DOI:10.26524/jms.2015.7

Journal of Management and Science ISSN: 2249-1260 | e-ISSN: 2250-1819 |

An analysis of contributions of household sector, private corporate sector and public sector in gross domestic savings and thus gross capital formation of india

K.Anandakumar[a] and P.Glorinthal[b]

[a]*Assistant Professor, Velammal Institute of Technology,Chennai-601204, Tamilnadu,South India*

[b]*Assistant Professor, KCS Kasi Nadar Arts and Science College, Chennai-21, Tamilnadu,South India*

ABSTRACT:

The fact that saving is one of the main factors to economic growth is unquestionable. Accumulated saving can be consider as the sources of capital stock which play a crucial role in creating investment, production, and employment. And all these activities eventually enhance the economic growth. The present paper attempts to analyze 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 reveals that the maximum contribution to GDS and GCF is made by household sector followed by private corporate sector and public sector.

Keywords*:* Gross Domestic Savings; Gross Capital Formation; Household Sector; Private Corporate Sector; Public Sector.

1. INTRODUCTION:

Saving is an essential factor to the working of any economic growth (*Solow and Harrod Domar growth models)*. Saving determines economic growth through facilitating financial opportunities for investments. The necessary resources for investment are obtained through cumulative savings of income. To finance investment required, a nation needs to generate sufficient domestic saving or it should borrow abroad and/or develops FDI. It should be noted that sustained low saving relative to investment translates into persistent current account deficit and a deteriorating international investment position. The increase in current account deficit raised the magnitude of a country's vulnerability as it signals reliance on foreign financing. Additionally, domestic savings may help in maintaining high growth rates through its impact on investment and also act as a catalyst for attracting FDI while strong reliance on external financing may erode competitiveness through an overvalued currency, providing additional motives for wanting to stimulate domestic saving. **Gross domestic saving is the Gross Domestic Product minus final consumption.** The saved money is either kept with the public or is invested back. When the money is invested back, we come to the figures known as **Capital Formation.** In an economy, adequate availability of capital formation is considered as one of the important factors for the overall growth and development of the economy. Inadequate availability or lack of capital formation in the economy may lead to underdevelopment of the economy. Therefore, capital formation is considered as one of the important drivers of growth in the economy. The Ratio of saving and investments is very

important for the economic health of the country. The Gross Domestic Saving has two parts. One is **Public Sector,** another is **Private sector**. The largest segment **of Private sector is the Household sector**. Another segment of the Private sector is the private corporate sector. This paper attempts to analyze the contributions of private sector in terms of private corporate and household sector and public sector in gross domestic savings and thus the capital formation.

2. 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 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.

3. 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.

4. REVIEW OF LITERATURE

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.

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.

Capital formation is a key to economic growth. The empirical studies (Hernandez-Cata (2000), Ndikumana (2000), Ben-David (1998), Collier and Gunning (1999), Ghura and Hadji Michael (1996), Khan and Reinhart (1990), conducted in Africa, Asia and Latin America have established, beyond a doubt, the critical linkage between capital formation and the rate of growth. Throughout the 1990s, the ratio of total gross domestic investment (GDI) to gross domestic product (GDP) in Asia, which experienced a high average rate of growth compared with the rest of the world, was about 27 percent, while in Latin America and sub-Saharan Africa the corresponding ratios were 20 percent and 17 percent, respectively.

Econometric evidence (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. 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.

5. DATA ANALYSIS AND INTERPRETATION:

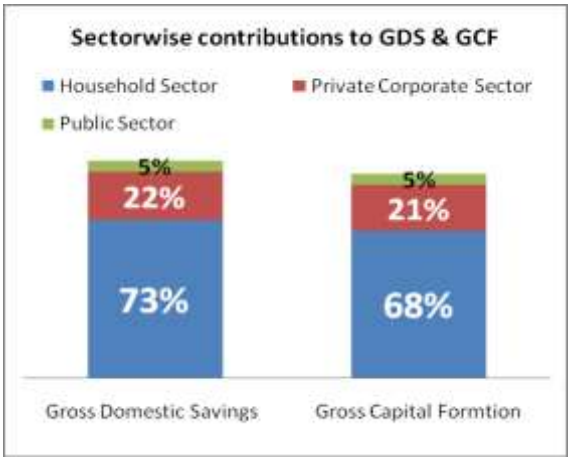
5.1. Analysis of Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Domestic Savings and Gross Capital Formation

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 No: 1 – 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	**73**	**22**	**5**	**100**	
% age contribution	**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 contribution towards GDS and GCF followed by private corporate sector and public sector

5.2. 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.

Table No: 2 – Correlation Analysis

SECTOR	Gross Domestic Savings			Gross Capital Formation		
	R	R^2	P Value	R	R^2	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 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.

5.3. Hypothesis Testing

H_o: The average contributions made by household sector, Private Corporate Sector and Public Sector to GDS and GCF are equal.

H_1: 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
Household Sector	1154246.08	599260.81	28.53	0.000
Private Corporate Sectors	356509.69	230453.11		
Public Sectors	78756.15	87390.121		

From the above ANOVA table, since the P value 0.000 is less than 0.05, the null hypothesis is rejected and hence 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 concluded 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

***5.4. Analysis of relationship between Contributions of Household Sector, Private Corporate Sector and Public Sector to Gross Capital Formation*:**

Regression analysis is a class of statistical models used to describe, estimate or predict causal relationships among a dependent variable (outcome) and one or several independent variables (predictor). The purpose of regression analysis is to analyze relationships among variables. The general purpose of multiple regression is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

Table No: 5 – Determining how well the model fits

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.999[a]	.998	.998	49221.073

a. Predictors: (Constant), Public Sector's Contribution , Household Sector's Contribution, Private Corporate Sector's Contribution

Table No 5: provides the *R*, R^2, adjusted R^2, and the standard error of the estimate, which can be used to determine how well a regression model fits the data. The "**R**" column represents the value of *R*, the ***multiple correlation coefficient***. *R* can be considered to be one measure of the quality of the prediction of the dependent variable (Gross Capital Formation); A value of 0.999 indicates a good level of prediction. The "**R Square**" column represents the R^2 value (also called the coefficient of determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables. From the table R^2 = 0.998 indicates that 99.8% of the variability of the dependent variable is explained by the independent variables. The following table shows the statistical significance of regression model.

Table No: 6 – ANOVA Table - Test for Regression Model Fit

ANOVA[b]

Model		Sum of Squares	Degrees of Freedom	Mean Square	F	Sig.
1	Regression	1.267E13	3	4.223E12	1743.157	.000[a]
	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 *F*-ratio in the above ANOVA table tests whether the overall regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, F (3, 9) = 1743.157, $p < .05$ (i.e., the regression model is a good fit of the data).

Statistical significance of the independent variables

In the following table, 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 (Household Sector Contribution) + 0.513 (Private Corporate Sector) + 0.999 (Public Sector)".

Table No: 7 - Statistical significance of the independent variables

Coefficients[a]

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

Putting it all together,

"A multiple regression was run to predict 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: 8 – Relationship between GDS and GCF

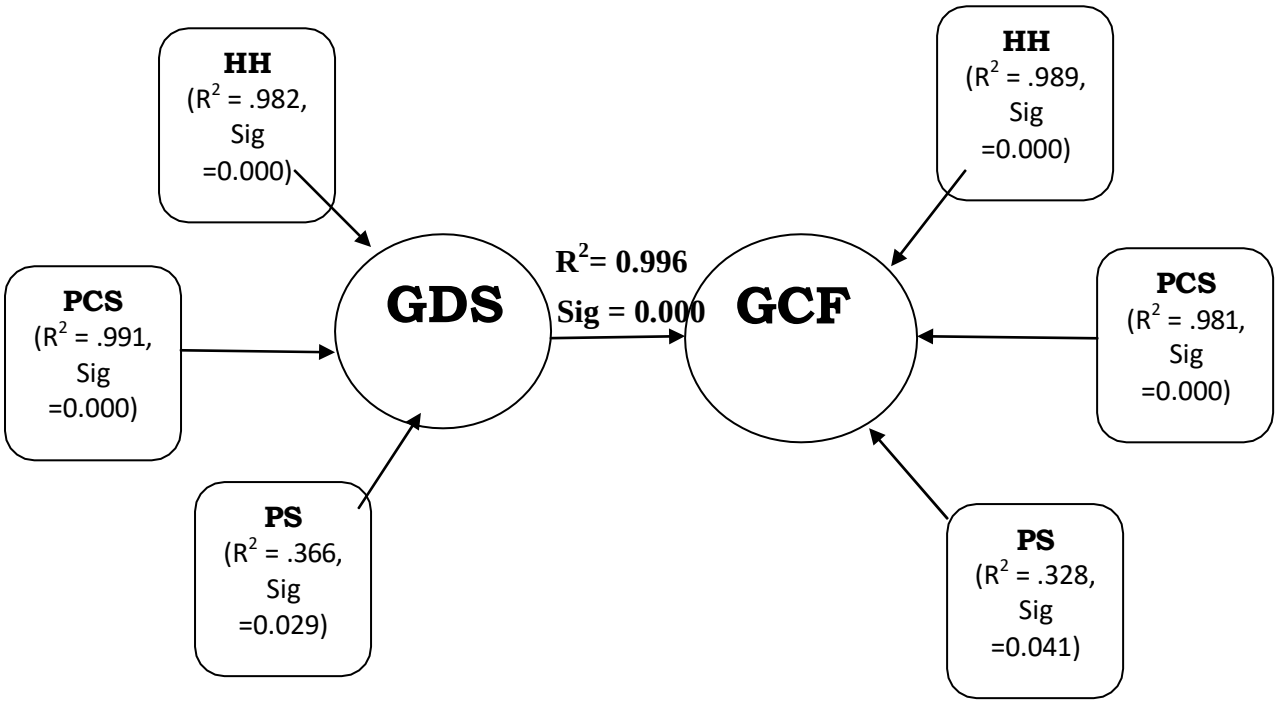
Variables	R	R^2	Adjusted R^2	Regression Significant	Coefficients			
						B	t	Sig
Predictor : GDS	0.998	0.996	0.996	0.000	Constant	-160993.212	-4.265	0.001
Dependent Variable : GCF					GDS	1.172	55.835	0.000

Table 8 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

$$\text{“}GCF_{predicted} = (-160993.212) + 1.172\ (GDS)\text{”}$$

5.5. 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

6. 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 stimulate growth of the economy.

REFERENCES:

[1] Kanu, Success Ikechi & Ozurumba, Benedict Anayochukwu (2014), the impact of capital formation on the economic growth of Nigeria, Global Journal of Human-Social Science: E Economics Volume 14 Issue 4 Version 1.0

[2] Inuwa Nasiru and Haruna M.Usman (2013), The Relationship between Domestic Savings and Investment: The Feldstein-Horioka Test Using Nigerian Data, CBN Journal of Applied Statistics Vol. 4 No.1 (June, 2013).

[3] Mishra, P.K., Das, J.R., and Mishra, S.K. (2010): "The Dynamics of Savings and Investment Relationship in India." European Journal of Economics, Finance, and Administration Sciences, Vol. 18, pp.164- 172.

[4] Herandez-Cata, E. (2000), —Raising Growth and Investment in Sub-Saharan Africa: What Can be done?" Policy Discussion Paper: PDP/00/4, International Monetary Fund, Washington, D .C.

[5] Ndikumana, L. (2000), —Financial Determinants of Domestic Investment in Sub-Saharan Africa, World Development, 28 (2), pp.381-400

[6] Beddies, C. (1999), —Investment, Capital Accumulation and Growth: Some Evidence from Gambia: 1964-1998. IMF Working Paper 99/117, August. Ben-David, D. (1998), —Convergence Clubs and Subsistence Economies, Journal of Development Economics, 55, pp.155-171.

[7] Collier, P. and J.W. Gunning (1999), —Explaining African Economic Performance, Journal of Economic Literature, 37, March, pp.64- 111

[8] Ghura, D. and T. Hadji Michael (1996), —Growth in Sub-Saharan Africa, Staff Papers, International Monetary Fund, 43, September.

[9] Ghura, D. (1997), —Private Investment and Endogenous Growth: Evidence from Cameroon, IMF Working Paper 97/165, December.

[10] Khan, M.S., and C.M. Reinhart (1990), —Private Investment and Economic Growth in Developing Countries, World Development, 18 (1), pp. 19-27..

*****