

TESTING THE PERMANENT INCOME HYPOTHESIS: MICRO EVIDENCE FROM THE EAST COAST REGION OF MALAYSIA

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© Ontario International Development Agency. ISSN 1923-6654 (print)
ISSN 1923-6662 (online). Available at <http://www.ssrn.com/link/OIDA-Intl-Journal-Sustainable-Dev.html>

Abstract: Based on the Milton Freidman views, permanent income has an impact on the total household consumption. The life cycle hypothesis stated that individual consumption is based on the changes in income. Both views emphasised on the relation between income and consumption. Based on PIH studied by Freidman in 1957, people opt to make a less saving when the expected future income to rise and it indicates the negative relationship between those two factors (Ireland. P.N, 1995). Meanwhile Robert Hall (1978) derived the Permanent Income Hypothesis from mathematical theory using the joint behavior of consumption, income and saving. In other related study by David Hage (1994), these three variables (consumption, income and saving) have been adopted to forecast the US economy in 1994. The purpose of this study is to identify the impact of income on household consumption using PIH. A total of 645 household samples have been collected from the East Coast region of Malaysia. The estimation model utilized the cross-sectional regression with household income as a proxy to test the Permanent Income Hypothesis. The basic regression model take into account the basic variables for Permanent Income Hypothesis; income, saving and loan and socio-economic and demographic factors represented by age, educational level, job sector and household member. There were several important results based on this study; i) as household income increases by RM1.00, consumption rises by RM0.07 ii) as household saving increases by RM 1.00, household consumption goes up by RM0.45 and iii) as household loan increases by RM1.00, the

household consumption increases by RM0.94. Apart from these results, there were also interesting findings revealed on the socio-economic and demographic factors on the household consumption patterns. From the regression estimation, the results indicated a positive significant relationship between household consumption as dependent variable with household income, loan, saving, education level, type of employees and family size.

Keywords: East Coast Region; Household Consumption Pattern; Permanent Income Hypothesis.

I. INTRODUCTION

Malaysia consists of thirteen states and three Federal Territories which is separated into two regions, Peninsular Malaysia and Malaysia Borneo. One of the regions in Peninsular Malaysia is East Coast region which cover the state of Kelantan, Terengganu and Pahang. In terms of economic structure, Kelantan, Terengganu and Pahang are specializing in agro-based activities, fishing, and tourism. Based on Table 1, the rate of poverty by state indicated that Kelantan (4.8%) and Terengganu (4.0%) were above the incidence of Malaysia's poverty (3.8%) in 2009. The establishment of the East Coast Economic Region (ECER) in 2007 was timely particularly in eradicating hard-core poverty, to improve distribution of income together in narrowing the regional disparities between West Coast and East Coast states. Poverty, income and consumption pattern is closely interrelated. Therefore, in order to attain high quality of life together with sustainable development, the efficiency in consumption pattern is needed.

Table 1: Incidence of Poverty by State, Malaysia (2009)

State	Incidence of Poverty
Johor	1.3
Kedah	5.3
Kelantan	4.8
Melaka	0.5
Negeri Sembilan	0.7
Pahang	2.1
Pulau Pinang	1.2
Perak	3.5
Perlis	6.0
Selangor	0.7
Terengganu	4.0
Sabah	19.2
Sarawak	5.3
Kuala Lumpur.	0.7
Putra Jaya	-
Malaysia	3.8

Source: Economic Planning Unit, 2011

Table 2: Gross Domestic Product Per Capita by State, Malaysia (Million) (2009)

State	GDP Per Capita
Johor	18,458
Kedah	12,630
Kelantan	7585
Melaka	22,761
Negeri Sembilan	23,600
Pahang	19,974
Pulau Pinang	29,569
Perak	14,769
Perlis	14,457
Selangor	27,609
Terengganu	16,994
Sabah	14,830
Sarawak	30,3108
Wilayah Persekutuan Kuala Lumpur	51,197
Wilayah Persekutuan Labuan	27,084
Malaysia	24,366

Source: Economic Planning Unit, 2011

Based on the economic theory, Gross Domestic Product (GDP) per capita is one of the best measurements of the economic well being of a society. A higher GDP per capita contribute to a higher standard of living. In other words, this situation indicates the relation between income and consumption of the average person in the economy [1]. Unfortunately, based on Table 2, the GDP per capita of East Coast region was lower compared to other regions in 2009.a.The lower income received

by household defined the lower total of goods and services owned by household.

Based on the Milton Freidman views, permanent income has an impact on the total household consumption. By referring to the Permanent Income Hypothesis (PIH), the basic hypothesis posited is that individuals consume a fraction of this permanent income in each period [2]. The life cycle hypothesis stated that individual consumption is based on the

changes in income. Both views emphasized on the relation between income and consumption. Meanwhile Robert Hall (1978) derived the Permanent Income Hypothesis from mathematical theory using the joint behavior of consumption, income and saving [3]. In other related study by David Hage (1994), these three variables (consumption, income and saving) have been adopted to forecast the US economy in 1994 [4].

Most of the early study discussed on the PIH model at the macro level such as studies from Laumas et al.(1976) [5], Zuehlke and Payne (1981) [6], Velculescu and Rizavi (2005) [7] and Leigh and Peter Olters (2006) [8]. In terms of micro level, there are several related studies focusing on the area, to name a few such as DeJuan and Seater (1999), Chamon and Prasad (2008) and Chamon et al. (2010). A study by Chamon and Prasad (2008) highlighted the rising of saving rates among younger and older urban household in China. Despite rapid income growth, households postponed their consumption. This situation is explained by the rising private burden of expenditures on housing, education and health care. Besides, this precautionary motive may have been caused by financial underdevelopment such as constraints on borrowing against future income and low returns on financial assets [9]. The extended study by Chamon et al. (2010) examined the increase of household saving rate in China by looking on income uncertainty and pension reforms. The results concluded that rising income uncertainty and pension reforms contribute to the increase of the urban household savings rate together with the U-shaped age – saving profile [10]. A study by DeJuan and Seater (1999) was quite similar to our study in terms of chosen variables. The study has included socioeconomic variables such as

age, education and family size in testing PIH model based on US consumer expenditure survey datasets from 1986 until 1991. The results indicated that consumption behavior is consistent with PIH model [11].As our study highlights PIH model on micro level by looking on consumption pattern in relation to income, loan, saving and socioeconomic factors, this paper offers a unique feature to PIH literatures which commonly emphasis on macro level as well as contribute to the collection of studies on developing economies.

Hence, this study tries to figure out whether the level of income, loan and saving give an effect to the consumption pattern in the East Coast region? Do the others socio-economic and demography factors such as age, educational level, type of employees and family size contribute to the same effect? Using the PIH analysis, this study is to identify the impact of income on household consumption. The estimation model utilized the cross-sectional regression with household income as a proxy to test the Permanent Income Hypothesis. The basic regression model take into account the basic variables for Permanent Income Hypothesis; income, saving and loan and socio-economic and demographic factors represented by age, educational level, type of employees and family size.

II.METHODS

Most of the Permanent Income Hypothesis (PIH) studies attempt to forecast the consumption based on future expected income by taking into account the present value conditions. However, in this study, we test the PIH theory to estimate the current consumption equation without taking into consideration of forecasting aspect.

Therefore, we adopted the model of PIH as in the study of Ireland (1995, 53) [12] as the following equations:

$$\sum_{t=0}^{\infty} \frac{y^p}{(1+r)^t} = PV = \sum_{t=0}^{\infty} \frac{Ey_t}{(1+r)^t} \tag{Eq. 1}$$

In light of the formula

$$\sum_{t=0}^{\infty} \frac{1}{(1+r)^t} = \frac{1+r}{r} \tag{Eq. 2}$$

Equation (1) simplifies to

$$y^p = \frac{r}{1+r} PV \tag{Eq.3}$$

$$c_t = f(y^p) \quad (\text{Eq. 4})$$

Where c_t is consumption, y^p is household's permanent income as the constant income level, PV is present value, and t is time.

Based on equation (1), (2), (3), and (4), the consumption equation consists of loan and saving. Therefore, our basic regression equation is:

$$C_i = \beta_0 + \beta_1 \text{INC}_i + \beta_2 \text{SAV}_i + \beta_3 \text{LOAN}_i + \alpha_4 \text{SE}_{ji} + \varepsilon_i \quad (\text{Eq. 5})$$

Where C is household consumption, INC is permanent household income, SAV is saving, LOAN is loan, SE is socio-economic variables represent by j variables, ε is error term and i represent the cross-sectional sample.

Equation (5) can be written as:

$$C_i = \beta_0 + \beta_1 \text{INC}_i + \beta_2 \text{SAV}_i + \beta_3 \text{LOAN}_i + \alpha_1 \text{AGE}_i + \alpha_2 \text{EDU}_i + \alpha_3 \text{EMPS}_i + \alpha_4 \text{FS}_i + \varepsilon_i \quad (\text{Eq. 6})$$

Where AGE is age, EDU is a dummy of educational level with 1 represent diploma and above, 0 otherwise. EMPS is dummy of employment sectors with 1 for the public employees and 0 otherwise. The selections of public employees are based on the assumption that the constant income level received with certainty monthly, and FS is the number of family size.

In order to test the basic relationship between consumption, permanent income, saving and loan, we utilizes the OLS regression method. The data collection are based on the East Coast Region of Peninsular Malaysia, namely Terengganu, Kelantan and Pahang. Sampling technique is based on the stratified random sampling whereby the selection of respondents was chosen from selected districts according to stratified urban and rural area. In Terengganu, two districts selected were Kuala Terengganu (urban) and Setiu (rural). For Kelantan, the selected areas are Kota Bharu (urban) and Kuala Krai (rural). While for Pahang, the selected areas are Kuantan (urban) and Pekan (rural). A total number of respondents are 645 which for Terengganu are 213, 214 for Kelantan and 218 for Pahang.

We are not conducting the validity and reliability tests due to the type of scale of the data that consists of dichotomous choice and category scale. The

questionnaire were divided into six sections; personal background, family profile, source of income, expenditure, saving and loan, and quality of life.

III. RESULTS AND DISCUSSION

This study focuses on three states namely Pahang, Kelantan and Terengganu in East Coast Region of Malaysia. The total numbers of household head in Pahang are 218 (34%) persons, in Kelantan 214 (33%) persons and Terengganu 213 (33%) persons with most of households are male (87%). The discussion of results are separated into two analysis; descriptive and regression analysis.

a) Descriptive Analysis

This section emphasise on the descriptive analysis for socio-economic and demographic variables; age, educational level, type of employees and family size and three basic variables for Permanent Income Hypothesis (PIH); income, saving and loan.

The majority of household are in between 30 to 60 years old. Based on Figure 1, on average, the households in East Coast Region had a big family size. Due to this condition, a high personal income is needed in order to fulfill a basic necessity as well as to improve their standard of living.

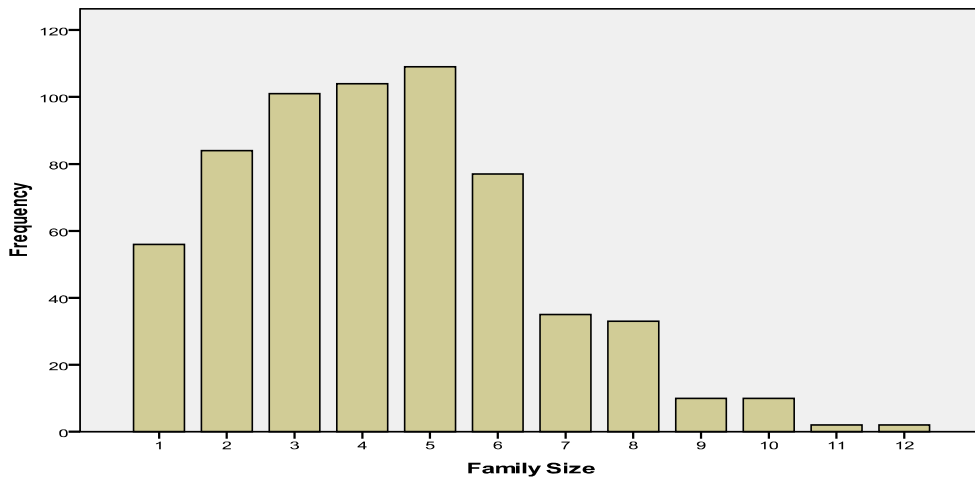


Figure 1: The Numbers of Family Size, East Coast Region.

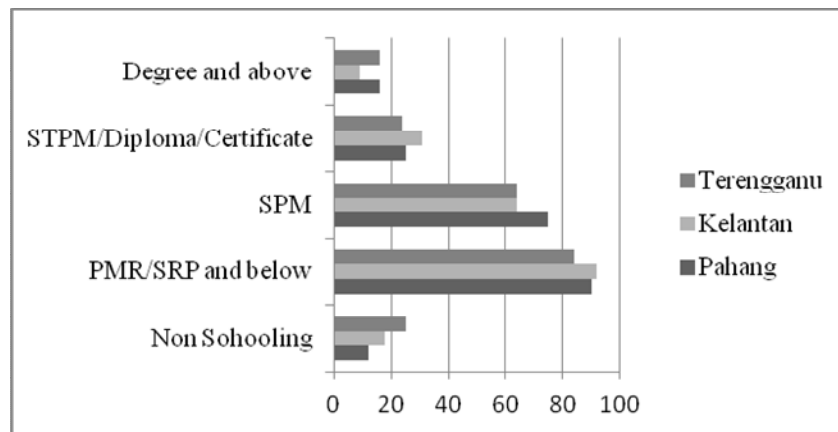


Figure 2: The Educational Level of Households, East Coast Region.

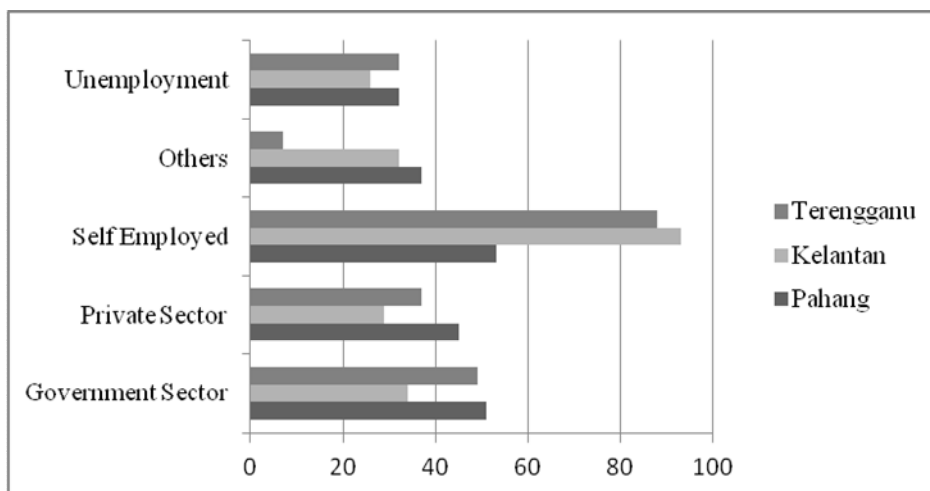


Figure 3: The Type of Employees, East Coast Region

On the other hand, educational level is an important indicator in screening the pool of workforce talents in terms of qualification. A higher educational level means they have an opportunity to get a better job and high income in improving their quality of life. Based on the Figure 2, it is shown that 44 percent of households had at least SPM and STPM/Diploma certificate for their educational level.

Generally, the chance in getting employed is higher to those who has a higher education level compared to those who has a lower education level. However, the data in Figure 3 revealed some interesting result where majority of household were self-employed. Among their economic activities are based on traditional and small business enterprises.

Based on PIH by Milton Friedman, permanent income has an impact on the household consumption patterns. Generally, a higher income received by household will increase the total consumption of household. According to the Figure 4, the highest mean value of total income for households were; Pahang with RM1785, followed by Terengganu with RM1475 and Kelantan with RM1144. The consumption patterns can be classified into groups such as foods, clothes, transportation, education, communication, entertainment, residence, health, reimbursement loan, and others expenditures. From the data collection, the results show that the majority

of household consume more on food, education, transportation, reimbursement loan and clothes expenditure.

The next variable is loan, where there were is only 30 percent of households received a loan from local bank or government or others institution. These findings indicated that the majority of respondents used their own money to finance their daily consumption. Even with that condition, a majority of households had made a loan whether a car or housing loan or both. In overall, the average of reimbursement loan for households in East Coast Region is RM804.

The last variable is total of saving. Based on economic theory, marginal propensity to save is a fraction of total income. The allocation of saving increases when the total of income earned by households rises. By referring the data collection from the questionnaire, more than 50 percent of households in East Coast Region interested to save their excess money in cash compared to invest in property and unit trust. The majority of the respondent chose a local bank and Pilgrim Fund as a main institution to deposit their money. Unfortunately, almost 50 percent of respondent only made a saving less than RM100 per month (refer Fig. 5).

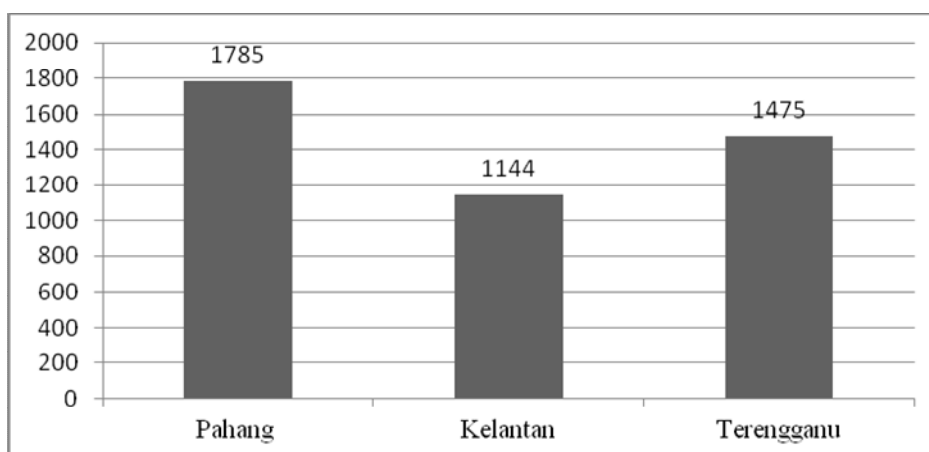


Figure 4: The Mean Total Income of Households, East Coast Region

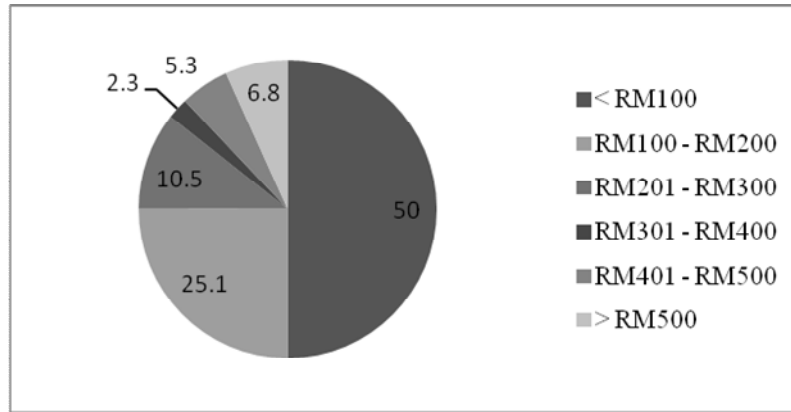


Figure 5: Allocation for Saving per Month, East Coast Region

Table 3: Estimation of Parameters of Multiple Regression

Variable	Coefficients	p-value
INC	0.071	0.020
SAV	0.449	0.024
LOAN	0.939	0.001
EMPS	298.980	0.046
AGE	-15.341	0.053
FS	145.274	0.001
EDU	486.358	0.003
<i>F</i> -value	38.144 (0.0001)	
R Square	0.534	
Adjusted R Square	0.520	
Durbin-watson	1.773	

b) Regression Analysis

This section provides empirical evidence on the effects of income on the household consumption using Permanent Income Hypothesis. A description of the characteristics of the variables used in this study is given in Table 3, which reports the R square, adjusted R square, durbin-watson, regression coefficients, *F* value, and p-value.

Therefore the cross-sectional regression model is :

$$C_i = \beta_0 + 0.071INC_i + 0.449SAV_i + 0.939LOAN_i + 298.980EMPS_i - 15.341AGE_i + 145.274FS_i + 486.358EDU_i + \epsilon_i$$

(Eq. 7)

The value of adjusted R square is 0.534; means that 53.4 percent of households' consumption patterns in East Coast region can be explained by the exogenous variables in the regression model. The estimation result shows a significant relation between income, saving and loan with household consumption. Based on the theory, the lower of p-value, the greater evidence the null hypothesis may be rejected. Therefore, refer to the Table 3, there were several important results for basic variables for Permanent

Income Hypothesis; i) as household income increases by RM1.00, consumption rises by RM0.07 ii) as household saving increases by RM 1.00, household consumption goes up by RM0.45 and iii) as household loan increases by RM1.00, the household consumption increases by RM0.94.

Apart from these results, there were also interesting findings revealed on the socio-economic and demographic factors on the household consumption patterns. From the regression estimation, the results

indicated a positive significant relationship between household consumption with type of employees, family size and educational level. The results for socio-economic and demographic factors are; i) if family members increases one person in their family, household consumption goes up by RM145 ii) for educational level, the average household consumption for diploma holders and above is RM486 higher compared to the household consumption of low educational level respondents. iii) for employment sector, the household consumption of public employees, in average higher compared to the private employees. This result shows that constant income received in certainty will increase the volume of consumption. Meanwhile, age variable has a negative impact on consumption patterns where the elderly consume less.

IV. CONCLUSION

Our empirical study show that the permanent income has a huge impact on the household consumption pattern. The finding revealed that the basic variables for Permanent Income Hypothesis; income, saving and loan indicates a positive significant relationship with household consumption. Based on the finding from questionnaire, there were almost 50 percent of households not satisfied with their present income where it is not suffice to finance their family expenses due to the increase in the inflation rate. Based on the current economic situation, Pahang, Kelantan and Terengganu are still be categorized as a lower income state. If these problems are continuously persist in the long run, the quality of life of East Coast Region will be affected due to increase in cost of living. Besides, due to the globalization and, uncertainty, in economic activities also can influence the total income earned by households.

Thus, in terms of government role and responsibility, a Master Plan via East Coast Economic Region (ECER) was developed to accelerate the growth rate of the East Coast state in a viable, equitable and sustainable manner. This Master Plan will become a fundamental in giving a support to be a developed region in 2020. Corresponding to the economic sources in this region, the Master Plan focuses on the selected economic clusters such as tourism, oil, gas and petrochemical and agriculture. Beside focusing on these clusters, government also put emphasizes on manufacturing and education activities. A list of vision that need to attain under the ECER in 2020 are; i) GDP per capita rises to RM13,510 ii) average monthly household income equal RM5,227 iii) GDP growth at least 7.2 percent iv) numbers of new job created almost 560,000. Besides, the government also

take an action in improving the economic value chain, raise the capacity of knowledge and innovation, as well as increase the standard and quality of life in ensuring the sustainability of the region. Ultimately, all these programmes to be a catalyst in achieving a developed region in 2020.

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