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Money Supply and Agriculture (A Special Study of Indian Agriculture)

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Abstract: *The paper deals with Agriculture of India and Money Supply in the Indian Economy after Reforms period. The paper also explains the relationship between them and the impact of Money Supply on Agriculture. The various measures of Money Supply, the concept of Narrow Money and Broad Money are also explains here. The Trend, Composition and Patterns of Narrow Money and Broad Money are analyzed here in this paper. The importance of Agriculture for National Income, Foreign Trade, Capital Formation, and Employment are described here. The production scenario of both the Kharif and Rabi crops are analyzed here also, The paper analyzed the impact of Money Supply on Agriculture with the statistical tools Correlation and Regression analysis which tells it has a positive relationship.*

Keywords: *Agriculture, Employment, Foreign Trade, Money Supply, National Income etc.*

I. Introduction

Agriculture which has always been the backbone of the Indian economy is studied and analyzed in this paper. Agricultural progress which is normally regarded as a prerequisite of economic development is the entire superstructure of the growth of industrial and other sectors of the economy in modern times also. Kuznets, the great economist identifies four possible types of contribution of the agriculture sector which makes the overall economic development. These are ---

1 -Product contribution → making available food and raw materials.
2-Market contribution → providing the market for producer goods and consumer goods
3- Factor contribution → making available labour and capital to the non-agricultural sector.
4-Foreign exchange contribution

On the other hand, the supply of money is a stock at a particular point of time, though it conveys the idea of a flow over time. The term '**the supply of money**' is synonymous with such terms as '**money stock**', '**stock of money**', '**money supply**' and '**quantity of money**'. The supply of money at any moment is the total amount of money in the economy.

1.1-REVIEW OF LITERATURE-Various books and research papers related to this study I already studied .I give the names in references.

1.2-OBJECTIVES- I have certain objectives to write this paper which I give bellow-

- To study about the measures of Money Supply
- To analyze about the trend and patterns of Narrow Money after reforms period.
- To analyze about the trend and patterns of Broad Money after reforms period
- To study about Indian Agriculture and its importance
- To study the production scenario of Agriculture
- To analyze the impact of Money Supply on Agriculture
-

1.3- DATA COLLECTION& METHODOLOGY- . These All the data are collected from secondary sources. The methodology which I use for analyzing the data is KARL PEARSON"S CORRELATION &REGRESSION.

II. Measures Of Money Supply:

There are four measures of money supply in India which are denoted by M1, M2, M3 and M4. This classification was introduced by the Reserve Bank of India (RBI) in April 1977. Prior to this till March 1968, the RBI published only one measure in keeping with the traditional and Keynesian views of a narrow measure of the money supply.

M_1 : A measure of the money supply that includes all physical money, such as coins and currency, as well as demand deposits, checking accounts and Negotiable Order of Withdrawal (NOW) accounts. M_1 measures the most liquid components of the money supply.

M_1 = C + DD + OD **(**equation-1)

Where C = currency deposits with the public,
DD = Demand deposits with the public in the commercial and cooperative banks,
OD = other deposits held by the public with RBI.

M_2 : M_2 is a broader concept of money supply in India than M_1. In addition to the three items of M_1, the concept of money supply M_2 includes savings deposits with the post office saving banks. Thus,

M_2 = M_1 + saving deposits with the post-office saving banks (equqtion-2)

M_3 : M_3 is a broad concept of money supply. In addition to the items of money supply included in measure M_1, in money supply M_3 time deposits with the banks are also included. Thus,

M_3 = M_1 + Time deposits with the banks (equation-3)

M_4 : The measure M_4 of money supply includes not only all the items of M_3 described above but also the total deposits with the Post-Office Savings Organization. However, this excludes contributions made by the public to the national saving certificates. Thus,

M_4 = M_3+Total deposits with Post-Office Savings Organization (equation-4)

Of the four inter-related measures of money supply for which the RBI publishes data, it is M_3 which is of special significance. It is M_3 which is taken into account in formulating macroeconomic objectives of the economy every year. For some reasons RBI does not attach any importance to these measures (M_2 and M_4) and that's why it has not updated figures of Post Office savings accounts and Total deposits of Post Office savings organization from time to time.

So, the whole study is about two measures of money supply i.e. M_1 (Narrow Money) and M_3 (Broad Money).

Table-1 Trend And Patterns Of The Narrow Money (M_1) After Reforms Period

(In Billion)

Year	Currency with the public	Other Deposit with the RBI	Demand Deposits	Narrow Money (M1)
1	2	3	4	5 = (2 + 3 + 4)
1990-91	530.48	6.74	391.70	928.92
1991-92	610.98	8.85	524.23	1144.06
1992-93	682.73	13.13	544.80	1240.66
1993-94	823.01	25.25	659.52	1507.78
1994-95	1006.01	33.83	881.93	1922.57
1995-96	1182.58	33.44	932.33	2148.35
1996-97	1320.87	31.94	1053.34	2406.15
1997-98	1455.79	35.41	1187.25	2678.44
1998-99	1689.44	37.36	1363.88	3090.68
1999-00	1890.82	30.34	1496.81	3417.96
2000-01	2095.50	36.13	1662.70	3794.33
2001-02	2095.50	28.31	1791.99	4228.24
2002-03	2407.94	32.19	1987.57	4735.58
2003-04	2715.81	50.97	2586.26	5786.94
2004-05	3149.71	64.54	2869.98	6497.66
2005-06	3563.14	68.43	4074.23	8263.89
2006-07	4121.24	74.67	4776.04	9679.25
2007-08	5684.10	90.27	5783.72	11558.10
2008-09	6654.50	55.33	5886.88	12596.71
2009-10	7674.92	38.06	7179.70	14892.68

Year	Currency with the public	Other Deposit with the RBI	Demand Deposits	Narrow Money (M1)
1	2	3	4	5 = (2 + 3 + 4)
2010-11	9118.36	36.53	7228.56	16383.45
2011-12	10236.70	28.22	7109.02	17373.94
2012-13	11410.61	32.40	7532.25	18975.26
2013-14	12483.44	19.65	8043.86	20546.95

Source : Handbook of Statistics on Indian Economy

Table-2 Growth Rate (%) Of The Narrow Money (M_1) After Reforms Period

(In Billion)

Year	Annual Growth Rate (%)of Currency with the public	Annual Growth Rate (%)of Other Deposits with the RBI	Annual Growth Rate (%)of Demand Deposits	Annual Growth Rate (%)of Narrow Money
1990-91	14.58	12.70	14.65	14.60
1991-92	15.18	31.30	33.83	23.16
1992-93	11.74	48.36	3.92	8.44
1993-94	20.54	92.30	21.06	21.53
1994-95	20.54	33.99	33.72	27.50
1995-96	17.46	- 1.16	5.71	11.74
1996-97	11.70	- 4.49	12.98	12.00
1997-98	10.21	10.87	12.71	11.31
1998-99	16.04	5.50	14.88	15.40
1999-00	11.91	- 18.80	9.74	10.59
2000-01	10.82	19.08	11.08	11.01
2001-02	10.82	- 21.64	7.78	11.43
2002-03	14.91	13.70	10.91	12.00
2003-04	12.79	58.34	30.12	22.20
2004-05	15.98	26.62	10.98	12.29
2005-06	13.12	6.02	41.97	27.19
2006-07	15.67	9.11	17.22	17.12
2007-08	17.71	20.90	21.10	19.41
2008-09	17.07	- 38.70	17.83	8.99
2009-10	15.33	- 31.21	21.97	18.22
2010-11	18.80	- 4.01	0.69	10.01
2011-12	12.27	- 22.74	− 16.53	6.04
2012-13	11.47	14.81	5.96	9.21
2013-14	9.40	- 39.36	6.80	8.29

Source-Analyzed from table1

Table No. 2 shows the growth rate of currency with the public after reforms period. The growth rate ups and downs for various times. The growth rate is in the financial year 1994-95 which is 22.33% and the growth rate is lowest in the financial year 2013-14 which is 9.40%. The growth rate decreases in various years and these are 1992-93, 1995-96, 1996-97, 1997-98, 1999-00, 2000-01, 2002-03, 2004-05, 2008-09, 2009-10, 2011-12, 2012-13, 2013-14 and the growth rate is successively 11.74%, 17.46%, 11.70%, 19.21%, 11.91%, 10.82%, 12.79%, 13.12%, 17.07%, 15.33%, 12.27%, 11.47%, 9.40%. The growth rate also increases for various years and these are 1991-92, 1993-94, 1994-95, 1998-99, 2001-02, 2003-04, 2005-06, 2006-07, 2007-08, 2010-11 and the growth rate is successively 15.18%, 20.54%, 22.33%, 16.04%, 14.91%, 15.98%, 15.67%, 17.17%, 17.71%, 18.80%. Actually after reforms period the growth rate of currency with the public decreases for thirteen (13) times and increases for ten (10) times.

Table No. 2 also shows the growth rate of other deposits with the RBI after reforms period. The growth rate fluctuates for many times. The growth rate is highest in the financial year 1993-94 and that is 92.30% and the growth rate is lowest in the financial year 2013-14 and that is – 39.36%. The growth rate decreases in various years and these are 1994-95, 1995-96, 1996-97, 1998-99, 1999-00, 2001-02, 2004-05, 2005-06, 2007-08, 2008-09, 2011-12, 2013-14 and the growth rate is successively 33.99%, - 1.16%, - 4.49%, 5.50%, - 18.80%, - 21.64%, 26.62%, 6.02%, - 38.70%, - 22.74%, - 39.36%. The growth rate also increases in various years and these are 1001-92, 1992-93, 1993-94, 1997-98, 2000-01, 2002-03, 2003-04, 2006-07, 2007-08, 2009-10, 2010-

11, 2012-13 and the growth rate is successively 31.30%, 48.26%, 92.30%, 10.87%, 19.08%, 13.70%, 58.34%, 9.11%, 20.90%, - 31.21%, -4.01%, 14.81%. Actually after reforms period the growth rate of other deposits with the RBI increases for twelve (12) times and decreases for eleven (11) times.

Table no. 2 shows also the growth rate of demand deposits after reforms period. The growth rate ups and downs for many times. The growth rate is highest in the financial year 2005-06 and that is 41.97% and the growth rate is lowest in the financial year 2011-12 and that is – 16.52%. The growth rate decreases for various times and these are 1992-93, 1995-96, 1997098, 1999-00, 2001-12, 2004-05, 2006-07, 2008-09, 2010-11, 2011-12 and the growth rate is successively --- 3.92%, 5.71%, 12.71%, 9.74%, 7.78%, 10.98%, 17.22%, 17.83%, 0.69%, - 16.53%. The growth rate also increases for various years and these are 1991-92, 1993-94, 1994-95, 1996-97, 1998-99, 2000-01, 2002-03, 2003-04, 2005-06, 2007-08, 2009-10, 2012-13, 2013-14 and the growth rate is successively --- 33.83%, 21.06%, 33.72%, 12.98%, 14.88%, 5.96%, 10.91%, 30.12%, 41.97%, 21.10%, 21.97%, 5.96%, 6.80%. Actually the growth rate of Demand Deposits after reforms period increases for thirteen (13) times and decreases for ten (10) times.

Table No. 2 also shows the growth rate of Narrow money (M1) after reforms period. The growth rate fluctuates for many times. The growth rate is highest in the financial year 1994-95 and that is 27.59% and the growth rate is lowest in the financial year 2001-12 and that is 6.04%. The growth rate decreases for various times and these are 1992-93, 1995-96, 1997-98, 1999-00, 2004-05, 2006-07, 2008-09, 2010-11, 2011-12, 2011-12, 2013-14 and the growth rate is successively 8.44%, 11.74%, 11.31%, 10.59% 12.29%, 17.12%, 8.99%. The growth rate also increases for various times and these are 1991-92, 1993-94, 1994-95, 1996-97, 1998-99, 2000-01, 2001-02, 2002-03, 2003-04, 2005-06, 2007-08, 2009-10, 2012-13 and the growth rate is successively 23.16%, 21.53%, 27.50%, 12.00%, 15.40%, 15.40%, 11.01%, 11.43%, 12.00%, 22.20%, 27.19%, 19.41%, 18.22%, 9.21%. Actually the growth rate of narrow money (M1) after reforms period increases for thirteen (13) times and decreases for ten times.

Table-3trend And Patterns Of The Broad Money (M_3) After Reforms Period

(Billion)

Year	Time Deposits	Narrow Money (M_1)	Broad Money (M_3)
1	2	3	4
1990-91	1729.36	928.92	2658.28
1991-92	2026.43	1144.06	31.70.49
1992-93	2399.50	1240.66	3640.16
1993-94	2803.06	1507.78	4310.84
1994-95	3353.38	1922.57	5275.96
1995-96	3843.56	2148.35	5991.91
1996-97	4553.97	2406.15	6969.12
1997-98	5534.88	2678.44	8213.32
1998-99	6718.92	3090.68	9809.60
1999-00	7823.78	3417.96	11241.74
2000-01	9337.71	3794.33	13132.04
2001-02	10755.12	4228.24	14983.36
2002-03	12443.79	4735.58	17179.36
2003-04	14269.60	5786.94	20056.54
2004-05	15958.87	6497.66	22456.53
2005-06	18931.04	8263.89	27194.93
2006-07	23421.13	9679.25	33100.38
2007-08	28620.46	11558.10	40178.55
2008-09	35351.05	12596.71	47947.75
2009-10	41134.30	14892.68	56026.98
2010-11	48657.71	16383.45	65041.16
2011-12	56474.37	17373.94	73848.31
2012-13	64922.93	18975.26	83898.19
2013-14	74426.30	20546.95	94973.26

Source : Handbook of Statics on Indian Economy

Table-4 Growth Rate Of The Broad Money (M_3) After Reforms Period

(Billion)

Year	Annual Growth Rate (%)of Time Deposits	Annual Growth Rate (%)of Narrow Money	Annual Growth Rate (%)of Broad Money
1990-91	15.38	14.60	15.10
1991-92	17.18	23.16	19.27
1992-93	18.41	8.44	14.81
1993-94	16.81	21.53	18.42
1994-95	19.63	27.50	22.39
1995-96	14.61	11.74	13.58
1996-97	18.49	12.00	16.16
1997-98	21.53	11.31	18.00
1998-99	21.39	15.40	19.43
1999-00	16.44	10.59	14.60
2000-01	19.36	11.01	16.81
2001-02	15.18	11.43	14.10
2002-03	15.70	12.00	14.66
2003-04	14.68	22.20	16.74
2004-05	11.83	12.29	11.97
2005-06	18.62	27.19	21.10
2006-07	23.71	17.12	21.71
2007-08	22.20	19.41	21.39
2008-09	23.51	8.99	19.33
2009-10	16.36	18.22	16.86
2010-11	18.29	10.01	16.09
2011-12	16.06	6.04	13.54
2012-13	14.96	9.21	13.60
2013-14	14.63	8.29	13.20

Source-Analyzed from table no 3

Table No. 4 shows the growth rate of Time Deposits after reforms Period. The growth rate fluctuates various times. The growth rate is highest in the financial year 2006-07 and that is 23.71% and the growth rate is lowest in the financial year 2004-05 and that is 11.83%. The growth rate decreases for various times and these are 1993-94, 1995-96, 1998-99, 1999-00, 2001-02, 2003-04, 2004-05, 2007-08, 2009-10, 2011-12, 2012-13, 2013-14 and the growth rate is successively 16.81%, 14.61%, 21.39%, 16.44%, 15.18%, 14.68%, 11.83%, 22.20%, 16.36%, 16.06%, 14.96%, 14.63%. The growth rate also increases for various times and these are 1991-92, 1992-93, 1994-95, 1996-97, 1997-98, 2000-01, 2002-03, 2005-06, 2006-07, 2008-09, 2010-11 the growth rate is successively 17.18%, 18.41%, 19.63%, 18.49%, 21.53%, 19.36%, 15.70%, 18.62%, 23.71%, 23.51%, 18.29%. Actually, according to table No. 17 the growth rate of time deposits after reforms period increases for eleven times and decreases for twelve times.

Table No.4 also shows the growth rate of Broad Money (M_3) after the reforms period. The growth Rate of Broad Money fluctuates various times. The growth rate is highest in the financial year 1994-95 and that is 22.39% and the growth rate is lowest in the financial year 2004-05 and that is 11.97%. The growth rate decreases for various times and these are 1992-93, 1995-96, 1999-00, 2001-02, 2004-05, 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2013-14 and the growth rate is successively 14.81%, 13.58%, 14.60%, 14.10%, 11.97%, 21.39%, 19.33%, 16.86%, 16.09%, 13.54%, 13.20%. The growth rate also increases for various times and these are 1991-92, 1993-94, 1994-95, 1996-97, 1997-98, 1998-99, 2000-01, 2002-03, 2003-04, 2005-06, 2006-07, 2012-13 and the growth rate is successively 19.27%, 18.42%, 22.39%, 16.16%, 18.00%, 19.43%, 16.81%, 14.66%, 16.74%, 21.10%, 21.71%, 13.60%. Actually according to table No. 18 the growth rate of Broad Money (M_3) after reforms period increases for twelve (12) times and decreases for eleven (11) times.

III. Importance Of Agriculture In Indian Economy-

Actually Indian Economy is one of the world's oldest agrarian economics even when our ancestors were growing rice and barley at a time then the Europeans were hunting boars and huddling around peat fires. Basically, Agriculture is the primary sector and has a crucial role to play in the country's economic development. Agriculture provides food (more than fifty percent of income is spent on food by eighty percent

of population in urban areas and ninety-five percent in rural areas) and raw materials, employment, national income, capital for its own development.

3.1-Role For National Income

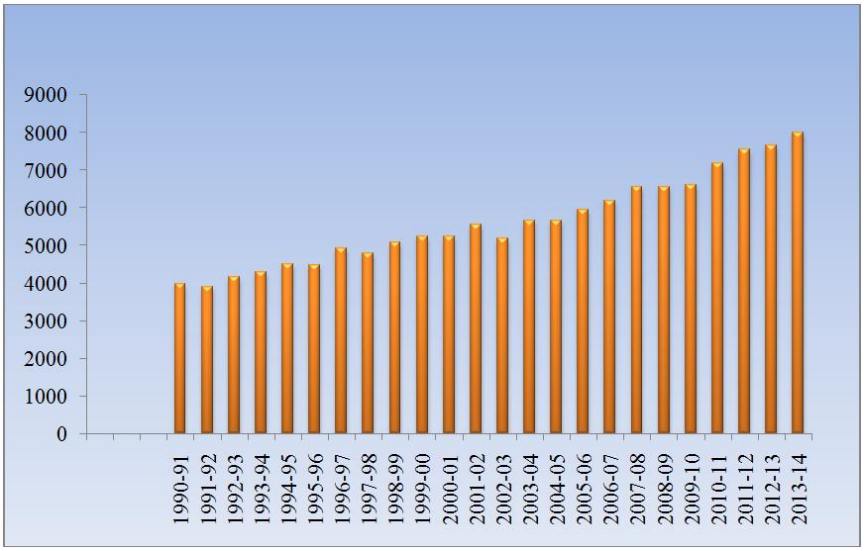
Agricultural Sector contributes a significant share to the national income in India. The role of agriculture for GDP (at factor cost) is shown through the table No. 23. The table shows the GDP from 1990-91 to 2013-14 because the study includes only post-reforms Period --- We can easily understand the share of agriculture through this…

Table-5 **Components Of Gross Domestic Product (At Factor Cost)**

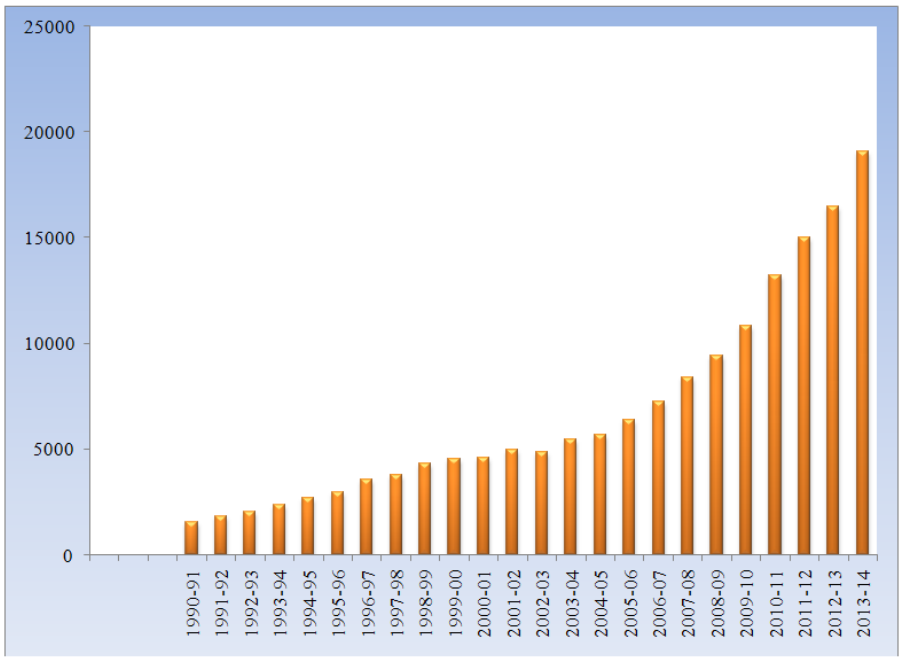
(` Billion)				
Year	Agriculture & Allied Activities		Agriculture	
	At Constant Prices	At Current Prices	At Constant Prices	At Current Prices
1	2	3	4	5
Base Year : 2004-05				
1990-91	3979.71	1543.50	3361.76	1311.08
1991-92	3902.01	1803.13	3284.07	1543.77
1992-93	4161.53	2022.19	3515.84	1728.14
1993-94	4299.81	2345.66	3627.64	2001.14
1994-95	4502.58	2701.07	3799.59	2300.30
1995-96	4471.27	2937.01	3762.43	2504.26
1996-97	4914.84	3531.42	4153.77	3026.74
1997-98	4789.33	3747.44	4030.30	3181.71
1998-99	5092.03	4303.84	4317.19	3677.99
1999-00	5227.95	4553.02	4421.13	3894.14
2000-01	5227.55	4606.08	4394.32	3887.22
2001-02	5541.57	4986.20	4678.15	4205.96
2002-03	5175.59	4850.80	4297.52	4044.91
2003-04	5643.91	5446.67	4763.24	4591.58
2004-05	5654.26	5654.26	4766.34	4766.34
2005-06	5944.87	6377.72	5029.96	5368.22
2006-07	6191.90	7229.84	5237.45	6046.72
2007-08	6550.80	8365.18	5569.56	7162.76
2008-09	6556.88	9432.05	5554.42	8066.46
2009-10	6609.87	10835.14	5577.15	9285.86
2010-11	7178.14	13196.86	6109.05	11435.17
2011-12	7538.31	14990.98	6435.43	13005.69
2012-13	7645.09	16449.26	6494.24	14174.68
2013-14	8005.48	19063.48	.	.

Notes : 1. Data for 2013-14 are Provisional. **Source :** Central Statistics Office (CSO).
2. Data for 2012-13 are First Revised Estimates
.3.Datafor2011-12areSecondRevisedEstimates.

Bar Diagram – 1
Gdp Of Agriculture & Allied Activities
At Constant Prices

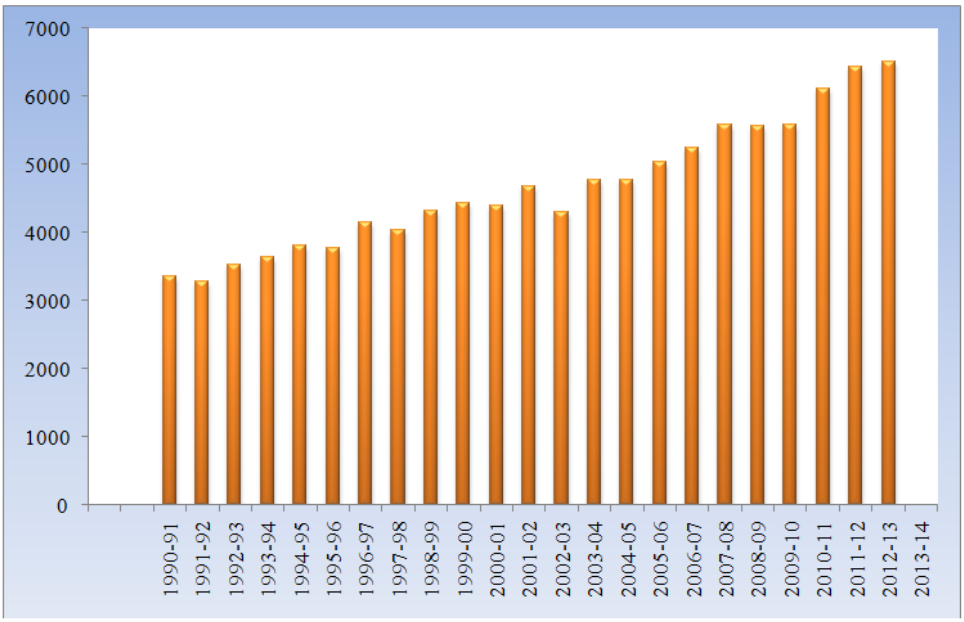


Bar Diagram – 2
Gdp Of Agriculture & Allied Activities
At Current Prices

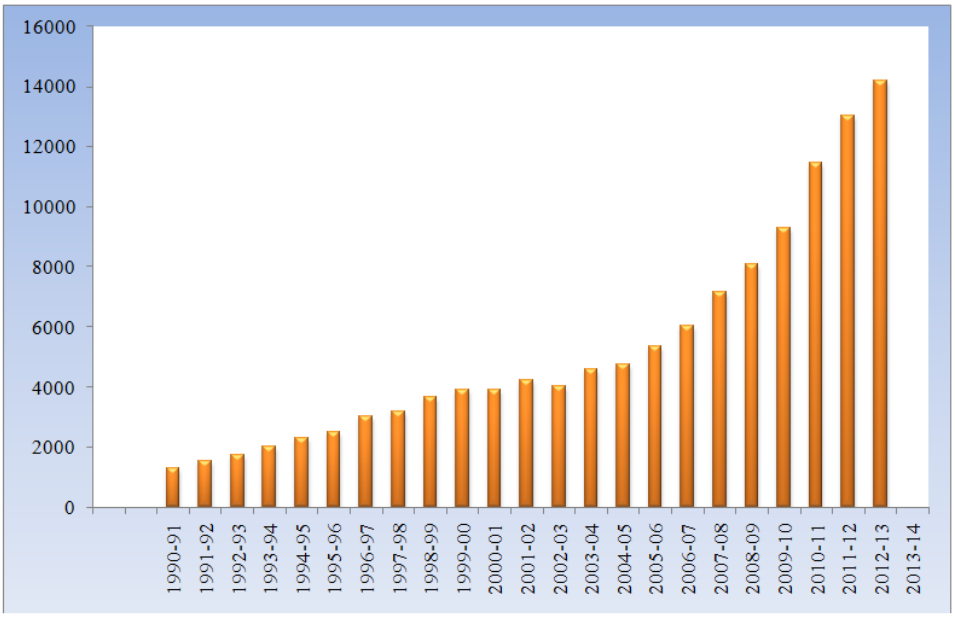


Bar Diagram – 3

Gdp Of Agriculture
At Constant Prices



Bar Diagram - 4
Gdp Of Agriculture
At Current Prices



3.2-Role For Employment – As we know that India is one of the oldest agrarian economics, maximum rural population depends on it for livelihood. Above 50 percent of Indian population are employed in this sector as a cultivators or as an agricultural workers. The scenario of agricultural employment is shown through the tables –

TABLE-6- Population and Agricultural Workers

Year	Total Population	Average Annual Exponential Growth Rate (%)	Rural Population	% of Total Population	Agricultural Workers				
					Cultivators	% of total Agricultural workers	Agricultural laborers	% of total Agricultural workers	Total Agricultural workers
1	2	3	4	5	6	7	8	9	10
1951	361.1	1.25	298.6	82.7	69.9	71.9	27.3	28.1	97.2
1961	439.2	1.96	360.3	82.0	99.6	76.0	31.5	24.0	131.1
1971	548.2	2.20	439.0	80.1	78.2	62.2	47.5	37.8	125.7
1981	683.3	2.22	525.6	76.9	92.5	62.5	55.5	37.5	148.0
1991	846.4	2.16	630.6	74.5	110.7	59.7	74.6	40.3	185.3
2001	1028.7	1.97	742.6	72.2	127.3	54.4	106.8	45.6	234.1
2011	1210.8	1.50	833.7	68.9	118.7	45.1	144.3	54.9	263.0

Source: The Ministry of Agriculture

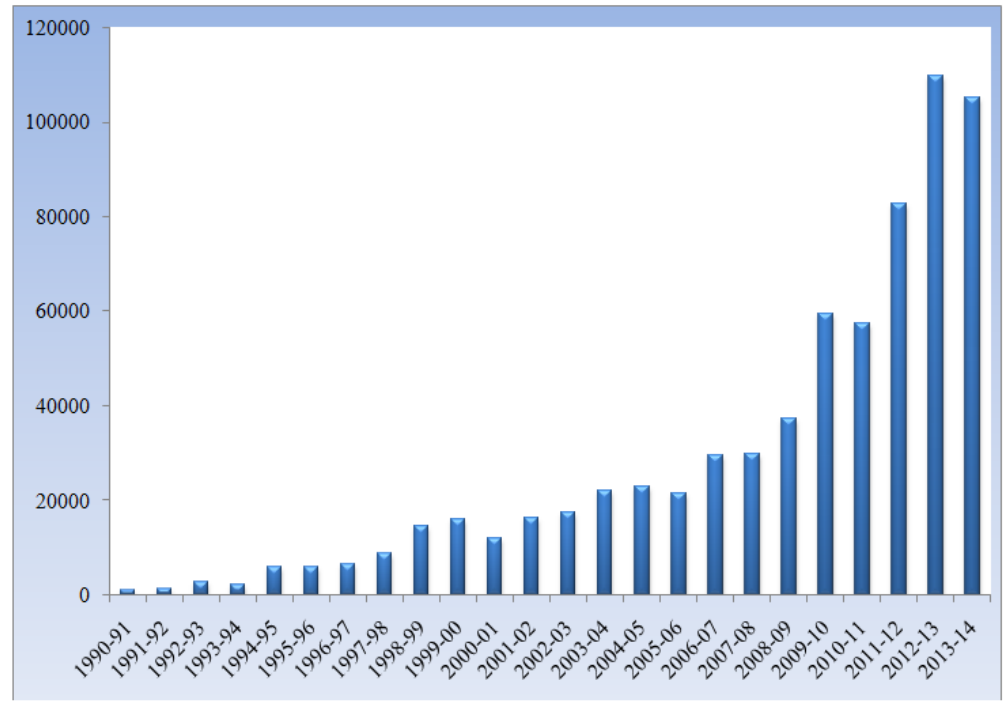
3.3-ROLE FOR FOREIGN TRADE- Indian agriculture has a role in the country's foreign trade. The main products which are exported are tea, fruits, vegetables, spices, tobacco, cotton, coffee, sugar and sugar products, hides and skins, raw wool and other varieties of animals hair, vegetable oils, cotton and jute textiles etc. The major imported products are rubber, wool, agricultural machinery and technology etc. The role of agriculture in foreign trade is shown through the following table ---

Table-7 India's Imports And Exports Of Agricultural Commodities

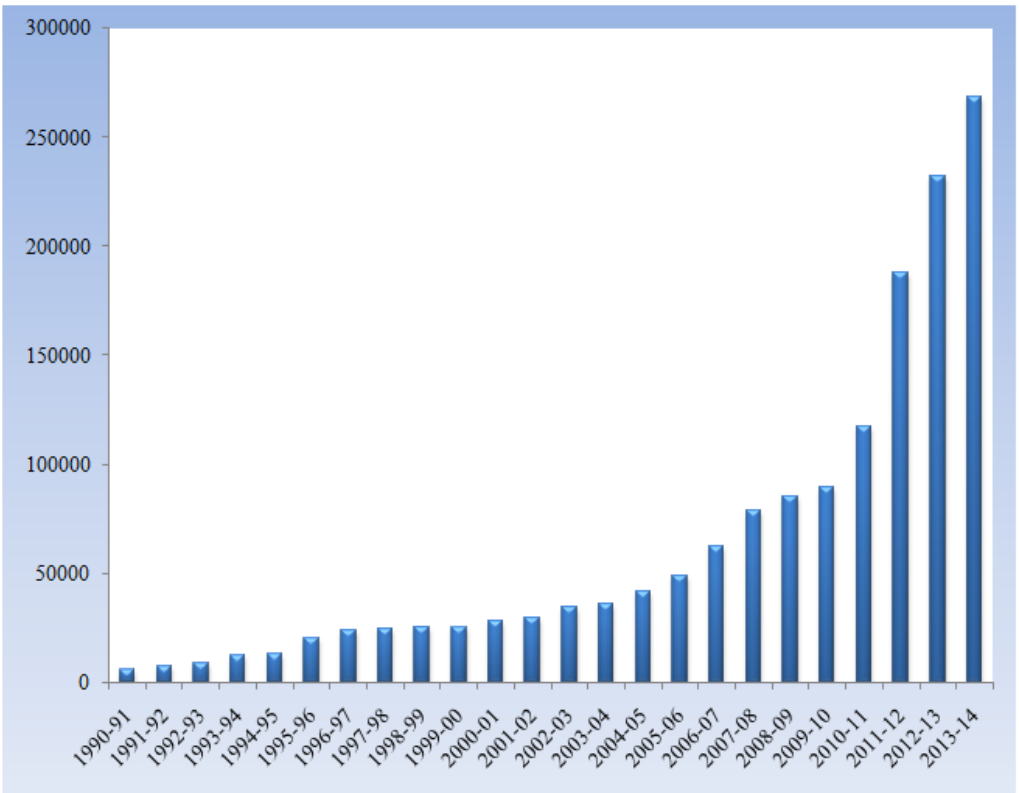
Year	Agriculture Imports	Total National Imports	% of Agriculture Imports of Total National Imports	Agriculture Exports	Total National Exports	% of Agriculture Exports of Total National Exports
1	2	3	4	5	6	7
1990-91	1205.86	43170.82	2.79	6012.76	32527.28	18.49
1991-92	1478.27	47850.84	3.09	7838.04	44041.81	17.80
1992-93	2876.25	63374.52	4.54	9040.30	53688.26	16.84
1993-94	2327.33	73101.01	3.18	12586.55	69748.85	18.05
1994-95	5937.21	89970.70	6.60	13222.76	82673.40	15.99
1995-96	5890.10	122678.14	4.80	20397.74	106353.35	19.18
1996-97	6612.60	138919.88	4.76	24161.29	118817.32	20.33
1997-98	8784.19	154176.29	5.70	24832.45	130100.64	19.09
1998-99	14566.48	178331.69	8.17	25510.64	139751.77	18.25
1999-00	16066.73	215528.53	7.45	25313.66	159095.20	15.91
2000-01	12086.23	228306.64	5.29	28657.37	201356.45	14.23
2001-02	16256.61	245199.72	6.63	29728.61	209017.97	14.22
2002-03	17608.83	297205.87	5.92	34653.94	255137.28	13.58
2003-04	21972.68	359107.66	6.12	36415.48	293366.75	12.41
2004-05	22811.84	501064.54	4.55	41602.65	375339.53	11.08
2005-06	21499.22	660408.90	3.26	49216.96	456417.86	10.78
2006-07	29637.85	840506.31	3.53	62411.42	571779.28	10.92
2007-08	29906.23	1012311.70	2.95	79039.52	655863.52	12.05
2008-09	37183.04	1374435.55	2.71	85551.67	840755.06	10.18
2009-10	59528.37	1363735.55	4.37	89341.50	845533.64	10.57
2010-11	57334.32	1683466.96	3.41	117483.61	1142921.92	10.28
2011-12	82819.15	2345463.24	3.53	187609.33	1465959.39	12.80
2012-13	109610.68	2669161.96	4.11	232041.11	1634318.84	14.20
2013-14	105149.00	2714181.50	3.87	268469.05	1894181.95	14.17

Source : The Ministry of Agriculture

Bar Diagram – 5
Total Agricultural Imports



Bar Diagram – 6
Total Agricultural Exports



3.4-ROLE FOR CAPITAL FORMATION – Actually, agriculture which plays an important role in National Income, Employment and Foreign Trade is also a source of capital formation for the Indian Economy. The development of an economy depends on the rate of capital formation. After independence both public and private investment has been made in Agriculture. In areas where Agricultural practices are traditional, investment has also been traditional like land developments, carts, livestock, etc. and in progressive areas modern technology has been adopted. The scenario of capital formation is shown through Table 8 ---

TABLE-8 GROSS CAPITAL FORMATION IN AGRICULTURE AND ALLIED SECTOR (AT CURRENT PRICES) (Rs. Crore)

Year	GCF in Agriculture & Allied Sector			GCF of Economy (by industry of use)			Share of Agriculture & Allied Sector in Total GCF (%)		
	Public Sector	Private Sector	Total	Public Sector	Private Sector	Total	Public Sector	Private Sector	Total
1	2	3	4	5	6	7	8	9	10
2004-05	16187	59909	76096	240580	770598	1011178	6.7	7.8	7.5
2005-06	20739	69204	89943	293350	931331	1224681	7.1	7.4	7.3
2006-07	25606	75496	101102	356556	1134319	1490875	7.2	6.7	6.8
2007-08	27638	95679	123317	441923	1401285	1843208	6.3	6.8	6.7
2008-09	26692	133655	160347	531730	1396160	1927890	5.0	9.6	8.3
2009-10	33201	151325	184526	592788	1642155	2234943	5.6	9.2	8.3
2010-11	31968	165396	197364	656448	2024131	2680579	4.9	8.2	7.4
2011-12	36887	214818	251705	695835	2335823	3031658	5.3	9.2	8.3
2012-13	45511	232328	277839	821966	2420761	3242727	5.5	9.6	8.6

Source: Central Statistics Office, New Delhi

4-The Production Scenario Of Indian Agriculture-

As we know the science, art or occupation which is related with cultivating land, raising crops, and feeding, breeding and raising livestock; farming is called Agriculture. According to Wendell Berry "Eating is an agricultural act."

Actually the written history of Agriculture in India dates back to the Rig-Veda, written about 1100BC and today, India ranks 2nd worldwide in farm output.

According to 2010 FAO world agriculture statistics, India is the world's largest producer of many fresh fruits' and vegetables, milk, major spices, select fibrous crops such as jute, several, staples such as millets and castor oil seed. In fact, India is the second largest producer of wheat and rice.

The various agricultural crops is divided into two major groups → food grains and non-food grains. Food grains include all the food items cereals and pulses like rice, pulses, wheat, barley, maize, bajra etc. On the other hand, non-food grains include cash crops like jute, cotton, oil seeds, sugarcane etc.

But season wise the crops are divided between Kharif crops and Rabi crops. Actually the Kharif crops are usually which are known as monsoon crops are cultivated and harvested in the rainy season in India. Actually, in India, the Kharif season varies by state and crop, starting at the earliest in May and ending at the latest in January but is popularly considered to start in June and to end in October. Kharif crops are depend upon the rainy season. Most common Kharif crops are Rice, Millets, Maize, Moog Bean. Urad Bean, Cotton, Soya-bean etc.

On the other hand, Rabi crops refer to agricultural crops sown in winter and harvested in the Spring. These crops are sown around mid-November, after the monsoon rains, are over and harvesting begins in April/May. Rabi crops' main source of water is rainwater that has percolated into the ground. These crops need irrigation facility. In fact, a good rain in winter spoils these crops. In fact, many crops are cultivated in both Kharif and Rabi seasons. The example of Rabi crops are wheat, gram, pea, Mustard, linseed, barley etc. The production scenario of Indian Agriculture is shown through table No. 9---

Table-9season-Wise Area, Production And Yield Of Food Grains After The Reforms Period

A = Area in Million Hectares
P = Production in Million Tons'
Y = Yield in Kg/Hectare

Year	Kharif			Rabi			Total		
	A	P	Y	A	P	Y	A	P	Y
	2	3	4	5	6	7	8	9	10
1990-91	80.78	99.44	1231	47.06	76.95	1635	127.84	176.39	1380
1991-92	78.02	91.59	1174	43.85	76.79	1751	121.87	168.38	1382
1992-93	77.92	101.47	1302	45.23	78.01	1725	123.15	179.48	1457
1993-94	75.81	100.40	1324	46.94	83.86	1787	122.75	184.26	1501
1994-95	75.19	101.09	1344	48.67	90.41	1858	123.86	191.50	1546
1995-96	73.60	95.12	1292	47.42	85.30	1799	121.02	180.42	1491
1996-97	75.34	103.82	1379	48.24	95.52	1980	123.58	199.34	1613
1997-98	74.37	101.58	1370	49.70	90.68	1825	124.07	192.26	1550
1998-99	73.99	102.91	1391	51.18	100.69	1967	125.17	203.60	1627
1999-00	73.24	105.51	1441	49.87	104.29	2091	123.11	209.80	1704
2000-01	75.22	102.09	1357	45.83	94.73	2067	121.05	196.81	1626
2001-02	74.23	112.07	1510	48.55	100.78	2076	122.78	212.85	1734
2002-03	68.56	87.22	1272	45.30	87.55	1933	113.86	174.77	1535
2003-04	75.44	117.00	1551	48.01	96.19	2004	123.45	213.19	1727
2004-05	72.26	103.31	1430	47.82	95.05	2004	120.08	198.36	1652
2005-06	72.72	109.87	1511	48.88	98.73	2020	121.60	208.60	1715
2006-07	72.67	110.58	1522	51.04	106.71	2091	123.71	217.28	1756
2007-08	73.58	121.00	1644	50.49	109.77	2174	124.07	230.78	1860
2008-09	71.45	118.18	1654	51.39	116.28	2263	122.85	234.47	1909
2009-10	69.51	104.00	1496	51.83	114.11	2202	121.34	218.11	1798
2010-11	72.42	120.90	1669	54.25	123.60	2278	126.67	244.50	1930
2011-12	72.08	131.27	1821	52.67	128.01	2430	124.75	259.29	2078
2012-13	67.69	128.07	1892	53.09	129.06	2431	120.78	257.13	2129
2013-14	69.26	129.24	1866	56.78	135.53	2387	126.04	264.77	2101

Source-The Ministry of Agriculture

Table-10 Comparison Between Kharif Crops And Rabi Crops

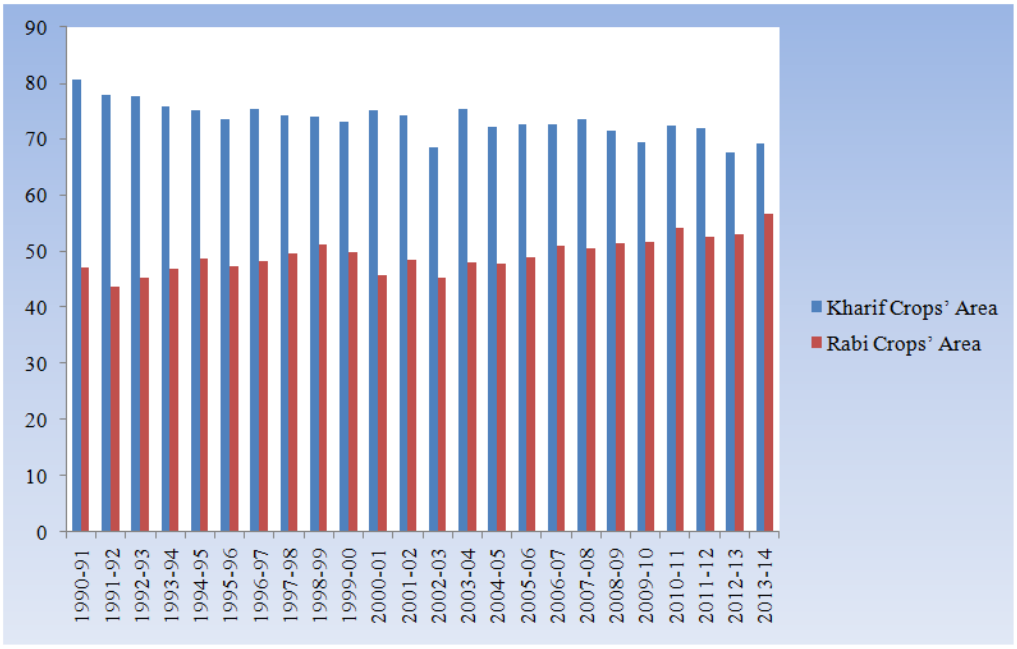
Area in Million Hectares
Production in Million Tons'
Yield in Kg/Hectare
Growth Rate in %.

Year	Kharif Crops' Area	Growth Rate (%) of Kharif Crops' Area	Kharif Crops' Production	Growth Rate(%) of Kharif Crops' Production	Yield of Kharif Crops'	Growth Rate (%) of Yield of Kharif Crops'	Rabi Crops' Area	Growth Rate (%) of Rabi Crops' Area	Rabi Crops' Production	Growth Rate (%) of Rabi Crops' Production	Yield of Rabi Crops'	Growth Rate (%) of Yield of Rabi Crops'
1	2	3	4	5	6	7	8	9	10	11	12	13
1990-91	80.78	− 0.77	99.44	− 1.53	1231	− 0.80	47.06	3.72	76.95	9.86	1635	5.90
1991-92	78.02	− 3.41	91.59	− 7.90	1174	− 4.63	43.85	− 6.82	76.79	− 0.20	1751	7.10
1992-93	77.92	− 0.12	101.47	10.79	1302	10.90	45.23	3.14	78.01	1.59	1725	− 1.49
1993-94	75.81	− 2.70	100.40	− 1.06	1324	1.69	46.94	3.79	83.86	7.50	1787	3.60

1994-95	75.19	− 0.81	101.09	0.69	1344	1.51	48.67	3.69	90.41	7.81	1858	3.98
1995-96	73.60	− 2.11	95.12	− 5.90	1292	− 3.87	47.42	− 2.57	85.30	− 5.66	1799	− 3.18
1996-97	75.34	2.37	103.82	9.14	1379	6.73	48.24	1.72	95.52	11.99	1980	10.07
1997-98	74.37	− 1.29	101.58	− 2.16	1370	− 0.66	49.70	3.02	90.68	− 5.07	1825	− 7.82
1998-99	73.99	− 0.51	102.91	1.30	1391	1.53	51.18	2.97	100.69	11.03	1967	7.79
1999-00	73.24	− 1.01	105.51	2.52	1441	3.60	49.87	− 2.56	104.29	3.58	2091	6.30
2000-01	75.22	2.70	102.09	− 3.24	1357	− 5.82	45.83	− 8.10	94.73	− 9.17	2067	−1.14
2001-02	74.23	− 1.31	112.07	9.78	1510	11.28	48.55	5.93	100.78	6.39	2076	0.43
2002-03	68.56	− 7.63	87.22	− 22.18	1272	− 15.77	45.30	− 6.70	87.55	− 13.12	1933	−6.89
2003-04	75.44	10.03	117.00	34.14	1551	21.93	48.01	5.99	96.19	9.87	2004	3.68
2004-05	72.26	− 4.21	103.31	− 11.70	1430	− 7.80	47.82	− 0.40	95.05	− 1.19	2004	0
2005-06	72.72	0.63	109.87	6.34	1511	5.67	48.88	2.21	98.73	3.88	2020	0.80
2006-07	72.67	− 0.06	110.58	0.64	1522	0.72	51.04	4.41	106.71	8.09	2091	3.51
2007-08	73.58	1.25	121.00	9.42	1644	8.01	50.49	− 1.08	109.77	2.87	2174	3.97
2008-09	71.45	− 2.90	118.18	− 2.33	1654	0.60	51.39	1.79	116.28	5.93	2263	4.10
2009-10	69.51	− 2.71	104.00	− 12.00	1496	− 9.56	51.83	0.86	114.11	− 1.87	2202	−2.70
2010-11	72.42	4.18	120.90	16.26	1669	11.57	54.25	4.67	123.60	8.31	2278	3.46
2011-12	72.08	− 0.47	131.27	8.58	1821	9.10	52.67	− 2.91	128.01	3.57	2430	6.68
2012-13	67.69	− 6.10	128.07	− 2.43	1892	3.90	53.09	0.80	129.06	0.82	2431	0.04
2013-14	69.26	2.31	129.24	0.91	1866	− 1.38	56.78	6.96	135.53	5.01	2387	−1.80

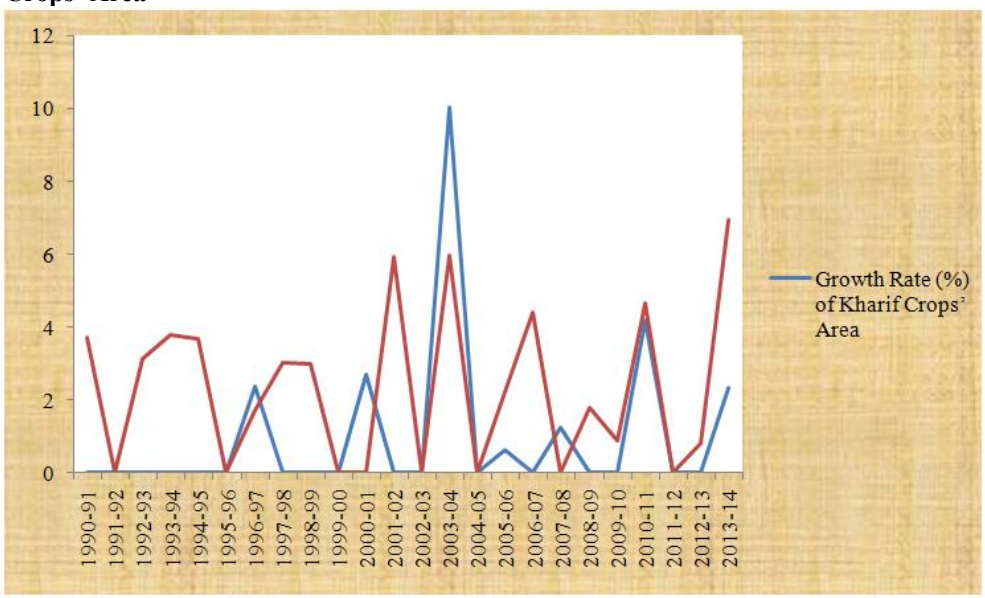
Source: Analyzed from Table No. 9

Bar Diagram – 7
Comparison Between Kharif Crops' Area And Rabi Crops' Area



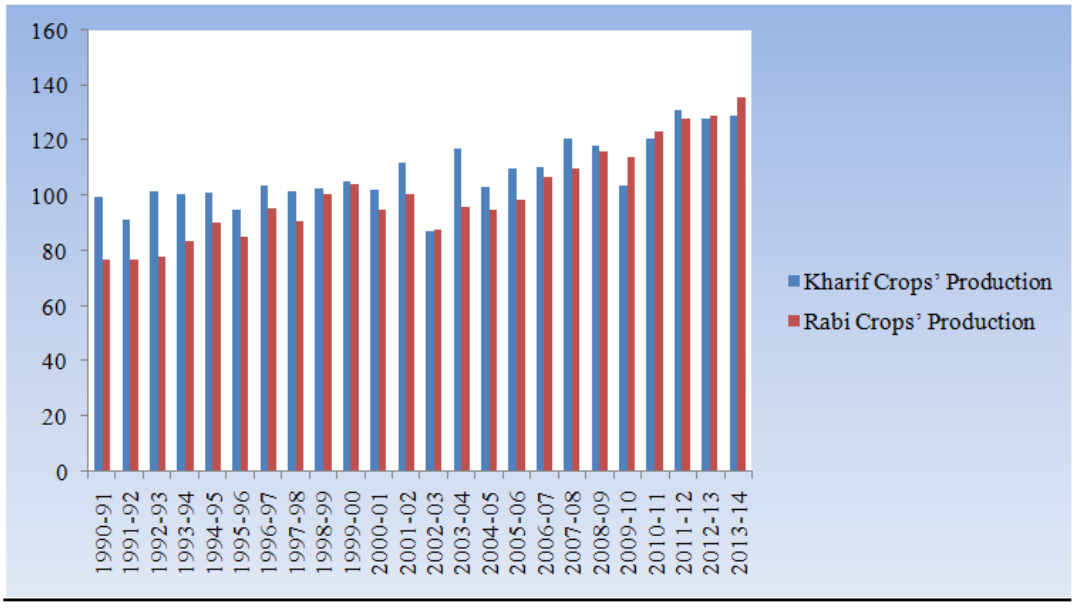
Line Chart – 1

Comparison Between The Growth Rates (%) Of Kharif Crops' Area And Rabi Crops' Area

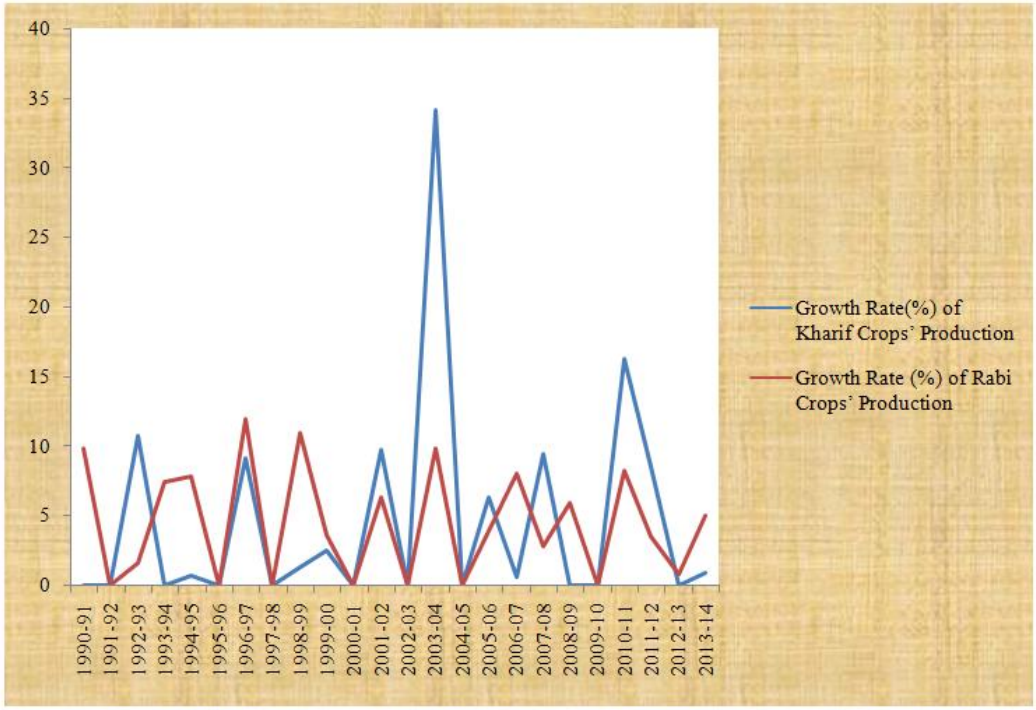


Bar Diagram – 8

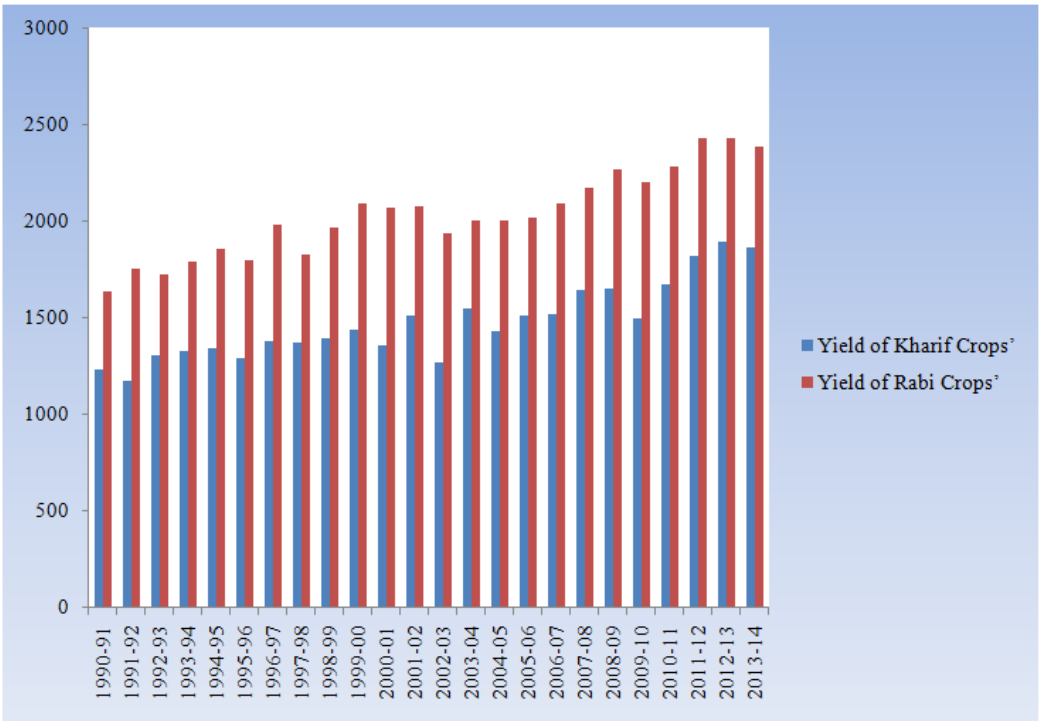
Comparison Between Kharif Crops' Production And Rabi Crops' Production



Line Chart – 2
Comparison Between The Growth Rates (%) Of Kharif Crops' Production And Rabi Crops' Production



Bar Diagram – 9
Comparison Between The Yield Of Kharif Crops' And Rabi Crops'



Line Chart – 3
Comparison Between The Growth Rates (%) Of Kharif Crops' Yield And Rabi Crops' Yield

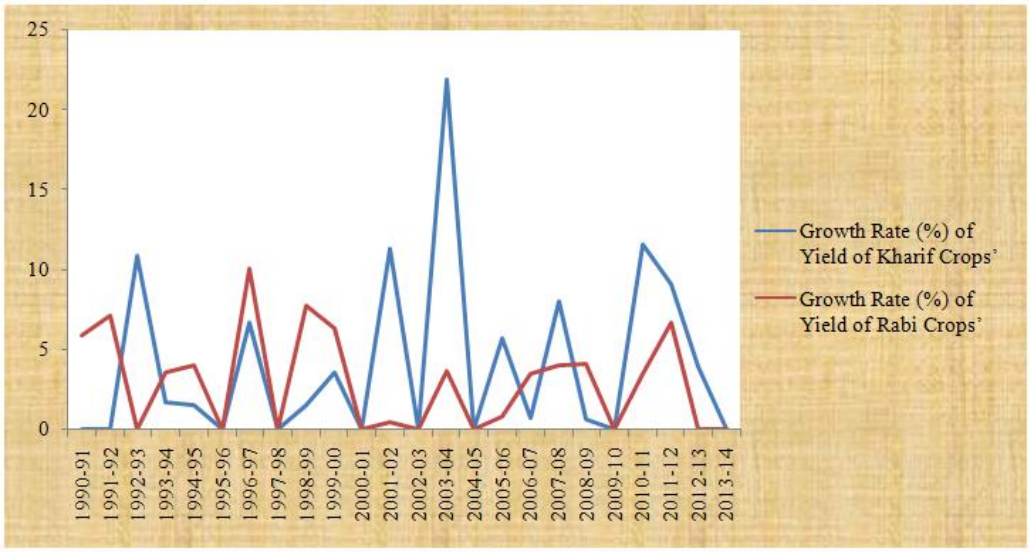


Table-11 Growth Rate (%) Of Both Kharif And Rabi Crops' After Reforms Period

Year	Annual Growth Rate (%)of Total Area	Annual Growth Rate (%)of Total Production	Annual Growth Rate (%)of Total Yield
1990-91	0.84	3.12	22.97
1991-92	− 4.67	− 4.54	0.14
1992-93	1.06	6.60	5.42
1993-94	− 0.32	2.67	3.01
1994-95	0.90	3.92	3.00
1995-96	− 2.30	− 5.79	−3.56
1996-97	2.11	10.49	8.19
1997-98	0.40	− 3.56	−3.90
1998-99	0.89	5.90	4.97
1999-00	− 1.64	3.04	4.73
2000-01	− 1.68	− 6.20	−4.58
2001-02	1.42	8.14	6.64
2002-03	− 7.27	− 17.90	−11.48
2003-04	8.42	21.99	12.50
2004-05	− 2.72	− 6.96	−4.34
2005-06	1.27	5.17	3.81
2006-07	1.73	4.17	2.40
2007-08	0.30	6.21	5.92
2008-09	− 0.99	1.60	2.63
2009-10	− 1.22	− 6.98	−5.81
2010-11	4.40	12.10	7.34
2011-12	− 1.51	6.04	7.67
2012-13	− 3.19	− 0.83	2.46
2013-14	4.36	2.98	−1.31

Source: Analyzed from Table No. 9

IV. Analyze The Impact Of Money Supply On Agriculture-

This is one of the important objectives of my study. Before estimating anything about this I try to find out the relationship between these variables. Actually, I had a doubt is there any relationship exists between this. So, I study "CORRELATION", a statistical tool which measuring the closeness of the relationship between the variables. I use "KARL PEARSON'S COEFFICIENT OF CORELATION for this study and find out the results.

The formula which I use for calculating Pearsonian Coefficient of Correlation is,

$$\mathbf{r} = \frac{\sum xy}{\sqrt{\sum x2 \times \sum y2}}$$

(Equation no 5)

$$\text{Where } \mathbf{x} = (\mathbf{X} - \bar{\mathbf{X}})$$
$$\text{and } \mathbf{y} = (\mathbf{Y} - \bar{\mathbf{Y}})$$

I calculate the relationship between Narrow Money (M_1) and Production growth and also for Broad Money(M_3) and production growth separately. The same is shown bellow:-

Table-12 Narrow Money Growth Rate&Total Production Growth Rate

Year	X Narrow Money (M_1) Growth Rate (%)	Y Total Production Growth Rate (%)
1990-91	14.60	3.12
1991-92	23.16	− 4.54
1992-93	8.44	6.60
1993-94	21.53	2.67
1994-95	27.50	3.92
1995-96	11.74	− 5.79
1996-97	12.00	10.49
1997-98	11.31	− 3.56
1998-99	15.40	5.90
1999-00	10.59	3.04
2000-01	11.01	− 6.20
2001-02	11.43	8.14
2002-03	12.00	− 17.90
2003-04	22.20	21.99
2004-05	12.29	− 6.96
2005-06	27.19	5.17
2006-07	17.12	4.17
2007-08	19.41	6.21
2008-09	8.99	1.60
2009-10	18.22	− 6.98
2010-11	10.01	12.10
2011-12	6.04	6.04
2012-13	9.21	− 0.83
2013-14	8.29	2.98

Source : Table No. 2 and Table No. 11

After calculating these two variables with the equation No. (5) I get the value of

$$\sum y^2 = 1470.28, \quad \sum x^2 = 804.27, \quad \sum xy = 193.66$$

$$\mathbf{So,} \quad \mathbf{r} = \frac{\mathbf{193.66}}{\sqrt{\mathbf{804.27 \times 1470.28}}}$$

$$\Rightarrow \quad \mathbf{r} = \frac{\mathbf{193.66}}{\sqrt{\mathbf{1182502.096}}}$$

$$\Rightarrow \mathbf{r} = \frac{\mathbf{193.66}}{\mathbf{1087.429122}}$$

$$\Rightarrow \boxed{r = +0.17}$$

Table No. – 13 Broad Money Growth Rate&Total Production Growth Rate

Year	X	Y
	Broad Money Growth Rate (%)	Total Production Growth Rate (%)
1990-91	15.10	3.12
1991-92	19.27	− 4.54
1992-93	14.81	6.60
1993-94	18.42	2.67
1994-95	22.39	3.92
1995-96	13.58	− 5.79
1996-97	16.16	10.49
1997-98	18.00	− 3.56
1998-99	19.43	5.90
1999-00	14.60	3.04
2000-01	16.81	− 6.20
2001-02	14.10	8.14
2002-03	14.66	− 17.90
2003-04	16.74	21.99
2004-05	11.97	− 6.96
2005-06	21.10	5.17
2006-07	21.71	4.17
2007-08	21.39	6.21
2008-09	19.33	1.60
2009-10	16.86	− 6.98
2010-11	16.09	12.10
2011-12	13.54	6.04
2012-13	13.60	− 0.83
2013-14	13.20	2.98

Source: Table No. 4and Table No. 11

After calculating these two variables with the equation No. (5) I get the value of

$$\sum x^2 = 210.43,\ \sum y^2 = 1470.28 \text{ and } \sum xy = 100.87$$

$$\textbf{So, } r = \frac{100.87}{\sqrt{210.43 \times 1470.28}}$$

$$\Rightarrow r = \frac{100.87}{\sqrt{309391.0204}}$$

$$\Rightarrow r = \frac{100.87}{556.2292876}$$

$$\Rightarrow \boxed{r = +0.18}$$

In Both cases coefficient are positive and it shows low degree of positive correlation. So, we can say Money Supply M_1 and M_3 has low degree of Positive correlation with production growth.

Now, I know both Money supply i.e. Narrow Money (M1) and Broad Money (M3) are correlated with the Agricultural Production. So, I can measure the impact of Money Supply on Agriculture with the help of Regression Analysis. Because, the statistical tool with the help of which we are in a position to estimate the unknown values of one variable from known values of another variable is called Regression. The formula which I use here that is calculated by Arithmetic Mean --- Regression equation of Y on X is thus ----

$$\mathbf{Y_C = a + bx \rightarrow (6)}$$

The two normal equation which help to determine the values of a and be are –

$$\mathbf{\sum y = Na + b\sum x \rightarrow (7)}$$
$$\mathbf{\sum xy = a\sum x + b\sum x^2 \rightarrow (8)}$$

Since $\sum x$ and $\sum y = 0$

Because $\mathbf{x = (X - \bar{X})}$

and $\mathbf{y = (Y - \bar{Y})}$

In this case,

$\mathbf{Na = 0}$ from equation No. → (7)

=> $\mathbf{a = 0}$

So, if I put **a** in No. → (8)

$$\mathbf{\sum xy = b\sum x^2}$$

So, $\mathbf{b = \frac{\sum xy}{\sum x^2}}$

So, in case of table no. 42,

=> $\mathbf{b = \frac{\sum xy}{\sum x^2}}$

=> $\mathbf{b = \frac{193.66}{804.27}}$

=> $\boxed{\mathbf{b = 0.24}}$

Put **a = 0** and **b = 0.24** in equation No. → (ii),
I get,

$\mathbf{Y_C = 0 + 0.24x}$

=> $\boxed{\mathbf{Y_C = 0.24x}}$

In case of table No. 43,

$\mathbf{b = \frac{\sum xy}{\sum x^2}}$

=> $\mathbf{b = \frac{100.87}{210.43}}$

$\mathbf{b = 0.48}$

=> Put **a = 0** and **b = 0.48** in equation No. → (ii)
I get,

$\mathbf{Y_C = 0 + 0.48x}$

=> $\boxed{\mathbf{Y_C = 0.48x}}$

The impact of Narrow Money(M_1) on production growth rate -

$\mathbf{Y_C = 0.24x}$ [x = Narrow Money (M_1)
y = Production]

and the impact of Broad Money (M_3) on Production Growth rate –

$\mathbf{Y_C = 0.48x}$ [x = Broad Money (M_3)
y = Production]

V. Findings

1-Trend of Narrow Money fluctuates after reforms period.
2- Trend of Broad Money fluctuates after reforms period.
3-Money Supply has a positive correlation with Agriculture.
4-Momey Supply has a positive impact on Agriculture.

VI. Suggestions

1-If we increase Money Supply Agricultural production will also increase.
2- We must increase Agricultural employment.
3-We must increase production as it increases National Income.
4-Agriculture also increases capital formation and foreign trade.

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