until they find their "station in life", whereas females initially enter a narrow range of female-stereotype occupations with uncertainty only clouding their later career prospects because of possible marriage, family commitments and the like.

## PUBLIC VERSUS PRIVATE SECTOR PAY

As shown in Table XI there exists a slight asymmetry in public versus private pay in the two samples. Those who are now students expect to receive a higher remuneration in the private relative to the public sector of the economy and this ranking is opposite to the one observed in the graduate sample. One possible explanation of this reversal of opinion relative to the facts is the higher seniority of the graduates. Another possible explanation is a genuine increase in private job opportunities that is reflected in higher salaries. Also, a disaggregation of actual graduate public versus private pay-by-age group reveals that the students' expectations are right later on in their careers. A disaggregation of public and private pay by field of study reveals that students expect consistently higher rewards in the private sector. Actual graduate pay (Tables XII and XIII) is more erratic exhibiting higher remuneration in the private sector for those who studied agriculture, food and nutrition, law and social sciences. One dramatic difference in public–private pay refers to teachers, those in state schools ($Y$ = 1,168) getting about half as much again in pay relative to their colleagues in private schools ($Y$ = 682).

TABLE XI

Expected versus Actual Pay by Economic Sector

| Sector of employment | Expected student earnings, $Y_0$ | Actual graduate earnings, $Y$ |
|---|---|---|
| Private | 686 | 807 |
| Public | 575 | 869 |

TABLE XII

Actual Pay by Economic Sector and Age (Graduates File)

| Age group | Private sector | Public sector |
|---|---|---|
| 30– | 611 | 623 |
| 30–40 | 902 | 785 |
| 40+ | 1,254 | 1,153 |

TABLE XIII

The Sex Earnings Differential by Economic Sector (Graduates File)

| Sector of employment | Male earnings (pesos) | Female earnings | Male earnings advantage (%) |
|---|---|---|---|
| Private | 956 | 575 | 39.9 |
| Public | 1,042 | 726 | 30.3 |

TABLE XIV

Mean Earnings by Educational Level of Two Generations (Pesos)

| Educational level | Mean monthly earnings | |
|---|---|---|
| | Father | Respondent |
| No education | 884 | [a] |
| Primary school | 953 | [a] |
| Secondary school | 964 | [a] |
| Vocational school | 1,017 | 566 |
| B.A. | 1,446 | 782 |
| M.A. | 1,396 | 1,054 |
| Ph.D. | 2,150 | 2,451 |

[a] The graduates sample does not include persons with secondary educational qualifications or less.

TABLE XV

Expected Student Earnings by Father's Occupation (Students File)

| Father's occupation | Initial $Y_0$ | After 5 years $Y_5$ | After 10 years $Y_{10}$ |
|---|---|---|---|
| Professional | 772 | 2,148 | 4,672 |
| Administrative | 849 | 2,189 | 4,730 |
| Clerical | 615 | 1,544 | 3,465 |
| Sales workers | 696 | 1,956 | 4,227 |
| Service workers | 624 | 1,483 | 3,261 |
| Agricultural workers | 587 | 1,416 | 2,811 |
| Production workers | 623 | 1,474 | 3,071 |
| Armed forces | 710 | 1,548 | 3,397 |
| Overall | 689 | 1,764 | 3,761 |

As expected, the actual sex differential from the graduates file is much smaller in the public sector relative to the private sector (Table XIII).

THE ROLE OF THE FATHER

Parental influence is strong in affecting student earnings expectations and waiting time to first job. In the first place, father's income is neatly stratified by educational level (Table XIV). Then, expected student earnings at the three career points (0, 5 and 10 years after graduation) are strongly influenced by the occupations of their fathers. Students whose fathers are in the professional or administrative occupational category aspire to the highest earnings, while the offspring of farmers to the least (Table XV). Finally, father's income is inversely related to waiting time to first job. As shown in Table XVI, those graduates who waited 1–2 months came from fathers with 400 pesos higher income relative to those who waited over one year.

TABLE XVI

Waiting Time to First Job by Father's Income (Graduates File)

| Waiting time | Father's income (pesos) |
|---|---|
| 1–2 months | 1,202 |
| 3–6 months | 1,053 |
| 7–12 months | 1,051 |
| Over 1 year | 804 |

## IV. Earnings and Search-Time Functions

The various factors that have been individually discussed in the previous sections are now pooled together in an effort to explain statistically a set of dependent variables. We also introduce in the regressions some additional independent variables in a heuristic way so as to find out if they relate statistically to the dependent variable.

THE VARIABLES LIST

The set of dependent variables from the students file includes the continuous ones

– self-assessed foregone earnings, $Y_{for}$
– earnings of working students, $Y_s$
– expected earnings at the start of the career, $Y_0$
– expected earnings after 5 years in the career, $Y_5$
– the 5–to–0 expected earnings growth ($Y_5/Y_0$)
– expected waiting time to get a job, $T_{wait}$, and
– the National Entrance Examination (NCEE) score.

TABLE XVII

Earnings and Waiting Time Regressions on Extended List of Independent Variables (Students File)

| Independent variable | Foregone earnings ($Y_{for}$) | Working student earnings ($Y_s$) | Initial earnings ($Y_0$) | Earnings after 5 years ($Y_5$) | Waiting time ($T_{wait}$) |
|---|---|---|---|---|---|
| Mean: | 498 | 452 | 678 | 1,749 | 4.040 |
| Constant | 444 | 312 | 627 | 1,490 | 3.657 |
| Male | 81* | 24* | 190* | 611* | 0.256* |
| Married | 13 | 197* | 351* | 177 | –0.174 |
| Private elem. school | –13 | –6 | –25 | –196* | –0.048 |
| Barrio sec. school | 4 | –78 | 2 | 295 | 0.635* |
| Vocational sec. school | –55* | 116 | –68 | –282* | 0.496* |
| Science sec. school | –86 | 83 | –36 | 84 | –0.399 |
| Working student | –54 | . | 59 | 280* | –0.457* |
| Public sector empl. | –94 | 10 | –283* | –882* | 0.124 |
| Private sector empl. | –49* | –16 | –217* | –581* | –0.010 |
| Manila or Ilocos | 95 | 157* | 141* | 502* | –0.036 |
| Chinese | 14 | –52 | 29 | 222 | –0.566 |
| U.S.A. | 798* | 439 | 1,189* | 2,649* | 1,457 |
| Thai | 829* | 0 | 367 | 864 | 3,013* |
| Agriculture | 12 | –50 | 28 | –180 | –0.842* |
| Engineering | –16 | 42 | 146* | 552* | 0.689* |
| Food | 31 | 21 | 7 | –113 | 0.641 |
| Law | 279* | 464* | 600* | 2,380 | –0.848* |
| Humanities | –36 | –55 | –80 | –361 | –0.114 |
| Physics | 48 | 89 | 243* | 1,282* | –0.097 |
| Social sciences | 40 | 49 | 44 | 147 | –0.248 |
| Medical | 45 | 140 | 111* | 412* | 1.816* |
| Fine arts | 113* | 6 | 62 | 885* | –0.450 |
| Teaching | –51* | –15 | –60 | –188 | –0.486* |
| Liberal arts | 10 | 159* | 103 | 832* | 0.398 |
| $R^2$ | 0.048 | 0.135 | 0.037 | 0.084 | 0.044 |
| $N$ | 7,079 | 837 | 8,645 | 8,256 | 6,989 |

* Indicates statistical significance at the 5% level or better.

TABLE XVIII

Earnings Growth and Dichotomous Opinion Variables on Extended List of Independent Variables (Students File)

| Independent variable | Earnings growth ($Y_5/Y_0$) | Course work satisfactory | Moved for college |
|---|---|---|---|
| Mean: | 2.289 | 0.818 | 0.457 |
| Constant | 2.341 | 0.726 | 0.387 |
| Male | 0.125* | 0.027* | 0.020 |
| Married | 0.183 | 0.076* | -0.043 |
| Private elem. school | -0.106* | -0.016 | -0.073* |
| Barrio sec. school | -0.067 | 0.040 | 0.178* |
| Vocational sec. school | -0.129* | 0.005 | -0.011 |
| Science sec. school | 0.127 | 0.079* | 0.051 |
| Working student | 0.013 | -0.017 | -0.016 |
| Public sector empl. | -0.428* | 0.072* | 0.025 |
| Private sector empl. | -0.182* | 0.036* | -0.056* |
| Manila or Ilocos | 0.287* | 0.001 | 0.087* |
| Chinese | 0.157 | 0.086* | -0.184* |
| U.S.A. | -0.377 | 0.166 | 0.042 |
| Thai | 0.093 | 0.131 | 0.473* |
| Agriculture | -0.391* | 0.070* | 0.074* |
| Engineering | 0.245* | 0.104* | 0.087* |
| Food | -0.308* | 0.047 | -0.109* |
| Law | 0.185 | 0.124* | 0.289* |
| Humanities | -0.382* | -0.005 | 0.001 |
| Physics | 0.304* | 0.062* | 0.180* |
| Social sciences | 0.053 | 0.046* | 0.026 |
| Medical | -0.041 | 0.061* | 0.156* |
| Fine arts | 0.556* | 0.182* | -0.072 |
| Teaching | -0.489* | -0.054* | -0.068* |
| Liberal arts | 0.101 | -0.003 | 0.018 |
| $R^2$ | 0.090 | 0.027 | 0.051 |
| $N$ | 7,981 | 9,105 | 9,105 |

It also includes two dichotomous (dummy) variables

- whether the student thinks the course work is satisfactory, and
- whether the student moved out of his home province to pursue his college education.

The dependent variables used from the graduates file are total earnings and its natural log transformation as well as waiting time. Of course, no proper human capital earnings functions can be fitted because the two files do not contain observations on the whole spectrum of educational qualifications [3].

Tables XVII and XVIII present the regression results on the expanded set of independent variables. Beyond the variables already discussed, this includes the following dummies, along with the omitted categories with reference to which the coefficients should be interpreted:

- the fact that the student attended a private elementary school (state school is the omitted category)
- the fact that the student attended a vocational, barrio or science secondary school (secondary general is the omitted category)
- the fact that the student expects to be employed in the private or the public sector of the economy (self-employment is the omitted category)
- the fact that the student is located in the urban area of Manila or Ilocos (the rest being the omitted category)
- the fact that the student is Chinese, American or Thai (Philippino being the omitted category), and
- the field of study (commerce and business being the omitted category).

The number of observations varies in each regression because of missing cases for one or more of the variables used.

## REGRESSION RESULTS

The main features of the regression results are as follow:

As judged from the $R^2$ values explanation is very low, even taking into account the fact that this is a cross-sectional sample. The most predictable dependent variable from the set is the earnings of working students, ($Y_s$, $R^2$ = 13.5%) perhaps because this is the most objective variable in the set. Next are the longer-looking variables of earnings growth ($Y_5/Y_0$) and earnings 5 years after graduation ($Y_5$) with $R^2$ of 9% and 8.4%, respectively. Initial earnings ($Y_0$) is the most unpredictable variable among the continuous ones ($R^2$ = 3.7%) while satisfactory course work exhibits the lowest overall $R^2$ equal to 2.7% [4].

Turning to the statistical significance of particular independent variables, the fact that the respondent is male dominates the scene. For example, males expect, other things being equal, 190 pesos above females in terms of starting monthly salary. Males expect to wait fractionally longer than females to get their first job (one quarter of one month) and they are more likely to find the course work satisfactory.

The fact that the respondent is married significantly influences working student earnings, foregone earnings and initial earnings, although it does not seem to affect later earnings or the growth of earnings.

Among the secondary school types, vocationalism appears almost

throughout with negative signs most of which are statistically significant. As found in other studies, those who finish vocational courses do not necessarily perform better in the labour market and they also have to wait longer to get a job (see Psacharopoulos, 1980).

Public and private employment appears with significant negative signs (relative to self-employment). Clearly, the self-employed are doing much better in the Philippines' economy.

Manila or Ilocos residence is associated, as expected, with positive coefficients on earnings.

Among the nationality dummies it is only the American one that appears with strong positive coefficients (relative to Philippino) earnings. Thais expect to wait significantly longer (three months) to get their first job.

Among the field of study dummies, law dominates the scene with significant positive coefficients almost throughout. Law students not only expect 600 extra initial salary (relative to commerce and business students) but also have (other things being equal) higher self-assessed foregone earnings ($\Delta Y_{for} = 279$) and actual earnings ($\Delta Y_s = 464$) if they happen to work while studying. At the other end of the scale, teaching appears with significantly negative coefficients, while the performance of other fields of study is extremely mixed. It should be mentioned, however, that some "soft subjects" like fine and liberal arts also appear with significantly positive coefficients in some instances.

## FURTHER RESULTS

After this preliminary analysis Table XIX presents the results of regressions using only a limited set of independent variables, transforming in log terms the earnings dependent variables, adding father's income as an explanatory factor and attempting to explain the NCEE score as well. Virtually all coefficients (except some referring to private finance and private sector employment) are statistically significant and have the expected sign. Although explanation is again low, the NCEE score is the most predictable dependent variable ($R^2 = 8.1\%$). Father's income is the strongest determinant of NCEE score, as judged from the high $t$-ratio ($t = 9.3$). Father's income is statistically significant in all regressions. Waiting time is the most volatile dependent variable ($R^2 = 0.4\%$), while earnings growth in the first five years after graduation is the most predictable among the remuneration variables.

## GRADUATE FUNCTIONS

Table XX gives the results of graduate log-earnings and waiting time

TABLE XIX

Regression Results on Reduced Set of Independent Variables (Students File)

| Independent variable | Dependent variable | | | | | |
|---|---|---|---|---|---|---|
| | $\text{Ln}Y_0$ | $\text{Ln}Y_5$ | $\text{Ln}Y_{10}$ | $\frac{Y_5}{Y_0}$ | Waiting time | NCEE |
| Constant | 5.949 | 6.417 | 6.457 | 2.263 | 3.553 | 83.391 |
| Male | 0.170 | 0.266 | 0.352 | 0.208 | 0.294 | −2.586 |
| | (5.5) | (5.8) | (5.7) | (6.5) | (2.7) | (4.8) |
| Father's income | 0.00004 | 0.00008 | 0.00010 | 0.00090 | −0.00005 | 0.111 |
| | (6.5) | (8.2) | (7.4) | (12.7) | (2.2) | (9.3) |
| Private finance | 0.090 | 0.191 | 0.277 | 0.036 | 0.275 | −3.636 |
| | (1.4) | (2.0) | (2.2) | (0.5) | (1.2) | (3.3) |
| Private sector | 0.028 | 0.024 | 0.242 | −0.076 | 0.078 | 1.844 |
| | (0.6) | (0.3) | (2.6) | (1.6) | (0.5) | (2.2) |
| Public sector | −0.156 | −0.513 | −0.501 | −0.447 | 0.303 | −6.029 |
| | (3.4) | (7.3) | (5.4) | (9.3) | (1.9) | (7.1) |
| $R^2$ | 0.020 | 0.043 | 0.039 | 0.070 | 0.004 | 0.081 |
| $N$ | 6,616 | 6,616 | 6,616 | 6,006 | 5,167 | 4,063 |

Numbers in parenthesis are $t$-ratios.

TABLE XX

Earnings and Search Functions from the Graduates File

| Independent variable | Dependent variable | |
|---|---|---|
| | Ln($Y$) | Waiting time |
| Constant | 4.938 | 5.174 |
| Sex | 0.168 | 0.100 |
| | (2.26) | (0.12) |
| Age | 0.018 | 0.211 |
| | (3.28) | (3.19) |
| Married | 0.100 | 0.899 |
| | (1.25) | (0.99) |
| Father's income | 0.00002 | −0.0005 |
| | (0.99) | (1.82) |
| Public sector | −0.142 | 1.641 |
| | (1.75) | (1.71) |
| Bachelor's | 0.487 | −5.435 |
| | (3.39) | (3.30) |
| Graduate | 0.482 | −9.917 |
| | (2.09) | (3.63) |
| $R^2$ | 0.020 | 0.047 |
| $N$ | 2,041 | 889 |

Numbers in parentheses are $t$-ratios.

functions using a limited set of independent variables. The most important result to note is that father's income is not, in the case of graduates, a significant factor in affecting earnings or waiting time, perhaps because its influence attenuates as one moves away from the early career stages where, as found using the students file, father's income is a strong predictor of labour market performance.

## V. The Returns to College Education

The information in the students and graduates files permits the estimation of the returns to college education as perceived by the students and as actually enjoyed by the graduates. We shall approach this theme in two stages. First, we shall produce an overall expected rate of return to college education from the students file and we shall check this against the actual returns from the graduates file and other studies. Next, we shall disaggregate the rate of return by selected sample characteristics such as the field of specialization.

### THE BASE ESTIMATES

Our first expected rate of return to college education from the students file is based on $Y_0$, i.e., the starting salary and the self-assessed foregone earnings.

TABLE XXI

Expected versus Actual Private Returns to College Education

| Rate of return type | Assumption or source | Rate of return (%) |
|---|---|---|
| Expected (students file) | $Y_0 = 680$, $Y_{for} = 498$ | 7.3 |
| | Direct cost added ($C = 200$ pesos) | 5.2 |
| Actual (graduates file) | $Y'_0 = 666$, $Y_{for} = 498$ | 6.7 |
| | Direct cost, added, $C = 200$ | 4.8 |
| | $Y'_0 = 666$, $Y'_{for} = 349$, $C = 200$ | 11.5 |
| | $Y = 806$, $Y'_{for} = 349$, $C = 200$ | 16.6 |
| Actual (graduates file) | B.A. (versus high school) | 15.8 |
| | M.A. (versus B.A.) | 12.6 |
| | Ph.D. (versus M.A.) | 32.0 |
| Actual (other studies) | Williamson and De Voretz (1966) | 13.0 |
| | ILO (1971) | 9.5 |

Using the formula $r = \frac{Y_0 - Y_{for}}{5(Y_{for} + C)}$

where 5 is an assumed across the board length of college studies in years and $C$ the direct private monthly cost of college education the rate of return ($r$) is estimated at 7.3% or 5.2% depending on whether direct costs are included or not (see top panel of Table XXI).

The private direct costs of college study in the Philippines vary from near zero for those who hold scholarships to 611–3,814 pesos (see Sanyal et al., 1979, Table 3.24). In the basic rate of return calculation we have used an across the board direct cost assumption of $C = 200$ pesos per month.

The order of magnitude of the returns cited gives an indication that Philippino students expect modest returns from the college education they receive, although the 5.2% to 7.3% estimates must be downward biased as they are based on initial earnings and they do not take into account the growth of earnings thereafter.

The second panel of Table XXI gives more or less comparable estimates of the actual returns to college education from the graduates file. The first estimate ($r = 6.7\%$) is based on the actual starting salary of graduates, uses the self-assessed student foregone earnings and is very near to the expected rate of return estimate (7.3%). Adding direct costs reduces the actual returns to 4.8%, again very close to the corresponding expected return of 5.2%. The third actual rate of return estimate from the graduates file uses an alternative assumption of foregone earnings ($Y'_{for} = 349$) coming from information contained in the same file, i.e., the earnings of those aged 19 or less and hence without a college degree. The actual rate of return in this case is of the order of 11.5%. Using actual mean earnings ($Y = 806$) rather than starting earnings, further raises the returns to college education ($r = 16.6\%$) because of the growth of earnings effect with age mentioned above.

The third panel of Table XXI attempts a disaggregation of the actual returns to college education by degree level using the mean earnings of each group of graduates. The results indicate a slight dip of the returns to a Masters ($r = 12.6\%$) but extremely high returns at the margin to a doctorate [5].

The last panel of Table XXI presents two previous estimates of the actual returns to college education in the Philippines (I.L.O., 1974; Williamson and De Voretz, 1969). Bearing in mind the different dates to which the estimates refer (1966 and 1971 relative to ours that refer to 1977) and the different data bases and methodologies used, one is impressed by the overall proximity of the actual returns to education and the expected returns as perceived by the students.

## VI. Conclusion

The results of this study support a number of conclusions, the main ones being as follow:

(a) Higher education students have a realistic perception of the *level* of earnings they will receive upon graduation in the labour market.
(b) Students also have realistic expectations regarding the *structure* of labour market rewards by sex, field of study, occupation and self-assessed college performance.
(c) Students make extremely realistic assessments of their *foregone earnings* while in college.
(d) Regarding the *sector of employment* students correctly anticipate they will enjoy the highest rewards by working on their own account, whereas they are optimistic regarding the rewards from the public (relative to the private) sector of the economy.
(e) Expected and actual *waiting time* to the first job is too short to be characterized as "graduate unemployment".
(f) However, those who search longer exhibit somehow permanently *depressed wages* thereafter.
(g) *Parental income* positively affects expected student earnings and negatively waiting time to the first job, although its effect on actual graduate earnings later in life diminishes.
(h) The level of *expected earnings* and *expected waiting* to first job are favourably related to the respondent being male, expecting to enter self-employment and studying law, and unfavourably related to the specialization of teaching.
(i) The level of *actual earnings* and *actual waiting* time for the first job is consistent with the expected earnings and waiting function results reported under (h), above.
(j) The expected *rate of return* from investment in college education is very realistically close to the actual returns.

Regarding policy, the results of this study seem to support the following two propositions. First, given the realistic expectations of students vis-à-vis actual labour market outcomes, there seems to be no overwhelming case for an information system transmitting actual price signals to the student and his family. These signals are fairly well and automatically transmitted by the informal social network. Although one could possibly use starting public salaries as a policy instrument to affect the social demand for education, no planner could reduce the uncertainty of future earnings ten years into the career. This uncertainty has been well documented in the students' perception of salaries five and ten years after graduation.

The second proposition is, once more, an increased confidence to the previously and often documented fact that graduate unemployment is not a permanent phenomenon and that sooner or later the graduate finds a niche. In the case of the Philippines this happens three to four months after graduation, a time span short enough not to warrant the label of graduate unemployment. Also, some "soft faculties" like law and fine arts seem to lead to high earnings and quick absorption by the labour market. Therefore, one should take this into account in the formulation of educational policy and try to promote a balance of faculties rather than the old prescription of providing mainly for engineering, technology and agronomy for economic development.

## Notes

1 For other studies containing estimates of *ex ante* returns to education, see McMahon (1975), Psacharopoulos and Soumelis (1979) and Williams and Gordon (1981).

2 This is an issue that has received a lot of attention in the theory of human capital, such as in Gary Becker's opportunity–ability model of income distribution but has remained empirically obscured because of the demanding nature of the data. See his 1967 Woytinsky Lecture, "Human Capital and the Personal Distribution of Income: An Analytical Approach", reprinted in the second edition of his *Human Capital* book, Becker (1975).

3 The reader is reminded that in the Mincer (1974) human capital formulation:

$$\text{Ln}Y = a + bS + cEX + dEX^2$$

where $S$ is years of schooling and $EX$ years of experience, the constant term "a" refers to the earnings of those with 0 years of education, something that can only result if the sample includes illiterates.

4 Given this exploratory result we did not feel a more appropriate statistical technique (such as logit analysis) should be used for the dichotomous dependent variable explanation.

5 The marginal time assumptions for these calculations have been two years for the M.A. relative to B.A. and three years from the M.A. to the Ph.D. The direct M.A. costs have been assumed equal to 300 pesos per month and the corresponding Ph.D. costs to 400 pesos per month.

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