



Socioeconomic Influences to the School Performance: Case Study of O-NET Test Result in the Provincial Level

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Abstract

The article was aimed to estimate the influences of socioeconomic factors towards the O-NET test results in Thailand. The purpose of this research was to study the effect of socioeconomic status toward the O-NET test results of the 6th grade, 9th grade, and 12th grade in Thailand. A simple linear regression was adopted to analyze the cross sectional data at the provincial level. The data was retrieved from various surveys by the National Statistical Organization during 2010 such as the Household Expenditure survey, Labor Force survey and Employment survey. The results found that the household income and household expenditures were unable to describe the test score. The internet accessibility and unemployment provided significantly effects to the test results. Nevertheless, the absence of the relationship between the income and the school performance may be diluted by the application of average score as a provincial proxy. In this study, the household income and expenditure took no part in the education performance in the provincial level. To overcome the diluted scores, using of the small area estimation may point out the effect of the socioeconomic status toward the O-NET test scores explicitly.

Keywords: School Performance, Socioeconomic Factors, O-NET Test

Introduction

Education results could be influenced by the socioeconomic status (SES). In the rural area, children seemed to have a limitation of the quality education accessibility (Dewen, 2003; Helge, 1984), since few of teachers preferred to work in the remote area (Collins, 1999). According to the human nature, people seemed to leave their native places and seek for better lives (DeFrain & Asay, 2007). In addition, other learning supplies which could be affordable by wealth such as the computers, sending children to tutoring school, education of parents, competitive environment, and Infrastructure availabilities for the comparable learning environment were limited. All mentioned factors possibly affected the score results through the socioeconomic factors (Grissmer & Flanagan, 1998; Uline & Crampton, 2009; Wilson, 1998; Wilson, Jencks, & Phillips, 1998). The socioeconomic factors varied throughout the different demography and geography.

To give a clearer picture of socioeconomic effects to the educational performances, several articles continually described the relationship of Socioeconomic Score (SES) to the educational achievement (White, 1982). Families with lower SES scores are likely to have less resource for their children during the schooling period. This could reflect through the development of academic skills, for instance, reading skill learning (Aikens & Barbarin, 2008; Coley, 2002). In Aikens and Barbarin's study, they reported the family characteristics and school characteristics having high impacts to the reading achievement. Among high profile student there could be a higher expectation of achievement together with higher financial resources, they seemed to have higher motivation of achievement (JAVEED, 2012) than the lower profile students. Moreover, children from the lower profile families seemed to have less achievement in mathematics than higher profile ones (Coley, 2002; Jensen, 2006). Not only SES score could affect to the student cognitive skills and, but SES score also indirectly concerned with the school performance through the educational



environment. Students in the school where it was located in the low SES score seemed to perform worse than the one in high SES area (Harris, 2009; Lee & Burkam, 2002; Lupton, 2004).

By the way, the SES score caused a change differently depending on the context; educational policy, geographic area, resource availabilities, and other demographics. Similarly, those factors also play roles in the school performances in Thailand especially family characteristics (Pitiyanuwat & Campbell, 1994). According to Pitiyanuwat and Campbell's results, the family processes (support and intellectual resources) and home environment had a positive effect on the mathematic achievement. Moreover, the development of the area also influenced the education results (Lounkaew, 2013). After the compulsory education act has been regulated, Thai's government have started universal supports for all Thai citizen. The scheme has changed the trend of education and get rid of a barrier of education for the poor. They could send their children to school even with limited financial resources. Even though, reaching of a quality education was neither sole going to school, nor having qualified teachers in the area. It is rather a holistic development- income, employment, ability to access basic public services. The development of mentioned factors is gearing the education inequality between the rich and the poor. Thus, the sole income may not enough to be evidences of education achievement among Thai

student. Therefore, this article aimed to ascertain the effect of socioeconomic factors to the O-NET test results. Knowing of its influence to the test scores could guide to an appropriated policy development as a tool to fight with unfairness in society.

Material and Method

1. Data

The study used quantitative data on socio-economic factors from the National Statistical Office (NSO) in provincial level. The ONET-Test result was supported by the National Institute of Educational Testing Standard (NIETS). The average score of three subjects at provincial level in 2010 selected as a proxy of provincial test scores agreeable with the availability of the household income in this scale. The selected year 2010 was linked to the period of the household survey where prominent variables contained.

2. Method

The study applied linear regression to estimate the influence of socioeconomic factors to the test results. It was a cross sectional analysis of the dependent variable (the average sum score of the 3 Subject ONET-Test: Mathematic, Science, and English) and the socio-economic factors as independent variables following the equation below.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8$$

Where

X1 = Gross Provincial Product per capita (GPP)

X2 = Average household income

X3 = Average household expense

X4 = Average household debt

X5 = The poverty

X6 = Unemployment rate in 2011

X7 = Unemployment rate in 2012

X8 = Information Access

Gross Provincial Product (GPP) reflected the net production of the province and indirectly referred to the

economics and urbanization of the province. The household income used as a proxy of the purchasing power of the household in the province. Household expense may relate and compose of the educational expenses in. Some household could have higher expense than income that connected with the household debt and was trying to cope with financial problems in society. On the other hand, implying the anxiety and depression in household effects to the educational performances (Andrews & Wilding, 2004). The poverty was a key factor of how well the poor could perform in the ONET



test. Unemployment rate affected not only income, but also the mental environment of learning in the household. Nevertheless, the effect of unemployment was not immediate. The use of one period lag of unemployment rate possibly provided a stronger evidence. Lastly, the information access; household with a mobile phone, household with a computer, and household with internet in the household—were assumed that the technology will assist children to learn faster in the reign of online information.

3. Limitation

It was only a large scale estimation when some economic factors such as Gross Provincial Product, Unemployment rate, and others were available only in provincial level. Moving back to the year 2010, once the household survey was held in that period. This study rather provided a macro view than a micro scale analysis. Consequently, the use of the aggregated number of test results, average income, and other variables in provincial level as a proxy of socioeconomic factors means the analysis omitted the variation of the population size.

Results

The linear regression model explained the effects of socioeconomic factors to the test results. The OLS method needed to meet the criteria of the best-fit between the data and model. The absence of multi-linearity,

autocorrelation, and heteroscedasticity were required. The assumption testing revealed the independent variables had a strong correlation between the average household income and average household expenses, then, we ignored to include one of them in the equation. The test showed no sign of autocorrelation and heteroscedasticity among the variables. In this article, the results reported separately at each level of education; sixth grade, ninth grade, and twelfth grade.

1. The sixth Grade

The independent variables were able to explain the test results 33.4 percent (R Square .334). However, a significant effect appeared only in the internet accessibility at 0.05 statistically significant. Its beta value implied us about growing of the internet accessibility as 1 percentage will raise the average test score of the three subjects 55 points at the sixth grade level. The two years of unemployment rate is a lagging indicator prevailed a year lagged in the opposite direction to the educational performance. Since the higher negative beta of unemployment will lower the sum score of the three subjects in the province, for instance, increasing of the recent unemployment rate increased will affect the sum score of the three subjects for the next coming year -2.52 points and decreased the scores of the next 2 years -4.119 points. Other variables seemed to have less impact to the educational results.

Table 1 The regression result of the sixth grade

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	98.548	5.615		17.552	.000
Debt	0.000008	.000	.061	.469	.641
Income	0.000064	.000	.048	.277	.783
Poor	-.070	.101	-.087	-.693	.490
GPPCAP	0.0000026	.000	.043	.346	.731
Unem54	-2.528	2.610	-.112	-.969	.336
Unem55	-4.119	2.656	-.186	-1.551	.126
Internetacc	55.108	16.944	.439	3.252	.002

a. Dependent Variable: P6



2. The ninth grade

The result of the ninth grade was interestingly different from the sixth grade when the same set of independent variables affected education results higher than the sixth grade. The independent variables could explain 41.6 percent (R square .416). The Internet accessibility and the two years lagged of unemployment rate were significant at the 0.05 and 0.10 level respectively. Contrary to the higher r-square, the effect

of internet access and unemployment both one and two year lagged seemed palliative. A percent of internet access at this education level could only raise the score of three subjects by 34 points as an unemployment rate could lower the score not more than 2 points; 1.910 for two years lagged data and 0.95 for a year lagged data. Other independent variables played no part in the education performance.

Table 2 The regression result of the twelfth grade

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	83.801	2.282		36.724	.000
Debt	-0.0000014	.000	-.026	-.212	.833
Income	0.000046	.000	.081	.495	.622
Poor	.019	.041	.054	.463	.645
GDPCAP	0.00000046	.000	.017	.151	.881
Unem54	-.954	1.061	-.097	-.899	.372
Unem55	-1.910	1.079	-.199	-1.769	.081
Internetacc	34.041	6.887	.625	4.943	.000

a. Dependent Variable: M3

3. The twelfth Grade

The result of the model at the twelfth grade was robust when the r-square (.593) was higher than any other level and it was able to explain the dependent variable more than 50 percent. The unemployment rate increased its role in the education results. They were significant at level 0.05 and 0.10 for one year and two year lagged of unemployment rate respectively. The results of internet access indeed had a great influence in the education results. In this level, 1 percent of increasing of internet access can cause the rise of

summed score of three subjects 57 points according to the Table3. On the other hand, one period lagged of the unemployment provided a higher effect than the two periods lagged which contrasted to other two education levels. The results of both one and two period lagged unemployment provided a low effect on the test score. One and two periods lagged of unemployment in 2011 and 2012 increasing caused a decreasing of the sum of the three subject scores 3.009 points and 2.512 points, respectively.



Table 3 The regression result of the twelfth grade

Model	Coefficients ^a					
	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1	(Constant)	57.382	3.236		17.730	.000
	Debt	-0.000007	.000	-.076	-.745	.459
	Income	.000	.000	.212	1.554	.125
	Poor	.001	.058	.001	.014	.989
	GPPCAP	0.000003	.000	.066	.688	.493
	Unem54	-3.009	1.504	-.180	-2.000	.049
	Unem55	-2.512	1.531	-.154	-1.641	.105
	Internetacc	57.014	9.767	.615	5.837	.000

a. Dependent Variable: M6

Discussion

The objective was to describe the effect of socioeconomic factors to the test results in the different levels of education; sixth grade, ninth grade, and twelfth grade. The study result revealed the effect of the internet access and the unemployment rate to the test score that they seemed to have a higher effect toward the test score at the sixth grade and the twelfth grade. There were issues to be discussed from the study results as follows.

The effect of high competition, which might be influence by the tough competition in the job market competition for the high paid job (Hallak & Poisson, 2007), to enroll into the reputed schools (Kitsawad, 2013) during the transition of the sixth grade to high school level and the twelfth grade to higher education may be a key role. The reputed school in the government control or the private international school was charging high additional fees for student who were disqualified the entrance test. In this case, the schools will propose their parents to pay additional tuition payments to guarantee a seat in the class. This phenomenon not only presented the competitive rivalry to the high school admission, but also the parent wanted to provide the competitive learning environment for their children. The only choice for the poor was to qualify the admission examination and this is why the socioeconomic factors

affected the school performance in the sixth grade stronger than the ninth grade.

Consequently, the higher demand for higher education reflected through the school fee for their parents to pay (Nitiwong, 2015). The Study of Nitiwong mentioned about the costly price of going to tutorial schools. To afford the cost, parents’ earning was crucial. Notwithstanding, the results in this article explicated that the household income and household expenditure had no effect on the student performance. It might be a complacent word to conclude that both the household income and expenditure failed to produce effects to the education performance. Their effects may be immeasurable in the provincial scale, since the test score were diluted to be an averaged proxy of provincial level. The smaller scale may provide both indirect and direct results as presented in some examples from the United States (Dahl & Lochner, 2005; Davis-Kean, 2005; Reardon, 2011).

A prominent model result was the significant effect of the internet access to the education performance. The result opposed to many studies which had done by case and control studying (Macho, 2006). The internet and technological information using reported nor good or bad results in their school achievement, by the way most of the parents seemed to have anti-direction of internet using among their descendants by limited using of the computer (Kafai & Sutton, 1999). OECD also reported



the negative effect of using the internet to the school results (Peña-López, 2015) that “Students who use computers very frequently at school get worse results”. On the other hand, the point is still skeptical about the effect of information technology to the school performance. Paul Attewell and Juan Battle (Battle, 1999) found that having computers at home is associated with higher test scores in mathematics and reading. In their study, they included the control of family income as well as social and cultural capital. On supply side using technology in teaching also provided effective learning to learners (Dede, 2000; Rau, Gao, & Wu, 2008).

Suggestion and conclusion

Our study results suggested the internet access and unemployment rate affected the school achievement among their children. The results are having a contradiction to many studies. Our study presented the different scale of studying. To conclude our results that the internet access has a great influence in the educational system may be harsh and to jump quickly to the conclusion may mislead the policy guidance. The study needs its extension in the smaller scale among the Thailand's education system in both indirect and direct effects of using technology in the education. Bearing of Information technology unarguably provided great benefit to human society, the effect of education achievement needs a clear definition of using technology in the learning, computer using and computer game addiction in the upcoming study.

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