An Exploratory Study on Variables Impacting Investments in India with Reference to Theories of Investments (2010-2020)

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Abstract

Theories of Investments deciphers and ruminates the mechanism and accelerator of investments in the economy and a firm. To study the theories of investments is an integral part of finance and economic ecosystem due to augmenting vitality of investments. All the growth and development activity depend on the monetary infusion in the system which can be pooled through large scale investments. The desideratum to study theories of investments to articulate the existing variables affecting investment patterns in the economy (India:2010-2020) alongside to explore the uncharted variables existing in the ecosystem has become variably imperative. The branch of macroeconomics is diverse and vast to incorporate add on variables to existing theories to develop a new dynamic and advanced model for a fundamental concept like investments. Monetary policy by the central bank is targeted at inflation but inflation is also a pivotal variable of investments and monetary policy do affect the investment patterns in the country, as it is a determinant factor for the raging and dropping interest rates, open market operations, money (cash or digital) flow in the economy. Hence a regression analysis on the variables discovered at macro level will ruminate the dynamics of investments in the millennial age.

Keywords

Foreign Direct Investment, Foreign Institutional Investors, Gross Domestic Product, Gross Domestic Savings, Gross Fixed Capital Formation,Inflation, Regression Analysis and Theories of Investments.

INTRODUCTION

From the backdrop of history any concept is always supported by a theory which ignites confidence in the concept and specific understanding which nearly comes to be accurate for a certain time period. One such concept is investments. Investments being the crucial and integral part of all time economies has made it evident with enough proofs that a certain idle lying capital or money can earn income if invested on time and wisely.[1] Myriad options have surfaced from all times, ranging from a variety of petite to lofty. From earning $1 to millions of dollars, investments have become a specialised branch where people are ready to capitalize time, money, accredits and careers in this branch of finance and economics.

Investments has taken a place from micro to macro level, or rather macro to micro, as investments have transformed from a national economic concept to a household concept. In history, investments were broadly a national concept where it was needed by government authorities to propagate their agendas of growth in the sector of infrastructure, industries and social well-being. Household level investments were meagre and were hardly holding prospects in early stages. Individual investments were a concept that is modernised and refined which is supported by the circular flow of income which states that households channelise their savings to financial institutions for them to lend it to corporates for them to use it in growth and development activities (inhouse) which later translates to growth in the GDP [2] of the country.

But in modern and dynamic times, investments do not hold a restrictive approach of depositing savings in a bank. They have enthrallingly entered the local (micro) market with various options. In the beginning it was only stock market and bonds that were considered as a prerogative but with times the horizon has broaden to mutual funds, sovereign bonds, ETF's, real estate, energy (renewable-sustainable aspect has been added on the wagon), while where gold was considered just an expense, it is understood that gold is also an investment.[3]

While, the focus has not drifted from macro, micro has made a place in the field on this vast landscape. Albeit, macro is still an integral part of the landscape or it would rather be appropriate to deliver that macro is the core and centrifugal force of this mammoth landscape. Any disturbance in this force the equilibrium is distraught. National investments play a vital role to develop the economy justly and equitably. This brings in not only the concept of circular economy but also propagates the inevitable nature of these investments. Hence it is of utmost importance to study the mechanism and accelerator of investments which work at national level.[5]

Investments like all other concepts is supported by theory, if reviewed then theories. Seven theories of investments have come up till date to immunise the variables impacting investments and how investment multiplier works.

THEORIES OF INVESTEMENTS

Accelerator Theory of Investment

The theory states that a proportionate increase in the capital stock (desired or optimum stock of capital) leads to an increase in the output.[4]

Considering time passed as 't'

$K_t = v * Y_t$

K_t= Desired stock of capital in time period t

v= accelerator, a positive constant

Y_t= Output in period t

According to the theory, Δ in output will lead to a Δ in capital stock.

$K_t - K_{t-1} = v * (Y_t - Y_{t-1})$

$I = v * (Y_t - Y_{t-1}) = v * \Delta Y_t$

Where, $\Delta Y_t = (Y_t - Y_{t-1})$

I = Net investments

∴ $Net\ Investments \propto \Delta Y$

Flexible Accelerator Theory of Investment

The theory covers the lags of the accelerator theory of time lag, investment lag and decision-making lag. It states that faster the rate of difference coverage between desired stock of capital and actual stock of capital the faster the rate of investment.

$K_0 = K_{-1} + \lambda(K^* - K_{-1})$

K_0 = actual capital stock at the end of the current period

K_{-1}= capital stock at the end of the last period

$K^* - K_{-1}$ = gap between desired and actual capital stock

K_{-1}, capital stock is to be increased to K_0, to achieve the number of net investments, which is indicated by: $I = K_0 - K_{-1}$

Therefore,

$I = K_0 - K_{-1}$

$I = \lambda(K^* - K_{-1})$

Profits Theory of Investment

Version 1: It states that if the profits (undistributed profits) are high the retained earnings are also high while the cost of capital is low whereas optimum stock of capital is large, the investments are high.

Version 2: Optimum stock of capital is a function of expected profits. If the profits in the past have been high, profits in the future will also be high and vice-versa. The optimum stock of capital is directly proportional to the optimum stock of capital.

Version 3: this version defines that higher the interest rate for a particular level of profits smaller will be the optimum stock of capital and vice-versa.

Duesenberry's Accelerator Theory of Investment

1. When the capital stock grows, gross investment begins to exceed depreciation.
2. When income grows, investment outnumbers savings.
3. The ratio of capital stock to income determines both the growth rate of income and the growth rate of capital stock. He considers investment to be a function of

income (Y), capital stock (K), profits (), and capital consumption allowances (). (R). All of these are independent variables and can be represented as

$I = f(Y_{t-1}, K_{t-1}, \pi_{t-1}, R_t)$

TOBIN Q's Theory

The investments of the firm are financed by issuing new shares in the stock market.

q = Market Value of Capital Stock/Replacement Cost of Capital

Net investments are explained by the market value of the financial assets and the replacement cost of the real capital that exists with the firm.

NATURE

The grail of the paper is to identify existing and novice variables impacting investment pattern in the economy and to run a regression analysis to formulate a dependent relationship on the investments of the economy. Theories of Investments are to be studied with the same objective of examining the variables and accelerator of different theories in connection to investments broadly.

SCOPE

The changing dynamics of changing times with new trends being followed all over across various fashions and streams makes it mandatory to broaden the horizons to look upon the diversifying nature of investments. This paper exactly, gives a scope to study such varying nature of investment trend in the nation with varying and myriad variables and factors which have added to the wagon. Monetary Policy recommendations which can foster the acceleration in the investment aspect of the aggregate demand of the economy is pivotal aspect which can be referred from the study of this paper.[6]

OBJECTIVES

- To study and understand the various Theories of Investments.
- To explore existing and novice variables of Investments in India (2010-2020)
- To study the extent of impact of these variables on Investments
- To analyse the changing patterns of Investments in reference to myriad variables of investments.

LIMITATIONS

- Time constraint to evaluate the validation of all the Theories of Investment.
- Association of theory variables to the available data.
- Limited access to sources and data.
- Profits Theory of Investment and Tobin Q's Theory of Investment are strictly micro (firm) level and cannot be applied to macro level.

e-ISSN: 2583-1143

LITERATURE REVIEW

SR. NO.	REFERNCE	OUTCOME
01)	**Chandana Charkraborty and Parantap Basu (2010)**	Foreign Direct Investment (FDI) and Gross Domestic Product (GDP) have a positive relationship. However, FDI has no effect on GDP in the short run.
02)	**Gurmeet Singh and Justin Paul – SMART, Journal of Business Management Studies (January-June 2014)**	FDI's effect on growth is ambiguous ranging from primary sector being negative, the manufacturing sector- positive while the service sector is uncertain.
03)	**Sanjai Bhagat, Pulak Ghosh, and Srinivasan P Rangan – Economic Policy Uncertain an Economic Growth in India (IIM-2013)**	Pivotal conclusions from this finding is that as businesses deviate from investments there is an economic slowdown.
04)	**Badri Narayan Rath and Debi Prasad Bal – The Journal of Developing Areas, 2014**	FDI has a crowding-in effect on private domestic investments, there is no or a neutral effect of public investments on private domestic investments i.e., no crowding in or crowding out.
05)	**Abdul Azeez Erumban-Rental Prices, Rates of Return, Capital Aggregation and Productivity: Evidence from EU countries-CESifo Economic Studies · February 2008**	With corporate tax included in the rental cost of capital calculation affects growth in capital services in a very few industries.
06)	**R G Ridker and K D Gupta-Estimates of Gross Fixed Capital Formation in Corporate Sector 1966/67 to 1969/70-Economic and Political Weekly, Vol. 4, No. 22 (May 31, 1969)**	Gross Fixed Capital Formation in corporate sector are governed by retained earnings, capital raised externally and depreciation reserve.
07)	**Barendra Kumar Bhoi and Harendra Kumar Behera-India's Potential Output Revisited-Journal of quantitative economics: journal of the Indian Econometric Society · April 2016**	Output gap when positive leads to increase in aggregate demand and puts inflationary pressures. Output gap has a positive correlation with core inflation which is a key indicator to growth.
08)	**Annual Reports, RBI (1998-2019)**	It explains the variation in Gross Domestic Savings of India since 1991 reforms. It improved and soared to 34.8% maximum after the reforms and has gradually decreased from 2011.
09)	**Monetary Policy, RBI (2014-19)**	The repo rate ranged from 8% to 5.15% and this led to Gross Fixed Capital Formation to vary from 23.2% to 32.8%.

RESEARCH GAP

It has been observed that Investments in macro terms is discussed in limited dimensions and the variables associated to Investments have been given negligible importance, thus this paper attempts to analyse myriad variables like

- Inflation
- Desired Stock of Capital
- GDS
- GFCF
- FDI
- FII
- Real Interest Rate

Affecting investments in an economy. [7] It broadens the horizon of study related to investments in macro-economics.

RESEARCH METHODOLOGY

Multiple Regression Analysis studies the relation between single dependent variable with various independent variables in the model. It shows how much a dependent variable will change if 1 unit of independent variable changes. [8]

Formula

$$Y_i = f(X_i, \beta) + e_i$$

Y_i = dependent variable
f = function
X_i = independent variable
β = unknown parameters
e_i = error terms

DATA AND DATA ANALYSIS

R Square and Adjusted R square are more than 0.90 which indicates a good fit of the model while Significance of F is less than 0.05 and p-value for all the variables are close to 0 Which signifies a significant Beta value (except Inflation which is not a supporter of the beta significance).[13]

This indicates that all the variables are highly crucial to study investments in macro-economic aspect for a nation to develop as GFCF (investment) is a growth driving factor in the economy.[10]

Year	GFCF	FDI	FII	GDS	GDP	Desired Stock of Capital	Real Interest Rate	Inflation, consumer prices (annual %)
2010	5.57E+11	27396885034	39469	5.74E+11	1.67562E+12	9.40177E+14	4.808592108	11.98938992
2011	6.26E+11	36498654598	8300	5.96E+11	1.82305E+12	-2.53033E+15	-1.983859222	8.858360966
2012	6.11E+11	23995685014	31011	6E+11	1.82764E+12	4.3722E+15	1.317979708	9.312445605
2013	5.81E+11	28153031270	12128	5.95E+11	1.85672E+12	2.8663E+15	2.473521656	11.06367478
2014	6.13E+11	34576643694	42692	6.41E+11	2.03913E+12	2.5479E+15	3.865992863	6.649500151
2015	6.04E+11	44009492130	10596	6.43E+11	2.10359E+12	1.65203E+15	6.69517609	4.906973441
2016	6.47E+11	44458571546	-3191	6.98E+11	2.2948E+12	1.73573E+15	7.556488414	4.948216341
2017	7.47E+11	39966091359	30784	8.09E+11	2.65147E+12	2.55223E+15	6.232711415	3.328173375
2018	7.88E+11	42117450737	-11334	8.05E+11	2.70111E+12	3.23376E+15	5.327608862	3.945068664
2019	8.25E+11	50610647354	19408	8.12E+11	2.8705E+12	3.4281E+15	5.510956675	3.723276483
2020	7.21E+11	64362364994	14035	7.69E+11	2.66025E+12	4.50036E+15	4.33826	6.623436776

SUMMARY OUTPUT

Regression Statistics						
Multiple R	0.991203014					
R Square	0.982483414					
Adjusted R Square	0.94161138					
Standard Error	21702141963					
Observations	11					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	7	7.92505E+22	1.13215E+22	24.03804	0.012266456	
Residual	3	1.41295E+21	4.70983E+20			
Total	10	8.06635E+22				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	1.67729E+11	1.52276E+11	1.101476895	0.351132	-3.16882E+11	6.52339E+11
FDI	-2.708153259	1.320388339	-2.051027852	0.132633	-6.91021825	1.493911733
FII	6508.335755	467295.7737	0.013927658	0.989762	-1480635.373	1493652.044
GDS	-0.343733419	0.689184981	-0.498753496	0.652229	-2.537027616	1.849560778
GDP	0.387012705	0.185796124	2.082996655	0.128634	-0.204273484	0.978298894
Desired Stock of Capital	-5.91035E-06	5.28443E-06	-1.118445593	0.344864	-2.27278E-05	1.09071E-05
Real Interest Rate	-6754671137	3413941252	-1.978555177	0.142257	-17619355860	4110013585
Inflation, consumer prices (annual %)	3002964681	5137565747	0.584511192	0.599928	-13347062449	19352991812

SUGGESTIONS AND RECOMMENDATION

A more detailed approach to Investments in the equation

AD= C+ I + G + NX

AD = Aggregate Demand

I= Investment

G= Government Expenditure

NX= Net Export

Should be given with respect to more variables like output gap, trade policies and business activities and market size. Monetary Policy formulation primarily dedicated to control inflation and money supply in the economy directly affects investment activity in the economy and hence a detailed study and section should be directed towards it.[9] Investments in not only capital but also physical goods (by household) should be taken into considerations while formulating policies so as to maintain saving-investment ratio in the economy.

CONCLUSION

All the variables studied define a grave relation with investments portraying the accompanied importance every variable poses in the economy.[14] FDI and FII remunerate investments from abroad adding capital advantage to the domestic economy and leading to a crowding in effect for domestic investments while variables like real interest rate supports the cost of capital in an economy which deals with the ratio of investments and debt in the corporate sector of the economy. [15] GDS and inflation are factors which decide the consumption patterns which reduces the gap for investments as higher inflation and lower GDS means low investments. GDP contributes highly to investments as higher the GDP higher the investments and Good Fit Regression Model elaborates the high dependence of investments on each of the regressors mentioned.

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