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A MODEL FOR VALUATION OF A PHD DIPLOMA A MICRO-MODEL FOR THE FACULTY MEMBERS OF LPU BATANGAS

JUAN APOLINARIO C. REYES*

*Assistant Professor, Dept. of Mathematics, Lyceum of the Philippines University Batangas Philippines

ABSTRACT

Faculty members with a PhD made a huge investment in higher education. This study develops a model by which faculty members of LPU Batangas with a PhD can evaluate their investment. The valuation employed in this study is Rate of Return on Investment or ROI. The cost function is based on median cost of total tuition and miscellaneous fees needed to complete a PhD. This median is obtained from a list of tuition and matriculation fees from various universities where faculty members of LPU Batangas finished their PhD. The revenue function on the other hand is based on loading scheme at the department level and on the salary and incentive scheme stipulated in the LPU Employees Manual and Salary Scheme of the Human Resource Department of LPU Batangas. The specific variables that go into the revenue function are: hourly rate, average teaching load, over-load compensation, vacation leave cash equivalent, and separation benefits. The model was tested based on a data set collected from ten respondents.

KEYWORDS: Graduate Degree, PhD, Economic Valuation, ROI, Higher Education.

INTRODUCTION

Faculty members with Doctor of Philosophy degree (PhD) are priced employees of universities. In many universities in the Philippines they serve many practical purposes. They are depended upon to improve the research output of the university owing to their thesis and dissertation writing experience in graduate school. They are also often tasked to nurture the culture of research by being assigned as thesis advisers to undergraduate students or as course handlers of subjects in technical writing. Alongside the research agenda graduate degree holders improve the university profile. Their credentials for example are often presented as centrepiece during accreditations.

Faculty members with PhD made an investment in education. They put money into obtaining a graduate diploma hoping to see a future pay off. In as much as this is an investment it is only fitting to evaluate it in the same manner that people evaluate investments in business or finance. How much profit does a graduate degree bring? How does such an investment compare with other options? A faculty member who carries a Masters degree for

example can choose to forgo with additional academic advancement in exchange for a possibly higher pay off from alternative investments such as gold, real estate, stocks and time deposits. The choice to acquire a PhD presents an additional economics-related question: what is the opportunity cost of this decision? Faculty members share a keen interest to see the fruits of their investment because in most cases it is the faculty member who shoulders the cost of his graduate education.

This paper presents a micro-model for valuation of a PhD based on the teaching load assignments and general salary scheme of Lyceum of the Philippines University Batangas. This valuation is based on Return on Investment (ROI).

The term PhD is used in this paper to refer to any of the following degrees Doctor of Philosophy, Doctor of Education, Doctor of Public Administration, and Doctor of Business Administration. Masters degree or MA refers to either Master of Arts or Master of Science. Teaching load is the weekly teaching hours assigned to a faculty.

Methodology

This study used return on investment (ROI) to construct a model for valuation of PhD. ROI measures the ratio of profit over cost. The median cost of finishing a PhD was used to represent the cost function. Five components of revenues were identified and their sum represented the revenue function. The variables r , \bar{y} , \bar{x} , and $S(n)$ used in the model were derived from the salary and teaching load assignments schemes of LPU Batangas and the university's separation benefits.

To test the model, an informal survey was done. Respondents came from five faculty members with PhD and another five with MA. Information about their teaching loads for SY 2012-2013 was obtained alongside the university where the respondents finished PhD. The costs of PhD from these universities were obtained from the total matriculation fees as published in the university's website or its accounting office.

The same information was gathered from faculty members with MA. A comparison between the mean teaching loads between these groups was done to estimate the additional teaching loads that accrued to members with PhD. The yearly increases in rate from 2005 to 2013 were obtained to produce a linear regression to estimate the increases in rate for the next twenty years.

Results and Discussion

Cost Function \bar{C}

The model proposed in this paper obtains the median cost of a graduate diploma based on total enrolment fees needed to complete the degree in various universities where LPU faculty members graduated. Ideally, such cost should include books, transportation fees, board and lodging, attendance to seminars, consultation fees, manuscript preparation, not to mention catering services that sometimes accompany thesis and dissertation defence in many colleges and universities around the Philippines. From a financial perspective consideration of opportunity cost should complete the model. A model that takes all these into consideration is most realistic. These expenses, however, vary on a case to case basis, they are also not reflected in most university accounting books. Furthermore, to organise a survey project to put all these data together carries huge survey costs.

Define C_i to be the total cost of a graduate diploma in university i . The variables t , f , m and n are defined as follows: t – total number of units to finish a degree, f – tuition fee per unit, m – miscellaneous fees, and n the number of terms/semesters to finish a graduate program. The total cost of the graduate diploma in university i is given by $C_i = (tf + nm)$. For the faculty members of LPU Batangas the population mean for the cost of a graduate diploma is chosen to be

$$\bar{C} = \text{median}(C_i).$$

Revenue Function R_i

The revenue function R involves five components. These are revenues from five sources earned by a faculty member: 1) regular compensation, 2) overload compensation, 3) vacation leave cash compensation, 4) 13th month pay, and 5) separation benefits.

Define rate to be the compensation awarded to a faculty for one hour of teaching. Let r_1 be the hourly rate at the entry level of a faculty member with MA and with only the minimum qualification. Let r_2 be the hourly rate at the entry level of a faculty member with PhD also with only the minimum qualification. The rate differential r for PhD is defined as follows:

$$r = r_2 - r_1$$

The rates for PhD and MA increase with time side by side with increases in student tuition fees in LPU. As a function of time (n) this positive correlation is estimated by the regression equation¹

$$r = 0.19n + 38.22$$

Regular Compensation R_1

The regular teaching hours for a regular faculty member in LPU Batangas is 24 hours a week. In one school year a faculty member collects 768 hours. The increase in compensation for two regular semesters received by a faculty with Phd is given by

$$R_1 = 768 \times r$$

Overload Compensation R_2

The guidelines of LPU for assigning overload is based on faculty ranking which is in turn based on two components: academic ranking (60%) and performance ranking (40%). The weight of PhD for academic ranking is 25% whereas for MA it is 15%.

Define w_i to be the weight of PhD as criteria for allocating additional teaching loads, this weight is found to be²

$$w_i = 0.15$$

Define x_i as the average teaching loads from the first and second semesters of faculty member i with MA and y_j for faculty member j with PhD, if \bar{x} is the median for x_i and \bar{y} for y_i , the revenue for the faculty member arising from additional teaching load for one school year is given by³

$$R_2 = 4.8r(\bar{y} - \bar{x})$$

Vacation Leave R_3

Regular employees are entitled to a vacation leave of five days. If this leave is not consumed it is converted to cash based on hourly rate of a faculty member. It is part of LPU management practice to pay the cash equivalent of un-used leave at the end of the second semester. For a faculty member with PhD this revenue is computed as follows:⁴

$$R_3 = 80r$$

13th Month Pay R_4

The 13th month pay is a month's salary given to employees as mandated by law. LPU computes it based on the average monthly earnings of a faculty. If \bar{y} is the median load (teaching load a week), for one year a faculty member performs $32 \times \bar{y}$ of teaching hours. The total revenue for one year is $r \times (32 \times \bar{y})$. This divided by 12 yields the additional revenue that accrues to the faculty from 13th month pay is computed as follows.

$$R_4 = 2.67r\bar{y}$$

Separation Benefits R_5

The separation benefits awarded to a faculty is based on length of service, latest monthly salary before separation, and percentage payable. Percentage payable is defined in Article VII of Separation Benefits of LPU Batangas Employees Manual.

The separation benefit function R_5 is defined as follows.

$$R_5 = 4\bar{y}rS(n)$$

where $S(n)$ is given by

$$S(n) = \begin{cases} 0 & n < 5 \\ 1 & n = 5 \\ 1.8 & n = 6 \\ 2.8 & n = 7 \\ 4.8 & n = 8 \\ 7.2 & n = 9 \\ 10.0 & n \geq 10 \end{cases}$$

The values of $S(n)$ represent the corresponding multiplier multiplied by length of service.⁵

The ROI Model

Combining the five components of compensation yields the final revenue function after n years of employment.

$$R = n \sum_{i=1}^n R_i$$

$$R = [(848 + 7.47\bar{y} - 4.8\bar{x})n + 4\bar{y}S(n)](0.19n + 38.26)$$

The model for valuation based on ROI is

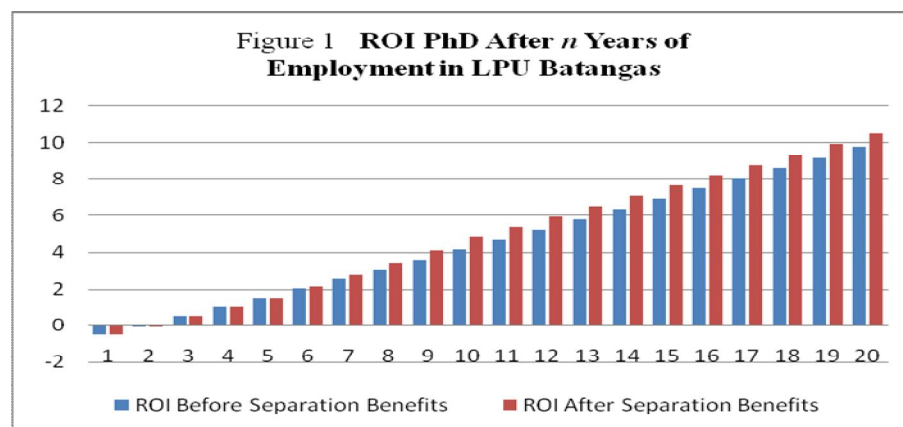
$$ROI = \frac{\left((848 + 7.47 \bar{y} - 4.8 \bar{x})n + 4\bar{y} S(n) \right) (0.19n + 38.26) - \bar{C}}{\bar{C}}$$

Initial Tests

An informal survey was conducted to run the model. Pertinent data were collected from five Faculty members with PhD and five members with MA. Because of company confidentiality issues the actual values of mean teaching loads \bar{y} and \bar{x} are not revealed in this paper.

Based on the informal survey $\bar{y} - \bar{x} = 4.5$, and $\bar{C} = 75000 \text{ Php}^6$

n Years	ROI Before Separation Benefits	ROI After Separation Benefits	n Years	ROI Before Separation Benefits	ROI After Separation Benefits
1	- 0.51	- 0.51	11	4.67	5.38
2	- 0.01	- 0.01	12	5.21	5.92
3	0.49	0.49	13	5.76	6.48
4	0.99	0.99	14	6.32	7.03
5	1.50	1.57	15	6.87	7.59
6	2.02	2.14	16	7.44	8.16
7	2.54	2.73	17	8.01	8.73
8	3.06	3.40	18	8.59	9.31
9	3.59	4.10	19	9.16	9.89
10	4.13	4.83	20	9.74	10.48



CONCLUSION

The model presented in this study is based on simple cash flow model. It has merits as it requires only as inputs those expenses and payments which are often recorded in accounting books. This paper however does not wish to understate the deficiency of such a model. Many expenses attend the experience of obtaining a PhD. A comprehensive model that pins down all the cost of this experience from transportation costs, book expenses, dissertation reproduction, dissertation defence, etc., is a major research worth undertaking.

REFERENCE

¹ The regression equation is derived from the rate increases from 2005 to 2013, source: HRD – LPU Batangas

² $w_t = 0.25 \times 0.60 = 0.15$

³ $R_2 = 32 \times w_t \times r(\bar{y} - \bar{x})$, 32 is the total number of weeks in two semesters.

⁴ $R_3 = 8 \times 5 \times 2 \times r = 80r$

⁵ Source: LPU Batangas Employees Manual, HRD LPU-B.

⁶ The median cost coincides with the cost of a PhD from the University of Batangas.

7. LPU Batangas Employees Manual 2013.