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# An Analysis of Contributions of Household Sector, Private Corporate Sector and Public Sector in Gross Domestic Savings and Thus Gross Capital Formation of India

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**Abstract-** It is an unquestionable fact that gross domestic saving is one of the most contributing factors of economic growth of a nation. It plays concrete role in fostering investment, production, employment and eventually the economic growth. The present paper endeavors to analyze and exemplifies the contributions of household sector, private corporate sector and public sector in Gross Domestic Savings (GDS) and thus Gross Capital Formation (GCF) of India. The study is based on secondary data from 2000-2013. The statistical tools like Percentage, ANOVA, Correlation and Regression analysis are used for data analysis. The analysis divulges that the maximum contribution to GDS and GCF is made by household sector followed by private corporate sector and then public sector.

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# An Analysis of Contributions of Household Sector, Private Corporate Sector and Public Sector in Gross Domestic Savings and Thus Gross Capital Formation of India

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*Gross Domestic Savings = Gross Domestic Product – Final Consumption Expenditure.*

The money thus saved is either held in reserve with public or is ploughing back for further investments which are known as Capital Formation. *Capital Formation* is one of the driving forces for the holistic economic development and insufficient or lack of capital formation in the economy may usher to under development of the economy. There are three important segments contributing to gross domestic savings and capital formation viz. household sector, private corporate sector and public sector. Considering the importance of domestic savings in capital formation and thus economic growth, this paper attempts to analyze and exemplify the contributions made by household sector, private corporate sector and public sector in gross domestic savings and thus the capital formation.

## II. OBJECTIVES OF THE STUDY

The focal objective of the study is to analyze the contribution of private sector in terms of private corporate and household sector and public sector in

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## I. INTRODUCTION

Investment made by the government is the momentous factor for enhancing and sustaining economic prosperity. In order to finance investment required, a nation suppose to generate ample domestic savings or it has to scrounge abroad and / or develops FDI. According to Solow and Harrod Domar Growth Model, saving is a crucial factor for the economic growth of any nation, since it generates opportunities for investment which in turn boost up production and stimulates employment. Domestic savings aid in sustaining high growth rates through its impact on investment and also perform as a channel for magnetizing FDI whereas the over dependence on peripheral financing may erode competitiveness through an overvalued currency, providing additional motives for wanting to stimulate domestic saving.

gross domestic savings and thus the capital formation of India.

- The other objectives are

To explore the flow of savings of each sector to the Gross Domestic Savings in order to ascertain the dominant contributing sector.

- ✓ To throw light on sectors having more contribution towards the capital formation.
- ✓ To measure the strength and statistical significance of each sector's contribution as predictors of GDS and GCF.
- ✓ To rank the sectors based upon the highest contribution in terms of gross domestic savings and gross capital formation.

## III. NATURE OF THE STUDY

The present study is of analytical nature and makes use of secondary data. The relevant secondary data has been collected from reports of Union Budget of India 2014 and the following economic survey 2013-2014, the Ministry of Commerce and Industry, Department of Industrial Promotion and Policy, Government of India, Centre for Monitoring Indian

Economy, Reserve Bank of India, World Investment Report and World Bank national accounts data.

#### IV. REVIEW OF LITERATURE

Khan and Reinhart (1990) in their empirical study titled "Private investment and economic growth in developing countries" formulated a simple growth model that separates the effect of private sector and public sector and supported the notion that private investment has a larger direct effect on growth than does public investment.

The empirical studies conducted by Hadji Michael (1996), Ben- David (1998), Hernandez-Cata (2000), Ndikumana (2000) in Africa, Asia and Latin America have established that there exists critical linkage between capital formation and the rate of growth. This exemplifies that capital formation is a key to economic growth.

Econometric evidence due to work done by Beddies 1999, Ghura and Hadji Michael 1996, Ghura 1997 indicates that private capital formation has a stronger, more favorable effect on growth rather than government capital formation probably because private capital formation is more efficient and less closely associated with corruption.

Mishra et al. (2010) studied the dynamic relationship between savings and investment in India for the period 1950-51 to 2008-09 by employing Johansen cointegration technique and Granger causality test via Vector Autoregressive framework. The authors found the presence of long run equilibrium relationship between saving and investment in India. The Granger causality test revealed directional causal relationship between the variables under study.

Inuwa Nasiru and Haruna M. Usman (2013) in their paper "The Relationship between Domestic Savings and Investment: The Feldstein-Horioka Test

Using Nigerian Data" found that there is a long run relationship between savings and investment. The study used the reduced-form bi-variate model of Feldstein and Horioka (1980) to examine the long-run relationship between domestic saving and investment and measure the degree of international capital mobility.

Kanu, Success Ikechi & Ozurumba, Benedict Anayochukwu (2014) have employed multiple regression technique to study the impact of capital formation on the economic growth of Nigeria. It was ascertained that in the short run, gross fixed capital formation had no significant impact on economic growth; while in the long run; the VAR model estimate indicates that gross fixed capital formation, total exports and the lagged values of GDP had positive long run relationships with economic growth in Nigeria.

#### V. DATA ANALYSIS AND INTERPRETATION

##### a) *Analysis of Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Domestic Savings and Gross Capital Formation*

The following table shows the contributions of Household sector, Private Corporate Sector and Public Sector to Gross Domestic Savings and Gross Capital Formation from 2000 to 2013. It is clearly found that household sector contributes 73% to GDS and occupies the most dominant variable of GDS. The private corporate sector with its share of 22% to GDS holds second major contributor of GDS. Together, the private sector (Household + Private corporate) contributes 95% to GDS. It is then followed by public sector with a share of only 5%. Correspondingly, the household sector with its contributions of 68% occupies predominant position in total Gross Capital Formation and then followed by private corporate sector having 21% and public sector having only 5% and the rest 7% by other variables which are beyond the scope of this study.

**Table No1 :** Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Domestic Savings and Gross Capital Formation

Year	Gross Domestic Savings				Gross Capital Formation (Rupees in Crores)
	Household Sector (Rupees in Crores)	Private Corporate Sector (Rupees in Crores)	Public Sector (Rupees in Crores)	Total (Rupees in Crores)	
2000-2001	463750	81062	-29266	515545	528299
2001-2002	545288	76906	-36820	585374	571146
2002-2003	564161	99217	-7148	656230	627743
2003-2004	657587	129816	36372	823775	762416
2004-2005	763685	212519	74499	1050703	1064041
2005-2006	868988	277208	88955	1235151	1279754
2006-2007	994396	338584	152929	1485909	1531433

2007-2008	1118347	469023	248962	1836332	1900762
2008-2009	1330873	417467	54280	1802620	1931380
2009-2010	1630799	540955	10585	2182338	2363132
2010-2011	1800174	620300	201268	2621742	2841457
2011-2012	2054737	658428	111295	2824459	3200633
2012-2013	2212414	713141	117919	3043474	3521399
TOTAL	15005199	4634626	1023830	20663652	22123595
% age contribution to GDS	73	22	5	100	
% age contribution to GCF	68	21	5	93 (Others = 7%)	

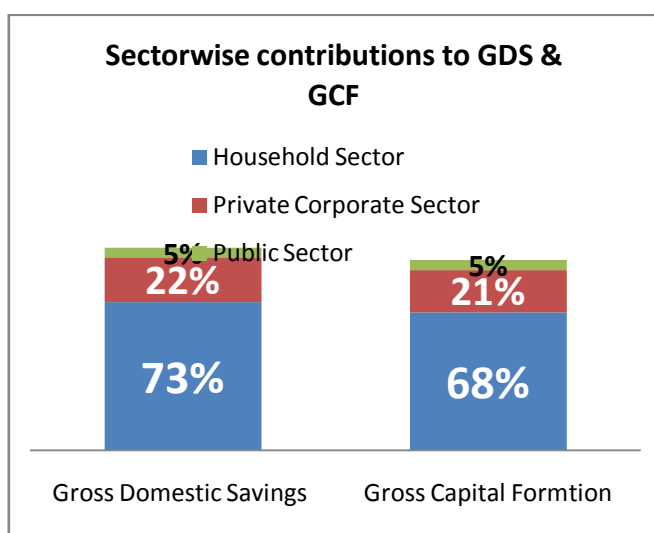


Figure No 1 : Sector wise Contribution to GDS & GCF

The above figure illustrates that household sector occupies the first rank in contributions towards GDS and GCF followed by private corporate sector and public sector

Table No 2 : Correlation Analysis

SECTOR	Gross Domestic Savings			Gross Capital Formation		
	R	R <sup>2</sup>	P Value	R	R <sup>2</sup>	P Value
Household Sector	0.991	0.982	0.000	0.995	0.989	0.000
Private Corporate Sector	0.996	0.991	0.000	0.991	0.981	0.000
Public Sector	0.605	0.366	0.029	0.573	0.328	0.041

The value R determines the strength of relationship. The value of R between household sector and GDS is 0.991 which signifies more strong relationship between them and the relation is significant since the P value 0.000 is less than 0.05. Similarly, the R value between Private Corporate sector and GDS is

b) Analysis of Relationship between Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Domestic Savings

Table 2 reveals the strength of relationship between contributions of sectors to GDS and Capital Formation of a country.

0.996 which symbolizes the intense relationship between them and the relation is significant (P value = 0.000 < 0.05). Correspondingly, the value of R between Public sector and GDS is 0.605 which denotes modest relationship between them and the relation is significant (P Value=0.029 < 0.05). The

analysis of three different values of R strongly reveals that the contribution made by Public Sector is not competent in comparison with other two sectors.

In the same way, the values of R between different sectors and GCF indicate the degree of relationship between them. The scrutiny of different R discloses that public sector has less contribution to Gross capital Formation.

#### c) Hypothesis Testing

*H<sub>0</sub>*: The average contributions made by household sector, Private Corporate Sector and Public Sector to GDS and GCF are equal.

*H<sub>1</sub>*: The average contributions made by household sector, Private Corporate Sector and Public Sector to GDS and GCF are not equal.

**Table No 3 :** ANOVA Table  
Amount in Crores

Sectors	Mean	Standard Deviation	F value	P Value	Decision
Household Sector	1154246.08	599260.81	28.53	0.000	P value < 0.05, ∴ H <sub>0</sub> is Rejected
Private Corporate Sectors	356509.69	230453.11			
Public Sectors	78756.15	87390.121			

From the above ANOVA table, since the null hypothesis is rejected it is concluded that the average contributions made by household sector, Private Corporate Sector and Public Sector are not equal. Based on Tukey's HSD test (Table No: 4), it is found that

the contributions made by household sector is varying from other two sectors. Comparing mean values in the table No: 3, it is found that household sector's contribution to GDS and GCF is more than other two sectors.

**Table No 4 :** Tukey's HSD Test to determine homogeneous subset  
Amount in Rupees

Sectors	N	Subset for alpha = 0.05	
		1	2
Public Sector	13	78756.15	
Private Corporate Sector	13	356509.7	
Household Sector	13		1154246.1
Sig.		0.155	1

#### d) Analysis of relationship between Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Capital Formation

A Multiple Regression Analysis is conducted to predict causal relationship among a dependent variable (Gross capital Formation) and independent variables such as contributions of household sector, private corporate sector and public sector.

The value R called as coefficient of correlation indicates a measure of the quality of the prediction of

the dependent variable (Gross Capital Formation). From the table 5, the value R = 0.999 which indicates a good level of prediction.

From the table 5, R<sup>2</sup> = 0.998 indicates that 99.8% of the variability of the dependent variable (Gross Capital Formation) is explained by the independent variables (*Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Capital Formation*).

**Table No 5 :** ANOVA Table - Test for Regression Model Fit

ANOVA <sup>b</sup>								
	Model	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.	R	R <sup>2</sup>
1	Regression	1.267E13	3	4.223E12	1743.157	.000 <sup>a</sup>	.999 <sup>a</sup>	.998
	Residual	2.180E10	9	2.423E9				
	Total	1.269E13	12					
a. Predictors: (Constant), Public Sector's Contribution , Household Sector's Contribution, Private Corporate Sector's Contribution								
b. Dependent Variable: Gross Capital Formation								

The above ANOVA table exemplifies that the regression model is a good fit of the data since F (3, 9) = 1743.157, p < .05. Hence it is concluded that the contributions made by household sector, private corporate sector and public sector statistically significantly predict the gross capital formation.

Table No 7 shows the statistical significance of the independent variables. It is obvious that the p values for household sector and public sector are less than 0.05 which reveals that those sectors' contributions are statistically significant in determining the gross capital formation. But the p value for private corporate sector is

greater than 0.05, implies the statistically not significant contribution to capital formation of that sector. Fitting the model to the data obtained from table no: 7, it is established that

$$GCF_{pred} = -224138.294 + 1.442 (\text{Household Sector Contribution}) + 0.513 (\text{Private Corporate Sector}) + 0.999 (\text{Public Sector}).$$

Table No 6 : Statistical significance of the independent variables

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-224138.294	50951.793		-4.399	.002
	Household Sector's Contribution	1.442	.185	.840	7.797	.000
	Private Corporate Sector's Contribution	.513	.541	.115	.948	.368
	Public Sector's Contribution	.999	.342	.085	2.923	.017

a. Dependent Variable: Gross Capital Formation

a. To be sum it up

"A multiple regression analysis is performed to envisage gross capital formation from contributions of household sector, private corporate sector and public sector. It is found that the first two variables are statistically more significant than the third variable.  $F(3, 9) = 1743.157$ ,  $p < .05$ ,  $R^2 = 0.998$ . All the three variables added statistically significantly to the prediction,  $p < 0.05$ ."

Table No 7 : Relationship between GDS and GCF

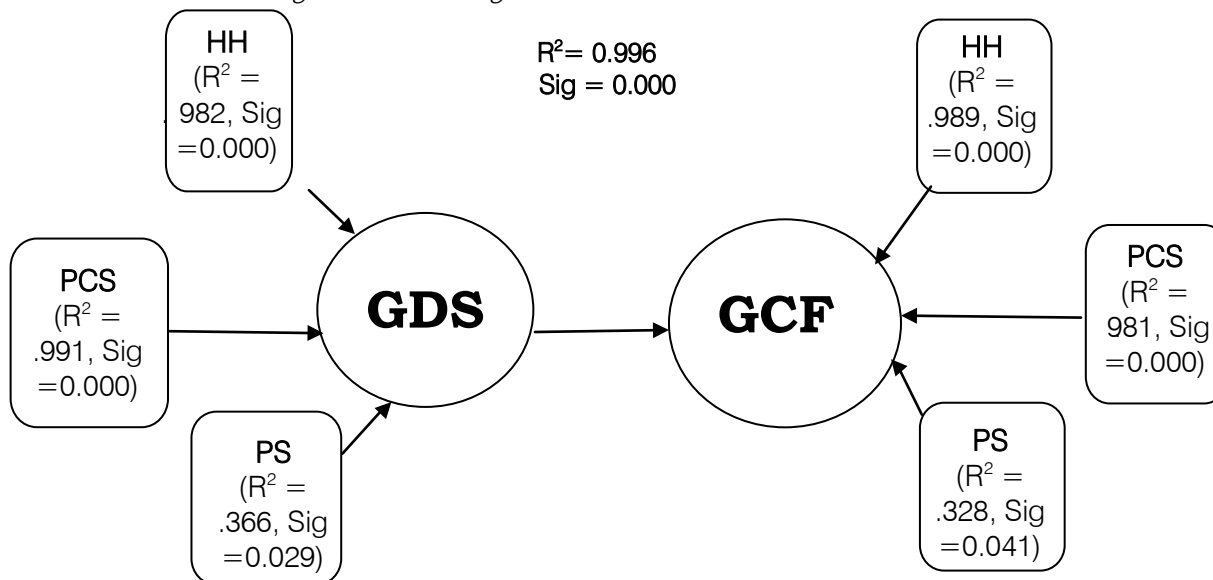
Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Regression Significant	Coefficients			
						B	t	Sig
Predictor : GDS	0.998	0.996	0.996	0.000	Constant	-160993.212	-4.265	0.001
Dependent Variable : GCF					GDS	1.172	55.835	0.000

Table 7 shows the contribution of GDS to GCF. The value of  $R = 0.998$  indicates that there exist a powerful relationship between GDS and GCF i.e. the contribution of GDS to GCF is more whenever there is hike in GDS. The regression significant value 0.000 ( $p < 0.05$ ) implies that the regression model is the best fit

for the data and the independent variable (GDS) is statistically more significant to predict the dependent variable (GCF) ( $p < 0.05$ ). The linear relationship between GDS and GCF can be established as

$$GCF_{predicted} = (-160993.212) + 1.172 (GDS)$$

e) Research model showing the statistical significance of contributions of each sector to GDS and GCF



Note: HH – Household Sector, PCS – Private Corporate Sector, PS – Public Sector



## VI. CONCLUSION

Gross Domestic Savings and Capital Formation are keys to economic growth. The central opinion of this paper is that all the three sectors such as household, private corporate and public sector are statistically significant in determining the Gross Domestic Savings and Gross Capital Formation. Of which, the paper discovered that the Household sector's contribution is more than other two sectors. It is also found that the rise in GDS leads to more capital accumulation which will enhance productive capacity of the nation and in turn stimulate growth of the economy.

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