Asian Economic and Financial Review

Permanent Income Hypothesis, Myopia and Liquidity Constraints: A Case Study of Pakistan

Khalid Khan (Lecturer Department of Economics, Lasbela University of Agriculture, Water and Marine Sciences, (LUAWMS), Uthal, Balochistan)

Hazrat Yousaf (Lecturer Department of Economics, Lasbela University of Agriculture, Water and Marine Sciences, (LUAWMS), Uthal, Balochistan)

Muhammed Ghazanfar Abbas (Lecturer Department of Economics, Lasbela University of Agriculture, Water and Marine Sciences, (LUAWMS), Uthal, Balochistan)

Manzoor H Memon Ch*E* (Chartered Economist, Senior Manager, JCR-VIS Credit Rating Co. Limited)

Mohammed Nishat (Professor Department of Finance and Economics, Institute of Business Administration (IBA), Karachi)

Permanent Income Hypothesis, Myopia and Liquidity Constraints: A Case Study of Pakistan

Author (s)

Khalid Khan
Lecturer Department of Economics, Lasbela University of Agriculture, Water and Marine Sciences, (LUAWMS), Uthal, Balochistan.
Email: khalidkk82@yahoo.com

Hazrat Yousaf
Lecturer Department of Economics, Lasbela University of Agriculture, Water and Marine Sciences, (LUAWMS), Uthal, Balochistan.

Muhammed Ghazanfar Abbas
Lecturer Department of Economics, Lasbela University of Agriculture, Water and Marine Sciences, (LUAWMS), Uthal, Balochistan.

Manzoor H Memon Ch*E*
Chartered Economist, Senior Manager, JCR-VIS Credit Rating Co. Limited
Email: manzoorhmemon@yahoo.com

Mohammed Nishat
Professor Department of Finance and Economics, Institute of Business Administration (IBA), Karachi

Abstract

This paper is an attempt to test the Permanent Income Hypothesis (PIH), Myopia and Liquidity Constraints as a case study for Pakistan. The paper also attempts to find out valid reasoning incase the PIH is rejected. Hall's random walk model (1978) and Campbell and Mankiw model (1990) are used to test for the validity of PIH. The results reject the PIH and indicate the strong validity of Absolute Income Hypothesis (AIH) in Pakistan. Accordingly, Shea (1995) model is also used to validate the rejection of the PIH. The application of Shea (1995) model confirms the rejection; the symmetric relationship between consumption and expected income and provide a little evidence of existence of liquidity constraints

Key Words: Permanent Income Hypothesis; Absolute Income Hypothesis; Symmetric Relationship; Liquidity Constraints

Introduction

The empirical puzzle of Keynes psychological law of consumption provides the opportunity to extend the consumption literature. To answer Kuznets's (1946) empirical puzzle, different economists introduced their consumption theories such as relative income hypothesis (RIH) by Duesenberry (1948), life cycle hypothesis (LCH) by Modigliani and Brumbergh (1954) and permanent income hypothesis (PIH) by Friedman (1957). According to Duesenberry (1948) consumption of the individual depends upon its relative

income rather than its absolute income. Whereas according to PIH, consumption of individual which is explained by its permanent income rather than its relative and current income, while LCH forwards the same argument in a different perspective. According to LCH the consumption of individual is explained by its expected life time income, so the PIH and LCH share the same optimizations model and conclusion. However, empirically PIH is more popular than LCH, while the RIH is not tested widely because of unavailability of data for key variables.

To test the PIH, Friedman (1957) estimated the permanent income by using the distributive lags of current income. Lucas (1976) postulated that the lags of current income do not explain the current consumption. In the response to Lucas (1976) critique, Hall (1978) showed that without current consumption other variables have no explanatory power to predict future consumption i.e. change in consumption is a random walk.

Hall's random walk hypothesis implies that unexpected change in permanent income can affect current consumption. Several empirical studies tested the Hall's random walk hypothesis. The most notable among them are Flavin (1981); Hall and Mishkin (1982); Hayashi (1982); Bernanke (1985); and Campbell and Mankiw (1990). However, the results did not support the Hall's Random walk hypothesis and argued that individual's consumption is sensitive to current income rather than permanent income. This phenomenon has been named as "excess sensitivity of consumption" by Flavin (1981).

Before Campbell and Mankiw (1990), economist believes that an economy can satisfy one consumption hypothesis at a time. Campbell and Mankiw in their study proved that in economy consumers can satisfy both AIH and PIH, simultaneously. They divided consumers in two different segments i.e. 'λ' and (1- λ), where λ shows the proportion of backward looking consumers, while (1- λ) shows the proportion of forward looking consumers.

Khalid (1994) tested the PIH for Pakistan, using distributive lag model. The study reveals the irrelevance of PIH in the context of Pakistan, however there was no discussion drawn for the failure.

Since in consumption literature, there are two reasons for the rejection of PIH, one is liquidity constraints (Zeldes (1989)), and another is myopia (Runkle (1991)). In case of liquidity constraints consumers are unable to borrow against their future income but they can save freely when their current income increases. Therefore, liquidity constraints show an asymmetric relationship between consumption and expected income. In myopia, consumption follows current income, as consumers respond equally to predictable income increases and decreases. Therefore, myopia causes symmetric relationship between consumption and expected income.

Flavin (1985), Zeldes (1989) Jappelli & Pagano (1989) rejected the PIH, their results showed that the excess sensitivity of consumption to current income is due to liquidity constraints. Paz (2006) tested the PIH for Brazil and rejected the PIH due to the presence of both liquidity constraints and myopia.

Gomes and Paz (2010) tested the life cycle permanent income hypothesis for Brazil, Colombia, Peru and Venezuela. Gomes and Paz found liquidity constrained consumers in Brazil and Colombia, and perverse asymmetry in Peru while their results were remained uninformative about consumption in Venezuela.

This is the first study to test the PIH with the help of Hall's random walk model (1978) and Campbell and Mankiw model (1990) in case of Pakistan. Additionally, this study is also validates the rejection of the PIH in Pakistan, if AIH is valid for Pakistan. The rest of the paper is organized as follows: Section two offers methodology and data description, section three presents the results and discussion and section four summarizes conclusion.

Methodology and Data Description

As far as literature is concerned, there are several consumption theories, and are already discussed in detail namely, AIH, PIH, LCH and RWH.

This study considers the Hall (1978) random walk model to test AIH and PIH with rational expectation for Pakistan. Adopting the Hall (1978) that the typical forward looking consumer maximizes:

$$E_t \sum_{s=0}^{\infty} (1+\delta)^{-s} u(C_{t+s}) \ u' > 0, u'' < 0 \ (1.1)$$

E_t = expectation at period t

C_t = private consumption at period t

u = utility function of individual

δ = rate of subjective time preference

If the representative individual can lend and borrow at a real interest rate r, then the first order condition from the above maximization is:

$$E_t u'(C_{t+1}) = \left(\frac{1+\delta}{1+r}\right) u'(C_t) \quad (1.2)$$

If we assume that $r = \delta$ and the marginal utility (u') is linear or log linear then we finds that the current consumption is the best forecast of future consumption in the next period, i.e.:

$$C_{t+1} = C_t + \varepsilon_t \qquad (1.3)$$
or

$$E_t C_{t+1} = C_t \qquad (1.4)$$

Therefore,

$$\Delta C_t = \varepsilon_t \qquad (1.5)$$

Where ε_t is random error, the above equation (1.5) implies that all the available information is used in current period to forecast the future consumption.

Econometric Model

To test the PIH, the study uses following model:

$$\Delta C_t = \alpha + \lambda \Delta Y_t + \varepsilon_t \quad (1.6)$$

Where ΔC_t consumption growth, ΔY_t is expected income growth. When $\lambda = 0$, PIH will be considered satisfied

The Campbell and Mankiw (1990) allow the interest rate in equation (1.6) for intertemporal substitution of forward looking consumer. Adding this, the augmented model becomes:

$$\Delta C_t = \mu + \lambda \Delta Y_t + \sigma.r_t + \varepsilon_t \quad (1.7)$$

Where r_t is real expected interest rate

The PIH postulates that predictable changes in income have no affect on consumption while consumption can only be affected through interest rate. Therefore, if (λ) equals to zero validates PIH. Under myopia, consumer consumes a fixed share of his current income. Therefore, consumption should respond symmetrically to the increases and decreases of expected income. While, under liquidity constraints, individual consumption should respond more strongly to increase of expected income than decrease of expected income. This asymmetrical behavior is because of liquidity constraints as individuals cannot borrow but save freely. In order to test the presence of liquidity constraints and myopia, Shea (1995) model is followed and following regression is used:

$$\Delta C_t = \mu + \lambda_1 (POS_t) \Delta Y_t + \lambda_2 (NEG) \Delta Y_t + \sigma.r_t + \varepsilon_t$$
(1.8)

Where POS and NEG are dummy variables for periods, $\Delta Y_t > 0$ and $\Delta Y_t < 0$, respectively.

The PIH implies that both $\lambda_1 = \lambda_2 = 0$, under myopia the $\lambda's$ should be significant, equal and greater than zero, while liquidity constraint implies that: λ_1 is positive, significant and greater than λ_2.

Data and Variables

The analysis and test is based on the annual data of real disposable income, real consumption, real interest rate and consumer price index (CPI) for the period 1971 to 2010. The data was taken from International Financial Statistics (IFS) CD-ROM. The data consists of. The detail and definition of variables are as under:

Real Private Consumption
Private consumption (in nominal form) is used as a proxy of consumption. It includes both the consumption of durable and non-durable goods, but it does not include the government consumption. The real private consumption was calculated by deflating nominal private consumption with consumption deflator

Labor Income
Labor income is one of the major sources of current income. While GDP is highly correlated with labor income, it is used as a proxy for labor income; real value was obtained by deflating the nominal value with consumption deflator. Whilst labour is positively related to the private consumption, it is expected that the sign of labor income will be positive.

Real Interest Rate
Campbell and Mankiw (1990) used discount rate as the proxy of interest rate hence this study also used discount rate as a proxy of real interest rate after adjusting with inflation.

Consumption Deflator
The Consumer Price Index (CPI) is used as the consumption deflator. With the help of this, all nominal variables converted to their real counterparts.

Empirical Results
Firstly, the study tests the PIH for Pakistan, by estimating the equations (1.6) and (1.7). Table 2 presents the empirical results of equation (1.6) and equation (1.7). These equations are estimated by using OLS and instrumental variables (IV) method. Equation (1.6) is estimated by applying the OLS method; the results of equation (1.6) show strong validity of AIH for Pakistan. This reveals that consumption in Pakistan follows current income rather than permanent income. Both OLS and IV methods are used to estimate equation (1.7). Model 1, 2, 3, 4, and 5 are estimated by using the IV lists; first, second, third, fourth and fifth, IV lists offers by table 1.

The result of the equation (1.7) supports AIH for Pakistan. The high and significant values of marginal propensity to consume (MPC) ensure the invalidity of PIH and indicate that the predictable changes in income revise consumption decision of consumers in Pakistan. The study also estimates equation (1.8) to highlight the reasons for the rejection of the neoclassical consumption hypothesis i.e. myopia and liquidity constraints. Myopia violates the PIH and implies that consumers consume a constant fraction of their current income. While liquidity constrained consumers can smooth rising income through saving but are unable to smooth falling income. The equation (1.8) clarifies the source of the rejection of PIH. The estimates of the equation (1.8) are reported in table 3.

Equation (1.8) is estimated with the help of OLS and 2SLS by using the different instrumental variables, mentioned in table 1. There are three hypotheses regarding the equation (1.8). First, if the permanent income hypothesis is valid then: $\lambda_1 = \lambda_2 = 0$, second, if the PIH is not valid due to myopia then the significant value of λ_1 and λ_2 will be: $\lambda_1 > 0, \lambda_2 > 0$ and $\lambda_1 = \lambda_2$, and third, if the PIH is not valid due to liquidity constraints then the significant value of λ_1 and λ_2 will be : $\lambda_1 > 0,$ and $\lambda_1 > \lambda_2$.

Thus, the empirical results of table 2 shows that the value of λ_1 is negative in model 1 and positive and significant in all four (IV) models. While the value of λ_2 is found insignificant in OLS and all remaining models.

Result of equation (1.8) supports the results of equation (1.6) and (1.7) and reject validity of PIH because the possible condition for the validity of PIH is not found i.e. the expected negative and positive income do not affect

consumption ($\lambda_1 = \lambda_2 = 0$).While the value of λ_2 is insignificant in OLS model and throughout the IV models, the condition which ensures myopia is also not observed in all models from 1 to 6. Nevertheless, the results somehow fulfill the condition of the liquidity constraints i.e. λ_1 is positive, significant and greater than zero. Furthermore, the results of equation (1.8) indicate that consumption is more sensitive to increases than decreases in predictable income, due to the significant values of λ_1 and the insignificant values of λ_2. As a result of this evidence the presence of liquidity constraints is ensured rather than myopia or perverse asymmetry. Therefore, we can say that the rejection of PIH in Pakistan is not subject to myopia but liquidity constraints.

Conclusion

The study investigates validity of the PIH in Pakistan. The results indicate invalidity of PIH in Pakistan because the predictable change in income affects consumption. This is the clear violation of the neoclassical consumption hypothesis. Furthermore, to find out the reasons of the rejection of the PIH, the study applies Shea (1995) model to investigate the reasons of rejection of the PIH i.e. Myopia and liquidity constraint. The results are supported by the presence of liquidity constraints rather than myopia and perverse asymmetry.

Hall's model rejected the PIH for Pakistan, while the Campbell and Mankiw (1990) consumption model shows that small fraction of individuals support PIH in Pakistan. So, the asymmetry responses in consumption to the expected income suggest that the reason for the rejection of PIH in Pakistan is the liquidity constraint.

Table 1: Lists of Instrumental Variables

Instrumentals Variables Lists which are Used in Empirical Estimations	
List	Instrumentals variables
First list	$\Delta y_{t-2},...,\Delta y_{t-6};r_{t-2},...,r_{t-6}$
Second list	$\Delta c_{t-2},...,\Delta c_{t-6};r_{t-2},...,r_{t-6}$
Third list	$\Delta y_{t-2},...,\Delta y_{t-6};\Delta c_{t-2},...\Delta c_{t-6};cy_{t-2};r_{t-2},...,r_{t-6}$
Fourth list	$\Delta i_{t-2},...,\Delta i_{t-6};r_{t-2},...,r_{t-6}$
Fifth list	$\Delta i_{t-2},...\Delta i_{t-6};\Delta y_{t-2},...,\Delta y_{t-6};\Delta c_{t-2},...\Delta c_{t-6};cy_{t-2};r_{t-2},...,r_{t-6}$

Note: Δy =growth rate of real GDP, r = discount rate minus change in CPI, Δc = growth rate of real household consumption, cy = log of MPC, and Δi = change in nominal interest rate.

Table 2: Estimated Results of Equation (1.6) and (1.7)

Estimators of equations		$\Delta C_t = \alpha + \lambda \Delta Y_t + \varepsilon_t$				$\Delta C_t = \mu + \lambda \Delta Y_t + \sigma.r_t$				
Models	Instr: List	α	λ	R^2	DW	μ	λ	σ	R^2	DW
Model :1(OLS)	------	1558.95	0.7401***	0.97	1.5386	2045	0.783***	-0.049	0.96	1.50
Model: 2 (IV)	1					2045	0.888***	-0.171	0.85	1.47
Model: 3 (IV)	2					840	0.748***	-0.009	0.81	1.53
Model: 4 (IV)	3					1048	0.777***	-0.042	0.92	1.51
Model: 5 (IV)	4					1294	0.793***	-0.060	0.95	1.49
Model: 6 (IV)	5					1169	0.785***	-0.051	0.89	1.50

Note: Model one is estimated with the help of OLS method and model two, three, four, five and six are estimated through 2SLS method, by using the instrumental lists one, two three, four and five respectively . The coefficient on (**, ***) are statistically significant at the level of (5, 1) percent respectively

Table: 3 Estimated Results of Equation (1.8)

Estimators of equations		$\Delta C_t = \mu + \lambda_1 (POS_t)\Delta Y_t + \lambda_2 (NEG)\Delta Y_t + \sigma.r_t + \varepsilon_t$						
Models	Instrument List	μ	λ_1	λ_2	σ	R^2	F.statistics $H_0 : \lambda_1 = \lambda_2 = 0$ $H_1 : \lambda_1 \neq \lambda_2 \neq 0$	DW
Model:1 (OLS)	-------	-6.30E-10	-0.00269**	1.13	-1.52E-5	0.95	----------	1.52
Model: 2 (IV)	1	3.40E-09	0.00165***	0.78	-2.52E-7	0.85	20.10***	1.47
Model:3 (IV)	2	-1.2E-08	0.00321**	1.10	4.92E-6	0.90	34.05***	1.47
Model: 4 (IV)	3	1.36E-08	4.92E-3**	0.85	-1.46E-4	0.95	15.23***	1.51
Model: 5 (IV)	4	-3.40E-09	1.95E-3***	1.20	1.95E-4	0.82	22.01***	1.47
Model: 6 (IV)	5	6.12E-09	4.45E-3***	0.98	-5.64E-5	0.92	26.12***	1.76

Note: Model one is estimated with the help of OLS method and model two, three, four, five and six are estimated through 2SLS method, by using the instrumental lists one, two three, four and five respectively . The coefficient on (**, ***) are statistically significant at the level of (5, 1) percent respectively

References

Bernanke, B.S., (1985) "Adjustment Costs, Durables and Aggregate Consumption" Journal of Monetary Economics, Vol.15, pp.41-68.

Campbell, J. and Mankiw, N. (1990) "Permanent Income, Current Income, and Consumption" Journal of Business and Economic Statistics, Vol. 8, PP265-279.

Duesenberry, J.S., (1948) "Income Saving and the Theory of Consumption Behavior" Cambridge: Harvard University Press, 1948

Flavin, M.A., (1981) "The Adjustment of Consumption to Changing Expectation about Future Income" Journal of Political Economy, Vol. 89, pp. 974-1009

Flavin, M. (1985) "Excess Sensitivity of Consumption to Current Income: Liquidity Constraints or Myopia" Canadian Journal of Economics, Vol. 18, pp. 177–136

Friedman, M. (1957) "A Theory of the Consumption Function. Princeton University Press

Gomes, F. and L. Paz (2010) "Consumption in South America: myopia or liquidity constraints?" Economia Aplicada, 14, 129-145.

Jappelli, T. & Pagano, M. (1989) "Consumption and Capital Market Imperfections: an International Comparison" American Economic Review, Vol. 79, pp.1088– 1105.

Hall, E. E. (1978) "Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence" Journal of Political Economy, Vol. 86, pp. 971–87

Hayashi, F., (1982) "The Permanent Income Hypothesis: Estimation and Testing by Instrumental Variables" Journal of Political Economy, Vol. 90, pp. 895-916

Khalid, A. M. (1994) "Empirical Test of the Rational Expectation and Permanent Income Hypothesis Evidence from Pakistan" The Pakistan Development Review, Vol. 33, pp. 1043-1053

Kuznets, S., (1946) National Product Since 1869 (assisted by L. Epsteion and E. Zanks), New York, National Bureau of economics research, (1946)

Lucase, Robert E. Jr. (1976) Econometric Policy Evaluation: A Critique. in Carnegie-Rochester Conferences on Public policy, Vol.1, pp.19-46

Modigliani, F. and Brumberg, R.E., (1954) Utility Analysis and Aggregate Consumption Function: An Interpretation of Cross Section Data. In Post Keynesian Economics, K.K Kurinara (ed) (New Bruns Wick: Rutgers University Press 1954)

Paz, L. (2006) "Consumption in Brazil: Myopia or Liquidity Constraints A Simple Test Using Quarterly Data" Applied Economic Letters, Vol.12, pp. 961–964

Runkle, D. (1991) "Liquidity Constraints and the Permanent Income Hypothesis" Journal of Monetary Economics, Vol.27, pp.73-98

Shea, J. (1995) "Myopia, Liquidity Constraints, and Aggregate Consumption: A simple Test" Journal of Money, Credit and Banking, Vol.27, pp. 798-805

Zeldes.S.P. (1989) "Consumption and Liquidity Constraints: An Empirical Investigation" Journal of Political Economy, Vol.97, pp.305-34