TESTING PERMANENT INCOME AND RANDOM WALK HYPOTHESIS FOR TURKEY FOR THE PERIOD 1998:1 -2012:1[1]

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ABSTRACT[3]

There have been ongoing researches and debates on the dynamics of developing economies with structural changes within literature of economics since 1770s. Economics investigated some basic themes during Mercantilism and Physiocracy period and, however, shaped its scientific approaches together with related techniques of philosophy/mathematics/statistics through the models of Classical, Keynesian, Neo-classical, Neo-Keynesian and Monetarist. Among these approaches, Permanent Income Hypothesis (PIH) and Random Walk Hypothesis (RWH) have been searching/analyzing the alternative consumption functions with related possible significant parameters since 1930s

This paper, first observes different income-consumption relations through decomposing them by using Autoregressive (AR) process. Thus, validity of Permanent Income Hypothesis might be viewed. At the second stage, Random Walk Hypothesis is tested, by decomposing changes in permanent income into expected and unexpected changes throughout related AR processes. In this way, paper intends to explore, if exists, excessive smoothness and/or excessive sensitivity of consumption. Within the models launched in this paper, Turkish quarterly data for consumption and income, spanning from 1998:1 to 2012:1, are employed. Outcome of this paper indicates that consumption is found sensitive to changes in unexpected income as well as changes in expected income. Findings reveal overall that Absolute Income Hypothesis is confirmed in Turkish economy.

Keywords: Permanent Income Hypothesis, Random Walk Hypothesis, AR process, consumption smoothness, excessive sensitivity and excessive smoothness

JEL classification codes: C22, D12, E21

1.Introduction

[1] This article is generated from H.Hilal Baglitas' master thesis; "An Analysıs of Absolute Income, Permanent Income and Random Walk Models and Time Series Applications for Turkey"

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Consumption is one of the most debated topics in economy literature. After the great depression, absolute income hypothesis of J. Maynard Keynes gains a momentum. Absolute income hypothesis (AIH) claims that current consumption changes as current income changes. The model postulates some concepts such as marginal and average propensity to consume. AIH' main argument is that average propensity to consume (APC) declines as income accumulates. some short run time series empirical studies confirm Keynesian model whereas (i.e., Simon Kuznets), some other long run time series models disconfirm Keynesian model as they observe that APC might decrease in the short run but not in the long run. The controversies among short run and long run time series econometrical models cause a new concept of 'consumption puzzle' in the related literature.

James S. Duesenberry's relative income hypothesis (RIH) indicates that consumption is not only a function of current income; it is also a function of past values of income. Moreover, according to Duesenberry, the household's consumption is not independent from the group or environment in which they live.

Later, Irving Fisher develops Inter-temporal Consumption Choice Model. Individuals can adjust consumptions between today and future according to the given interest rate. They might consume all their income at the current term or save some part of income for future consumption. Furthermore, they could also choose to consume more than today' income by borrowing at the same rate.

Life Cycle Income Hypothesis is developed by Franco Modigliani, who suggests that individuals save money for spending purpose at the time that they get retired or unwilling to study. Thus, they could spend savings during the old ages and positive consumption-negative saving was valid at these times.

Fisher' model became a source of inspiration for Milton Friedman and he enchanted Permanent Income Hypothesis (PIH) based on adaptive expectations. Individuals realize their consumption according to the permanent income which they expect to earn during their whole life and they could smooth their consumption if their income changes can be predicted. Only, unexpected changes could affect consumption and they could make revision on their expectations as a deviation amount.

Following permanent income concept, Robert Hall has adopted 'rational expectation' instead of 'adaptive expectation'. This new model, Random Walk Hypothesis (RWH), means that all information is available in previous consumption behavior, so, changes in consumption cannot be estimated and just follows random walk. At this approach, consumption changes through surprise changes in permanent income. Under the circumstances of liquidity

constraints, borrowing constraints, uncertainty of income flows etc., the consumption smoothness does not occur. The consumption might be excess sensitive even if income changes are foreseen

For this study, consumption literature and especially related to permanent income and random walk hypothesis are examined at the second chapter. Methodology and data are given at the third chapter. The section of conclusion and policy implications, reveal some policy proposals at final chapter.

Table: 1 Consumption Literature

Author	**Period**	**Data**	**Results**
Arioglu and Tuan(2011)	1988:3-2009:3, Turkey	CPI, total employment, urban-rural employment, interest rate, inflation rate, consumption and GNP	There are two co-integration relationships, one is between consumption and GDP; other is between consumption and interest rate.
Sivri (2010)	1987:1-2007:3, Turkey	Nutrients-beverage, semi-durable-nondurable and service expenditure	Osborn model is valid for service expenditures and only surprise policies affect them
Okcu (2008)	1987:1-2007:3, Turkey	Consumption, income	Consumption is affected by its past value instead of income
DeJuan and Seater (2007)	1980-1991-USA	Consumption, income, socio-economic and demographic variables	Results support PIH
McIntryre (2007)	1978:1-1998:4, USA and Canada	Households nondurable goods and service consumption, labor income, interest rate, consumer confidence and sensitivity index	Predictive power of consumer confidence is consistent with the PIH.
Vardareri (2007)	1988:1-2005:3, Turkey	Per capita consumption, income	Excess sensitivity and liquidity constraints cause AIH
Bilgili (2006)	1987:1-2003:4-Turkey	Final consumption, GDP, public expenditure, tax and transfer payments	RWH is invalid and consumption has both excessive smoothness and excessive sensitivity
Maras (2006)	1960-2004, Turkey	Private-public consumption, income	RWH is the best explanatory hypothesis for both private and

			public spending in Turkey
Coban (2005)	1987:1-2003:4-Turkey	GDP, private consumption expenditure, tax and transfer payments	Consumption can be affected by expected and unexpected income changes
Yu (2005)	1991-2002-UK	Nondurable consumption, dummy variables for macro values such as seasonality, interest rate and demographic variables	Current consumption is sensitive to one lagged financial variable values. It is not confirmed that failure of REPIH is either myopic or liquidity constraints
Abeysinghe and Choy (2004)	1978:1-2003:4, Singapore	Consumption and income	There is no co-integration relationship
Gerdtham and Johannesson (2004)	1980-1986, Sweden	Per capita income, average community income and average community income inequality	AIH is supported
Slacalek (2004)	1970-2003 26 Industrialized countries panel data	Consumption, wealth level	There is a co-integrated relationship between consumption and wealth only for panel data
Parker and Preston (2002)	1981:1-1998:2, Monthly households questionnaire data, USA	Nondurable and service expenditure, 3 monthly real interest rate, discrimination of constraint and unconstraint consumers, demographic variables	Imperfect markets, precautionary savings, credit constraints, expectation of increasing unemployment make difficult to smooth consumption
Özer (2001)	1991-February-1991-December, Turkey, cross-section data	Durable-nondurable and service expenditure	Linear AIH is the best model explaining consumption
Madsen and McAleer (2000)	1972:1-1997:1-USA	Consumption, income, uncertainty, inflation expectation and liquidity constraints	Consumption is less sensitive to the current income in comparison with other studies.

Falk and Lee (1998)	1947:1-1995:1-USA	Treasury papers interest rate, inflation rates, per capita real disposable income, nondurable and service consumptions	Failure of separating labor income and consumption as permanent and transitory components result in wrongly evaluated applications for rational expectations PIH (REPIH)
Jappelli and Pistaferri (1998)	1989-93, Italy	Consumption, income, inflation expectation, income risk	Income risk supports precautionary savings
Garcia, Lusardi and Ng (1997)	1980-1987-USA	Race, gender, marital status, income and financial securities,	Excess sensitivity is valid among liquidity constraints. It is suggested that myopic behavior is not explanatory tool for denial of REPIH but might only explain excess sensitivity.
Lage (1997)	1974-1992-Michigan households cross-section data	Consumption, income	PIH is sensitive for learning process about income changes are permanent or transitory
Kim (1996)	1953:2-1993:1-USA	Consumption, labor and capital income	Consumption deviates from PIH less than % 4
Craigwel and Rock (1995)	1958:1-1990:3, Canada	Consumption, income, public expenditure, unemployment rate, interest rate, inflation and relative prices.	Income, public expenditure, interest rate, wealth and liquidity constraints are explanatory variables for consumption
Jin (1995)	1960-1988, OECD countries	Consumption, disposable income	Consumption and income are co-integrated
Gali (1991)	1947:1-1988:3-USA	Consumption, income, interest rate	Consumption show % 80 less variability according to PIH
Campbell and Mankiw (1990)	1953:1-1985:4-USA	Disposable income, nondurable goods and service expenditures	% 50 of Individuals consumes their current income rather than permanent income.
Zeldes (1989)	1968 USA households cross-section data	Consumption, real disposable income, interest rate after taxing, real estate wealth, yearly nutrient requirement	Inability of borrowing has impact on essential part of population

Blinder et all.(1985)	1954:1-1984:4-USA	Tax, gross interest payments to individuals, disposable income, public fees except taxes, nondurable goods and service expenditures, relative prices and interest rates	Unexpected income and wealth changes cause consumption changes. Temporary tax changes have little effect on consumption like as PIH suggestion. Interest rates have unimportant negative, inflation and relative prices have negative impact on consumption
Flavin (1984)	1929-1981, USA	Nondurable consumption goods, unemployment rate, income	AIH is insufficient model and liquidity constraints cause consumption to be excessive sensitivity to current income
Hayashi (1984)	1981:2-1982:2-Japan	Consumption, income	PIH/RWH is invalid because of excess sensitivity

In the Table 1, in general, it might be concluded that there is a co-integration relationship between consumption and income. Moreover, consumption is generally found excess sensitive to both expected and unexpected income changes. Because of some reasons, individuals/households could not smooth consumptions. More stable macro environment, developed financial markets, better demographic conditions etc. might cause consumption convergence PIH/RWH/REPIH.

3 Methodology and Data

At this study, Turkish quarterly data for consumption and income, spanning from 1998:1 to 2012:1, are employed. Aggregate household's consumption and national income (GDP) are variables and they were calculated by constant price based on 1998. Both variables have been used with logarithmic values. Paper first checks stationary conditions. Secondly, it employs Autoregressive Process (AR) to differentiate it two parts; 'permanent' and 'temporary'. PIH assumptions will be tested at this stage. Finally, permanent income variable resulted from the first AR, will be differentiated with AR for the second time. Thus, permanent income changes will have two parts; 'permanent changes' and 'temporary-surprise changes'. Thus, RWH can be checked at this step.

3.1 Stationary Tests

At the first stage of an econometric analysis, stationary test could prevent 'artificial regression' (or unit root). Artificial regression might lead researchers to have biased outcome. ADF-Augmented Dickey Fuller approach is used for stationarity test. At this approach, stationarity of $\boldsymbol{X_t}$ series can be illustrated through three forms of equations (Gujarati and Porter, 2009, p.755);

A) $\Delta X_t = \delta X_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta X_{t-i} + u_t$ 1)

B) $\Delta X_t = \beta_1 + \delta X_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta X_{t-i} + u_t$ 2)

C) $\Delta X_t = \beta_1 + \beta_2 t + \delta X_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta X_{t-i} + \varepsilon_t$ 3)

Equation A excludes constant and trend of series; B considers additionally the constant. And C employs both constant and trend. The consumption and income series are not stationary at their level hence they are not I (0). In case series is differenced once, they stylize from their root. For choosing the best model among stationary models after the relevant process, the Information criteria could help us. A model containing the lowest AIC/SC criteria value might be considered best among others to follow. Hence B model is chosen for further analyses. Results can be seen in the Table 2 below.

Table 2: ADF unit root test results

Hypothesis –I(0) level-lncons	**ADF/DF sta.**	**% 5 cri.value**	**Probability**	**Lag (L)**
A Model (None)	2,703	-1,948	0,998	6
B Model (with constant)	-0,75	-2,921	0,824	6
C Model (with constant and trend)	-2,334	-3,499	0,409	4
Hypothesis –I(1)-lncons	**ADF/DF sta.**	**% 5 cri.value**	**Probability**	**Lag (L)**
A Model (None)	-2,403	-1,947	0,0171	3
B Model (with constant)	-4,125	-2,921	0,0021	5
C Model (with constant and trend)	-4,05	-3,502	0,0131	5
Hypothesis –I(0) level -lninc	**ADF/DF sta.**	**% 5 cri.value**	**Probability**	**Lag (L)**
A Model (None)	1,965	-1,947	0,987	5
B Model (with constant)	-0,299	-2,92	0,918	5
C Model (with constant and trend)	-2,903	-3,499	0,17	4
Hypothesis –I(1)-lninc	**ADF/DF**	**% 5 cri.value**	**Probability**	**Lag (L)**

	sta.			
A Model (None)	-2,277	-1,947	0,0233	3
B Model (with constant)	-3,359	-2,92	0,0172	4
C Model (with constant and trend)	-3,319	-3,5	0,0747	4

3.2 Hypothesis Tests

There are different estimation techniques. Auto Regressive (AR) method might be preferable to follow among other methods, due to its some desirable statistical properties. AR (p) process keeps tracks of previous/past values of a series. AR process for X_t;

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \alpha_3 X_{t-3} + \cdots + \alpha_p X_{t-p} + \varepsilon \qquad 4)$$

At this model, a variable could be explained with its own previous or lagged values (Gujarati and Porter, 2009, 775).

To understand characteristics of a time series, researcher needs to examine it for 2-3 years. At the same time, researcher needs to know as well that choosing more lagged values diminishes the degrees of freedoms (d.f.) of the estimation. Hence, while determining suitable lag for AR, lag length might be restricted to eight quarters.

Table 3: dlncons ve dlninc series AR(p) trial results

Lag (L):		**L(1)**	**L(2)**	**L(3)**	**L(4)**	**L(5)**	**L(6)**	**L(7)**	**L(8)**
dlncons	AIC	-3,7091	-3,7172	-3,6911	**-4,0062**	-3,9154	-3,9319	-3,9136	-3,9979
	SC	-3,6361	-3,6435	-3,6168	**-3,9312**	-3,8396	-3,8554	-3,8364	-3,9199
	Ols.(%5)	0,1518	0,3348	0,4409	**0,0203**	0,3353	0,1006	0,5491	0,1644
dlninc	AIC	-3,655	**-3,8173**	-3,6712	**-3,9343**	-3,8273	-3,8852	-3,7854	-3,8735
	SC	-3,582	**-3,7436**	-3,5969	**-3,8592**	-3,7516	-3,8087	-3,7082	-3,7955
	Ols.(%5)	0,8356	**0,0068**	0,6283	**0,0228**	0,541	0,0516	0,785	0,0556

In the Table 3, according to the p-values and information criteria, lag length is chosen as L(4) for both consumption (dlncons) and income (dlninc). After regressing dlncons and dlnincs series with their fourth lagged values, residuals will be 'temporary' part of that relevant series. And if one subtracts temporary part from observed (original) data, he/she reaches the 'permanent' part of the series.

3.2.1. Permanent Income Hypothesis Test

Permanent consumption is function of interest rate (r) borrowing/lending, ratio of nonhuman wealth to income (w) and tastes and preferences (u) within the PIH (Friedman, 1957, 26);

$$C_P = k(r, w, u)Y_P \qquad k > 0 \qquad 5)$$

r, w and u parameters effect value of k and thus, they can change amount allocated from permanent income to consumption.

On a conceptual basis, consumption and income are separated two parts; permanent and transitory (Friedman, 1957, 26);

$$C = C_P + C_T \qquad 6)$$

$$Y = Y_P + Y_T \qquad 7)$$

PIH assumptions are (i) there is no correlation (ρ) between permanent-temporary parts of consumption and (ii) there are is no correlation between income and temporary income and consumption, (iii) there is no correlation between temporary consumption and temporary income (Friedman, 1957, 26, 27).

$$\rho_{C_P C_T} = \rho_{Y_P Y_T} = \rho_{Y_T C_T} = 0 \qquad 8)$$

Underlying truth is that individuals might save temporary amount of their income instead of spending. Individuals/households can smooth consumption according to the permanent income. Thus, current income changes are not able to affect consumption. At this phase, PIH hypothesis' assumptions are checked. Different combinations of current and lagged values of consumption and income are tested with Ordinary Least Squares (OLS) techniques. According to the 8th equation, three assumptions will be tested and checked, respectively.

Table 4: Test of relationship $Y_P - Y_T$

Dependent Variable: Y_P

Method: Least Squares

Sample (adjusted): 1999Q4 2012Q1

Included observations: 50 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y_T	-0.026740	0.047488	-0.563100	0.5762
Y_P (-1)	0.014214	0.138809	0.102397	0.9189

Y_P (-2)	-0.358329	0.144640	-2.477391	0.0171
Y_T (-1)	-0.044510	0.046313	-0.961068	0.3418
Y_T (-2)	-0.070417	0.046581	-1.511699	0.1378
C	0.015688	0.002788	5.626745	0.0000

R-squared	0.172352	Mean dependent var	0.011854
Adjusted R-squared	0.078301	S.D. dependent var	0.010898
S.E. of regression	0.010463	Akaike info criterion	-6.169778
Sum squared resid	0.004817	Schwarz criterion	-5.940335
Log likelihood	160.2444	F-statistic	1.832543
Durbin-Watson stat	1.990588	Prob(F-statistic)	0.126167

In the Table 4, observing F-test, one claims that at least some parameters are not statistically significant. Since calculated F, is smaller than table value of F ($F_{cal} < F_{tab}$); $1{,}8325 < 2{,}34$ and that null hypothesis might be accepted, and, hence, that model is not statistically significant.

Table 5: Test of relationship C_P-C_T

Dependent Variable: C_P

Method: Least Squares

Sample (adjusted): 1999Q4 2012Q1

Included observations: 50 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y_T	-0.035013	0.051744	-0.676648	0.5022
C_P (-1)	-0.202557	0.152910	-1.324681	0.1921
C_P (-2)	-0.188201	0.159655	-1.178796	0.2448
Y_T (-1)	0.011407	0.048262	0.236363	0.8142
Y_T (-2)	-0.040766	0.047623	-0.856006	0.3966
C_0	0.015917	0.003211	4.956882	0.0000

R-squared	0.068430	Mean dependent var	0.011502
Adjusted R-squared	-0.037430	S.D. dependent var	0.010611
S.E. of regression	0.010807	Akaike info criterion	-6.104998
Sum squared resid	0.005139	Schwarz criterion	-5.875555

Log likelihood	158.6249	F-statistic	0.646418
Durbin-Watson stat	2.051433	Prob(F-statistic)	0.665615

Table 5 shows that the model is statistically meaningful according to the F statistics. Until this stage, results are in favor of permanent income hypothesis. The third assumption is especially critical for PIH.

Table 6: Test of relationship C_T-Y_T

Dependent Variable: C_T

Method: Least Squares

Sample (adjusted): 1999Q4 2012Q1

Included observations: 50 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y_T	0.746819	0.089886	8.308490	0.0000
C_T (-1)	-0.269046	0.151506	-1.775814	0.0827
C_T(-2)	0.086783	0.153761	0.564399	0.5753
Y_T(-1)	0.131419	0.144141	0.911736	0.3669
Y_T(-2)	-0.065699	0.145262	-0.452276	0.6533
C_0	-0.000294	0.002834	-0.103608	0.9180

R-squared	0.642083	Mean dependent var	-0.000595
Adjusted R-squared	0.601411	S.D. dependent var	0.031696
S.E. of regression	0.020011	Akaike info criterion	-4.872887
Sum squared resid	0.017620	Schwarz criterion	-4.643444
Log likelihood	127.8222	F-statistic	15.78672
Durbin-Watson stat	1.828189	Prob(F-statistic)	0.000000

In the Table 6, model is statistically significant ($Ftab = 2{,}34$ and $Fhes \cong 15{,}786$). So, this model must be checked in terms of parameters. One lagged value of temporary consumption; C_T (-1) is statistically significant at % 10 level. It means that consumption lagged value might affect its current value. And also temporary income (Y_T) parameter is also important at % 1 significance level. This conclusion is against of PIH validity. But general evaluation could be reached after RWH tests.

3.2.2. Random Walk Hypothesis Test

Random walk hypothesis might be called permanent income hypothesis with rational expectations (REPIH). This is because of substituting rational expectations for adaptive expectations in the model. With this substitution, individuals determine their consumptions through all information obtained from past, current and future times. Due to evaluating all probabilistic information, consumption could not be estimated and might follow random walk. All needed information might be inside the one lagged consumption (C_{t-1}) (Hall, 1978; 975);

$$C_t = C_{t-1} + \varepsilon_t \qquad 10)$$

Under the PIH, 10th equation follows stochastic process (Hall, 1978, 975).

Consumers might change their consumptions only with unexpected permanent income changes like PIH. But there are two conditions breaking the rules; 'excess sensitivity' and 'excess smoothness'. One is that alterability of consumption even if expected permanent income movements; other is stableness of consumption even if unexpected permanent income movements. For this study, smoothness and excess sensitivity tested for RWH.

Now, this study will be continued with second AR process. Permanent income changes will be resolved into 'permanent-transitory changes' or 'expected-unexpected changes'. Later, i) current (or total) consumption(C_t) - permanent income (Y_P); ii) consumption changes (ΔC_t)-expected -ΔY_t^{PC}- and (ΔC_t)-unexpected -ΔY_t^{PT}-permanent income changes will be regressed. Thus, 'excessive' conditions could be tested.

Table 7: AR(p) trial results for Y_P series:

Lag (L):		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Y_P	AIC	-6,120264	**-6,24149**	-6,134645	**-6,37552**	-6,306549	-6,342087	-6,261691	**-6,35148**
	SC	-6,044506	**-6,16501**	-6,057428	**-6,29756**	-6,22782	-6,262581	-6,181395	**-6,27038**
	Prob.(%5)	0,7751	**0,0286**	0,6991	**0,083**	0,5489	0,1081	0,7351	**0,0654**
	DW	1,884394	**1,824469**	1,732707	**1,667035**	1,787707	1,815027	1,768408	**1,702382**

In the Table 7, L(2), L(4) and L(8) are suitable for AR process. But L(4) is more convenient among them because of information criteria. After regressing permanent income with its fourth lagged values, residuals give unexpected changes. After extracting residuals from original data (Y_P), expected changes left.

Table 8: Relationship between C_t and Y_P

Dependent Variable: C_t

Method: Least Squares

Sample (adjusted): 1999Q2 2012Q1

Included observations: 52 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y_P	0.800506	0.418406	1.913228	0.0615
C	0.001943	0.006793	0.286036	0.7760
R-squared	0.068215	Mean dependent var		0.011632
Adjusted R-squared	0.049579	S.D. dependent var		0.033495
S.E. of regression	0.032654	Akaike info criterion		-3.967998
Sum squared resid	0.053314	Schwarz criterion		-3.892950
Log likelihood	105.1680	Hannan-Quinn criter.		-3.939227
F-statistic	3.660441	Durbin-Watson stat		2.194999
Prob(F-statistic)	0.061454			

According to the Table 8, model as a whole is statistically significant ($Ftab = 2{,}84$ and $Fhes \cong 3{,}66$) and Y_P coeffient is important at % 10 level.

Table 9: ΔC_t -ΔY_t^{PT}) regression

Dependent Variable: ΔC_t

Method: Least Squares

Sample (adjusted): 2000Q1 2012Q1

Included observations: 49 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ΔC_{t-1}	-0.627158	0.143986	-4.355678	0.0001
ΔC_{t-2}	-0.270562	0.137744	-1.964233	0.0557
ΔY_t^{PT}	0.766908	0.441382	1.737517	0.0891
C_0	-0.001404	0.005871	-0.239179	0.8121
R-squared	0.399799	Mean dependent var		-0.000745

Adjusted R-squared	0.359786	S.D. dependent var	0.051329
S.E. of regression	0.041070	Akaike info criterion	-3.468951
Sum squared resid	0.075905	Schwarz criterion	-3.314516
Log likelihood	88.98929	Hannan-Quinn criter.	-3.410358
F-statistic	9.991645	Durbin-Watson stat	2.106055
Prob(F-statistic)	0.000036		

The above model is statistically meaningful ($Ftab = 2{,}61$ and $Fhes \cong 9{,}99$) and also ΔY_t^{PT} might lead consumption to change at % 10 level. It is said that there is sensitivity of consumption to the unexpected changes or shocks. Both Table 8 and 9 results are in favor of RWH.

Table 10: ΔC_t - ΔY_t^{PC} regression
Dependent Variable: ΔC_t
Method: Least Squares
Sample (adjusted): 2000Q2 2012Q1
Included observations: 48 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ΔC_{t-1}	-0.705898	0.134182	-5.260749	0.0000
ΔC_{t-2}	-0.334669	0.132419	-2.527347	0.0152
ΔY_{t-1}^{PC}	2.094868	1.243048	1.685267	0.0990
C_0	0.000740	0.005702	0.129708	0.8974

R-squared	0.394671	Mean dependent var	0.001619
Adjusted R-squared	0.353399	S.D. dependent var	0.049101
S.E. of regression	0.039483	Akaike info criterion	-3.546230
Sum squared resid	0.068592	Schwarz criterion	-3.390297
Log likelihood	89.10953	Hannan-Quinn criter.	-3.487303
F-statistic	9.562597	Durbin-Watson stat	2.097858
Prob(F-statistic)	0.000056		

Like as Table 9, the same things could be said for Table 10. Consumption might change with expected or predictable permanent income changes and thus shows excess sensitivity. In the

light of all results, we can express that Turkish household's consumption pattern does not follow PIH/RWH/REPIH.

4 Conclusion and Policy Implications

At this study, permanent income and random walk hypothesis are evaluated simultaneously. At the first stage, almost all results related to the hypothesis confirm PIH concept. Later, RWH model is tested. Results yield that Turkish households are sensitive to expected and unexpected permanent income changes. In the context of these results and related assumptions; absolute income hypothesis is relatively better one being able to explain Turkey private consumption pattern.

What might be the reasons of this conclusion? Liquidity constraints, borrowing constraints, uncertainty income flow, underdeveloped financial market, lack of education, myopic behavior, precautionary saving might be causes of this output. As for the policy implications of the model estimated in this study, policy makers might able to choose short run demand side policies. Households would respond to all policies whether they are expected or unexpected. If urgent solutions are required, policy' effects could be seen more easily, even if they are announced. Stable macroeconomic environment, developed financial markets, available or future regulations, education level etc. will shape households consumption pattern. Overall one may conclude that surprised policies as well as foreseen policies will have the impacts on Turkish consumption. A future work might, on the other hand, determine the relative degrees of effectiveness of anticipated and unanticipated policies.

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