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TRENDS AND DETERMINANTS OF GROSS DOMESTIC SAVING IN INDIA

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Abstract: The total of savings made by a country's household, business, and public sectors is known as its gross domestic savings. The nation's economic growth is significantly influenced by the gross domestic savings. A high rate of domestic saving could result in more rapid economic growth. Economic and demographic factors include foreign direct investment, inflation, per capita income, gross domestic product, and money supply growth are significant determinants of gross domestic savings. This study aims to examine the trend, major determinants and importance of gross domestic savings rate (GDS) in India using secondary annual data for the period 2010-2022. Data is collected from World Bank national accounts data, and OECD National Accounts data files. The macroeconomic variables used include foreign direct investment, inflation and GDP. The study adopts Augmented Dickey-Fuller unit root test and ordinary least square regression test to examine the long run relationship between the variables under study.

Keyword: Gross Domestic Saving, GDP, Inflation, FDI, India.

I. INTRODUCTION

Low domestic saving rate may lead to lower economic growth rate. A lot of difference can be seen in the economic growth performance between countries, which can be accredited to the distinction in the rate of savings and investment. Through its effect on the capital formation and investment, the domestic savings helps in maintaining high growth. However, if there is a shortage of domestic savings, the individual or businesses will certainly look for the funds from sources outside the county, which will make the nation highly exposed to the shocks from outside the country.

Gross domestic savings is the sum of the savings made by a nation's public, private and household sectors in a country. Major determinants of Gross domestic savings include economic and demographic variable like foreign direct investment, inflation, per capita income, gross domestic product and money supply growth.

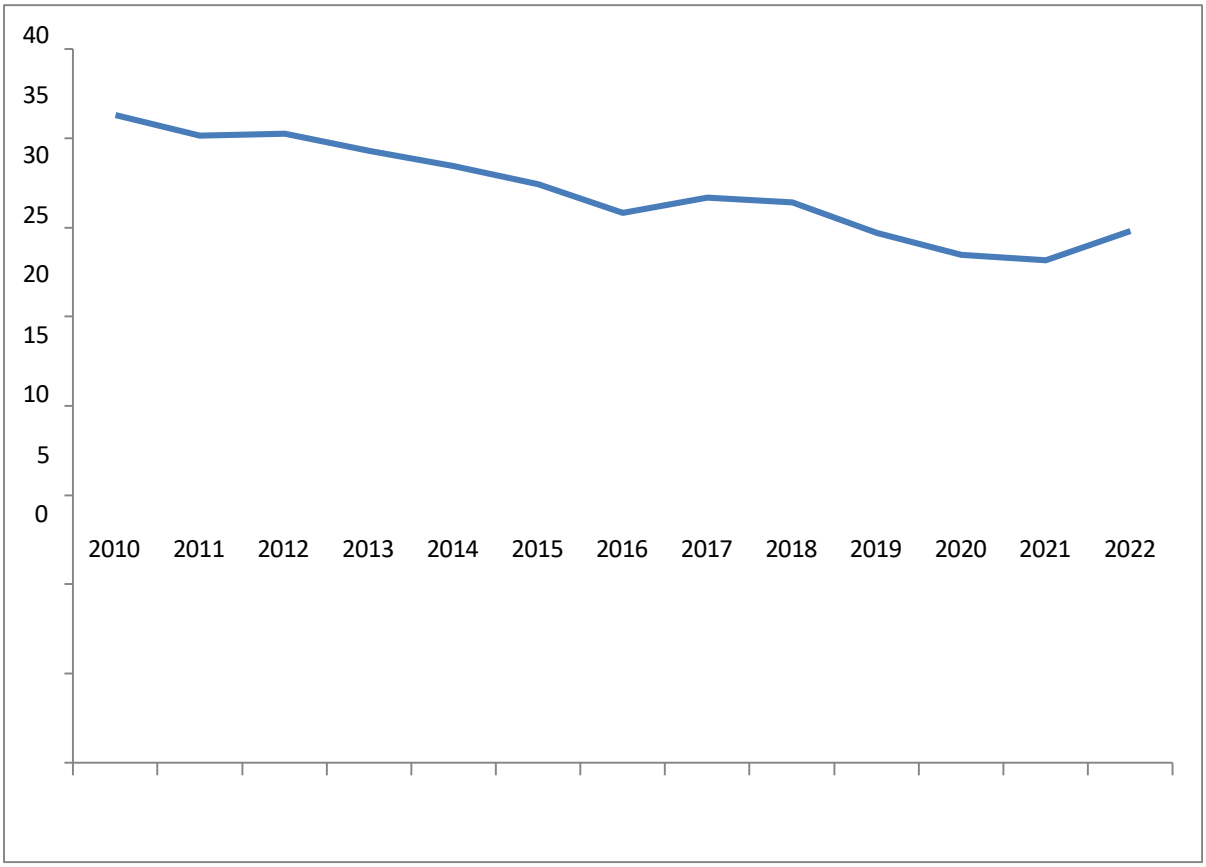
As per life cycle hypothesis (LCH) the people's expectations for their lifetime income, influence how much they consume relative to how much they save over a given time frame. The theory classifies the individual's lifetime into working and retirement period. It is considered that during the course of their job individuals produce more than they consume. Thus, throughout this time, they are net savers. In the retirement period individuals are assumed to be dis-savers and it is considered that people are not saving

during their retirement year. In this context, saving performance may have a positive relationship with income growth.

As per the trend, the gross domestic savings has started declining after 2010 and it is continuously declining. This paper focuses on finding the impact of the determinants on gross domestic savings. In this study the data regarding the determinants of gross domestic savings has been assembled from the secondary source.

Gross Domestic Savings is the amount of money that remains in a nation's budget after all of the goods and services produced that are consumed. This can be either retained by public or can be invested. Savings and investment is crucial for the economic growth of the country. If the saving rate is high, then there will be more money for investment. This will further lead to increased capital formation and capital formation is very essential for economic growth and development. Gross Domestic Savings consists of savings of household sector, private corporate sector and public sector. **M. Yadagiri and G. Srinivas. (2015)** has embedded in their study that a large portion of gross domestic savings is being generated from the household and private corporate sector. Saving, finance and investment are the three main activities involved in capital formation.

Mint. (2023). during the first decade of this century India has witnessed the combination of high savings, high growth, high tax collection, lower interest rate. Then the exposure of large risky loans in infrastructure came forward which led to inflation and a declining exchange rate. Then later demonetization, NBFC crisis, GST and pandemic gave another shock to the economy. The gross domestic savings rate fell from 36% of GDP in 2010-11 to 30% in 2021-22.



SOURCE: World Bank and OECD.

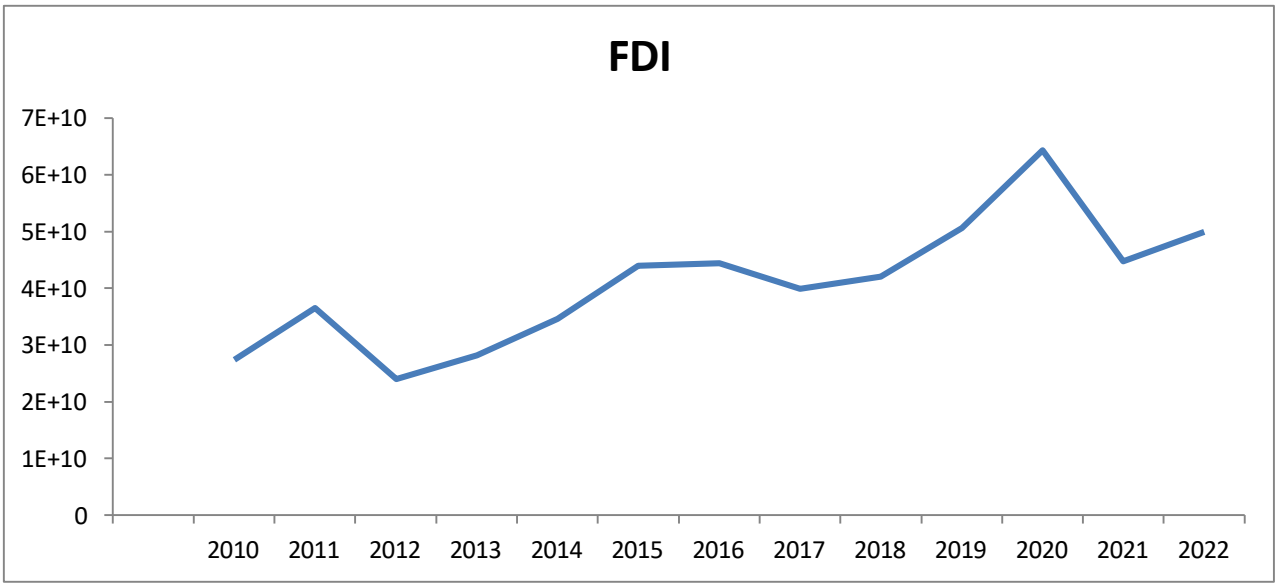
The wire. (2023). In India the price of medicinal products has increased up to 12% in 2021 which makes it the highest amongst the Asian countries. The cost of treatment has just been doubled. The price

of education facility has increased up to 11-12% in 2021. The increased cost of education and health care is majorly borne by the private sector. Amidst this high inflation the household income is falling which can be the main reason for reduction in the savings and increase in borrowing. Since past eight years from 2021 there has been no significant growth in real wage at all India level. **Sameer Bhardwaj. (2023)** has revealed that following COVID-19, a global increase in inflation was caused by a combination of restricted supply and increase in demand. Increase in energy and commodity costs during the conflict between Russia and Ukraine, as well as the disruption of global supply networks, contributed also lead to the rise in the inflation rate. By the year 2022-23 the asset grew by 14% and liabilities grew by 75.5% in Indian economy. Decrease in savings is a major concern for the India's economy as it will create challenges for government to finance its fiscal deficit.

Khan, M.I., et al. (2017) and **Samantaraya. A., & Patra. S.K. (2014).** Had summarized some factors which affect the gross domestic savings these factors are foreign direct investment, inflation, per capita income, GDP, money supply growth, and age dependency ratio.

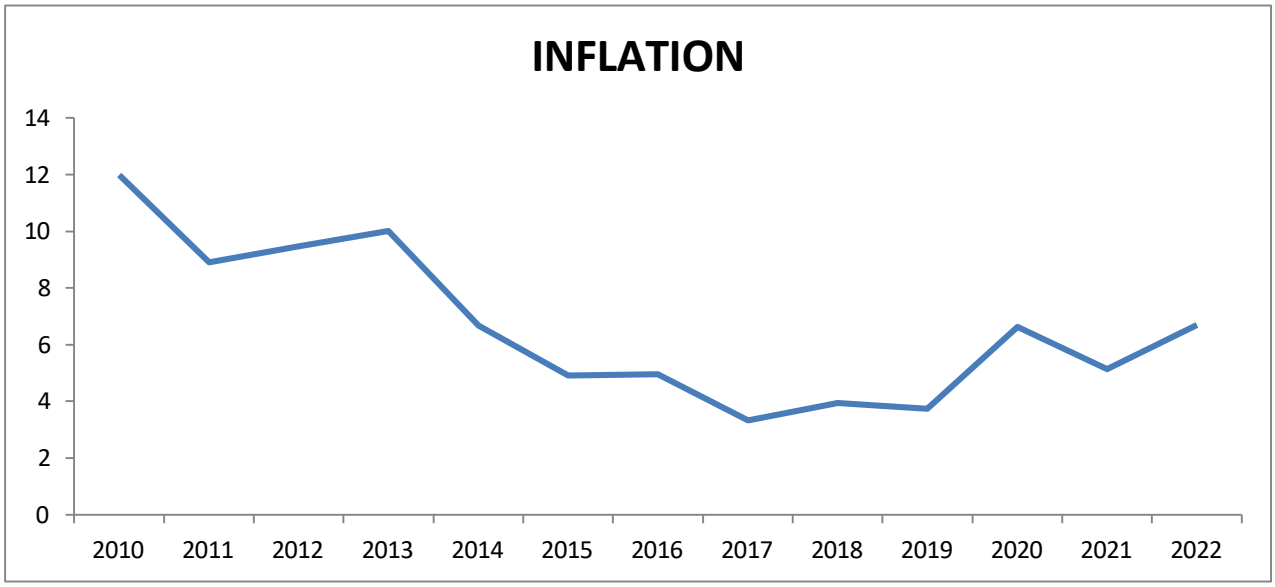
Adam Hayes (2023) has explained that FDI is when any foreign organization acquires the interest in any domestic organization. The nationality of both the organization is different. In FDI an investor in one economy owns 10% or more of the voting power in a business in another economy. FDI promotes international trade and it is an important channel for the transfer of new technology between countries.

Anil Duggal. (2017) has found out that foreign investment can decrease the domestic savings gap (the difference between the total savings and the savings required to provide fund for investment). **Dehghan, A. M., & Alizadeh, E. (2012)** has depicted in their study that the inflow of foreign direct investment (FDI) into India has a notable effect on domestic savings. Aggregate investment in the Indian economy ultimately exceeds domestic savings rate because one unit of FCI inflows encourages over more than one (1.55) unit of domestic savings.



SOURCE: International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates

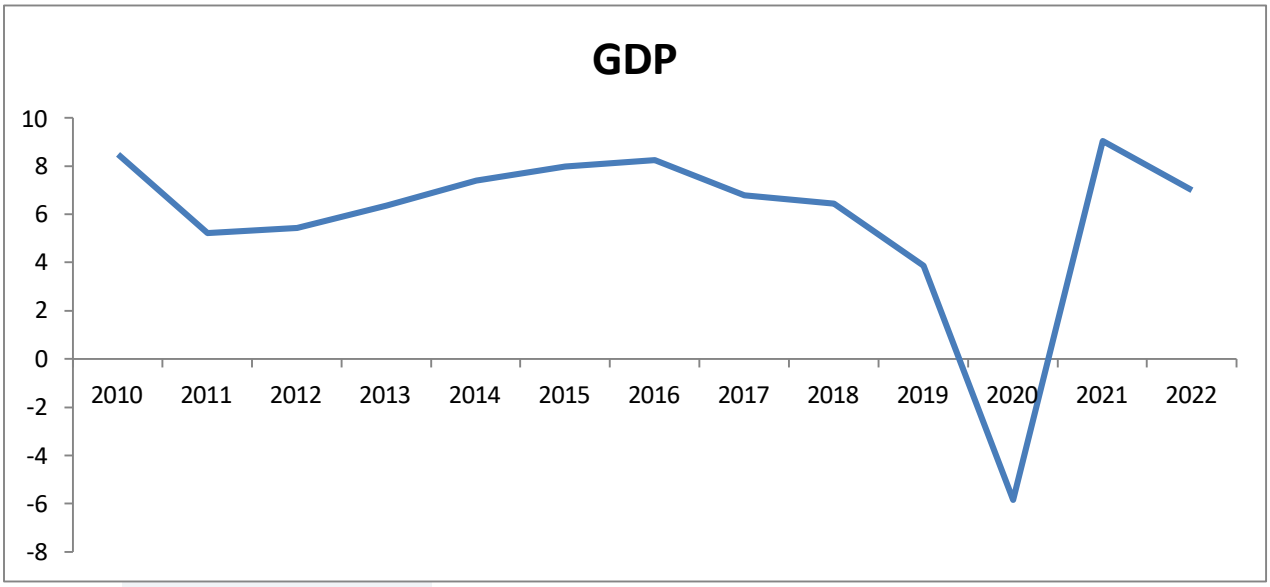
Pradhan. D., & Jain. A., (2023) has revealed that India's retail inflation, measured by the Consumer Price Index (CPI) is 5.02% in 2023. The rising inflation forces people to use their household savings for their consumption the net financial asset of household have consistently declined from 11.5% in financial year 2021 to 7.2% in financial year 2022. **Dash, S. K., & Kumar, L. (2018)** has stated that higher rates of inflation inevitably cause voluntary dis-savings that far exceed the positive impact of inflation on savings through income redistribution. Therefore, regulating inflation should be the primary goal of policymakers, as this would boost domestic savings.



SOURCE: International Monetary Fund, International Financial Statistics and data.

Krzysztof Bryniuk (2023) has depicted in their study that Gross Domestic Product (GDP) is the most common indicator used to measure economic growth. It is calculated by adding up all the expenditures in an economy from production, consumption, and government spending. **Topi Tjukanov (2011)** has depicted that certainly GDP data has a significant influence on the economy and is frequently employed as a tool in the formulation of economic policies. This results in a scenario where policies have a goal that is ultimately determined by GDP.

Verma. R., (2009) has disclosed in their study that growth in GDP affects private and household savings in a highly elastic way. Further household savings positively affect the investment.



SOURCE: World Bank data and OECD.

II. LITERATURE REVIEW

According to the World Bank report 2023 the India is amongst the fastest growing economy in the world and it is expected that it will reach higher middle income status by 2047, when India will complete its 100 years of independence. Furthermore in order to cope up with challenges that have been posed by climate change, it is being targeted to attain net zero emission by 2070. The growth in Indian economy has also led to an extra-ordinary progress in reducing extreme poverty. As per the TOI 2022 the nominal GDP rate the Indian economy is the 6th largest economy in the world. The Indian economy with $3.17 trillion has lagged behind the United States, China, Japan, Germany and United Kingdome. It has been observed that the per capita income of India has been grown to the large extent, since the independence of India (1947). From Rs. 265 in the initial years of Independence India's per capita income has increased up to Rs.1,28,829.

Dehghan, A. M., & Alizadeh, E. (2012) has done the study to find out that whether in developing country like India foreign capital inflow and domestic savings are complementary or substitute. It depicts that one of the key factors influencing economic growth is the mobilization of domestic resources. Indian savings record is inferior to that of the region's subsequent nations that had sustained high growth. India therefore looks forward for foreign funding sources to close the gap between domestic investment and savings which will make the country highly prone to the external shocks. **Samantaraya. A., & Patra. S.K. (2022)** has studied time series data from 1960 to 2019 using time-series methodologies to empirically determine the long-run link between savings, capital formation, and economic growth. The analysis shows that there is a consistent, long-term relationship between economic growth, investment, and savings but due to improper mobilization of domestic savings by Indian financial sector. The gross domestic savings has an insignificant impact on economic growth in India. **Mishra. P. K., et al, (2010)** has done the research which is based on empirical relationship between savings and investment in developed as well as in developing countries. It depicts the link between savings and investment that is in equilibrium over the long term. Investments and savings have long been considered as two essential macroeconomic factors for establishing price stability, creating job opportunities, and supporting long-term economic growth. **Jangil. R., (2011)** has investigated the relationship between savings, investment and economic growth for India. India, like with many other nations worldwide, has paid close attention to the role that domestic investment and savings play in fostering economic growth. The study concludes that though the Indian economy is opened to foreign investments, growth in India is still driven by the domestic savings.

Bayar, Y. (2014) investigated the relationship between gross domestic savings and financial development in the emerging Asian countries. The study revealed that aged dependency ratio had a negative effect on gross domestic savings, financial development, economic growth, and real interest rates had favorable effects on gross domestic savings. **Mehta, D. (2018)** most significant and essential factor in India's process of capital formation is savings. Increasing savings could help Indian business overcome two key challenges like an excessive reliance on foreign funding and high capital costs brought on by a lack of accessibility of surplus money. Additionally it has been suggested in this study that the policies should be designed and implemented to boost savings, which in turn will enhance economic growth of the nation. **Mehta, S. N., & Rami, G. D. (2014)** Indian gross domestic product (GDP), gross domestic savings (GDS) and gross domestic investment (GDI) showed long term relationship with each others, on contrary **Samantaraya. A., & Patra. S.K. (2014)** concludes that in India gross domestic savings and investment are not related for neither short nor long time periods.

Singh. T., (2011) has explained the trend of economic growth of India. It has been concluded that the economy has marked a low growth for a very long period of time until 1970_s. Then some gradual economic reforms and adoption of some structural adjustment in 1980'sand 1990's has enhanced the momentum of the growth. The growth have been accelerated after increase in savings which further has been infused in improved production through investment.

The previous researches have focused on finding out the importance of domestic savings in the economic growth of the country; it has been found that there is a long term relationship between economic growth, investment, and savings. There is a limited focus on research was towards examining the trends and determinants of Gross Domestic Savings (GDS).

III. OBJECTIVES

Objectives summarize the approach and purpose of the study. The objectives of this research are as follows: -

1. To examine the trends of Gross Domestic Savings.
2. To study the influence of macro- economic variables on Gross Domestic Savings.

IV. DATA AND METHODOLOGY

The present study has been conducted on the basis of secondary data during the period of 2010- 2022. Data on GDP, gross domestic savings, Inflation rate and FDI has been obtained from World Bank national accounts data, and OECD National Accounts data. The study adopts Augmented Dickey-Fuller unit root test and ordinary least square regression test to examine the long run relationship between the variables under study.

Most macroeconomic time series exhibit substantial co-movement, and thus estimating the previous model using OLS frequently suffers from the problem of no stationary regressors and spurious regressions, which do not reflect long run relationship but common time trends (Engle and Granger, 1987). Therefore, in order to investigate the long run effects of the model, we should first test whether the proposed variables in the model (1) are stationary or not. This step is carried out using Augmented Dickey Fuller (ADF) test. The next step is to test for the presence of co integration among the explanatory variables.

The procedure to test for stationary in the levels of variables starts with the most unrestricted model as shown in equation below:

$Xt = Xt-1 = \Delta Xt = \alpha + \beta T + \rho Xt-1 + \Upsilon Xt-1 + \epsilon t$ Where:

Xt : represents the variable of interest, t :time

trend.

The null hypothesis that Xt is non-stationary ($\beta = 0$, and $\rho = 1$) is rejected if the coefficient on Xt-1 is significantly negative. One lag of the dependent variable is added to make sure that the error term is free of significant serial correlation.

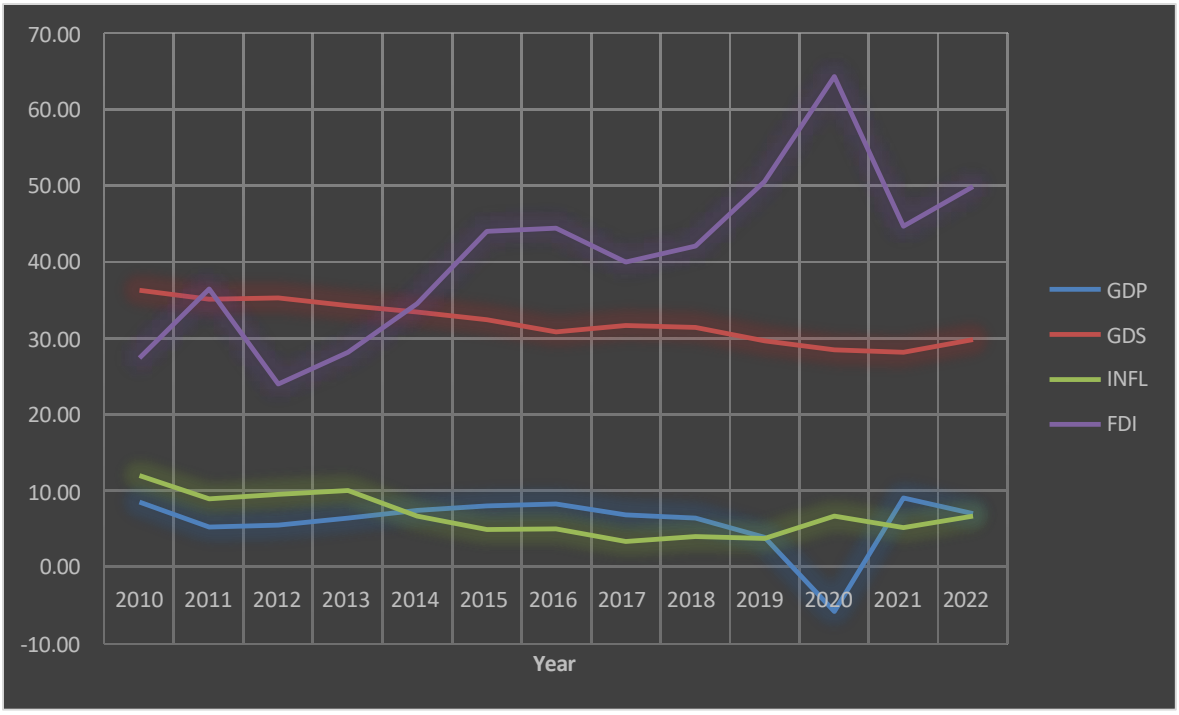
The ADF test is conducted to check for a unit root for the four variables in both levels and first differences. The results of these tests are shown in table (1), which reveals that the hypothesis of a unit root cannot be rejected in most variables in levels. However, the hypothesis of a unit root is rejected in first differences which indicates that all variables are integrated of degree one, I (1).

Furthermore, co integration involves examining the stationary of the residuals (ut) from the long run relationship. If the residuals are integrated of degree zero, then we can assure that the linear combination of the variables in the model (1) is co integrated. The result of the ADF stationary tests of the residuals indicates that these residuals are stationary of degree zero I (0) at 1% level of significance. In other words, the linear combination of the variables of the model (1) is stationary and they are co integrated data on gross domestic savings and foreign direct investment are measured as a ratio of GDP.

Data Analysis

Trend of Macro Economic variables

Till 2010 the rate of gross domestic savings kept on growing but after that GDS started declining. From 36.305% in 2010 GDS fell down to 29.835% in 2022. A difference of 6.47 % can be seen in declining graph of GDS. FDI inflows to India totaled $45.15 billion in 2014–15 and have been rising steadily ever since. India's consumer price inflation peaked in 2010 at 12%, and it continued to rise until 2021. 2014 saw a notable drop in India's inflation rate. In 2020, the inflation of consumer prices was 6.6%.



Taking into account both the pre- and post-pandemic circumstances, India, which has one of the strongest economies in the world, has seen fluctuations in its GDP growth rate in recent years. In 2010 the GDP growth rate was 8.5 % while in 2020 it came down to -5.8% due to the effect of pandemic and in 2022 the GDP growth rate again arises to 7%.

Correlation Analysis

Correlation Analysis at level

	GDS	FDI	INF	GDP
GDS	1			
FDI	-0.87	1		
INF	0.73	-0.61	1	
GDP	0.32	-0.59	0.017	1

As per the result there is high negative relationship between GDS and FDI, there is high positive relationship between GDS and Inflation and there is low positive relationship between GDS and GDP. Further moderate positive relationship can be seen in FDI and Inflation and also in FDI and GDP. Lastly Inflation and GDP are showing no correlation.

Test of Unit Root

Null Hypothesis: GDS, GDP, FDI, INF has unit root

	At level		At 1difference	-	At- 2difference	
Series	**t-statistics**	**p-value**	**t-statistics**	**p-value**	**t-statistics**	**p-value**
GDS	-1.456	0.51	-2.87	0.086	-3.265	0.046
GDP	-3.243	0.042	-2.982	0.070	-5.465	0.003
FDI	-1.736	0.390	-4.655	0.007	-3.2144	0.040
INF	-2.346	0.174	-3.929	0.015	-5.753	0.001

Unit root table reveals that at the level only GDP has showing free of unit roots where as others are not. Therefore, the test has been conducted for the first difference and FDI and INF has shown the unit free whereas GDS and GDP were not. Finally at the second difference all the Variables were free from unit root. In order to integrate the variables, it is necessary that all the variables must be unit free at the same level. For the unit root test was concluded that all the variables were integrated at the second orders **II (2).**

Testing of Influences. (Using ordinary least square regression)

Above table reveals that the Durbin Watson statistics was 1.85 which is sufficient to conclude that variables were not auto correlated as the value for the statistics value of 2 is perfect and reflecting completely autocorrelation free.

Dependent Variable: GDS(2)
Method: Least Squares

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	42.247	4.115	10.265	0.000
FDI(2)	-2.263	5.612	-4.029	0.005
GDP(2)	-0.182	0.132	-1.379	0.210
INFLATION(2)	0.031	0.229	-4.135	0.008
R-squared	0.840			
Adjusted R-squared	0.772			
F-statistic	12.291			
Prob (F-statistic)	0.003			
Durbin-Watson stat	1.873			

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Value of R-square is 0.84 indicating that the estimated model was highly efficient. And the f statistics (12.29) for the estimated model was highly significant as the p value (0.00) is below 0.05.

Coefficient matrix shows that t- statistics for the FDI and Inflation were 4.02, 4.13 with negative sign and significant as p-value is below 0.05.

Null Hypothesis: There is no significant impact of FDI on GDS

Table reveals that t- statistics for the variable FDI was -4.02 and was significant as p-value was below 0.05, implies that we cannot accept the null hypothesis. Therefore, we conclude that FDI has a significant influence on GDS.

Null Hypothesis: There is no significant impact of INF on GDS**.**

Table reveals that t- statistics for the variable Inflation was -4.13 and was significant as p-value was below 0.05, implies that we cannot accept the null hypothesis. Therefore, we conclude that inflation has a significant influence on GDS.

Null Hypothesis: There is no significant impact of GDI on GDS.

Table reveals that t- statistics for the variable GDP was -1.37 and was insignificant as p-value was more than 0.05, implies that we cannot accept the null hypothesis. Therefore, we conclude that FDI has a significant influence on GDS.

V. CONCLUSIONS

The Gross Domestic Savings rate of India has shown a healthy growth till 2010 but after that the Gross Domestic Savings has started declining and it fell down to 29.835% in 2022. A decline of 6.47% can be seen in the graph of Gross Domestic Savings. The Gross Domestic Savings is highly important for the nation as it leads to capital formation by providing fund for the investment which further leads to the economic growth of the country. This research study "Trends and Determinants of Gross Domestic Savings in India" was aimed to examine the important factors of domestic saving such as foreign direct investment, inflation and GDP for the period from 2010 to 2022. This research study was mainly based on secondary data compiled from websites of World Bank. The statistical evidence from this study showed that Foreign Direct Investment (FDI), Inflation and Gross Domestic Product (GDP) have a significant influence on Gross Domestic Savings (GDS).

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