

Primary Instruments of Economic Process and Increase in Value

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ABSTRACT: Since the origination of economic designing in India, the stress has been on saving and investment because the primary instruments of the economic process and increase in value. one in every one of the objectives of economic set up (for e.g., Eleventh 5-year plan) is to extend the assembly within the economy and therefore economic process. to extend the assembly, capital formation is taken into account because the crucial determinant; and capital formation needs to be backed by the acceptable volume of saving. Accrued saving is employed for accrued capital formation, use of the accrued capital formation for increasing saving, and use of the accrued saving for an extra increase in capital formation official the strategy behind the economic process.

INTRODUCTION: In view of the crucial role vie by savings and investment within the economic process of India, we tend to shall investigate the most important interdependencies between these 3 variables by analyzing the statistic knowledge for India from 1950-2008. Our aim here is to spot and study the pattern between savings, investment and economic process and also the policies that light-emitting diode to such changes so this analysis will henceforward be used for developing economic models for India and estimating and statement the policy implications which might have an effect on these variables.

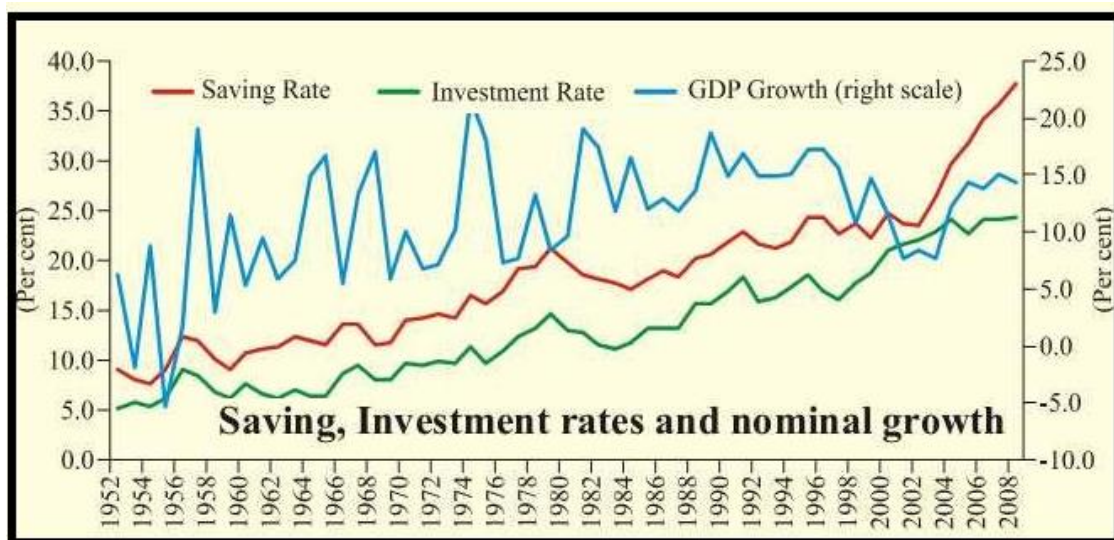
LITERATURE: The literature on the role of savings and investment in promoting economic process was studied as a section of my course (Theory of political economy Development). The central plan of Lewis's (1955) ancient theory was that a rise in saving would accelerate the economic process, whereas the first Harrod-Domar models such as investment because of the key to promoting the economic process. On the opposite hand, the classical Solow (1956) model argues that the rise within the saving rate boosts steady-state output by quite its direct impact on investment, as a result of the evoked rise in financial gain raises saving, resulting in an extra rise in investment. However, the new growth theories since the mid-1980s, Romer (1986, 1990), movie maker (1988) and Barro (1990), confirm the read that the buildup of physical and human capital area unit the drivers of long-haul economic process which high savings and investment rates area unit vital seeable of their sturdy and positive association with the gross domestic product rate of growth as prompt by endogenous growth theories. Since the economic crises in the Nineteen Eighties and money reforms in Nineteen Nineties in India, several studies were conducted however these studies offer very little empirical proof that supports the crucial role that savings and investment play in promoting the economic process. These studies normally take a look at for farmer relation between Indian savings and growth, or between Indian investment and growth. The findings tend to support the hypothesis that savings don't cause growth, the, however, economic process causes savings. for instance, Sinha (1996) found that the expansion of gross domestic saving and/or the expansion of personal domestic saving and also the growth of gross domestic product indicate that the relation doesn't run in any direction. Mühleisen (1997) conducts farmer relation tests by running quantity VARs on the expansion in real gross domestic product and also the levels of total, public and personal savings rates. while these tests indicate there's important relation from growth to savings, they systematically reject relation from savings to growth for all styles of savings. Mühleisen additionally states that this outcome is powerful with reference

to variations within the power unit lags, the selection of growth variable and different styles of savings. Saggur (2003) extends Mühleisen's (1997) amount to 2000-01 in order to research the results of India's money reforms within the Nineteen Nineties. He estimates quantity VARs between the log of real gross domestic product and total, public, personal and foreign savings rates. The results support Mühleisen's conclusions in this causality run from output to savings and not within the wrong way. Mahambare and Balasubramanyam (2000) conclude 'the former relation take a look at suggests that relation runs from growth to savings' for India. Agrawal (2000) examines the savings rate and also the rate of growth of gross national product exploitation power unit specifications. His analysis finds relation from growth to the savings rate, not just for India however additionally for Sri Lanka. Sahoo, Nataraj, and Kamaiah (2001) use annual knowledge for the amount 1950-51 to 1998-99 to look at the link between savings and growth in India. They realize unidirectional relation from gross domestic product to gross domestic savings in real terms, each within the long haul and short run.

Verma (2007) employed the ARDL co-integration approach to determine the long run relationship of GDS, GDI and GDP for the period 1950-51 to 2003-04 and supported the hypothesis that saving does not cause growth, but growth causes saving, the study also finds that saving unambiguously determines investment in both the short and long runs. No evidence is found to support the commonly accepted growth models in India, that investment is the engine of economic growth. Sinha and Sinha (2008) examined the relationships among growth rates of the GDP, household saving, public saving and corporate saving for the period 1950 to 2001 and found that economic growth produced higher saving in various forms and never the other way around. Aghion et.al. (2006) argues that saving affects growth positively in those countries that are not too close to the technological frontier, but does not affect it at all in countries that are close to the frontier. Literature in terms of Investment viz. Sandilands and Chandra (2003) conclude that 'Indian capital accumulation is the result rather than the cause of growth'. However Saggur (2003) shows that total and private investment rates cause real GDP growth. Despite this, he finds no evidence of causality from public investment to real GDP and from the growth in real GDP to the different measures of investment. Seshaiyah and Sriyval (2005) demonstrate that savings and investment are closely related. Verma and Wilson (2004) estimate that per worker household savings have an elastic 1.87 effect on household per worker investment in the long run. The reverse long run elasticity from household sector per worker investment to savings is 0.54 and both estimates are significant at the one per cent level. However, Verma and Wilson (2004) show there is only weak and imprecise evidence of the links between these variables and real per worker output in the short run. We will therefore focus on the difficult task of identifying and quantifying links between sectoral savings and GDP and sectoral investment and GDP in the long run and the short run. Venkata (2005) found that savings are influencing investment but investment is not influencing the savings in India. The savings are influencing the investment by 95 per cent whereas investment is influencing savings by 5 per cent. The growth in savings could not finance most of India's investment especially in mid-1980s because they were already at a quite high level. As a result, during the late 1980s India depended heavily on foreign sources that led to a balance of payment crisis in 1990s. Khundrakpam and Ranjan (2010) found long-run co-integration relationship between savings and investment. However, inclusion of post reform period weakened the relationship characterized by a more liberalized period. On the other hand, Shahbazet. al. (2008) found that there exists low positive correlation between domestic savings and investment in Bangladesh, Pakistan, India, Nepal and Sri Lanka.

Data: The study uses the annual data to examine the causal relationships between domestic saving, investment and income for India. Annual time series data for gross domestic product (GDP), gross domestic saving (GDS), gross domestic investment (GDI), saving and investment of household sector, private corporate sector and public sector for the period 1950-51 to 2010-11 are collected from Reserve Bank of India publication Handbook of Statistics on Indian Economy 2010-11 and Central Statistics Office (CSO).

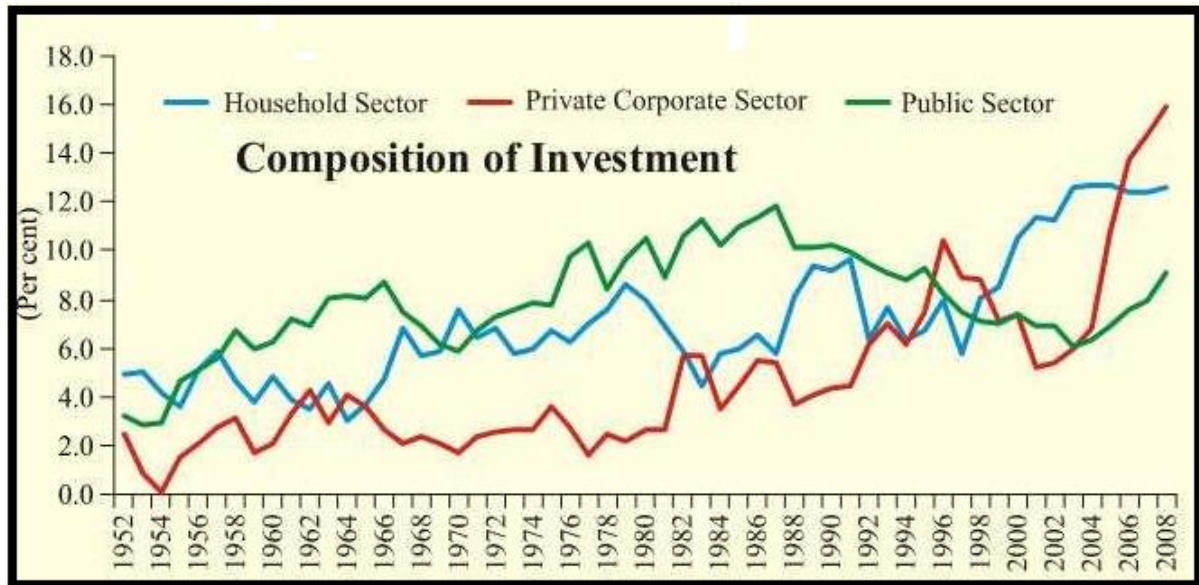
Savings and Investment rates have been steadily increasing since 1950-51. A significant positive and robust relationship between growth rate and saving rate was observed during this period, as growth rate was also rising during 1950-51 to 2007-08. Not only prior to economic reforms in 1990-91 domestic savings and domestic investment were highly correlated but even after the BOP crises in 1991 the correlation remain unchanged (correlation coefficient of 0.99 for the period) and only the gap between them was narrowed (as can be observed from Chart 1).



We can observe (from Chart 2) that while India's saving and investment rates have steadily increased overtime, their composition has undergone a considerable change, most noticeable being the growing divergence between the public and private saving. The share of household saving in the total saving has increased in the early 1990s to a maximum in 2001-02, after which it steadily declined till 2007-08. The savings rate private corporate sector was stagnant till the late 1980s but it has recently emerged as the sector with the fastest rising saving rate. The share of private corporate saving in total saving also increased considerably in the last 25 years. Until prior economic reforms in 1990-91, public investment rate was dominating and reached its peak value after which the role of public sector has gradually reduced in number of sectors, and its place has been taken over by the private sector (as evident from Chart 3). The share of public sector investment in total investment was stagnant till 1980s, and has since then shown a downward trend. On the other hand, the share of private corporate investment has steadily increased. Household sector investment rate also increased gradually till 2004-05 and it moderated thereafter. However, its share in total investment broadly remained the same.

Methodology: In order to determine the order of integration of the time series variables we first conduct the unit root test, we employ the augmented Dickey-Fuller test to test for the stationary of data. After that we proceed to test the co-integration among the different variables with the help of Johansen co-integration test. Based on the results of co-integration test we perform Granger-Causality test under the vector error correction methodology (VECM) or under vector

auto regression (VAR) framework to find out the causal relationship.



Unit Root Test: We first perform unit root tests in levels and first differences in order to determine the order of integration of the series. To test the order of integration, we employ the conventional augmented Dickey-Fuller (ADF) test. ADF test examines the null hypothesis of a unit root against a stationary alternative.

The results are present in the table below:

GDP HAS A UNIT ROOT, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		0.090682
Test critical values:	1% level	-3.568308
	5% level	-2.921175
	10% level	-2.598551

HOUSEHOLD SAVINGS HAS UNIT ROOT, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		21.76796
Test critical values:	1% level	-3.550396
	5% level	-2.913549
	10% level	-2.594521

PSI HAS UNIT ROOT, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		3.115251
Test critical values:	1% level	-3.574446
	5% level	-2.923780
	10% level	-2.599925

PUBLIC SECTOR SAVINGS HAS A UNIT ROOT, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		1.196449
Test critical values:	1% level	-3.577723
	5% level	-2.925169
	10% level	-2.600658

GDS has a Unit Root, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		7.857156
Test critical values:	1% level	-3.571310
	5% level	-2.922449
	10% level	-2.599224

Household Sector Investment has a Unit Root, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		10.66586
Test critical values:	1% level	-3.577723
	5% level	-2.925169
	10% level	-2.600658

PCI has a Unit Root, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		1.401049
Test critical values:	1% level	-3.577723
	5% level	-2.925169
	10% level	-2.600658

PSI has Unit Root, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		4.441845
Test critical values	1% level	-3.574446
	5% level	-2.923780
	10% level	-2.599925

GDS has a Unit Root, I(1)		t-Statistic
Augmented Dickey-Fuller test statistic		13.58930
Test critical values:	1% level	-3.574446
	5% level	-2.923780
	10% level	-2.599925

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We can observe from the statistics of Augmented Dickey-Fuller test that the variables are not level stationary. So, We need to do co-integration test for these variables in order to not get spurious results.

Co-integration Test: After the unit root test for stationary we go for Johansen’s test for co-integration among variables in the same way, so that we can eliminate spurious results. We intend to check for the presence of co-integrating relationship among the variables. Starting with the null hypothesis that co-integration ($r=0$) does not exist among the variables, the trace statistic is well above the 95 per cent critical value for all the series.

The example of one of the series (GDP and GDS) is shown below:

Unrestricted Co-integration Rank Test (Trace), GDP and GDS			
Hypothesized		Trace	0.05
No. of CE(s)	Eigen Value	Statistic	Critical Value
None *	0.434673	47.16719	15.49471
At most 1 *	0.238085	15.22757	3.841466

Trace test indicates 2 co-integrating eqn.(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

We find that all the series are co-integrated with GDP series except private corporate sector saving (PCS). Hence, it rejects the null hypothesis of no co-integration in favour of existence of co-integration for all the series except PCS as shown below:

Unrestricted Co-integration Rank Test (Trace), GDP and PCS			
Hypothesized		Trace	0.05
No. of CE(s)	Eigen Value	Statistic	Critical Value
None *	0.540464	44.40727	15.49471
At most 1 *	0.015331	0.865167	3.841466

Trace test indicates 1 co-integrating eqn. (s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Hence, we use Vector Error Correction Model for all other series and Vector Auto Regression Model for PCS to test for causality.

Granger Causality Test: After finding out the results of co-integration tests and we now intend to find out the vector error correction methodology and vector auto regression to determine the direction of causality between income, saving and investment. As we already know that Granger causality test is performed under VECM if co-integration exist and under VAR framework otherwise. So here we employ Granger causality test under VAR methodology for savings of private corporate sector (PCS) and GDP whereas for all other series it is employed under the VECM framework.

The results of the Granger Causality test have been summarized:

- a. Gross Domestic Savings causes Gross Domestic Product
- b. Gross Domestic Product does not cause Gross Domestic Savings
- c. Gross Domestic Investment causes Gross Domestic Product
- d. Gross Domestic Product does not cause Gross Domestic Investment
- e. Gross Domestic Savings and Gross Domestic Investment cause Gross Domestic Product
- f. Gross Domestic Product does not cause Gross Domestic Savings and Gross Domestic Investment

CONCLUSIONS: We here analyzed the information for 1950-51 to 2010-2011 and through empirical observation realize that the direction of relation is from saving and investment to economic process jointly in addition as severally and there's no relation from economic process to saving and/or investment. Also, we've got already studied and far-famed from the assorted long growth theories; associate degree economy can have a higher rate of growth if it's the next rate of growth of investment. Several might believe that a very huge open economy like the Republic of India won't like the backing of domestic savings for its investments because it will finance its investments from foreign sources. but from the empirical analysis on top of we will observe that top domestic savings will certainly increase the expansion rate.

These results might not please several economists as they read the Republic of India as an awfully huge open economy with domestic and foreign investors and domestic saving needn't be endogenous to growth. However, it's needed to possess technological progress during a country for investment diode growth, the case here in actual is of low technological progress in Asian nation and difficulties in adapting technologies from foreign investors because of India ancient and inherent nature. As already distinguished in a literature review on top of, Aghion et.al. (2006) argues that saving affects growth completely in those countries that aren't too getting ready to the technological frontier, however, doesn't have an effect on it in any respect in countries that square measure getting ready to the frontier. thus as is through empirical observation found for the case of the Republic of India there exists a savings diode growth because of its distance from the technological frontier, currently, the question that arises is that however so much is the Republic of India from the frontier?. From then on top of discussion it's clear that the economy isn't catching up with the technology frontier because the growth is diode by savings and isn't driven by the innovations that square measure happening worldwide. this means



that though the economy is opened to foreign investments, the expansion continues to be driven by the domestic savings. Further, domestic corporations might not be fascinating the technology that comes through the foreign investment so as to undertake additional profitable innovation comes because of sure reasons that appear to be an awfully vital topic of dialogue at this hour. additionally, it should be attainable that a number of the sectors square measure lying so much below the technological frontier and wish a lift to catch up the short moving frontier, different sectors could also be insulation behind the frontier and their distance from the frontier may very well be increasing. we'd like to spot such sectors of the economy and take fast policy measures to scale back space from the frontier all told attainable sectors thus on be freelance of this savings diode growth.

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