

## Factors of Permanent Income and effects over Consumption in Pakistan (1973-2013)

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### Abstract

This Study significantly observes long run as well as the short run effect of the permanent income (PI) on consumption (C) the same as initiated by the Milton Friedman employing ARDL to Cointegration bound testing approach and Error Correction Model (ECM). The reason of the current study is to discover the degree to which wealth indicators connecting to PI may have an effect on consumption with respect to Pakistan like GNE (Gross National Expenditure), GNS (Gross National Savings), GVA (Gross Value Added), NR (Natural Resources) and TR (Total Reserves) span from 1973 to 2013. Above tests show long run association exists among the selected variables. According to ECM correction process is slow and short-run disequilibrium not at all adjusts completely in the current period.

**Keywords:** Consumption, Consumption function, Permanent Income,

**JEL Classification:** E12, E21

### 1) Introduction:

The theory of consumption was the most accepted topic of modern economic research since seventy five years ago. The law of consumption propounded by Keynes that when the total income increases, consumption spending also increases but with a lesser degree. Later on, few studies dilate upon the determinants of the consumption functions of Aggregate Demand (AD). On the other hand, opponents of Keynesian were fast to seize upon this opportunity to put their views that well denied any prospect of precise short-run forecast of consumption expenditure. Keynes economic views were defended by his followers and supporters. The results were outpouring of theoretical, doctrinal and empirical discussions of such magnitude and diversity that the central question – the predictability of aggregate consumption spending – was lost in the discussion.

Household behavior regarding consumption contains different dimensions that have legitimately stimulated the involvement of social researchers and scientists. Economists' mostly focus the economic dimensions of household behavior and frequently overlook the demographic, psychological and sociological attributes. Researchers separate key variables and link the variables together through means of a convenient set of behavioral relations that explain and forecast the value of factors by considering different households both over an interval and at a point in time.

The focal point of this study rotates around Psychological law of consumption function given by Keynes. The paper discusses numerous theories of consumption and evaluation of the immense number of empirical outcomes in Pakistan's perspective.

#### 1.1) OBJECTIVE OF STUDY:

The study is largely concern with the objective of determining long-run and short-run effects on income indicators affecting Pakistan's consumption function.

#### 1.2) Data:

Annual time series data from 1973 to 2013 is employed in the empirical investigation. The data is acquired from the Handbook of SBP and the Economic Survey of Pakistan. The concerned variables are TCE (Total Consumption Expenditure), GVA (Gross Value Added), GNE (Gross National Expenditure), TR (Total Reserve), NR (Natural Resources) and GS (Gross Savings).

#### 1.3) The Theoretical framework:

The PIH (Permanent Income Hypothesis) contains two major features a model of income formation and an association between income and expenditure. In addition, Prof. Friedman provides an expectation model designed to estimate permanent income from aggregate time series data. We shall summarize each of these features in turn. First, the detail of the income structure specification is given by

$$Y = Y_p + Y_t \quad (1) \text{ and}$$

$$C = C_p + C_t \quad (2)$$

Where Y is measured income,  $Y_p$  is a permanent income and  $Y_t$  transitory income. Similar definitions apply to the consumption variables. The permanent components are systematic and form the basis of the theory, although they are not directly observable. The transitory components, on the other hand are best thought as residuals as it falls between the measured income and PI. According to Friedman (1957), the perpetual part is to be evaluated as reflecting the impact of those aspects which is determined by its capital value of wealth. On the other hand, the non human wealth is measured by the ability, capacity and the training of the Earners.

#### 1.4) Consumption with respect to Pakistan:

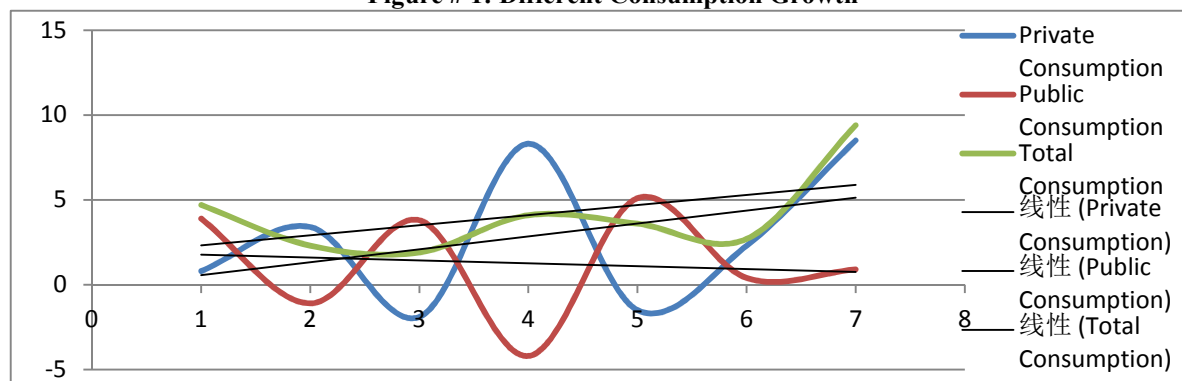
Consumption plays a pivotal role in the context of Pakistan. As the masses and the behavior is consumption oriented, the ratio of domestic savings is very low and on the other hand, MPC (Marginal Propensity to Consume) is quite high. Resultantly, Private Consumption (PC) becomes the key component of AD.

PC spending has augmented to 75 % of GDP (Gross Domestic Product), while Pub Con (public consumption) spending is 13 % of GDP. However, TC (Total consumption) has reached 88.35 % of GDP in FY (fiscal year) 2013 matches up to 83 % in 2011.

Real PC grew at 11.6 % in FY 12 as match up to 3.7 % in 2011. Whereas, real government consumption grows at 8.2 % in 2011-12 as match up to 5.2 % in 2011.

It has been observed that due to continuous rise in remittances, PC has been expanded. Moreover, rise in RI (Rural Income) because of the sharp increase in commodity prices (such as Wheat Support Price) and higher production of crops also sustained the consumer demand. Endogenous demand sustained to be the vital dynamic factor for economic development and growth, with PC being the main driving force for supporting AD.

Figure # 1: Different Consumption Growth



Source: Estimation and Tabulation by Author.

## 2) REVIEW OF LITERATURE:

The relationship between income and consumption has its extraction since the very beginning. Milton Friedman has specified his vision that the total household consumption is affected by permanent income. The association between income and consumption established by Friedman is in conformity with the life cycle hypothesis. There is a direct association between the basic PIH variables i.e. income, savings, loan and households' consumption (Akhir 2011).

James Duesenberry challenged the Keynes's psychological aspects on relative income concerns.

Moreover, it is worth mentioning that the social dimensions related to consumption have traces in the history i.e. Patten(1889), Veblen, (1899), Mitchell (1910), (1909), Downey (1910), Clark (1918), Knight (1925a), (1925b) and Duesenberry(1950) in their work promised the link between institutional and Keynesian analysis. Duesenberry's theory of consumption is replaced by Brumberg and Modigliani in (1954) and PIH of Friedman in (1957).

In macroeconomic models, different shapes of consumption functions had been pursued by Keynes (1936), Brumberg and Modigliani (1954), Milton Friedman (1957), [David, Hendry, Srba and Yeo (1978)] and the prominent consumption function model of Hall in (1978). The subsequent studies focused more on empirical confirmations. [Singh (2004)].

On the foundation of the empirical effort, consumption has a very extensive practice. Keynes (1939) hypothesized the association between disposable income and consumption. In the Keynesian consumption model, it was pointed out that the consumption is a fixed portion of the present income.

According to AIH (Absolute Income Hypothesis), the people became accustomed to the changes in income. Thus, both the theoretical and empirical apprehensions of AIH have been taken into account in the development of the LCH by Brumberg and Modigliani and the PIH by Friedman. The possibility of decline in net savings is due

to the enhancement in consumption owing to the convenience of wealth. In PIH, as an alternative of the unstable consumption the flat consumption is preferable.

The consumers frequently maintain a stable pattern of consumption but over the period of time there are substantive variations in income which leads to make changes in the consumption pattern. Friedman (1957) tested the PIH through stating that the idea of permanent income via people is implicit to be based on what occurred over the history of numerous years. Consequently, lags have been inducted in the PIH.

Hall (1978) applied the REH (Rational Expectations Hypothesis) by captivating the approach of life-cycle permanent income. The REH has suggested that the behavior of people is typically inclined towards the information and knowledge of the progression of generating income.

The author suggested that the addition of lagged variables for instance wealth and income into an auto-regression on consumption can be employed and intended for the proper testing of LCH or PIH of consumption. As contrasted to the suggestion of LCH or PIH, Flavin (1981) established that the variation in consumption over changes in income is very sensitive. There had been little support from Mankiw and Campbell (1990) for the PIH. [David, Hendry, Srba and Yeo (1978)] established that ECM is considered as another significant approach to modeling consumption.

The arrangement of the association between wealth and consumption has been measured by ECM approach as applied by Davis (1984). Molana (1991) shows that the favorable premature empirical confirmation on the (DHSY). Chambers (1991) established good predictions for United Kingdom by employing the identical ECM approach. Singh (2004) investigated the association between saving and income and revealed by a definite quantity of objectivity as affirmed through Clarida and Campbell. It has been revealed by the Canadian and Britain study with respect to the PIH so as to the disposable labor income to household saving behavior has a certain relative incorporation of changes [Clarida and Campbell (1987)].

The sequential array of the different works concerning PIH is specified in the above text. The summarize study is based on the relative association between a variety of permanent income determinants and consumption. These comprise TR (Total Revenue), GVA (Gross Value Added), GS (Gross Saving), and GNE (Gross National Expenditure).

The study dilates upon the factor affecting consumption pattern in the context of Pakistan. The LCH elaborates the life cycle of a consumer which discusses the smooth consumption pattern due to savings. The parity of non-savings with savings has been informed since the savings will be removed owing to the interest on borrowing. Wealth except income may profoundly influence the LCH.

There is a positive association between permanent income and consumption as confirmed by the PIH. Also, a direct association between family size and dependent variable that is household consumption, and independent variables i.e. types of employees, education level, saving, loan and household income has been observed. (Akhir 2011).

The alteration of the divergence of income, wealth and consumption can be merely correct through ECMs as a single equation. [Fernandez Corugedo, Price et al. (2003)].

This study is unique and one of its kind as it derives the long as well as short run association among income and consumption indicators that are TCE, GVA, GNE, TR, NR and GS.

### **3) Methodology:**

In this section methodology and empirical will be discussed.

#### **3.1) Unit Root Test:**

The essential state for the cointegration among these variables is their stationary levels in the ARDL Bound Testing for Cointegration. Variables are tested for stationary employing the Augmented Dickey-Fuller (ADF) (Fuller and Dickey 1984).

#### **3.2) ARDL Bound Testing For Cointegration:**

“Pesaran and Shin (1998) develop the ARDL approach to Cointegration to test the long run association. Different from other cointegration methods, the ARDL approach does not oblige a restraining assumption that the entire variables under study should be stationary at the same order. ARDL approach may be used irrespective of whether all variables are integrated at  $I(0)$  or  $I(1)$  or jointly stationary Pesaran and Shin (1999). The ARDL approach is appropriate still if the sample size of data is small; in difference to other cointegration methods that are sensitive to the sample size of data. Moreover, it takes enough quantity of lags to confine the data generating process in a general to specific modeling structure. Fourthly, it eliminates problems associated with absent variables and autocorrelations; gives balanced and competent estimates Narayan (2004). Procedurally, ARDL approach involves two distinguishing steps. The primary step entails the establishment of long run association through the ARDL model.

The variables of the study have been described earlier. To create a long run association, joint significance test of Co-integration shows that all long run coefficients are equal to zero. The F-statistic, which has an irregular

distribution, is considered on the numbers lags of variables in determining whether co-integration among the variables exists or not. In this regards, two bounds which are LCB (lower critical bound) and UCB (upper critical bound) of critical values are generated. The LCB defined as I(0) variables, though the UCB defined as I(1) variables. In relation to the bound test, long run association exists if the calculated F value greater than the UCB. If computed F value is in between the UCB and LCB, no decision about long run association however other method of cointegration can be applied. Finally, if the F value is lower than the LCB, it entails no cointegration.”

### 3.3) Error Correction Model:

The error correction mechanism (ECM) was used by Sargan and later adopted by Engle and Granger (1969) corrects for disequilibrium. An important theorem, known as the Granger representation theorem, describes that if variables are co-integrated, then the relationship between them can be expressed as ECM.

#### 4) Empirical Outcomes And Analysis:

**Table 1 Unit root test (Augmented Dickey fuller)**

Variables	Calculated value	1% Critical value	5% Critical value	p-values
TCE(0)	-3.547100	-4.211868	-3.529758	0.0481*
$\Delta$ (TCE)(0)	-5.714601	-4.226815	-3.536601	0.0002*
GNS(0)	-2.825282	-4.211868	-3.529758	0.1973*
$\Delta$ (GNS)(0)	-8.137121	-4.219126	-3.533083	0.0000*
GVA(0)	-2.468073	-4.211868	-3.529758	0.3413*
$\Delta$ ( GVA)(0)	-6.265594	-4.219126	-3.533083	0.0000*
GNE (0)	-3.398814	-4.211868	-3.529758	0.0662*
$\Delta$ ( GNE)(0)	-5.283262	-4.219126	-3.533083	0.0006*
NR (0)	-2.870979	-4.211868	-3.529758	0.1825*
$\Delta$ ( NR)(0)	-5.977971	-4.226815	-3.536601	0.0001*
TR(0)	-2.014905	-4.211868	-3.529758	0.5752*
$\Delta$ ( TR)(0)	-5.701562	-4.219126	-3.533083	0.0002*

“\*MacKinnon (1996) one-sided p-values. Notes: [Y: The Level form of the variable Y] [ $\Delta$  (Y): The first change of the variable Y]

Source: Summarized and Tabulated by Authors”

The table no. 1 shows the outcomes of the ADF test (with constant and trend) and some the variables that are chosen, is non-stationary at level. Afterwards, every variable become stationary at 1<sup>st</sup> difference. The values show is the bracket is the lag length of variables. At the next stage we used ARDL Cointegration Analysis to discover the long run nexus among the variables whether it exists or not.

**Table 2 The ARDL Cointegration Analysis**

Regressor	Coefficient	Standard Error	t-values	[ P-values ]
TCE (-1)	-0.37603	0.18121	-2.075	[.050]
TCE (-2)	-2.3195	0.79449	-2.92	[.008]
GNS	-6.5186	1.4767	-4.414	[.000]
GNS (-1)	5.4507	2.635	2.0686	[.051]
GNS (-2)	-3.8772	1.9556	-1.983	[.061]
GVA	-1.0816	0.5557	-1.946	[.065]
GVA (-1)	1.3732	0.49646	2.766	[.012]
GVA (-2)	0.54981	0.29283	1.8776	[.074]
GNE	3.2845	0.5136	6.395	[.000]
GNE (-1)	-0.83761	0.55194	-1.518	[.144]
NR	3.3442	1.8131	1.8444	[.079]
NR (-1)	-3.9902	1.6735	-2.384	[.027]
NR (-2)	2.7755	1.0869	2.5537	[.018]
TR	2.16E-04	7.50E-05	2.8754	[.009]
TR (-1)	-1.56E-04	8.45E-05	-1.841	[.080]
INTP	-201259.4	200198	-1.005	[.326]
TREND	26220	14455.6	1.8138	[.084]
R <sup>2</sup>	0.99817	<b>Adjusted R<sup>2</sup></b>	0.9968	F-stat 716
D-W	2.367	<b>NORMAL Test</b>	28.8508[0.000]	<b>SERIAL Test</b> 2.9166[0.103]
Functional Form	3.3523[0.082]	<b>Heteroscedasticity</b>	0.71845[0.402]	

**Source: Summarized and Tabulated by Authors**

**ARDL Cointegration Analysis:** ARDL Cointegration Analysis shows that all selected variables have long-run association with F-stat 716 and p-value 0.000.

**Table 3 Long Run Coefficients (ARDL Approach) AIC**

Regressor	Coefficient	Standard Error	t-values	[ p-values ]
GNS	-1.338	0.98772	-1.3548	[.190]
GVA	0.2277	0.06883	3.3082	[.003]
GNE	0.6621	0.06415	10.3221	[.000]
NR	0.5763	0.52638	1.0947	[.286]
TR	2E-05	2.5E-05	0.63583	[.532]
INTP	-54460	57566.4	-0.946	[.355]
TREND	7095.1	4134.8	1.7159	[.101]

**Source: Summarized and Tabulated by Authors**

The above table shows the estimated long run coefficients employing ARDL approach, which shows that TCE is highly affected with GNS, GVA and GNE. There is a direct association among GVA, GNE and TCE, this association is significant 5%, conversely TCE as well react negatively GNS and this association is significant at the 19% level.

The outcome of ECM shown below:

**Table 3 ECM for the Selected ARDL Model chosen based on AIC**

Regressor	Coefficient	Standard Error	t-Ratio	[Prob]
$\Delta$ TCE1	2.3195	0.79449	2.9195	[0.007]
$\Delta$ GNS	-6.5186	1.4767	-4.4142	[0.000]
$\Delta$ GNS1	3.8772	1.9556	1.9826	[0.058]
$\Delta$ GVA	-1.0816	0.5557	-1.9463	[0.062]
$\Delta$ GVA1	-0.54981	0.29283	-1.8776	[0.072]
$\Delta$ GNE	3.2845	0.5136	6.395	[0.000]
$\Delta$ NR	3.3442	1.8131	1.8444	[0.077]
$\Delta$ NR1	-2.7755	1.0869	-2.5537	[0.017]
$\Delta$ TR	2.16E-04	7.50E-05	2.8754	[0.008]
$\Delta$ INTP	-201259.4	200198	-1.0053	[0.324]
$\Delta$ TREND	26220	14455.6	1.8138	[0.081]
ECT <sub>t-1</sub>	-3.6955	0.85859	-4.3042	[0.000]
R <sup>2</sup>	0.9499	<b>Adjusted R<sup>2</sup></b>	0.91173	
F-stat	36.1987[0.000]	<b>D-W</b>	2.3671	

**Source: Summarized and Tabulated by Authors**

In the short-run dynamic, The Error Correction Term (ECT) has a sign according to theory and it is statistically significant at the 1% level. The value of ECT coefficient makes clear the pace of alteration from short run to the long run path.

##### 5) CONCLUSION AND RECOMMENDATION :

The aim of this study is to confirm long run as well as short run association between the selected variables, employing the ARDL to co-integration approach and ECM. It is evident from the findings of this study that there is a long run relationship exists between the chosen variables. It is also discovered that the speed of correction for the short run to the long run is significant, representing that the correction process is slow. The earlier fluctuations can be rectified in the future.

The GNS, NR and TR are insignificant to impact TCE in the long run but GVA and GNE are statistically significant to impact long run. The short run strategies of GNE and NR have a positive effect on consumption. The short run strategies have positive effects in term of production growth. The consequences are in the form of improved domestic performance, in term of consumption and capital expenditures. Short run strategies have positive effects in term of public and non-public investments. The short run strategy for the GVA is facing the problem. This possibly owing to the fact, that the public has low domestic savings. Derived from these confirmations it is obvious that consumption and Income variables are significant to establish the macroeconomic constancy in Pakistan.

- If the government provides precedence to long run consumption on the basis of exploring the accessible NRs, it may achieve improved outcome in economic development and growth, minimizing unemployment and poverty.
- For the success of PIH, strategies are desired to develop the plan to enhance the economic development and growth of the country keeping in view the above selected variables rather than focusing on the short run strategies.
- The policy makers and economists need to focus on the greater opportunities for permanent income generation in the economy which may lead to have an effect on consumption.
- Government should pay attention to the employment training in tendon the private sector as well as public sector to tangent the target of more permanent income because our study exhibits significant effect of perm ant income on consumption

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