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AN ECONOMETRIC ANALYSIS ON SELECTED SOCIOECONOMIC INDICATORS: Evidence From State of Malacca, Malaysia

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Abstract

In attaining a sustainable economic growth, the government or the relevant authorities must not disregard social life of the society. Economic development must coincide with the social development of the society. This study will endeavor to investigate the socioeconomic level of household in the state of Malacca by gathering information on 334 households located in the District of Alor Gajah. The main objective of this study is to view the socioeconomic level for selected indicators such as income, education and health. The method of this study is by the issuance of questionnaires which conform to the needs of this study. The methodology employed in analyzing the data obtained is through descriptive analysis and econometric techniques especially in examining the relationship between social and economic variables.

The result of the study shows that the Malay households control the income in the district and have a higher educational level compared to other ethnics relatively. The cost of education for household depends on the income level, the members in the household which are still studying and the ethnicity. The district's households still prefer to obtain health services provided by the government and the degree of dependency decreased accordingly with an increase in income. Although, this study is limited to only few socioeconomic indicators, it still can be considered as an initial step for further studies to be made on socio economy in the state of Malacca.

Keywords: *socioeconomics, household, econometric analysis.*

INTRODUCTION

The five year national plan namely The Eight National Plan has outline in detail on how the government would sustain economic growth and maintain competitiveness in facing the era of globalization and liberalization. The main strategies are centred on how to overcome the challenges during the planning period. The challenges are i) to increase the productivity of the economy; ii)

to increase the supply of quality human capital; iii) to spur research and development activities (R&D in order to promote innovations; and iv) to enhance the development of sectors that contribute to economic growth. The national plan has put greater emphasis on efforts to ensure Malaysia will achieve higher growth and greater strength in its economic activities as well as the well being of the society. The intensity of Malaysia in moving towards developed economy, it should not disregard the living standard of the society. Economic development has no meaning if the quality of live of the society weakens. Policy makers and the economic planning unit should be conscious of the coexistence between economic and social needs which cannot be separated in strategizing the nation national plan.

Socioeconomic is the study of the social and economic impacts of an economy as a whole where the authorities, organizations, firms and individuals are its main actors. These effects can usually be measured in economic and statistical terms, such as growth in size of the economy, households' income, saving, and expenditure, the number of jobs created, home ownership, levels of education, health condition, poverty, internet penetration and others. Socioeconomics is itself not an economic theory though it may use economic theories to understand impacts; it is related to but not identical with economic sociology. The goal of socioeconomic study is generally to bring about socioeconomic development, usually in terms of improvements in metrics. In view of the importance of such study, we try to explore the needs to mainstream the social development in the national/state economic plan in the case of Malacca. The remainder of this paper is organized as follows. In section 2, we discuss literature review, followed by methodology of the study in section 3, Data analysis is review in section 4. In section 5, we discuss the estimation result. Summary and concluding remarks are drawn in the last section.

LITERATURE REVIEW

The development of socio economy is a process to produce a stable and strong society whereby the basic individual needs can be fulfilled. The basic needs of the society must not only be viewed economically but also through healthy quality of life. Although economists do strive for a concurrent relation between social and economic development, in most cases, economic development may not precipitate social development as discussed by Ragayah Md Zin (1999) and Md Zyadi et. al. (2000). Development economists define socio economy as improvement in income, health, education and general contentment in addition to pride and respect as stipulated by Sen (1987), Griffin (1989) and Goulet (1991).

Problem in socio economy is not an issue which has only been discussed recently. In actual fact, it has been deliberated since the early days of human life. Conclusions forwarded by Ismail Md Salleh (2004), Rajah Rasiah (2002), Ragayah Md Zin (2001) and Madeline Berma (2001), for the case of Malaysia, has been found that the socioeconomic indicators are related between one another. They stressed on certain socioeconomic indicators where additional consideration should be given to assure the harmony of the society, for example, basic needs, economic needs, education, health, social security, public amenities/facilities and the environmental quality. The above study singled out several indicators in reviewing the relationship between social and economic indicator. One of the indicators chosen was education. Education is categorized as private goods for individual consumption which are offered publicly. Therefore education is considered as investment which generates profitable returns as mentioned by Voon (2001). The contribution

made by education to socio economy can be viewed from the micro or macro viewpoint. In term of micro, education will be able to promote the individual ability. Meanwhile, in term of macro, it can be viewed as a contributory factor to the economic growth as stipulated by Becker and Lewis (1993), Mc Mahon (1998) and Siphambe (2000). According to Tadaro (1997), the relationship between education and development involves a "two way" process whereby it shows how the economic components such as growth, in-equilibrium and poverty are related to social components such as population, fertility, migration and area development. The health indicator includes the aspects of physical, mental and emotional health as agreed by the World Health Organization (WHO). A sound level of health may improve workforce's productivity which in turn will increase income and consequently the household's (HH) standard of living, in line with the assertions of Van Zon and Muyshen (2001), Henderson (2002) and Leal, Dayton and Mehra (2002). The setting of standard in studying the socioeconomic condition of a society is difficult due to difference of culture in any society. This study will attempt to evaluate the socioeconomic condition of households in the District of Alor Gajah, Malacca and will try to view the relationship between the socioeconomic indicators chosen for this study.

Generally, the main objective of this study is to observe the extence of socioeconomic condition of households in the District of Alor Gajah, Malacca. Specifically, this study is made to analyze the socioeconomic condition of households in terms of income, expenditure and savings; to evaluate the level of achievement in human capital through education; to identify the choice of health services which defines the importance of health to households; to study the relationship between demographical and economic factors in improving the socioeconomic condition; and put forward views and propositions to improve the socioeconomic condition within the district under observation.

METHODOLOGY OF STUDY

The technique employed in obtaining the primary data is by issuance of questionnaires which have been established by the researchers in accordance to the objectives of this study. 334 heads of household (HH) or their representatives have been chosen through the sampling framework obtained with the cooperation of the Household Expenditure Section, Malaysian Statistical Department of Malaysia; employing the strata sampling method through specified sample blocks. The main variable of this study is separated into economic and social variables which were then linked together to view the socioeconomic condition of households in the District of Alor Gajah. Meanwhile, the econometric models that have been established are:

The Education Econometric Model

The education econometric models which will be evaluated are the rate of return on education model and individual cost of education model. In assessing the individual rate of return, the assumptions adopted are; firstly, individual income is a function of school level and working experience whereby school level is considered as formal education and working experience is considered as an informal education and secondly, working experience is said to have an effect on the human capital rate of return. As such, the period in which the individual spends by working, i.e. the age when he/she started working to date, is taken to measure the level of experience. Meanwhile the physical and mental strength will diminish yearly after achieving its peak for certain years. There are two methods in estimating the individual rate of return, i.e. by the common

regression method or Mincer regression method as proposed by Mincer (1974).

Common Regression Method

The model formed:

$$Y_i^s = \ _0 + \ _1 A_{it} + \ _2 A_i^2(t) + \ _t \quad \text{..... (1)}$$

where Y_i^s (t) is the i^{th} household's income in a given class "s" of education level at the period of "t", A is the years spent working, A^2 is the number of years working multiplied by itself, α_1 is the individual's rate of return on education, α_2 is projected to have a negative value as the mental and physical ability (productivity) decreases with the advancement in age and u_{it} is the disturbance term.

Mincer Regression Method

This regression method is in the form of semi logarithm as shown below:

$$Ln\, Y_{it} = \ _0 + \ _1 S_i + \ _2 Ex_i + \ (Ex)_i^2 + \ _{it} \quad \text{.....(2)}$$

where Y, S Ex and $(Ex)^2$ are the household's income, schooling years, years of working experience and years of working experience multiplied by itself. Generally, there exist two types of individual cost faced by households which are the direct and indirect cost. This study will only look into the direct cost for individuals. The educational expenditure (EE) = f {income (Y), the number of children still in school (C1), ethnic (C2), HH's educational level (C3), age of HH (C4), food and drinks' expenditure (E1) and recreational expenditure, eating out, entertainment and others (E2)}. The econometric model produced is presented by the following regression equation:

$$EE_{it} = \delta_0 + \delta_1 Yi + \delta_2 C1_i + \delta_3 C2_i + \delta_4 C3_i + \delta_5 C4_i + \delta_6 E1_i + \delta_7 E2_i + e_{it} \quad \text{..... (3)}$$

This model utilize two dummy variables which are the ethnic variable C2 (1 for the Malay ethnicity) and the HH educational level C3 (1 for higher education).

The Health Econometric Model

The model on demand for health services applied in this study has been pioneered by Goddarad and Smith (1998) and had been revised by Propper (2000). They had agreed whereby an individual has 2 discreet choices of health treatment which are either by obtaining the private or public (government) health services. As the dependent variable is a discreet choice of health services, the binomial logic model is used to estimate the demand of health services. The econometric model produced is as follows:

$$L_i = \ln (P_i/ 1- P_i) = \beta_1 + \beta_2 Y + \beta_3 AH + \beta_4 Age + \beta_5 E + \beta_6 EL + \beta_7 WS + \beta_8 CD + e_i$$

Where L_i in the qualitative dependent variable (1 if the HH select the public health services), Y is income, (AH) is the aggregate number of household members, Age is the age of head of household, E is ethnic, EL is educational level, CD the number of household member with chronic diseases and WS is the working sector. The estimation method employed is not the ordinary OLS but by employing the maximum likelihood method (MLE) – non linear function estimation with a large sample size and the standard error is asymptotic.

Data Analysis

The first objective of this study is to look into the household economic condition in term of income, expenditure and savings. This study has found that the average monthly income for the high income group is RM5063.66 (RM6268), while the average for the middle income group is RM2221.17 (RM2204) and the average for the low income group is RM764.92 (RM865). The

data in bracket is the Malaysian data obtained in the Eighth Malaysian Plan (Malaysia, 2001). The average household income for the state of Malacca is RM2260 but this study has found that the average monthly income for the district of Alor Gajah is RM1657.00. This is far below than the amount of average income for the state of Malacca as a whole. This study suggest that the state authorities may channel more economic activities to the district to reduce the inter district gap of average income. Results of the study also show that with a higher level of income, the expenditure, savings and size of household will also increase accordingly. The same result is also obtained when the relation of HH educational level with average income, expenditure, savings and average size of household is reviewed.

The highest average monthly income belongs to the Malay ethnicity (RM1682.59) followed by the Indian ethnicity (RM1503.79) and Chinese ethnicity (RM1446.67), in contrast with the Malaysian data where the highest income belongs to the Chinese followed by the Indian and Malay ethnicity. This shows that the Malay household's condition in terms of economy fares better compared to other ethnics. The overall average size of household is 4.64 where the average size of an Indian household is 5.14 which are bigger than the Chinese (4.60) and Malay (4.58) household. In terms of expenditure, the average monthly expenditure of Indian household is more (RM2232.26) compared to the Malay (RM1834.30) and Chinese (RM1727.42) household. The high monthly expenditure of the Indian household may be due to a bigger size of household. Meanwhile, the average monthly savings of the Malay household (RM175.25) is higher compared to the Indian (RM121.86) and Chinese (RM62.60) households. The above analysis is enclosed in Table 1.

Table 1: Average Monthly Income, Average Monthly Expenditure. Average Monthly Savings and Average Size of Household by Ethic, Income Category and Educational Level of Head of Household, 2004 (RM)

	Average Monthly Income of Household	Average Monthly Expenditure of Household	Average Monthly Savings	Average Size of Household
Overall	1657.00	1862.86	165.72	4.64
Ethic:				
Malay	1682.59	1834.30	175.25	4.58
Chinese	1446.67	1727.42	62.6	4.60
Indian	1503.79	2232.26	121.86	5.14
Income Category:				
Low	764.92	1329.59	92.86	4.63
Middle	2221.19	2317.12	199.71	4.59
High	5063.66	3419.16	493.56	4.86
Poor	331.74	893.63	43.35	7.43
Level of Education for Head Household				
No Schooling	854.71	1184.11	66.48	4.29
Primary School	1185.90	1325.43	109.13	4.4
LCE/SRP/PMR	1559.71	1989.88	93.65	4.53
MCE/SPM	1819.29	2023.32	216.03	4.95
Diploma/Certificate	2587.73	2649.19	304.77	3.86
Degree	3488.24	3504.33	310.47	5.59

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There are 23 households which can be categorized under the poor income group with an average monthly income of RM331.74 or 6.9% of the respondent falls under the poverty line income (RM510) with average expenditure of RM893.63. The rate of poverty in the State of Malacca itself, under the Eighth Malaysian Plan, is 5.7%. The above shows that the district of Alor Gajah is faced with the problem of poverty which exceeds the real problem faced by the state of Malacca. The local and state government may reduce the problem by identifying the affected household and help them in terms of economy to allow them to escape from the clutches of poverty. Moreover, the large average size of poor household (7.43) further aggravates their financial burden.

ESTIMATION RESULT

Common Regression Method

Estimates are made on the household's (HH's) income in accordance with the HH's on educational level with respect to the years of working factor (A) and years of working squared (A^2). The result of the estimation can be simplified as per Table 2. Based on the common model, which is Model 1, all coefficients are significant at least at 5% except for variable A^2. The coefficient value for variable A which is positive explains that the individual rate of return on education have a direct effect on the household's level of income.

By performing a separate estimation based on different HH's educational level, it has been found that the estimated parameters are significant at 1% only for Model 1C. Notwithstanding the above, the result obtained differs from the expected hypothesis, i.e. estimated parameter for A and A^2 are positive and negative respectively. This indicate that for a HH with SRP qualifications, the individual rate of return is negative, as such, the factor of extended working experience does not benefit the HH from the said category meanwhile the mental and physical ability are found to be improving with the increase in age.

Mincer Regression Method

As per the common regression method, the Mincer method also tries to look into the effect of educational period and working experience on the aggregate income obtained by the household and the function applied is in semi logarithm. The result is stated in the form of estimation equation as follows:

$$\text{Ln } \mathbf{Y_{it}} = 2.74 + 0.0342\ \mathbf{S_i} + 0.0026\ \mathbf{Ex_i} + 0.00016(\mathbf{Ex_i})^2$$

(58.8) (6.94)* (0.51) (1.157)*

$R^2 = 0.18$; $\overline{R}^2 = 0.17$; DW = 2.007; $n.R^2$ = 7.738 with probability = 0.4596 and White Heteroscehadisticity Test, F = 0.963 with probability = 0.4648

The only variable which is significant at 1% is $\mathbf{S_i}$ which has a positive value coefficient. This shows that with additional investment in formal education, $\mathbf{S_i}$, by one year will result to an increase in the household income at the rate 0.034. Meanwhile the length/period of working experience, $\mathbf{Ex_i}$ and $\mathbf{(Ex_i)^2}$, are found not to have an effect on the household level of income. In other words, the individual rate of return from informal education does not exist. The same can also be said on the rate of productivity with the increasing in age of HH in the district.

Educational Expenditure Regression

Every family and AH is said to bear the individual direct cost of education for the length of study/schooling of any AH. Based on the estimation result as per Table 3, for model 2A, it has been found that the significant variables are Y_i at 10%, C1 and C2 at 1% respectively. From the signs for

variables of the said model, variable Y have positive signs which generally agrees with the proposition that any increase in income will contribute to the increase in the educational expenditure. Variable C1 have positive signs, which explains that as the household size gets bigger, there will be an increase in the expenditure towards education. Meanwhile, variable C2 is a dummy variable on ethnic. Positive signs indicate that, on average, the Malay household tend to spend more on education compared to other ethnic.

If Model 2B, 2C and 2D are referred to, in principal, the estimation result is consistent, from the aspect of significance and signs. As such, it can be concluded from the empirical result obtained that the influence of household's income; size and ethnicity are strongly significant towards the total educational expenditure.

Table 2: Result on the Common Regression Method for Household Income

	Dependent Variable: Level of Household Income						
	Model 1	**Model 1A**	**Model 1B**	**Model 1C**	**Model 1D**	**Model 1E**	**Model 1F**
	Overall	No Schooling	Primary School	SRP/ Equivalent	SPM/ Equivalent	Diploma/ Certificate	Degree
Constant	1371.55	395.26	1069.69	1855.14	1579.97	3058.02	3638.37
	(12.40)*	(4.79)*	(9.49)*	(6.72)*	(8.17)*	(1.91)**	(3.64)*
A	44.99	71.94	40.6	-113.91	6.35	-215.02	-45.68
	(2.08)**	(2.76)**	(1.61)	(-2.96)*	(0.22)	(-0.94)	(-0.25)
A^2	-0.4518	-0.664	-1.03	3.24	1.09	8.35	1.84
	(-0.71)	(-0.86)	(-1.55)	(3.31)*	(1.50)	(1.29)	(0.33)
R^2	0.06	0.77	0.03	0.08	0.08	0.13	0.01
$\overline{R}^2$	0.05	0.75	0.01	0.04	0.07	0.04	-0.13
DW	1.77	1.30	1.99	194	1.68	2.04	3.08

Table 3: Educational Expenditure Regression Result

	Educational Expenditure (EE)			
	Model 2A	**Model 2B**	**Model 2C**	**Model 2D**
Constant	-39.92 (-1.62)	-41.46 (-1.62)	-43.69 (-1.80)***	-43.50 (-1.74)***
Y	0.03 (1.73)***	0.03 (3.35)*	0.03 (2.96)*	0.03 (3.72)*
C1	44.97 (3.72)*	44.66 (3.99)*	44.40 (3.63)*	44.43 (3.94)*
C2	50.23 (2.81)*	49.57 (2.62)*	51.83 (2.93)*	51.43 (2.84)*
C3	35.45 (0.91)	34.32 (0.86)		
E1	-0.003 (-0.05)		0.00 (0.012)	
E2	0.06 (0.44)			
R^2	0.12	0.12	0.12	0.12
$\overline{R}^2$	0.107	0.11	0.11	0.11
DW	2.03	2.04	2.03	2.03
White Hetroscadatiscity Test (nR^2)	6.76	4.25	6.17	4.08

*Note: *, ** and *** are significant at 1%, 5% dan 10% respectively; ( ) is statistic t*

The Health Logit Model

The Health Logit Model is applied when the estimated equation involves qualitative dependant variables. This study takes into consideration the relevant factors which are the household's income, the household's size, the dummy variable on ethnic, the dummy variable on HH's level of education, the number of sufferer of chronic diseases in the household and the dummy variable on the working sector towards preference of health services i.e. between the health services provided by the government or health services offered by the private sector.

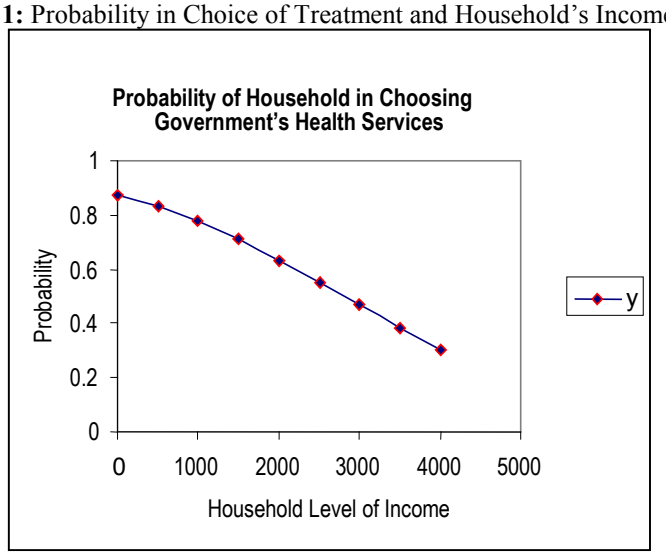
From Table 3, the estimation result has found that the only variable which is strongly significant towards preference in health services and has a positive relation is household's income. The interpretation that can be derived from the estimated value of income variable is that an increase of 1 unit in the household's income will cause the Log for the odds in choosing health services offered by the government to decrease by -0.0003. The said interpretation which is quite technical does not provide any significance to the researchers. Notwithstanding the above, the interpretation will be useful by using the graphical illustration as per Graph 1 which indicate the relationship between the probability of household frequenting governmental clinic/hospital with the household's level of income.

Table 3: Estimation Result of Logit Health Model

	Choice of Health Services from Government or Private			
	Model 3A	**Model 3B**	**Model 3C**	**Model 3D**
Constant	0.53 (1.25)	0.56 (1.32)	0.83 (4.55)	0.84 (4.57)
Y	-0.0003 (-2.90)*	-0.0003 (-3.11)*	-0.0003 (-3.09)*	-0.0003 (-3.58)*
AH (Size of AH)	0.04 (0.71)	0.037 (0.69)		
E (Ethnic) [1-Malay & 0- others]	0.05 (0.15)	0.06 (0.19)		
HH's Education [1- High & 0-others]	-0.31 (-0.75)	-0.33 (-0.88)	-0.38 (-1.02)	
CD (number of chronic patient in household)	0.09 (0.82)	0.08 (0.75)		
WS (Working Sector)	-0.02 (-0.06)			
R^2 McFadden	0.03	0.037	0.034	0.032
AIC	1.36	1.35	1.33	1.33
SBC	1.44	1.42	1.37	1.35

*Note: *, ** and *** are significant at 1%, 5% dan 10% respectively; ( ) is t- statistic*

Figure 1: Probability in Choice of Treatment and Household's Income Level



From Figure 1, it is clearly indicated that at lower income level, household are more inclined in acquiring health treatment provided by the government. As the household's income level increases, the probability of household frequenting governmental clinics/hospitals decreases. Household with higher income is more inclined to visit private clinics/hospitals. Such choices which were made by households in the district of Alor Gajah are related to purchasing power measured through the level of income earned by each household.

SUMMARY AND CONCLUDING REMARKS

The economic condition in the district is dominated by the Malay ethnicity compared to other ethnics even though the average household's monthly income in the district is lower compared to the national or state data. Though for the country the highest belongs to the Chinese followed by the Indian and the Malays respectively. The distribution of income on expenditure and saving is in line with the theoretical understanding the higher the income the average propensity to spend will reduce but average propensity to save will increase. There still exist groups of poor with income lower than the poverty income line. According to several economists, the current definition of poverty income line is inaccurate. If the per capita basis is taken into consideration and by taking into account other social expenditure in current socioeconomic environment, the value of poverty income line will then increase. Therefore, more household will fall under the poor category.

The redefinition of poverty income line will help the authority to identify the target group accurately and improvise the living standard of the poor. Through common regression method which took into account the highest level of education for the head of household, it has been found that the length of years spent working (experience) affect the household income positively while the mental and physical ability do not affect the household's income. The Mincer Regression Method discovered that only additional investment in formal education, not experience or mental and physical ability, would affect income. The result has shown

the importance of formal education that will change economic status of the household. The right decision of the government in giving more provision of its budget on education is proven empirically in this study. Cost on education is heavily dependent on income, size of household and ethnic, where the Malay ethnicity is inclined to spend more on education, to show the consciousness of that particular ethnic on the importance of education and its positive influence on household income. When the Health Logit Model is viewed, at lower income level, the household is more incline to obtain health treatment provided by the government compared to a household with higher income. The above means that the choice in seeking treatment depends on the purchasing power of the household and it can be concluded that the society is very much dependent on the health services provided by the government. Privatisation of health services will burden the lower income group of the society. If viewed, the questionnaires prepared for this study is found to be comprehensive; the analysis of this article contemplates part of the whole report of this study. The findings of this study can be used by the relevant authorities in identifying the problem and preparation of the necessary action plan in improving the socioeconomic condition of households in the district of Alor Gajah.

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