Keho, *Cogent Economics & Finance* (2019), 7: 1608052
https://doi.org/10.1080/23322039.2019.1608052

cogent economics & finance

GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Myopia, liquidity constraints and private consumption: the case of Cote d'Ivoire

Yaya Keho*

Received: 23 November 2018
Accepted: 02 April 2019
First Published: 15 April 2019

*Corresponding author: Yaya Keho, Ecole Nationale Supérieure de Statistique et d'Economie Appliquée (ENSEA), Abidjan 08 BP 03, Côte d'IvoireE-Mail: yayakeho@yahoo.fr

Reviewing editor:
Christian Nsiah, School of Business, Baldwin Wallace University, USA

Additional information is available at the end of the article

Abstract: In this paper, we estimate the behavior of private consumption in Cote d'Ivoire under the permanent income hypothesis using annual data for the period 1970–2016. The first objective is to test the validity of the permanent income hypothesis in Cote d'Ivoire. Our second concern is to investigate the reason explaining the rejection of this hypothesis. The data consists of real household consumption, real gross domestic product, and the real interest rate on deposits. The empirical analysis uses the nonlinear autoregressive distributed lag (NARDL) model proposed by Shin et al. This approach allows us to simultaneously test the short and long run nonlinearities through positive and negative partial sum decompositions of income. The results suggest that the absolute income hypothesis is valid rather than permanent income hypothesis. Also, there is evidence pointing to the rejection of the permanent income hypothesis-driven by the presence of liquidity constraints rather than myopia. As policy implications, the lending conditions of banks should be relaxed to increase the accessibility of households to credits. In addition, private consumption can be increased through income or consumption tax reductions.

Subjects: African Studies; Economics and Development; Economics

ABOUT THE AUTHOR

Yaya Keho, Ph. D. is a Professor in Econometrics and Statistics at the National School of Statistics and Applied Economics (ENSEA) of Abidjan, Côte d'Ivoire. He earned his Ph.D. in Economics from the University of Saint Quentin-en-Yveline, at France. He has taught at Many Universities in Africa (Cote d'Ivoire, Benin, Burundi, Cameroon, Senegal). Prof. KEHO has published in many international revues like *South African Journal of Economics, Energy Policy, Energy, International Economic Journal, Empirical Economic Letters, Economics Bulletin, International Journal of Energy Economics and Policy, International Journal of Statistics and Economics, Journal of Statistical and Econometric Methods, International Journal of Economics and Finance, International Journal of Business and Economics, Asian Economic and Financial Review, Asian-African Journal of Economics and Econometrics*. His academic interests are public finance, energy economics, international economics and applied econometrics.

PUBLIC INTEREST STATEMENT

Consumption is the final purpose of economic activity and thus, the level of consumption per person is viewed as a central measure of household wellbeing. There are many points of views about the relationship between consumption and income. In this study, we test the permanent income hypothesis which postulates that consumption depends on permanent income rather than current income. The results reject the permanent income hypothesis due to liquidity constraints. Lending conditions of banks limit the ability of households to borrow against their future income. The results of this study can be useful for designing economic policies aiming at improving the living conditions of households in Cote d'Ivoire.

Keywords: consumption function; permanent income hypothesis; absolute income hypothesis; liquidity constraints; Cote d'Ivoire
JEL classification: C22; C51; D12; E21

1. Introduction

Consumption plays a significant role in determining the growth effects of economics policies. It is also the largest component of the aggregate expenditure in most developing economies. As a result, modeling consumption behavior has generated a plethora of theoretical and empirical works. On the theoretical ground, economists have developed theories to explain the determinants of consumption. The absolute income hypothesis by Keynes (1936) explains that current consumption depends upon current income and the average propensity to consume continuously decreases with current income. But later on, the life cycle hypothesis due to Modigliani and Brumberg (1954) stipulates that household consumption depends in part on current income, but also on lifetime expected income. Similarly, the Permanent Income Hypothesis (PIH) by Friedman (1957) advocates that consumption responds only to permanent income, which is the part of current income expected in the future. Thus, PIH divides the current income into permanent income and transitory income. To test the PIH, Friedman (1957) suggested that permanent income can be estimated on the basis of current income lags. Lucas (1976) criticized this idea and argued that lags of current income cannot explain the current consumption. In response to this criticism, Hall (1978) presented his theory of rational expectation-permanent income hypothesis. He argued that current consumption is appropriate to estimate future consumption because any information affecting future consumption is already included in the current consumption. Hall further explained that both current income and past income do not affect future consumption. Therefore, consumption is a random walk.

A strand of the empirical literature has been devoted to test the validity of these theories. A number of studies found evidence supporting the permanent income hypothesis. For instance, the studies by Manitsaris (2006) for a panel of 15 European Union Member States, Nwala (2010) for five out of six African countries, Altunc and Aydin (2014) for 8 member countries of the Organization of Islamic Cooperation, and Osei-Fosu, Butu, and Osei-Fosu (2014) for Ghana validated the permanent income hypothesis. On the other hand, many other studies rejected the permanent income hypothesis (e.g., Khalid, 1994; Peleologos and Georgantelis, 1992; Apergis, Varelas, & Valentzas, 2000; Akekere & Yousuo, 2012; Ofwona, 2013; Lunfang, Khan, Khan, & Khan, 2018). Two reasons have been postulated for the rejection of the 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. Under myopia, consumers fail to optimize in an intertemporal framework and their consumption respond equally to predictable income increases and decreases. In other words, myopia causes a symmetric response of consumption to expected income. In most cases, the failure of the PIH is due to the existence of liquidity constraints (e.g., Drakos, 2002; Flavin, 1985; Gomes & Paz, 2010; Jappelli & Pagano, 1989; Khalid & Mohammed, 2011; Paz, 2006; Zeldes, 1989).

Despite the literature on the test of the permanent income hypothesis, there exists a paucity of literature on this subject in Cote d'Ivoire. This is the first study testing the validity of the permanent income hypothesis in Cote d'Ivoire using annual time series data over the period from 1970 to 2016. Besides that this study is also interested to find out the reasons of the rejection of the PIH in Cote d'Ivoire, if absolute income hypothesis holds. Since 2012, the government of Cote d'Ivoire has adopted a National Development Plan (NDP) which seeks to achieve the emergence of Cote d'Ivoire by 2020. This Plan aims to deal with the rampant challenges of poverty reduction, unemployment and economic growth facing the country. It focuses on improving the living conditions of populations, specially by developing quality economic infrastructure, enhancing the quality of both education and health services and making them accessible to all. The implementation of this Plan over the period 2012–2015 has resulted in an annual average economic growth rate of 9.3%.

Private consumption also increased at an average growth rate of 10.3% over the same period. However, little is known about the relationship between current income and private consumption in Cote d'Ivoire. How does private consumption respond to increases and decreases in income? To the best of our knowledge, there is no existing study that investigates the relationship between income and private consumption in Cote d'Ivoire with the aim of testing the permanent income hypothesis and contributing to the empirical literature on liquidity constraints. The empirical analysis uses the nonlinear autoregressive distributed lag (NARDL) approach proposed by Shin, Yu, and Greenwood-Nimmo (2014). This approach allows us to simultaneously test the short and long run nonlinearities through positive and negative partial sum decompositions of income.

The remainder of the paper is organized as follows. Section 2 presents the econometric framework of the study. Section 3 presents and discusses the empirical results and section 4 summarizes the findings and gives some policy recommendations.

2. Econometric framework

2.1. Campbell and mankiw consumption model

Most existing studies testing the PIH follow the model suggested by Hall (1978) and Campbell and Mankiw (1990) by running the following equation:

$$\Delta c_t = \alpha + \lambda \Delta y_t + \gamma r_t + \mu_t \tag{1}$$

where Δc_t is real private consumption growth, Δy_t is real income growth, and r_t is real interest rate. By specifying this equation, Campbell and Mankiw (1990) showed that in an economy consumers can satisfy both absolute income hypothesis and permanent income hypothesis simultaneously. They divided consumers into two different groups. The parameter λ represents the proportion of backward-looking consumers who consume their current income, while (1-λ) shows the proportion of forward-looking consumers who consume their permanent income.

On the basis of Equation (1) the PIH and AIH hypotheses can be easily tested. The PIH postulates that predictable changes in income have no effect on current consumption but consumption can only be affected by interest rate. Therefore, if λ = 0 then PIH is valid. Otherwise, current income affects current consumption as suggested by the AIH.

The permanent income hypothesis is often rejected in most empirical studies (Campbell & Mankiw, 1990). Two hypotheses have been suggested to justify this rejection: myopia and liquidity constraints. Under myopia, consumption depends on current income and responds equally to increases and decreases of income. Conversely, the presence of liquidity constraints implies that when income is temporarily low consumers cannot sustain their consumption by borrowing, but they can save freely when income increases. Therefore, consumption should respond more strongly to expected income increases than decreases (Altonji & Siow, 1987; Shea, 1995).

There are several ways to analyze the asymmetrical response of consumption to income. One estimation strategy applied by Shea (1995) and followed by most empirical studies consists in estimating the following equation:

$$\Delta c_t = \alpha + \lambda^{+} \Delta y_t^{+} + \lambda^{-} \Delta y_t^{-} + \gamma r_t + \mu_t \tag{2}$$

where $\Delta y_t^{+} = \max(\Delta y_t, 0)$ and $\Delta y_t^{-} = \min(\Delta y_t, 0)$ are positive and negative changes in income, respectively. The PIH implies that $\lambda^{+} = \lambda^{-} = 0$. Under myopia $\lambda^{+} = \lambda^{-} > 0$, while under liquidity constraints, λ^{+} is positive and greater than λ^{-}.

According to Campbell and Mankiw (1990), the above equations cannot be estimated using the Ordinary Least Square (OLS) method because of the correlation between income growth and the error term. They suggested the use of instrumental variables method. However, as recognized by

Shea (1995), the estimates may be imprecise or even spurious if the instruments have low predictive power for income growth. It is in general difficult to find appropriate instrumental variables for endogenous regressors. Another econometric problem with these specifications is that if income and consumption are cointegrated in the long run, then Equations (1) and (2) may be mis-specified and suffer from omitted variable bias.

2.2. The nonlinear autoregressive distributed lag model

To deal with both endogeneity and spurious regression problems, we follow the nonlinear ARDL (NARDL) bounds testing approach introduced by Shin et al. (2014), as an asymmetric extension of the ARDL bounds test developed by Pesaran, Shin, and Smith (2001). This approach allows estimating both asymmetric long run and short run relationships. One of the reasons for using the ARDL technique is that it is applicable irrespective of whether the regressors are stationary at the level or stationary at first difference. It also performs better for small sample sizes than other cointegration techniques such as those developed by Engle and Granger (1987) and Johansen (1991) (Cheung & Lai, 1993; Inder, 1993; Pesaran et al., 2001).

To begin with this approach, the asymmetric long-run relationship is expressed as follows:

$$c_t = \alpha + \beta^{+} y_t^{+} + \beta^{-} y_t^{-} + \gamma r_t + \mu_t \tag{3}$$

where y^{+} and y^{-} are partial sums of positive and negative changes in income, defined as follows:

$$y_t^{+} = \sum_{i=1}^{t} \Delta y_i^{+} = \sum_{i=1}^{t} \max(\Delta y_i, 0) \text{ and } y_t^{-} = \sum_{i=1}^{t} \Delta y_i^{-} = \sum_{i=1}^{t} \min\ (\Delta y_i, 0) \tag{4}$$

The asymmetric long-run impacts associated with increases and decreases in income are β^{+} and β^{-}, respectively. We posit that the income increases will result in higher long-run changes in consumption as compared to the impact of income reductions, i.e. $\beta^{+} > \beta^{-}$.

The asymmetric error correction model can be rewritten as follows:

$$\Delta c_t = \phi_0 + \phi_1 c_{t-1} + \phi_2^{+} y_{t-1}^{+} + \phi_2^{-} y_{t-1}^{-} + \phi_3 r_t + \sum_{i=1}^{m} \gamma_{1i} \Delta c_{t-i} + \sum_{i=0}^{n} \left(\gamma_{2i}^{+} \Delta y_{t-i}^{+} + \gamma_{2i}^{-} \Delta y_{t-i}^{-}\right) + \sum_{i=0}^{p} \gamma_{3i} \Delta r_{t-i} + e_t \tag{5}$$

where $\phi_2^{+} = -\phi_1 \beta^{+}$ and $\phi_2^{-} = -\phi_1 \beta^{-}$.

The empirical implementation of the nonlinear ARDL approach entails the following steps. In the first step, we estimate Equation (5) using the standard OLS estimation method. Second, we perform a test for the presence of long-run relationship among the variables using the bounds testing procedure of Pesaran et al. (2001), which involves the F test of the null hypothesis, $\phi_1 = \phi_2^{+} = \phi_2^{-} = \phi_3 = 0$. In the third step, with the presence of cointegration, we test by means of the Wald test for i) long-run symmetry where the null hypothesis is $\phi_2^{+} = \phi_2^{-}$, and ii) short-run symmetry in which the null hypothesis is $\gamma_{2i}^{+} = \gamma_{2i}^{-}$ for all *i*. The model in Equation (5) reduces to the standard linear ARDL model if both null hypotheses of short-run and long-run symmetry are not rejected.

3. Empirical results and discussion

The study is based on annual data over the period from 1970 to 2016. The data consists of real consumption (c_t), real gross domestic product (y_t) used as a proxy for income, and real interest rate on deposits (r_t). Real consumption and real GDP are in constant local currency unit. Real interest rate is computed as the nominal interest rate minus the inflation rate. All the data series are obtained from the World Development Indicators of the World Bank. For the empirical analysis purpose, all variables, except interest rate, enter the model in logarithmic form. Table 1 displays

Table 1. Descriptive statistics and correlation matrix

Variables	logC	logGDP	r
Panel A: Summary statistics			
Mean	29.404	29.828	−1.392
Median	29.338	29.774	0.422
Maximum	30.158	30.481	7.805
Minimum	28.676	29.167	−22.581
Std. dev.	0.309	0.278	6.205
Skewness	0.057	−0.124	−1.684
Kurtosis	3.182	3.263	6.142
Jarque-Bera	0.090	0.258	41.568
Probability	0.955	0.878	0.000
Panel B: Correlation matrix			
logC	1.000		
logGDP	0.985*	1.000	
r	0.309*	0.285**	1.000

C = Household real final consumption, GDP = real GDP, r = real interest rate on deposits. The asterisks * and ** denote statistical significance at the 5% and 10% levels, respectively.

descriptive statistics of the variables. The correlation matrix indicates a positive relationship between private consumption and income.

Table 1 shows descriptive statistics and correlations of the variables. The log of real household consumption averaged 29.404 over the sample period. The average of log of real GDP is 29.828. This implies that about 67% of Ivorian's income goes to consumption. The correlation matrix indicates positive relationships between real private consumption and real GDP.

As a first step of our empirical analysis, we check the order of integration of the variables. This step is still necessary since the presence of an I(2) variable renders the bounds testing procedure invalid. Consequently, we employ the PP test of Phillips and Perron (1988) and the KPSS test of Kwiatkowski, Phillips, Schmidt, and Shin (1992). The results displayed in Table 2 show that real interest rate is stationary at a level while the consumption and GDP are stationary at first-difference. This shows that variables under study have mixed orders of integration. This justifies the application of the NARDL approach.

The results of the Hall (1978) and Campbell and Mankiw (1990) consumption models are reported in Table 3. The positive and significant value of income growth suggests a positive strong association between change in consumption and change in current income. As Table 3 shows, 37% of consumers is forward-looking, while the remaining 63% is backward looking. These findings provide evidence against

Table 2. Results of unit root tests

Series	Level		First difference		Order of integration
	PP	KPSS	PP	KPSS	
logC	−2.144	0.093	−5.096*	0.157	I(1)
logGDP	−2.388	0.085	−4.273*	0.139	I(1)
r	−4.331*	0.055	−8.922*	0.074	I(0)

C = Household real final consumption, GDP = real GDP, r = real interest rate on deposits. Critical values for the PP test of Phillips and Perron (1988) are −3.510 and—3.185 at the 5% and 10% levels, respectively. Critical values for the KPSS test of Kwiatkowski et al. (1992) are 0.146 and 0.119 at the 5% and 10% levels, respectively. The null hypothesis of the PP test is that the series involves unit root, thus is not stationary, while that of the KPSS test is that the series is stationary. *(**) denotes the rejection of the null hypothesis at the 5% (10%) level

Table 3. Results of models of Hall (1978) and Campbell and Mankiw (1990)

	Model 1: $\Delta c_t = \alpha + \lambda \Delta y_t + \epsilon_t$		Model 2: $\Delta c_t = \alpha + \lambda \Delta y_t + \gamma r_t + \epsilon_t$	
	Coef.	**t-stat.**	**Coef.**	**t-stat.**
Constant	0.019*	2.576	0.019*	2.547
Δy_t	0.629*	4.827	0.632*	4.772
r_t	–	–	0.001	0.180

The asterisks * denotes statistical significance at the 5% level. Both models 1 and 2 include a dummy variable taking value 1 for years from 1987 to 1994.

the validity of PIH. Further, the real interest rate does not show a significant effect on consumption growth. Both models suggest that current consumption strongly depends on current income rather than expected income. Therefore, the results are consistent with the absolute income hypothesis.

In order to investigate the reason for the rejection of the PIH, we further estimate Shea (1995) asymmetric consumption model, where we allow negative and positive changes in income growth to exert an asymmetric impact on consumption. However, before we present the results it is worth mentioning that real income growth is negative only for 11 years out of 46 data, representing approximately 24% of the sample size. This relatively infrequent occurrence of negative income growth might affect the statistical credibility of our econometric findings. The results reported in Table 4 suggest the rejection of the joint hypothesis that predictable negative and positive components of income growth do not affect consumption growth. This finding is consistent with the case of liquidity constraints. The condition which ensures myopia is also rejected. Furthermore, the results indicate that consumption is more responsive to increases than decreases in current income. The significant and positive value of λ^+ and the insignificant value of λ^- provide evidence supporting the presence of liquidity constraints rather than myopia. Therefore, we can say that the rejection of PIH in Cote d'Ivoire is driven by the presence of liquidity constraints.

The previous findings may be misleading if consumption and income are cointegrated. To investigate this, we apply the ARDL bounds testing approach. Table 5 reports the test results for linear and asymmetric cointegration. For the linear ARDL model, the results clearly show that the null hypothesis of no cointegration cannot be rejected at the 5% level of significance. As mentioned above, a possible reason for the non-detection of a long-run relationship might be the non-linearity of the government expenditure–income relationship. However, the F-statistic rejects the null hypothesis of no cointegration if we allow short-run asymmetry.

Table 6 presents the test results for long and short-run symmetry. The Wald test strongly rejects the null of short-run symmetry. It does not, however, reject the null of long-run symmetry.

Table 4. Asymmetric consumption model of Shea (1995)

	$\Delta c_t = \alpha + \lambda^+ \Delta y_t^+ + \lambda^- \Delta y_t^- + \epsilon_t$	
	Coef.	**t-stat.**
Constant	−0.010	−1.364
Δy_t^+	1.150*	7.611
Δy_t^-	−0.411	−1.488
Symmetry tests		
H_0: $\lambda^+ = \lambda^- = 0$	59.634 (0.000)	
H_0: $\lambda^+ = \lambda^-$	19.151 (0.000)	

The asterisks * and ** denote statistical significance at the 5% and 10% levels, respectively.

Table 5. Bounds testing for linear and asymmetric cointegration

Model	F-stat.	I(0)	I(1)
Linear ARDL	2.902	3.620	4.160
NARDL with long and short run asymmetry	4.811*	3.100	3.870
NARDL with long run asymmetry	1.946	3.100	3.870
NARDL with short run asymmetry	6.331*	3.620	4.160

I(0) and I(1) represent the 5% lower and upper bounds critical values, respectively. * denotes rejection of the null hypothesis of no cointegration at the 5% level.

Table 6. Long- and short-run symmetry tests

Statistic	NARDL model with LR and SR asymmetry	NARDL model with SR asymmetry
W_{LR}	0.575 (0.455)	–
W_{SR}	8.062* (0.000)	9.137* (0.000)

Note: W_{LR} refers to the Wald test for the null of long-run symmetry defined by $\phi^{+}_{2} = \phi^{-}_{2}$. W_{SR} refers to the Wald test for the null of the short run symmetry defined by $\gamma^{+}_{2i} = \gamma^{-}_{2i}$ for all *i*. *p-values* are displayed in parentheses. * denotes rejection of the null hypothesis of symmetry at the 5% level.

Table 7 presents the estimates of the asymmetric short-run model. A statistically significant short-run coefficient is detected only from the positive income growth. The short-run coefficient indicates that a 1% increase in GDP results in a 1.17% increase in real private consumption. In contrast, the response of real consumption to a negative change in GDP is statistically insignificant at the 5% level. Thus, our results indicate that the greater short-run impact of GDP on private consumption is sourcing from the positive changes in GDP. Furthermore, the results support the rejection of the joint hypothesis that negative and positive income changes do not affect consumption growth. Also, the null hypothesis of myopia is rejected. Finally, the results from nonlinear ARDL approach confirm the rejection of PIH due to the presence of liquidity constraints. At the 5%

Table 7. Short run nonlinear error correction estimation results

Regressor	Dependent variabGrowth rate of private consumption			
	Coefficient	t-statistic		Prob.
ΔIncome increase	1.170*	9.848		0.000
ΔIncome decrease	−0.280	−1.188		0.241
ECM(−1)	−0.165*	−2.486		0.016
Long run coefficient				
Income	1.247*	18.773		0.000
Symmetry tests				
H_0: $\lambda^{+} = \lambda^{-} = 0$	48.813 [0.000]			
H_0: $\lambda^{+} = \lambda^{-}$	29.257 [0.000]			
Statistics and diagnostics				
R^2	0.616	χ^2_{NORM}	1.462 [0.481]	
χ^2_{SC}	0.994 [0.318]	χ^2_{HET}	5.910 [0.315]	

The short-run equation includes no constant. λ^{+} and λ^{-} represent short-run coefficients on positive and negative income growth, respectively. χ^2_{SC}, χ^2_{NORM} and χ^2_{HET} denote LM tests for serial correlation, normality, and heteroscedasticity, respectively. *p-values* are displayed in brackets. The asterisks * denotes statistical significance at the 5% level.

significance level, all diagnostic tests do not exhibit any evidence of a violation of the classical linear regression model assumptions.

4. Conclusion

In this paper, we have tested the permanent income hypothesis in Cote d'Ivoire. To this end, we have applied different estimation approaches to a data set covering the period from 1970 to 2016. First, the empirical results from Hall (1978) and Campbell and Mankiw (1990) models shows a positive response of consumption to income changes, which goes with absolute income hypothesis as introduced by Keynes (1936). Second, to investigate the reasons that underlie the rejection of the permanent income hypothesis, we allow for asymmetry in the response of private consumption to income using the nonlinear autoregressive distributed lag (NARDL) approach proposed by Shin et al. (2014). The results show that the long run relationship between consumption and income is linear. However, in the short run, consumption reacts significantly to increases in income but insignificantly to declines in income. From this short run asymmetric reaction of consumption to income, we confirm the reason for the failure of the permanent income hypothesis to be liquidity constraints rather than myopia. Lending conditions of banks limit the ability of households to borrow against their future income. Banks are adverse to lend money to households because of uncertain and instable future labor income. As policy implications, these findings suggest that lending conditions of banks should be relaxed to increase the accessibility of households to credits. In addition, private consumption can be increased through income or consumption tax reductions. The results of this study are useful for future works, as they suggest that researchers should consider nonlinearities when examining the relationship between consumption and income.

Funding
The author received no direct funding for this research.

Author details
Yaya Keho
E-mail: yayakeho@yahoo.fr
Department of Applied Economics, Ecole Nationale Supérieure de Statistique et d'Economie Appliquée (ENSEA), Abidjan, Cote d'Ivoire.

Citation information
Cite this article as: Myopia, liquidity constraints and private consumption: the case of Cote d'Ivoire, Yaya Keho, *Cogent Economics & Finance* (2019), 7: 1608052.

References

Akekere, J., & Yousuo, P. O. J. (2012). Empirical analysis of change in income on private consumption expenditure in Nigeria from 1981-2010. *International Journal of Academic Research in Business and Social Sciences*, *2*(11), 321–331.

Altonji, J. G., & Siow, A. (1987). Testing the response of consumption to income changes with noisy panel data. *Quarterly Journal of Economics*, *102*, 293–328. doi:10.2307/1885065

Altunc, Ö. F., & Aydin, C. (2014). An estimation of the consumption function under the permanent income hypothesis: The case of D-8 countries. *Journal of Economic Cooperation and Development*, *35*(3), 29–42.

Apere, T. (2014). Private consumption expenditure function in Nigeria: Evidence from the Keyness' absolute income hypothesis. *International Journal of Research in Social Sciences*, *4*(3), 53–58.

Apergis, N., Varelas, E., & Velentzas, K. (2000). Money supply, consumption and deregulation: The case of Greece. *Applied Economics Letters*, *7*(6), 385–390. doi:10.1080/135048500351320

Campbell, J., & Mankiw, N. (1990). Permanent income, current income and consumption. *Journal of Business and Economic Statistics*, *8*, 265–279.

Cheung, Y., & Lai, K. S. (1993). Finite-sample sizes of Johansen's likelihood ratio test for cointegration. *Oxford Bulletin of Economics and Statistics*, *55*(3), 313–328. doi:10.1111/j.1468-0084.1993.mp55003003.x

Drakos, K. (2002). Myopia, liquidity constraints, and aggregate consumption: The case of Greece. *Journal of Economic Development*, *27*(1), 97–105.

Engle, R. F., & Granger, C. W. J. (1987). Cointegration and error correction: Representation, estimation, and testing. *Econometrica*, *55*(2), 251–276. doi:10.2307/1913236

Flavin, M. (1985). Excess sensitivity of consumption to current income: Liquidity constraints or myopia. *Canadian Journal of Economics*, *18*, 136–177. doi:10.2307/135117

Friedman, M. (1957). *A theory of the consumption function*. Princeton, NJ: Princeton University Press.

Gomes, F. A. R., & Paz, L. S. (2010). Consumption in South America: Myopia or liquidity constraints? *Economia Aplicada*. *14*(2), 129–145. doi:10.1590/S1413-80502010000200001

Hall, R. E. (1978). Stochastic implications of the life cycle-permanent income hypothesis: Theory and evidence. *Journal of Political Economy*, *86*, 971–987. doi:10.1086/260724

Inder, B. (1993). Estimating long-run relationships in economics: A comparison of different approaches. *Journal of Econometrics*, *57*(1–3), 53–68. doi:10.1016/0304-4076(93)90058-D

Jappelli, T., & Pagano, M. (1989). Consumption and capital market imperfections: An international comparison. *American Economic Review*, *79*, 1088–1105.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in gaussian vector autoregressive models. *Econometrica*, *59*, 1551–1580. doi:10.2307/2938278

Keynes, J. M. (1936). *The general theory of employment, interest and money*. London: Palgrave Macmillan.

Khalid, A. M. (1994). Empirical test of the rational expectation and permanent income hypothesis: Evidence

from Pakistan. *The Pakistan Development Review*, *33*, 1043–1053. doi:10.30541/v33i4IIpp.1043-1053

Khalid, K., & Mohammed, N. (2011). Permanent income hypothesis, myopia and liquidity constraints: A case study of Pakistan. *Pakistan Journal of Social Sciences*, *31*(2), 299–307.

Kwiatkowski, D., Phillips, P. C. B., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root. *Journal of Econometrics*, *54*(1–3), 159–178. doi:10.1016/0304-4076(92)90104-Y

Lucas, R. E. (1976). Econometric policy evaluation: A critique. *In Carnegie-Rochester Conferences on Public Policy*, *1*, 19–46. doi:10.1016/S0167-2231(76)80003-6

Lunfang, D., Khan, K., Khan, I., & Khan, N. H. (2018). Testing the empirical validity of permanent income hypothesis and absolute income hypothesis for China. *The Empirical Economics Letters*, *17*(4), 453–460.

Manitsaris, A. (2006). Estimating the european union consumption function under the permanent income hypothesis. *International Research Journal of Finance and Economics*, *2*(3), 1450–2887.

Modigliani, F., & Brumberg, R. H. (1954). Utility analysis and the consumption function: An interpretation of cross-section data. In K. K. Kurhira (Ed.), *Post-Keynesian economics* (pp. 388–436). New York, NY: Rutgers University Press.

Nwala, K. (2010). Does permanent income hypothesis hold for some selected African countries? *African Journal of Business and Economic Research*, *5*(2–3), 27–43.

Ofwona, A. C. (2013). An estimation of the consumption function for Kenya using Keynes' absolute income hypothesis for the period 1992-2011. *Journal of Emerging Trends in Economics and Management Sciences*, *4*, 103–105.

Osei-Fosu, A. K., Butu, M. M., & Osei-Fosu, A. K. (2014). Does ghanaian's consumption function follow the permanent income hypothesis? The Cagan's adaptive expectation approach. *Africa Development and Resources Research Institute (ADRRI) Journal*, *4*(2), 133–148.

Paleologos, J., & Georgantelis, S. (1992). The rational expectations approach to the study of consumption-income dynamics: The case of Greece 1983-1988. *Rivista Internationale di Scienze Economiche e Commerciali*, *39*, 485–498.

Paz, L. (2006). Consumption in Brazil: Myopia or liquidity constraints: A simple test using quarterly data. *Applied Economic Letters*, *12*, 961–964. doi:10.1080/13504850500425931

Pesaran, H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. doi:10.1002/(ISSN)1099-1255

Phillips, P. C. B., & Perron, P. (1988). Testing for a unit root in a time series regression. *Biometrika*, *75*(2), 335–346. doi:10.1093/biomet/75.2.335

Runkle, D. (1991). Liquidity constraints and the permanent income hypothesis. *Journal of Monetary Economics*, *27*, 73–98. doi:10.1016/0304-3932(91)90005-9

Shea, J. (1995). Myopia, liquidity constraints, and aggregate consumption: A simple test. *Journal of Money, Credit and Banking*, *27*, 798–805. doi:10.2307/2077751

Shin, Y., Yu, B., & Greenwood-Nimmo, M. (2014). *Modeling asymmetric cointegration and dynamic multipliers in a nonlinear ARDLframework*. In W. C. Horrace and R. C. Sickles (Eds.), *Festschrift in Honor of Peter Schmidt: Econometric methods and applications* (pp. 281–314). New York, NY: Springer Science & Business Media. doi:10.1007/978-1-4899-8008-3_9

Zeldes, S. P. (1989). Consumption and liquidity constraints: An empirical investigation. *Journal of Political Economy*, *97*(2), 305–346. doi:10.1086/261605

***Cogent Economics & Finance* (ISSN: 2332-2039) is published by Cogent OA, part of Taylor & Francis Group.**