

Unlocking Effect of Education

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Abstract. This paper illustrates the benefit of evaluating the effect of education on income using education level rather than years of schooling. The result indicates that an extra year of advance education is worth more than an extra year of basic education. Our findings contradict with past research articles that find evidence of diminishing return to education but are consistent with Becker's[2] and Schultz's[9] claim that the positive effect of education on income is not uniform. Ultimately, our findings offer guideline for nation's education financing policy.

Keywords: Effect of Education, Cumulative Logit Model, Education Financing.

1. Introduction

Human capital theory posits positive relationship between education and income. Thus, one attends school hoping to make more money afterward. However, Becker[2] and Schultz[9] insist that this positive effect of education on income is not uniform. Different levels of schooling may have different effects on wages. Using years of schooling as a predictor in the income model is incapable of capturing this heterogeneous effect of education on income because the estimate coefficient implies an extra year of education creates uniform effect on income. Hence, the model would suggest that an extra year in elementary school is no different than an extra year in college. To make matter worse, past research articles find evidence of diminishing return to education. (Becker[2])

In this paper, we illustrate the benefit of evaluating the effect of education on income using education level rather than years of schooling using national survey data administered by King Prajadhipok's Institute. Because the response variable of our data is categorical, instead of using the conventional regression model we employ a cumulative logit model to fit this data. Agresti[1] and Ramsey&Schafer[7] recommend using the cumulative logit model with an ordinal response variable as it allows the model to capture information embedded in the internal ordering of the income level and to give simpler interpretations with possibly more power than other logits model.

2. Data

The data contains 1,880 samples with 155 variables. This national survey was conducted in Thai by King Prajadhipok's Institute (KPI) using a stratified survey method. Because many variables were unrelated to the main interest of this article, we selected only 9 relevant variables for our study. Schultz[8] notes that many studies of returns to education include only wage earners in their sample, while the excluded group may be relatively small in high-income countries, it represents a significant portion in low-income countries such as Thailand. This set of data contains samples of both wage earners and non-wage earners thereby avoiding bias noted by Schultz.

The response variable is a multilevel categorical response of monthly income. Originally, the income level was classified into 8 levels ranging from less than 5,000 baht (160 USD) to over 100,000 baht (3,175 USD). But samples with income over 40,000 Baht account for less than 5% of the entire sample, we had to reclassify income level into 5 levels.

This KPI data contains two variables as a measure of education; 1) Years of Schooling and 2) Education Level. For years of schooling, the minimum, median, and maximum value is 0, 9.23, and 39 years,

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