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Impact of Income on Gross Fixed Capital Formation in Pakistan: An Analysis for the Period 2008-17

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Abstract:
Investment in the developing countries differs from the investment in the developed countries in the sense of credit availability and government investment. The investment depends upon the infrastructure and characteristics of the economy of the country too. It is correlated with macroeconomic factors as GDP, interest rate offered to the investors and the government policy for attracting investment, inflation and income. The phenomena of profit that capital investment yields has been a matter of discussion, investigation and analysis by many financial and economy gurus over the past century. The main aim of encouraging investment to a country is to bring prosperity to it. This state of affairs can be materialized by engaging people into business activities that yield them a better economic status, improved life style and creation of business opportunities where the people can invest their savings. This signifies the fact that growth in economy of a country is an open manifestation of its progress and prosperity. The investment and the economy in general are fundamentally inter related and impact one another greatly. The macroeconomic factors in estimating speculations of resources are recognized to be crucial in this respect. Changes in macroeconomic factors do influence investment and capital formation in one way or another. Correct future estimations regarding patterns found in macroeconomic factors can be useful in order to see their main effect on investment.

Keywords: Income, Gross Fixed Capital Formation, Pakistan etc.

Introduction:

Investment or in other technical and measurable terms Gross Fixed Capital Formation is an important factor for economic growth (Al-Tarawneh,

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2004). This context has intrigued the financial pundits to study the determinants of the investment in a country, of which, some are income, inflation, interest rate, and exchange rate. Gross Fixed Capital Formation is the procurement of fixed assets by deducting the disposals and making value added improvements to, and transfer of costs onto, land and other non-produced assets i.e. assets which have been procured, these could be brand new or for that matter they may have been used already and are now to be traded on for a second hand use. The assets which are to be disposed of, they may be sold to those who want to use them for another economic unit or they may have just been abandoned by their owners or may have been left to be sold as mere scrap and be broken down into reusable units, recoverable materials for further use, or just as waste products. The macroeconomic factors in estimating speculations of resources is recognized to be crucial in this respect and correct future estimations regarding patterns found in macroeconomic factors particularly income can be useful in order to see their main effect on investment. The results of this study can be used by all the stake holders who either want to study the effect of income on capital formation in Pakistan as it is a developing country and ideal for investment and business creation.

Background of the Study:

The developing countries across the world have experienced a prominently weak economic growth since 1980s owing to many contributing factors namely, an inflated decline in investment, fall in exports, presence of external foreign debt and lack of private financing. The investment and the economy in general are fundamentally inter related and impact one another greatly. The macroeconomic factors in estimating speculations of resources are recognized to be crucial in this respect. Changes in macroeconomic factors do influence investment and capital formation in one way or another. This phenomenon has intrigued the financial pundits to study the determinants of the investment in a country, of which, some are the real interest rates, level of income and inflation. As a result, the phenomena of profit that capital investment yields has been a matter of discussion, investigation and analysis by many financial and economics gurus over the past century. This study investigates the impact of income on gross fixed capital formation for the period 2008-2017 which is a developing country.

Review of Literature:

A financial system of the modern latest era encourages investment. It not only identifies a business opportunity but it also provides relevant and pertinent information about business opportunities. It also helps in a quick accumulation of physical and human capital, in a faster technological progress, which in turn, help feed economic growth as stated by (Creane, Goyal, Mobarak, & Sab, 2004). The developing countries across the world have experienced a prominently weak economic growth since 1980s owing to many contributing factors namely, an inflated decline in investment as the income of the people is very low resulting in low savings, fall in exports, presence of external foreign debt and lack of private financing (Joshua & Delano, 1991). On the other hand, studies conducted by (Mckinnon, 1973) reveal that government restrictions on the interest rate and the banking system hamper economic growth.

The notions on the consequences of macroeconomic elements as income on gross fixed capital formation stand evidently proven. The same has been reflected in the previous studies, where one notion states that a higher income increases capital formation. Resultantly, it increases investment where, in less developing countries (LDCs), who have poorly developed financial markets, there is an inadequate access to financing for most projects or assets from where cash inflows can be expected. These notions indicate that investment (GFCF) is constrained by funds saved for it. Moreover, (Green, Decemeber, 1990), in their studies suggest that investment may have a positive impact on real interest rate resulting in an increase on (GFCF). Studies in this context were made by the financial scientists with various conclusions. (Green, Decemeber, 1990), recommend from their studies of 23 LDCs that the real interest rate if positive have a direct relationship with investment. Similarly, from studies of (Hyder, 2003) in Pakistan, it is revealed that the private investment has declined because of an inverse escalation in the rate of real interest and resulting in a decline in income thus savings of the people.

Macroeconomic Factors in an Economy:

The investment and the economy in general are fundamentally inter related and impact one another greatly. The macroeconomic factors in estimating speculations of resources are recognized to be crucial in this respect. Changes in macroeconomic factors do influence investment and capital formation in one way or another. Correct future estimations regarding patterns found in macroeconomic factors can be useful in order to see their main effect on investment.

Gross Fixed Capital Formation (GFCF):

(GFCF) is used to measure the value of acquiring novel assets or improving existing fixed assets by a business sector (excluding their unincorporated enterprises) and by lessening the disposals of fixed assets, GFCF is a part of expenditure of (GDP), and it explicitly portrays that what is the value of newly established assets in the economy that have been invested into by the businesses as shown by (Kanu & Nwaimo, 2015) in their studies. Moreover, Gross Fixed Capital Formation across countries has been viewed in two ways i.e. ***Public Sector Investment*** and ***Private Sector Investment*** (Joshua & Delano, 1991). Recent research by researchers suggest that private sector investment plays a pivotal role in economic growth and it is, hence, more related to economic growth in the countries that are developing than the investment made to the public sector which is mere a policy tool (Khan & Carmen, 1991).

Income:

A high income encourages savings and when savings are made they are either used for increasing facilities by acquiring luxury items or invested for making returns. Income is something which can be *measured in* terms of money, money value or earnings of a business which is done in exchange for providing a good living or rendering a service for getting money or by making capital investment in a business activity for a specific period of time (Investopedia, 2019).

Some other important Aspects of Income: Income made from wages, from salaries, interest received dividends from the companies, gains made through a business, capital gains and pensions that are received during a particular taxation period may be deemed as ***Taxable Earnings***. While income may also comprise of annuity inflows, rental income from renting out buildings, earnings through farming, fishing, livestock, and unemployment stipends offered by the government, retirement or settlement plan distributions and finally stock options received ***Disposable Earnings or Income*** is money that remains after paying off taxes or earnings after income tax in financial terms. People spend such income on their basic necessities. ***Discretionary Income*** is the amount of money which remains after paying for all the necessities of the livelihood. People spend discretionary income for their leisure. Such income is spent on vacations, hoteling, watching shows at the theater, and touring places (Investopedia, 2019). ***Real Income*** means that the earnings made by an individual or company after they have taken into contemplation the repercussions of inflation in an economy on purchasing power of a consumer.

Real Income of People:-

Real income means that the earnings made by an individual or company after they have taken into contemplation the repercussions of inflation in an economy on purchasing power of a consumer to illustrate this, if an individual happens to receive a 02 percent increase in his salary over and above the previous year where inflation for the year is 01 percent. As a result, his real income increases by 01 percent. Equally, if a person receives a 02 percent raise in his salary and inflation rate stands at 03 percent, this results in shrinkage of the real income by 01 percent.

Relationship of Real Income to the Consumer Price Index (CPI):-
As we know, the real income helps measures purchasing power of a person; however, it has always been compared with Consumer Price Index (CPI). CPI is used to help in measuring the average cost of a basket of goods or commodities. These commodities comprise of food items, education spending, recreation, transportation, and medical care in general (Investopedia, 2019). In this regard, Economic Survey, Planning and Division, SBP, and the Statistical Bureau publish CPI, GDP and Per Capita quarterly and annually. As in case of Pakistan, the basket of commodities comprise of 53 Essential Items and 17 non-index Essential Items (Monthly Review on Price Indices, April, 2019).

Hypotheses of the Study:

$\boldsymbol{H_1}$*:* There is a relationship between Level of Income and Gross Fixed Capital Formation (Investment).

Research Methodology:

Research Design:- It is an scheme of things to be done as it identifies the procedures through which the data is collected, measured and analyzed in a scientific method. The best possible method for this study was ***Cross Sectional Research Design***. This particular method was employed to see the impact of macroeconomic factor Income on (GFCF) i.e. investment during 2008 to 2017. For this purpose, the secondary data compiled by credible institutions is to be used for results of the study. ***Standard Theory of economics*** states that the level of investment which in this study is peroxided by (GFCF) depends upon Income. if Income is high, it helps people make savings. This study covers the (2008-2017) time period of Pakistan. And, the data is based on annual data sets and panel data. The time series analysis was used for arriving at the aim of the study. The suggested econometrical model by **(Majed Babar, 2010)** as in their studies was used taking the following form:

$$\boldsymbol{GFCF_t = \beta_{\ 0} + \beta_1 R_1 + \beta_2 GDP_t + U_t}$$

Where;

$\boldsymbol{GFCF}$: Shows level of investment (it is determined by gross fixed capital formation)

$\boldsymbol{R}$: Rate of real interest.

$\boldsymbol{GDP}$: Levels of income (it is determined by Gross Domestic Product)

U : Represents the Error Term.

t: Indicates time.

*Rate of real interest is used owing to the fact that debtors and creditors when taking decisions regarding investment take into account real interest instead of nominal rate.

Sample Selection:- A census is something which the researcher chooses for a particular population that constitutes as a whole for the study to be under taken as a Cause and Effect of the questioned variables. The Census in this study as GFCF as a whole which has been taken from the year 2008 to 2017.

The employed Statistical Methods and the Analytical Models:- The statistical procedures that the researcher has used for this study are namely; Percentage, Frequency Distribution tables, Correlation, Mean, Mode, Median, Standard Deviation, Variances, and Regression. Moreover, ADF Test and Granger Casualty Test were also employed to analyze data in order to ascertain and observe the effect of Independent Variables of study on Dependent Variable by means of all data available for the study.

Variable and their descriptions in the study:-

The D.V is level of investment proxied by the Gross Fixed Capital Formation (GFCF)

The I.V is:

Income level, it is measured by Gross Domestic Product (GDP).

Research Analysis Tools:-

Finally, the information or data was examined through (SPSS) version 2.0, E-Views version 8.0 and MS Excel. The results were generalized and discussed accordingly.

Results:-

Descriptive Statistics:- In this study, the descriptive statistics which were employed comprise of Minimum, Maximum, Standard Deviation and Mean Value. The tabular representation of the findings is as under:-

Variables	**Minimum**	**Maximum**	**Mean**	**Standard deviation**
GFCF	12.52	17.60	14.28	0.47
Income Level (proxied by the GDP & Per Capita)	10.06	15.47	12.58	0.43

Table Sources: Findings from the research

Inferential Statistics:- This section of the study relates to statistical inferences that have come from doing Correlation of the data, conducting a Multiple Regression, doing ADF Test and Granger Causality tests of the study: the interpretation of the all the test is also given in this part of the study.

Correlation Findings:-

The table which is given as under depicts the outcome of correlation.

Variables	**GFCF**	**Level of Income**
GFCF	1	
Income (proxied by GDP & Per Capita)	0.847*	1

* The results of correlation is significant at 0.01 (1-tailed)

Table Sources: Findings from the study.

The Analysis of Regression: To find results, Multiple Regression was applied to the data to see if an association between the D.V. and the I.Vs. existed. Findings of results are given in table drawn as under for decision making and further studies:

Table of Regression of the Study:-

Gross Fixed Capital Formation (GFCF): The Dependent Variable of the Study

Model: OLS, Least Square Method:-

Variables	**Coefficient Beta**	**Standard Error**	**T Statistics**	**Significance**	**R^2**	**Adjusted R^2**
Constant	20.324	10.705	1.098	1.078	0.957	0.910
Income (as per GDP)	0.213	0.750	2.844	0.0029*	0.957	0.910

Augmented Dickey Fuller (ADF) test:

Table which is given here under depicts the ADF test findings and results. These are based on the null hypothesis which state that **(the time series has a unit root test):**

ADF Statistics	GFCF	Level of Income
T-statistics	0.047	0.737
Prob*	0.044	0.004*

*Mackinnon (1996) one-sided p values

Findings from the ADF Test: The results that have been found by application of ADF test reveal that p-values of GFCF, Income is lesser than 0.005. This depicts that Null hypothesis are Accepted. Moreover, data collected for the study has a unit root test or in other words the data is not stagnant around the mean. The data changes with the time period or the time series has a unit root test.

Application of Granger Causality Test:

Table given below of the above test reveals that there exists a Causal relationship between the two variables. The findings of the same are as follows:

Income and GFCF:

Null hypothesis	F-statistics	Probability	Causal inference
Income doesn’t granger cause GFCF.	2.081	0.002*	Causality
GFCF doesn’t granger cause level of income.	4.801	0.085	No causality

Conclusion:-

The researcher in his study has thoroughly examined the effect or impact of income on the Gross Fixed Capital Formation (GFCF) for Pakistan for the period 2008 to 2017. To check the hypothesis which was proposed by the researcher, he has employed Correlation, Regression, ADF test and Granger Casualty test for results. The researcher anticipated a significantly positive impact of Income on the gross fixed capital formation in his hypothesis. Finally, from the findings of the study and its results, it can be inferred that the macroeconomic factor under study namely, Income has an influence on volatility of gross fixed capital formation.

Recommendations:

The policy makers can develop a set of sound policies to control the macroeconomic element or factor namely Income so that the GFCF i.e. investment is not affected by this factors.

The investors, who risk their money, can have a closer analysis of the patterns and trends when they keenly observe the rise and fall in Income for predicting trends and decisions making.

This research has applied Regression, Correlation, Granger Casualty test and ADF test to check the association or relationship between the variables. The future researchers can adopt other econometrics tests to develop more analysis of the impact of macroeconomic elements on GFCF.

Lastly the future researchers can carry out the same study into a global perspective to check the GFCF in the context of the whole world or various economic regions.

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