Explicit Subsidy versus Fiscal Consolidation - Towards Greater Economic Efficiency

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Note:

Preface

Research Center for Management Studies (RCMS), which was created five years ago at SDMIMD, has endeavoured to promote research in the field of management education in the Institute, in various ways. The Research Centre has encouraged faculty and students to actively take part in research activities jointly, collate and disseminate findings of the research activities through various types of projects to contribute to the body of knowledge to the academic fraternity in general, and management education in particular.

In this direction, keeping in line with the philosophy of promoting active research in the field of management to capture live situations and issues, the Research Center has taken a unique initiative to sponsor and encourage faculty members to carry out Applied Research Projects in various areas of management.

The duration of these projects is between four to eight months. At the end of the project, after peer review, a publication is taken out with an ISBN number by the institute. The projects help the faculty members, and the students, who work under the supervision of the faculty members for these projects, to identify issues of current importance in the field of management in various sectors. Data is collected mostly through primary research, through interviews and field study.

The institute takes into account the time and resources required by a faculty member to carry out such projects, and, fully sponsors them to cover the various costs of the project work (for data collection, travel, etc), thereby providing a unique opportunity to the two most important institutional stakeholders (faculty and students), to enrich their knowledge by extending their academic activities, outside the classroom learning situation, in the real world.

From the academic viewpoint, these projects provide a unique opportunity to the faculty and the engaging students to get a first-hand experience in knowing problems of targeted organizations or sectors on a face to face basis, thereby, helping in knowledge creation and its transfer, adding to the overall process of learning in a practical manner, with application of knowledge, as the focus of learning pedagogy, which is vital in management education.

Dr. Mousumi Sengupta

Chairperson, SDM RCMS

Acknowledgement

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Executive Summary

In India, the budgetary subsidy has increased enormously over the period of time. During 2002-03 and 2014-15, the budgetary subsidy rose by more than six-fold. Prominently, explicit subsidy with the components of food, fertilizer and fuel subsidies has comprised of more than 96 percent of the total budgetary subsidy of the Government of India. Though the Government has made some attempts in cutting down the subsidies for more efficient and effective functioning of the economy, the current progress in subsidy reforms is insufficient. It is eating away a lion's share in the Government's expenditure, which otherwise could have been deployed for building up physical and human capital assets. It is against this background the present study has been made to investigate empirically the impact of explicit subsidies on the fiscal consolidation of the Central Government. The study intends to draw attention of policy makers on how increasing subsidies not only puts the nation in the debt trap but also stagnates the capability of the man power. Secondary data from different sources have been procured for this research and they are analysed by employing statistical tools including multiple regression. Based on the outcome of the study, certain policy recommendations are made for fiscal discipline by rationalizing explicit subsidies. One of the prominent suggestions was to done away with subsidies to the maximum extent possible and target subsidies only to the financially weaker section of the economy and could be delivered directly to their bank accounts under Direct Benefit Scheme (DBS).

Key words: *Subsidy, Fiscal Deficit, Economic Efficiency, India.*

1. Introduction

Background : India, like other developing economies, grants substantial subsidies to the people. Subsidy has remained as an integral component of budget estimates of the Central Government and State Governments since 1951. Subsidy was the accepted model of growth when the independent Indian administrative machinery inclined more towards socialistic principles. Due to long period of foreign domination, frequent wars, persistent social and political mutinies, India was rendered backward. Country was grappled with poverty, unemployment, illiteracy, poor health and deep economic inequalities. Subsidy was the immediate short-run solution to the ailing Indian political economy. Thereafter, over the decades, the subsequent governments initiated many subsidy programmes in varied sectors with constantly increasing budgetary allocations. The Central Government, currently, has an allocation of more than 12 percent of its total expenditure for various subsidies. This amounts to about ₹ 2.56 lakh crore annually.

Should India still continue with subsidies and burden herself financially is the major questioned raised and debated over the last two decades. These discussions precede two major economic developments of India. Firstly, series of economic reforms since 1991, and secondly, joining World Trade Organisation (WTO) in 1995 as its founder member.

In fact, it is well known that since 1991 India shifted her growth paradigm from society-centric to market-centric. The market economy, expects minimum government interference. The role of the government is reduced to be complimentary and supplementary to market forces. Ultimately, 'survival of the fittest'- the basic philosophy of the free market guides the resource allocation in the national economy.

Under changed Indian economic environment, two schools of thought have emerged on the viability, feasibility and rationality of financing the subsidized programmes of the elected governments in India. The thinkers of socialist group of thought argue that the market outcome has divided the society glaringly into 'haves' and 'havenots'. Havenots, the poor are incapable of meeting the basic necessities of life in the open market. All those who are adversely affected by the market should be 'protected' by the government.

Subsidies can correct for the under consumption of goods. Subsidies are thus essential for maintaining social equity. While, free market economists urge the government to phase out all forms of subsidies. Their argument lies on the fact that subsidies are short-lived and they are economically inefficient as they make beneficiaries highly dependent on government schemes and hence discourage drive for efficiency, self-dependency, self-employment and income generating activates. Financing of subsidies' schemes involve a great degree of compromise on fiscal prudence. The growth through subsidy is neither sustainable nor fiscally disciplined.

Being the founder member of WTO, India signed an Agreement on Agriculture (AOA). As per the provisions of the agreement, India has to withdraw all the subsidies on farm inputs and export of agricultural products. India reiterated her commitment to the agreement in the successive WTO ministerial meetings. The global pressure on India to reduce and remove subsidy on phased manner is mounting. International credit rating agencies such as CRISIL, Standard & Poors, Fitch Ltd, are threatening India of downgrading her credit worthiness in the event of failure to adhere to low fiscal deficit. In spite of this, successive governments at the Centre and States have loaded their budget estimates with populist subsidized schemes.

Thus, the views are divided between 'free lunch' and 'no lunch is free lunch' models of growth. The dilemma for the Government is between social equity and economic efficiency. To resolve the dilemma and pursue clear cut policy, let us investigate the fiscal cost of the subsidy.

Objectives : The major objective of the study is to study the impact of subsidies on the fiscal front of the Government of India. The specific objectives are:

1. To study the composition of explicit subsidy (food, fertilizer and fuel) of India

2. To examine the impact of increasing subsidies on fiscal deficit in India

3. To analyse policy reform agenda of the Government and suggest roadmap for fiscal prudence.

Research Methodology

Variables: To facilitate the study, data have been collected pertaining to certain variables. As the present study focuses on the central explicit subsidies, food subsidy, fertilizer subsidy and fuel subsidy being the major explicit subsidies form the integral part of the research. Since the study also aims at assessing their impact on fiscal position of the Central Government, fiscal deficit has been selected as the best available proxy variable. Pertaining to these variables, some indicators have also been used for analysis. Such indicators are selected based on the results of past studies of eminent researchers. Details are given in the respective sub sections as applicable.

Data Collection: Data relating to the variables and indicators under study are essentially procured from authentic secondary sources. Reports/publications of the central government departments, RBI data portal and the Government of India data portal indiastat.com provided required data for the study.

Tools for Data Analysis: Inorder to facilitate the analysis of the collected data, simple statistical techniques like trend analysis, ratio analysis, and percentage analysis are applied. For advanced investigation, linear multiple regression technique has been estimated. The description of the estimated regression model is provided in the analysis section.

Review of Empirical Literature: Developing Conceptual Framework and Model

Several studies were made in the past on the critical issue of subsidies and their impact on the national exchequer. The empirical framework of the current study is drawn from the methodologies of few selected studies. One of the prominent studies which supplies valuable conceptual and empirical framework was the work of *Sharma (2012)*. He made an intensive study exclusively on food subsidy in India. This study estimates a regression model to explore the factors determining the food subsidy. From the results it was found that Government-led operational factors contribute largely towards growing subsidy. The study explores that increase in procurement price was main contributor to increase in economic cost of foodgrains which is responsible for rising food subsidy. Other components, which contributed to food subsidy, included open-ended procurement policy, increase in procurement costs mainly statutory charges by state

government on procurement of foodgrains, constant central issue prices and distribution costs. However, there has been an improvement in the efficiency of Food Corporation of India's (FCI) operations. For instance, share of administrative charges of procurement costs, and storage losses have declined during the last decade. Though FCI operates efficiently, it was not sufficient enough to reduce the subsidy. Thus the paper suggested for radical reforms for improving the efficiency of Government's operation of food subsidy.

Chand and Pandey (2008) studied the distortions and imbalances caused by the fertilizer subsidies. According to the findings of the study composition of fertilizers remained very uneven which has led to serious imbalances in use of N, P and K. The cumulative effect of this imbalance is considered detrimental for soil health and crop productivity. Main reason for this imbalance is found to be the price distortions caused by structure of fertiliser subsidy in favour of nitrogenous fertiliser. Based on the results and major observations, the study believes that trend in prices of agricultural products offer scope for reducing and rationalizing fertiliser subsidy to boost fertilizer production in the country and to reduce nutritional imbalances.

Gulati & Banerjee (2015) made an exhaustive study on the key issues relating to the fertilizer subsidies in India. Results of the study appear to be similar to the results of *Chand & Pandey (2008)*. The study brings out that though rising fertiliser subsidy in India has succeeded in increasing fertilizer consumption, it has led to three notable problems: rising amounts of fertiliser subsidy in the budget and their financially unsustainability; extremely low prices of urea leading to imbalanced use of N, P and K, as also misuse of urea (like diversion to neighbouring countries and its use for non-agricultural purposes); and lack of investment flows to the sector at home, leading to rising imports in the wake of uncertainty on fertiliser subsidy policy issues and delayed payments to industry. This paper suggests the following alternative policy options: switch to direct cash transfers to farmers on per ha basis, free up the urea sector with imports at zero duty, and let domestic prices be determined by demand and supply forces in open markets; take up a soil health care programme seriously; and encourage Indian investments in

nitrogenous fertilisers in Gulf countries (e.g., Iran, Kuwait, Oman, etc.) where gas prices are typically less compared to the pooled price in India, with some medium to long-term agreements for imports.

An empirical investigation by *Anand et.al (2013)* analyses the fiscal and welfare impacts of fuel subsidy reforms in India. The research observes that rising fuel subsidies have contributed to fiscal pressures in India. Fuel subsidies are found to be badly targeted, with the richest ten percent of households receiving seven times more in benefits than the poorest ten percent. Although subsidy reform would generate substantial fiscal savings, the associated increases in fuel and other prices would lower household real incomes of all income groups. Better targeting of fuel subsidies would fully protect lower income households while still generating substantial net fiscal savings. Lessons from subsidy reforms in other countries are identified and discussed.

Nag (2014) also reaches to the inference after a study that the administered price of petroleum products in India is much lower than their actual market value. This causes very huge under recoveries for oil marketing companies. Huge subsidy burden is borne by the government in order to compensate the mounting under recoveries of the public sector oil companies, causing a mammoth fiscal cliff on the government budget. The results follow with a set of recommendations towards radical reforms in fuel subsidy.

Research Gap and Rationale for Study

Most of the studies are segregate in nature. Studies focus on only specific segment of subsidy such as food or fertilizer or fuel etc. and examine the fiscal impact of the same on the Government. This gives us only partial and micro picture about impact of the subsidies. As observed from the available literature, hardly any attempt was made to investigate the combined impact of explicit subsidies of the Government of India and their relative share in the fiscal deficit. To fill this vacuum, the current study attempts to develop a model incorporating the major central explicit subsidy components.

Model Specification

Inorder to meet the objective of filling the absence of aggregate analysis of various components of explicit subsidy, a multivariate model is developed. As it is proved from the past studies that food, fertilizers. Currently, the allocation in the Central Government budget towards these explicit subsidies is about 96 percent of total subsidies. Under this pretext, the current study develops a functional model as stated below:

Fiscal Discipline = f (Central Explicit Subsidy)

From the review of literature it appears that food, fertiliser and fuel subsidies are the prominent explicit subsidies and hence they form the explanatory variables in determining the fiscal deficit which is the proxy for fiscal discipline. Thus the model estimated under the study could be spelled as:

$$Y = f(X_1 + X_2 + X_3)$$

Wherein, Y if fiscal deficit, X_1 is food subsidy, X_2 is fertilizer subsidy and X_3 is fuel subsidy.

Central Explicit Subsidy

The explicit subsidy of the Central Government of India comprises of primarily food subsidy, fertilizer subsidy and fuel subsidy. It accounts for major share in the total subsidy allocation of the government. In the year 2014-15, explicit subsidy accounted for more than 96 percent of the total subsidy allocation of the Central Government which was up from less than 93 percent in 2002-03 (Table-1). In the year 2002-03 the total explicit subsidy was ₹ 41450 crore, of which food subsidy alone accounted for more than 58 percent. By 2014-15 (BE), the explicit subsidy rose to ₹ 246397 crore with little change in its structural composition. Though the share of food subsidy has declined to about 47 percent, still it continues to contribute major share to the explicit subsidy. During the period 2002-03 and 2014-15, fertilizer subsidy increased by about six times from ₹ 11009 crore to ₹ 67970 crore. However, the share of fertilizer subsidy to the explicit subsidy remained more or less same at 27 percent during this period. It is noteworthy that fuel subsidy cost of the Central Government was ₹ 6265 crore in 2002-03 which accounted for 15 percent of the explicit subsidy, raised to ₹ 63427 crore in 2014-15 (BE) recording ten- fold increase during the period and eventually leading to increase in its share to the explicit subsidy to about 26 percent. From the trends, it appears that food subsidy continues to dominate the explicit subsidy burden of the government though

its share has slightly declined. It is prominent to record that fuel subsidy is adding more fiscal pressure to the Government.

Table-1.
Trends in Central Government Subsidies in India (₹ in crore)

Year	Food Subsidy	Fertiliser Subsidy	Fuel Subsidy	Total Explicit Subsidy	Interest Subsidy	Other Subsidies	Total Subsidy	Share of Explicit Subsidy to Total Subsidy (%)
2002-03	24176	11009	6265	41450	765	2379	44618	92.9
2003-04	25160	11847	6351	43358	170	744	44323	97.8
2004-05	25746	15879	2956	44581	564	760	45957	97.0
2005-06	23071	18460	2683	44214	2177	1125	47522	93.0
2006-07	23828	26222	2724	52774	2809	1381	57150	92.3
2007-08	31260	32490	2820	66570	2311	1977	70926	93.9
2008-09	43668	76603	2852	123123	3493	3009	129708	94.9
2009-10	58242	61264	14951	134457	2686	4006	141350	95.1
2010-11	63844	62301	38371	164516	4680	4223	173420	94.9
2011-12	72822	70013	68484	211319	5049	1573	217941	97.0
2012-13	85000	65974	96880	247854	7416	2385	257654	96.2
2013-14*	92000	67972	85480	245452	8175	1890	255516	96.1
2014-15**	115000	67970	63427	246397	8463	847	255708	96.4

Source: Indiastat.com

*Revised Estimates   ** Budget Estimates

As discussed earlier, the total explicit subsidy of the Central Government increased phenomenally year on year since 2002-03. However, the trends of the share of explicit subsidy to the Gross Domestic Product (GDP) during the same period expose slightly different phenomena (refer Table-2). The total explicit subsidy of the Central Government as the percentage of GDP was 1.8 in 2002-03. Since then, it continued to decline till the year 2006-07 to 1.3 percent though the outstanding figures of subsidy increased. In the subsequent financial years, the share of explicit subsidy to the GDP increased persistently and reached the peak at 2.6 percent in 2012-13 before starting to decline in 2013-14.

Table-2
Share of Central Explicit Subsidy in GDP

Year	Total Explicit Subsidy*	GDP*	% of Explicit Subsidy to GDP @ FC
2002-03	41450.45	2343864	1.8
2003-04	43358	2625819	1.7
2004-05	44581.45	2971464	1.5
2005-06	44214	3390503	1.3
2006-07	52773.59	3953276	1.3
2007-08	66569.68	4582086	1.5
2008-09	123123.1	5303567	2.3
2009-10	134457.5	6108903	2.2
2010-11	164516.2	7248860	2.3
2011-12	211318.7	8391691	2.5
2012-13	247854.1	9388876	2.6
2013-14 (RE)	245451.5	10472807	2.3

Source: Indiastat.com   * Rs. in cror

2. Food Subsidy

Food subsidies, in India, comprise to consumption, production and storage. Over the years, per capita income has increased but simultaneously food prices have also increased more proportionately than rise in income of the people. The bottom class of consumers spends about 65 per cent of total expenditure on food items in rural areas and about 62 per cent in urban areas (NSSO, 2012). This attributes to paramount significance for the provision of food subsidies to the poor segment of the society.

Trend Analysis

Food subsidies have increased significantly in the post-reforms period. In 1990-91, the Central Government disbursed an amount of ₹ 2450 crore towards food subsidies. The same has increased to ₹ 115000 crore (BE) in 2014-15, accounting for over 47

2003-04	25160	4.07	0.98
2004-05	25746.45	2.33	0.88
2005-06	23071	-10.39	0.69
2006-07	23827.59	3.28	0.61
2007-08	31259.68	31.19	0.69
2008-09	43668.08	39.69	0.86
2009-10	58242.45	33.37	1
2010-11	63844	9.62	0.91
2011-12	72822	14.06	0.81
2012-13	85000	16.72	0.84
2013-14*	92000	8.24	0.81
2014-15**	115000	25.00	0.89

Source: Indiastat.com

*Revised Estimates ** Budget Estimates

times increase in the span of two and a half decades (Table-3). The pressure of the burgeoning food subsidies could also be noted from its increasing proportion to GDP. If food subsidies were 0.43 percent of GDP in 1990-91, it went up to 0.89 in 2014-15. The annual growth rate of food subsidies appears to be uneven marked with fluctuations during 1990-91 to 2014-15. Food subsidies, which increased rapidly during the decade between 1992-93 and 2002-03, remained stagnant between 2002-03 and 2006-07. However, there was unprecedented growth in food subsidies during 2006-07 to 2009-10. Under pressure to consolidate the fiscal position, post 2010, the Government of India, is reforming food subsidies and results are evident from stable annual growth of food subsidies and declining proportion of food subsidies to GDP.

Consumer subsidy, which is one of the segments of food subsidies, is provided through public distribution system (PDS) under several schemes. Since June 1997, Targeted PDS (TPDS) has been introduced to provide more subsidies to poor. Consumers below poverty line (BPL) pay a lower price and receive a higher quantum of food grains than those above poverty line (APL). Despite this, there are indications that there are both inclusion and exclusion errors (GOI, 2004). Besides, there are wide disparities in PDS subsidy penetration across income groups.

Food subsidies on account of wheat and rice have risen almost proportionately year on year under BPL and APL schemes (Tables- 4 & 5). Though rise in BPL subsidies could be justified under the principle of equity, equal proportionate increase in APL subsidies has contributed to sharp rise in subsidy bill in the expenditure account of Government of India putting more fiscal pressure.

Table-3.
Growth of Food Subsidies in India
(1990-1991 to 2014-2015)

Year	Food Subsidy (₹ crore)	Annual Growth (%)	As % of GDP
1990-91	2450	-	0.43
1991-92	2850	16.33	0.44
1992-93	2800	-1.75	0.37
1993-94	5537	97.95	0.64
1994-95	5100	-7.89	0.5
1995-96	5377	5.43	0.45
1996-97	6066	12.81	0.44
1997-98	7900	30.23	0.52
1998-99	9100	15.19	0.52
1999-00	9434	3.67	0.49
2000-01	12060	27.84	0.58
2001-02	17499	45.1	0.77
2002-03	24176.45	38.2	1.06

Table-4.
Trends in Consumer Subsidy on Wheat (₹ /quintal)

Year	AAY	% Change	BPL	% Change	APL	% Change
2002-03	684.1	-	469	-	301	-
2003-04	718.7	5.06	503.7	7.40	308.7	2.56
2004-05	818.9	13.94	604	19.91	409	32.49
2005-06	831.5	1.54	616.5	2.07	421.3	3.01
2006-07	1014.4	22.00	799.4	29.67	604.4	43.46
2007-08	1148.7	13.24	933.7	16.80	738.7	22.22
2008-09	1180.6	2.78	965.6	3.42	770.6	4.32
2009-10	1224.6	3.73	1009.6	4.56	811.5	5.31
2010-11	1326.4	8.31	1111.4	10.08	916.4	12.93
2011-12 (RE)	1451.9	9.46	1236.9	11.29	1041.9	13.69

Source: GOI, 2012

Table-5.
Trends in Consumer Subsidy on Rice (₹/quintal)

Year	AAY	% Change	BPL	% Change	APL	% Change
2002-03	866.1	-	600.4	-	370.5	-
2003-04	936.1	8.08	671.1	11.78	408.7	10.31
2004-05	1003.6	7.21	738.6	10.06	475.1	16.25
2005-06	1050.7	4.69	785.7	6.38	520.7	9.60
2006-07	1111.6	5.80	846.6	7.75	581.6	11.70
2007-08	1271.4	14.38	1006.4	18.88	741.4	27.48
2008-09	1440.7	13.32	1175.7	16.82	909.9	22.73
2009-10	1519.5	5.47	1254.1	6.67	939	3.20
2010-11	1702.4	12.04	1437.4	14.62	1172.4	24.86
2011-12 (RE)	1884.2	10.68	1619.2	12.65	1354.2	15.51

Source: GOI, 2012

Table-6
Share (%) of Consumer Subsidy and Buffer Subsidy in Total FCI Subsidy

Year	Consumer	Buffer
2002-03	73.7	26.3
2003-04	85.3	14.7
2004-05	93.2	6.8
2005-06	98.2	1.8
2006-07	98	2
2007-08	87	13
2008-09	88.1	11.9
2009-10	86	14
2010-11	85.7	14.3
2011-12 (RE)	90.3	9.7

Source: FCI, 2012

Major Issues and Concerns: Need for Reforms

Being the founder member of WTO and signatory of its Agreement on Agriculture (AOA), India is obliged to reduce her subsidies in a phased manner. It is obligatory for India to keep up the trust of the countries of the world. However, subsidy in general and food subsidy in particular which has socio-political significance is the epic center of government decisions. Persistent increase in food subsidy over the last two decades is the growing policy challenge to the government. The primary motivation for subsidy reform originates from two inter-related subject matters - growing food subsidy bill and the uncontrolled fiscal deficit.

With escalating economic costs, stagnant food grain issue prices, poor targeting, increasing procurement of foodgrains and rising buffer carrying cost, the food subsidy bill has reached a level that is a significant proportion of the total government expenditure.

Escalating Economic Costs

It is shocking that the economic cost of food grains (wheat and rice) has increased phenomenally since 2001-02. The annual cumulative rise in the economic cost of wheat was 91 percent in 2014-15 since 2001-02 (Table-7). While, in case of rice, it was 98 percent during the same period. Rising minimum support price/procurement price, increasing procurement incidentals and ever widening distribution costs appear to be attributing factors for escalating economic cost of foodgrains.

Table-7
Economic Cost of Wheat and Rice (₹ /quintal)

Year	Wheat	Cumulative Rise (%)	Rice	Cumulative Rise (%)
2001-02	852.94	-	1097.96	-
2002-03	884	3.64	1165.03	6.11
2003-04	918.69	7.57	1236.09	12.21
2004-05	1019.01	18.49	1303.59	17.67
2005-06	1041.85	20.73	1339.69	20.44
2006-07	1177.78	33.77	1391.18	24.28
2007-08	1311.75	45.15	1549.86	35.69
2008-09	1380.58	50.40	1740.73	48.00
2009-10	1424.61	53.59	1820.07	52.56
2010-11	1494.35	58.48	1983.11	61.52
2011-12	1595.25	65.23	2122.94	68.57
2012-13	1752.57	75.09	2304.87	77.14
2013-14	1908.32	83.98	2615.51	90.62
2014-15 (RE)	2047.56	91.28	2817.91	98.36

One of the prominent factors behind increasing government subsidies is rise in Minimum Support Price (MSP) (year on year) on both rice and wheat which was very massive during 1990-91 and 2014-15 (Table-8). Although in 90s the procurement price of rice and wheat increased by more than two and half times, its growth was less than 6 percent in the first half of the 2000s decade. Since 2005-06 the MSP has increased by more than 135 percent from ₹570 per quintal to ₹1360 in 2014-15. Almost in similar trend,

MSP of wheat has risen by about 123 percent during the same period.

This comprehensive analysis leads to the inference that a large part of recent spike in subsidies arise from relatively high MSP. It is noteworthy that in recent years, the MSPs announced by the government for foodgrain procurement are higher than the prices recommended by the Commission for Agricultural Costs and Prices (CACP), resulting in bloated food subsidy bill.

Table-8
Minimum Support/Procurement Price of Wheat and Paddy (₹/quintal)

Year	Rice	% Change	Wheat	% Change
1990-91	205	10.8	225	4.4
1991-92	230	12.2	280	24.4
1992-93	270	17.4	330	17.9
1993-94	310	14.8	350	6.1
1994-95	340	9.7	360	2.9
1995-96	360	5.9	380	5.6
1996-97	380	5.6	475	25.0
1997-98	415	9.2	510	7.4
1998-99	440	6.0	550	7.8
1999-00	490	11.4	580	5.5
2000-01	510	4.1	610	5.2
2001-02	530	3.9	620	1.6
2002-03	530	0.0	620	0.0
2003-04	550	3.8	630	1.6
2004-05	560	1.8	640	1.6
2005-06	570	1.8	650	1.6
2006-07	580	1.8	850	30.8
2007-08	745	28.4	1000	17.6
2008-09	900	20.8	1080	8.0
2009-10	1050	16.7	1100	1.9
2010-11	1000	-4.8	1170	6.4
2011-12	1080	8.0	1285	9.8
2012-13	1250	15.7	1350	5.1
2013-14	1310	4.8	1400	3.7
2014-15	1360	3.8	1450	3.6

Source: FCI, 2015

Increasing procurement incidentals are another major source of rising food subsidy. Procurement incidentals in the case of wheat increased marginally at an average annual growth rate of 5.5 percent between 2001-02 and 2005-06 (Table-9). In case of rice, procurement incidentals decreased at an annual average of more than 8 percent during the same period. Since 2005-06, the procurement cost of both wheat and rice increased phenomenally. The combined annual growth rate of procurement cost of rice and wheat during 2005-06 and 2013-14 was 28.5

percent in contrary to less than even 1 percent during 2001-02 and 2005-06.

The procurement costs include statutory charges such as market fee, rural development/ infrastructure development cess and VAT and non-statutory charges like dami/arhatia commission, mandi labour charges, cost of gunny bags, handling charges, internal transport and interest charges. An examination of FCI annual data leads to the conclusion that ever increasing mandi charges and cost of gunny bags are the factors behind rising procurement incidentals.

Table-9
Food Procurement Incidentals (₹ /quintal)

Year	Wheat	% Change*	Rice	% Change*	Total	% Change*
2001-02	134.68	-	66.81	-	201.49	-
2002-03	137.63	2.2	61.67	-7.7	199.3	-1.1
2003-04	138.2	0.4	30.68	-50.3	168.88	-15.3
2004-05	182.74	32.2	58.48	90.6	241.22	42.8
2005-06	171.2	-6.3	39.12	-33.1	210.32	-12.8
2006-07	180.15	5.2	193.66	395.0	373.81	77.7
2007-08	164.02	-9.0	214.91	11.0	378.93	1.4
2008-09	179.62	9.5	226.87	5.6	406.49	7.3
2009-10	206.88	15.2	288.6	27.2	495.48	21.9
2010-11	212.38	2.7	313.09	8.5	525.47	6.1
2011-12	235.68	11.0	350	11.8	585.68	11.5
2012-13	263.35	11.7	383.76	9.6	647.11	10.5
2013-14	286.41	8.8	463.53	20.8	749.94	15.9

Fast increasing food distribution cost in the recent years adds further pressure on the food subsidy bill of the government. The distribution cost consists of freight, interest, handling and storage charges, transit and storage losses and administrative overheads. During the first half of 2000s, the distribution cost of both wheat and rice increased sharply with a combined annual average growth rate of more than 21 per cent from ₹246 per quintal to ₹558 (Table-10). In a contradicting trend, between 2007-08 and 2009-10, the combined distribution cost of rice and wheat decreased by about 10 percent on an average annually. Post 2009-10 until 2013-14, the distribution cost of both the food items shot up. The combined distribution cost has almost doubled from ₹385 per quintal to ₹740 during the same period, registering more than 18 percent annual average growth. From the study of FCI report (2014), it appears that rapid increase in food distribution cost is mainly due to high food handling expenses, though freight and interest remain the largest contributing factors.

Table-10.
Food Distribution Costs (₹ /quintal)

Year	Wheat	% Change*	Rice	% Change*	Total Cost	% Change*
2001-02	126.65	-	119.62	-	246.27	-
2002-03	145.51	14.9	157.72	31.9	303.23	23.1
2003-04	169.69	16.6	214.52	36.0	384.21	26.7
2004-05	222.8	31.3	256.51	19.6	479.31	24.8
2005-06	234.54	5.3	272.37	6.2	506.91	5.8
2006-07	269.36	14.8	289.58	6.3	558.94	10.3
2007-08	244.43	-9.3	297.82	2.8	542.25	-3.0
2008-09	245.42	0.4	280.76	-5.7	526.18	-3.0
2009-10	200.37	-18.4	184.92	-34.1	385.29	-26.8
2010-11	217.65	8.6	223.49	20.9	441.14	14.5
2011-12	240.39	10.4	260.74	16.7	501.13	13.6
2012-13	269.81	12.2	287.28	10.2	557.09	11.2
2013-14	350.8	30.0	389.97	35.7	740.77	33.0

Source: (Basic data): FCI

* Author's calculation

Stagnant Central Issue Price (CIP)

It is pertinent to note that the issue price or sales price of PDS rice and wheat remained unchanged since 2002-03. But, as explored earlier, due to increased procurement costs and distribution costs, economic cost kept on increasing. The increasing gap between the issue price and the economic cost is the subsidy funded by the Government through its budgetary allocation. The issue price of rice for APL card holders is ₹795 per quintal and for BPL allocation ₹565 since 2002-03 till date. However, the economic cost of rice increased from ₹1165 per quintal in 2002-03 to ₹2818 in 2014-15 (RE), recording almost 142 percent rise. Similarly, though the economic cost of wheat increased by about 132 percent from ₹884 per quintal to ₹2048 during 2002-03 and 2014-15, the issue price remained same at ₹610 and ₹415 per quintal for APL and BPL families respectively. Since the issue prices were not raised, to meet up with the rising economic cost, the burden on the government in the form of subsidy also increased.

A High Level Committee on Long Term Grain Policy (HLC) constituted by the Department of Food and Public Distribution in its report had recommended that APL price should be reduced to 80 per cent of economic cost and BPL price to 50 per cent of the economic cost excluding statutory levies (GOI, 2003). It is clearly evident that issue prices of both wheat and rice are much lesser than the recommended limit. For instance, in 2014-15, the economic cost of wheat was ₹2048 per quintal, whereas issue price for APL was ₹610 per quintal. The issue price covers just 30 percent of the economic cost, remaining 70 percent is funded by the government in the form of subsidy. Similar analogy can be observed even in the case of rice. The issue price of rice was ₹795 per quintal for APL population against economic cost of ₹2818 per quintal. This accounts for coverage of only 28 percent of economic cost, leaving 68 percent of subsidy burden. Since 2002-03, the subsidy is constantly increasing with widening gap between ever increasing economic cost and stagnant issue prices.

Table-11
Relative Rise in Central Issue Price (CIP) and Economic Cost

Particulars	Duration	APL		BPL		AAY		Cumulative Rise in Economic Cost (%)
		CIP*	Cumulative Rise (%)	CIP*	Cumulative Rise (%)	CIP*	Cumulative Rise (%)	
Rice	2002-03 to 2014-15	795	0	565	0	300	0	141.9
Wheat	2002-03 to 2014-15	610	0	415	0	200	0	131.6

*Rupees per quintal

Increasing Volume of Foodgrain Procurement and Buffer Carrying Cost

Another sever problem in food subsidy is rising buffer carrying cost over the years. The combined buffer cost of wheat and rice rose from ₹205 per quintal in 2001-02 to ₹446 in 2013-14, with an annual average growth of 9 percent (Table-12). This is accounted for constant increase in the government procurement of wheat and rice since 2001-02. The combined volume of procured food grains increased from 42 MT in 2001-02 to 56 MT in 2013-14. Since 2008-09, due to record food grain production, procurement and buffer stock is also increasing, leading to higher buffer cost.

Table-12.

Food Procurement (million tonnes) and Buffer Carrying Costs (₹/quintal)-Wheat and Rice

Year	Wheat	Rice	Total	% Change*	Buffer Cost	% Change*
2001-02	20.63	22.13	42.76	-	205.52	-
2002-03	19.03	16.41	35.44	-17.1	286.86	39.6
2003-04	15.8	22.9	38.7	9.2	289.02	0.8
2004-05	16.8	24.67	41.47	7.2	303.37	5.0
2005-06	14.79	27.58	42.36	2.1	337.76	11.3
2006-07	9.23	25.11	34.34	-18.9	407.42	20.6
2007-08	11.13	28.74	39.86	16.1	326.77	-19.8
2008-09	22.69	34.1	56.79	42.5	450.41	37.8
2009-10	25.38	32.03	57.42	1.1	405.14	-10.1
2010-11	22.51	34.2	56.71	-1.2	408.42	0.8
2011-12	28.34	35.04	63.38	11.8	426.42	4.4
2012-13	38.15	34.04	72.19	13.9	474.46	11.3
2013-14	25.09	31.85	56.94	-21.1	446.28	-5.9

It is pertinent to note that in recent years, the actual stocks of foodgrains are higher than the required norm (refer Tables-13 & 14). For instance, the actual stock of wheat was 18.2 MTs in 2009 as against the norm of 8.2 MTs, creating an excess stock of 10 MTs. By 2014, the actual stock was 19.8 MTs more than the norm. Similar is the case of rice. For the increasing additional stock, proportionately rising buffer stock subsidy has to be earmarked.

Rising procurement and increasing buffer stock is reported because of record foodgrain production over the last half a decade. The study takes us to a paradoxical conclusion that there are mounting food grain stocks and reported deaths of starvation.

Table-13
Foodgrain Buffer Stocks - Norms Vs. Actuals: Wheat (in MTs)

As on January 1st	Buffer Norm	Actual Stock	Excess*	Excess as % of Buffer Norm*
1992	7.7	5.3	-2.4	-31.2
1993	7.7	3.3	-4.4	-57.1
1994	7.7	10.8	3.1	40.3
1995	7.7	12.9	5.2	67.5
1996	7.7	13.1	5.4	70.1
1997	7.7	7.1	-0.6	-7.8
1998	7.7	6.8	-0.9	-11.7
1999	8.4	12.7	4.3	51.2
2000	8.4	17.2	8.8	104.8
2001	8.4	25	16.6	197.6
2002	8.4	32.4	24	285.7
2003	8.4	28.8	20.4	242.9
2004	8.4	12.7	4.3	51.2
2006	8.2	6.2	-2	-24.4
2007	8.2	5.7	-2.5	-30.5
2008	8.2	7.7	-0.5	-6.1
2009	8.2	18.2	10	122.0
2010	8.2	23.1	14.9	181.7
2011	8.2	21.5	13.3	162.2
2012	8.2	25.7	17.5	213.4
2013	8.2	34.4	26.2	319.5
2014	8.2	28	19.8	241.5

Source: (Basic Data) Economic Survey 2014-15 and earlier issues.

* Author's calculation

Table-14.
Foodgrain Buffer Stocks - Norms Vs. Actuals: Rice (in MTs)

As on January 1st	Buffer Norm	Actual Stock	Excess*	Excess as % of Buffer Norm*
1992	7.7	8.6	0.9	11.7
1993	7.7	8.5	0.8	10.4
1994	7.7	11.2	3.5	45.5
1995	7.7	17.4	9.7	126.0
1996	7.7	15.4	7.7	100.0
1997	7.7	12.9	5.2	67.5
1998	7.7	11.5	3.8	49.4
1999	8.4	11.7	3.3	39.3
2000	8.4	14.2	5.8	69.0
2001	8.4	20.7	12.3	146.4
2002	8.4	25.6	17.2	204.8
2003	8.4	19.4	11	131.0
2004	8.4	11.7	3.3	39.3
2006	11.2	12.6	1.4	12.5
2007	11.2	12	0.8	7.1
2008	11.2	11.5	0.3	2.7
2009	11.2	17.6	6.4	57.1
2010	11.2	24.3	13.1	117.0
2011	11.2	25.6	14.4	128.6
2012	11.2	29.7	18.5	165.2
2013	11.2	32.2	21	187.5
2014	11.2	14.7	3.5	31.3

Source: (Basic Data) Economic Survey 2014-15 and earlier issues.

* Author's calculation

Factors Affecting Food Subsidy

This section rolls out the results of an empirical investigation carried out to identify the factors determining food subsidy. At the outset, food subsidy is affected by several factors. Based on the discussion in the previous section and results of previous studies (George, 1996; Sharma, 2012 for instance), certain factors have been selected as probable factors determining food subsidy. The factors chosen for testing their possible impact on food subsidy are minimum support price, foodgrain procurement volume, foodgrain distribution costs, foodgrain buffer carrying costs and off-take quantity of food grains. The estimating model used to examine the impact of such variables on food subsidies is:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Wherein,

Y = Food Subsidy (dependent variable)

a = Intercept of Y which is constant

$\beta_1, \beta_2, \beta_3, \beta_4, \& \beta_5$ =Beta coefficients of $X_1, X_2, X_3, X_4 \& X_5$ (explanatory variables) respectively

X_1 = Minimum Support Price (MSP) of foodgrains (+)

X_2 =Procurement Volume (PV) of foodgrains by the FCI (+)

X_3= Distribution Cost (DC) pertaining to foodgrains (+)

X_4 = Buffer Carrying Cost (BC) of foodgrains (+)

X_5 = Off-take quantity of foodgrains (-)

e = error term

As per the theoretical framework, MSP, PV, DC and BC have positive impact on food subsidy. Thus, the beta coefficient of these explanatory variables must be preceded by positive sign. Whereas, off-take quantity of foodgrains has negative impact on the food subsidy indicating that higher the off-take quantity of foodgrains, lower the food subsidy and vice-versa. Hence, in this case the expected sign for the beta coefficient of this explanatory variable is negative.

Inorder to examine the impact of the identified explanatory variables on the food subsidy, multiple linear regression equation has been estimated for annual time series data from 2001-02 to 2013-14 and the estimates are reported in Table-15.

The regression estimation results indicate that 98 percent variation in food subsidies is explained by the model (Adj R^2 = 0.98). The goodness of fit of the model is tested and validated by Durbin-Watson test (for auto correlation), F- test and VIF test (for collinearity). Among the explanatory variables, minimum support price and off-take quantity have significant impact on food subsidy bill of the Government of India. However, the coefficient of foodgrain off-take quantity has positive sign, which was theoretically not expected. Similarly, coefficient of buffer cost has negative sign, which was again contrary to the predictions. In the case of Procurement Volume and Distribution Cost, coefficients are positive as expected, indicating that rise in volume of foodgrain procurement and increase in foodgrain distribution cost cause mounting food subsidies. The results show that among the explanatory variables, minimum support price is the most influential factor in determining food subsidy.

Table-15
Estimation Results for Determinants of Food Subsidy in India

Particulars	Coefficients	Std. Error	t value	sig	VIF
Intercept	-50400.4	7674.812	-6.567	0.00	-
MSP	66.796	11.181	5.974	0.001*	9.854
PV	219.397	231.131	0.949	0.374	7.033
DC	17.175	14.498	1.185	0.275	3.086
BC	-51.023	28.954	-1.762	0.121	5
Off	765.337	154.129	4.966	0.002*	2.203
R^2	0.989	-	-	-	-
Adj R^2	0.981	-	-	-	-
D-W	2.349	-	-	-	-
F	123.455	-	-	0.00	-

Significant at 1 percent

3. Fertilizer Subsidy

In India, to keep up the pace of food grain production with the rapid growth of population over the decades, in the late 1960s, green revolution was successfully launched. The strategy was to enhance the farm productivity by supplying farm inputs to the farmers at affordable prices. Fertilisers, along with better seeds and water, play a crucial role in enhancing productivity. The subsidies have played an important role in promoting use of fertilizers and contributed to significant increases in yields (Morris et. al., 2007) although their contribution to agricultural growth and poverty reduction has declined steadily over time (Fan et. al., 2007). The fertilizer subsidies have been questioned in the recent years due to their declining contribution to productivity improvement, inefficiency, inequity and the government's expanding budget deficit (Sharma, 2012). The Prime Minister's Economic Advisory Council (PMEAC) in its Economic Outlook 2012-13 argued for "dismantling of fertilizer subsidy because agricultural input subsidies are progressively losing their relevance, becoming an unbearable fiscal burden and their role in contribution to productivity enhancement is fast disappearing" (PMEAC, 2012).

Trend Analysis

Fertiliser subsidy in India has increased significantly from ₹11009 crores in 2002-03 to ₹67970.3 crores in 2014-15 (BE), registering close to 40 percent of average annual growth during this period (Table-16). The fertilizer subsidy reached to its peak in 2008-09 with government spending nearly 60 percent of total subsidies. Since then, though, the percentage share of fertilizer subsidy to the total central government subsidies declined, the actual outstanding amount is still rising, leading to fiscal burden.

Table-16
Trends in Fertiliser Subsidies - 2002-03 to 2014-15 (₹. in crore)

Year	Indigenous Fertilisers	Imported Fertilisers	Subsidy to Manufacturers/Agencies for Concessional Sale of Decontrolled Fertilizers	Fertiliser Subsidy	% Share in Total Subsidy
2002-03	7499	10	3500	11009	24.67
2003-04	8521	0	3326	11847	26.73
2004-05	10243	494	5142	15879	34.55
2005-06	10653	1211	6596	18460	38.85
2006-07	12650	3274	10298	26222	45.88
2007-08	12950	6606	12934	32490	45.81
2008-09	17969	10079	48555	76603	59.06
2009-10	17580	4603	39081	61264	43.34
2010-11	15081	6454	40767	62301.2	35.93
2011-12	20208	13716	36089	70012.7	32.12
2012-13	20000	15398	30576	65974.1	25.61
2013-14	26500	12044.64	29426.86	67971.5	26.6
2014-15 (BE)	31000	12300	24670.3	67970.3	26.58

Source: Indiastat.com

Reasons for Fast Growing Fertiliser Subsidy

The fertilizer subsidy seeks to promote fertilizer consumption, increase agricultural productivity and maintain national food security. However, there has been a growing concern about steep increase in the subsidy during last few years and several factors have contributed to higher subsidy (Sharma, 2012). The study identifies rapid increase in fertilizer consumption, fast growing volume and value of imported fertilisers, increase in the cost of production of fertilisers and unchanged selling price as prominent factors in dwindling fertilizer subsidy.

Increase in Fertiliser Consumption

The consumption of farm fertilisers (NPK) by the Indian farmers went on increasing from 2177 thousand tonnes (TT) in 1970-71 to 5516 in 1980-81, showing a record 153 percent growth in fertilizer consumption during the decade (Table-17). This remarkable fertilizer consumption growth is on account of green revolution which was on its peak during the decade. The following decade (1980-81 to 1990-91) also witnessed increased fertiliser consumption from 5516 TT to 12546 TT, with about 127 percent growth. If the consumption of fertilizer increased from 12546 TT in 1990-91 to 19702 TT in 2000-01 (57 percent of decadal growth), in the last decade (2000-01 to 2010-11), it continued its increasing trend from 19702 TT to 28122 TT (43 percent of decadal growth). Since 2010-11, the consumption of chemical fertilisers has declined slightly. Inspire of that, the consumption of fertilisers increased by nearly 13 times during 1970-71 and 2013-14. This fast growing fertilizer consumption is also evident from the rising consumption ratio of NPK over the period of time (Table-18). Since government subsidises every unit of fertilizer consumed by the farmers, with increased fertiliser consumption, the government continues to allocate a significant share of budget to fertilizer subsidy.

Table-17
Production, Imports and Consumption of Fertilizers (in thousand tonnes)

Year	Nitrogen (N)			Phosphat (P)			Potas (K)		All Fertilisers (NPK)		
	Production	Imports	Consumption	Production	Imports	Consumption	Imports	Consumption	Production	Imports	Consumption
1970-71	830	477	1487	229	32	462	120	228	1059	629	2177
1980-81	2164	1510	3678	842	452	1214	797	624	3006	2759	5516
1990-91	6993	414	7997	2052	1311	3221	1328	1328	9045	2758	12546
2000-01	11004	154	10920	3748	396	4215	1541	1567	14752	2090	19702
2007-08	10900	3677	14419	3807	1391	5515	2653	2636	14707	7721	22570
2008-09	10870	3844	15090	3464	2927	6506	3380	3313	14334	10151	24909
2009-10	11900	3447	15580	4321	2756	7274	2945	3632	16221	9148	26486
2010-11	12157	4493	16558	4223	3802	8050	4069	3514	16380	12364	28122
2011-12	12259	5240	17300	4104	4427	7914	3335	2576	16363	13002	27790
2012-13	12194	4801	16821	3541	2797	6653	1559	2062	15735	9157	25536
2013-14	12338	3920	16750	3714	1588	5633	1926	2099	16092	7434	24482

Source: Economic Survey 2014-15

Table-18
Fertiliser Consumption Ratio (NPK)

Sl. No.	Year	NPK Ratio
1	1985-86	7.0 : 2.5 : 1
2	1986-87	6.7 : 2.4 : 1
3	1987-88	6.5 : 2.5 : 1
4	1988-89	6.8 :2.5 : 1
5	1989-90	6.3 :2.6 : 1
6	1990-91	6.0 : 2.4 : 1
7	1991-92	5.9 : 2.4 : 1
8	1992-93	9.5 : 3.2 : 1
9	1993-94	9.7 : 2.9 : 1
10	1994-95	8.4 : 2.6 : 1
11	1995-96	8.5 : 2.5 : 1
12	1996-97	10.0 : 2.9 :1
13	1997-98	7.9 : 2.8 : 1
14	1998-99	8.5 : 3.1 : 1
15	1999-00	6.9 : 2.9 : 1
16	2000-01	7.0 : 2.7 : 1
17	2001-02	6.8 : 2.6 : 1
18	2002-03	6.5 : 2.5 : 1
19	2003-04	6.9 : 2.6 : 1
20	2004-05	5.7 : 2.2 : 1
21	2005-06	5.3 : 2.2 : 1
22	2006-07	5.9 : 2.4 : 1
23	2007-08	5.5 : 2.1 : 1
24	2008-09	4.6 :2.0 : 1
25	2009-10	4.3 :2.0 : 1
26	2010-11	4.7 :2.3 : 1
27	2011-12	6.7 :3.1 : 1
28	2012-13	8.2 :3.2 : 1

GOI, 2013

Increased Dependency on Imported Fertilisers

Another prominent reason for rise in fertilizer subsidy is persistent increase in the volume of fertilisers imported. Though indigenous fertilizer production is very large and continues to increase, but domestic production is not been able to meet rising demand of the farmers. The import of chemical fertilisers increased by more than three times during 2000-01 and 2013-14 from 2.09 MT to 6.73 MT (Table-19). During the same period of time, domestic production remained more or less stagnant. In 2000-01 domestic production was 14.7 MT, while in 2013-14, it was 16.09 MT. Import growth was higher manifold than domestic production growth. During 2000-01, 12.45 percent of fertilizer availability was being made available by import. Whereas, the same has increased to almost close to 30 percent by 2013-14. In other words, contribution of domestic production to the total fertilizer availability has decreased sharply from 87.55 percent in 2000-01 to about 70 percent in 2013-14. With the increased import, the government's budgetary allocation on this account also increases. Further, the financial burden multiplies even more to the government as Indian rupee depreciates faster since 1991. As the government is not willing to pass on the increased import cost of fertilisers to the farmers, the additional cost due to increased import is shouldered up by the government as subsidy.

Table-19
Fertiliser Production and Import (in Nutrients)

Year	Production (MMT)	Import (MMT)	Availability (MMT)	Production (% of availability)	Import (% of availability)
2000-01	14.7	2.09	16.8	87.55	12.45
2001-02	14.63	2.4	17.03	85.91	14.09
2002-03	14.47	1.67	16.15	89.63	10.37
2003-04	14.27	2.02	16.28	87.61	12.39
2004-05	15.41	2.75	18.16	84.85	15.15
2005-06	15.58	5.25	20.83	74.78	25.22
2006-07	16.1	6.08	22.18	72.58	27.42
2007-08	14.71	7.58	22.29	65.98	34.02
2008-09	14.33	10.15	24.49	58.54	41.46
2009-10	16.22	9.15	25.37	63.94	36.06
2010-11	16.38	12.36	28.74	56.98	43.02
2011-12	16.36	13	29.36	55.72	44.28
2012-13	15.74	8.7	24.43	64.4	35.6
2013-14	16.09	6.73	22.82	70.51	29.49

Source: Annual Report 2013-14, Department of Fertilisers, GOI

Increase in the Prices of Imported Fertiliser/ Feedstocks

To make situation worse on fiscal front, parallel to the rise in import volume, the prices of some major categories of fertilisers imported and similarly prices of fertiliser raw material (feedstocks) imported went up steeply. The price of imported urea (f.o.b) increased by 53 percent, from US $ 279 per MT in 2009-10 to US $ 422 in 2012-13 (Table-20). Import of fertilizer raw materials such as phosphoric acid, which is the main

feedback for di-ammonium phosphate (DAP) became expensive by 74 percent during 2008-09. Similar is the case of ammonia. Its import price was US $ 454 in 2008-09 and it rose to US $ 633 in 2012-13, increasing by nearly 40 percent in 4 years. Importing sulphur became costly by 110 percent in just three years between 2009-10 and 2012-13. Though import prices of some other categories declined, the overall impact of rise in the import prices of major fertilizer categories pushed up budgetary subsidy bill of the government.

Table-20
Prices of Imported Fertilisers/Fertiliser Feedstocks (US $ /MT)

Year	DAP C&F US	MOP FOB	Urea FOB	Phos Acid India CIF	Ammonia CIF	Sulphur CIF	Rock Phos. CIF
2008 -09	911.17	824.44	-	495.62	454.05	-	412.24
2009 -10	404.26	514.69	278.64	490.775	303.13	94.89	149.45
2010 -11	588.63	359.26	324	791.25	401.74	171.52	160.94
2011 -12	597.9	465.95	455.5	1035	517.5	224.84	206.41
2012- 13	526.95	448.28	421.67	861.95	633.03	198.71	203.86

Source: GOI, 2013

Unchanged / Minor Changes in Gate Prices

The selling price of major fertilisers remained stagnant for enduring period of time inspite of increased cost of feedstock and high import prices. Between 1983 and 1991, only thrice fertilizer prices were revised but very slightly (refer Table-21). The price of urea increased by ₹ 1150/MT, DAP increased by ₹1690/MT and MOP by mere ₹620 per MT. Similar price trend could be observed during 1991 to 1999-00. Even later, until 2010-11, only minor increase was made in their prices. It is only after the implementation of Nutrient-based Subsidy (NBS) in 2010, prices of DAP and MOP

increased steeply. However, urea as it was kept out of NBS, increase in the market price of urea is very meager. During 1991 and 2014, the rise in urea price is less than 3 percent annually on average basis. Such price stagnancy increases the gap (subsidy) between the cost of fertilisers to the government and the price at which it is sold to the farmers. Obviously, this has again resulted in pressure factor in budgetary allocation, causing widening fiscal deficit.

Table-21
Price Trends of Main Fertilisers in India (₹. MT)

Year/ Period	Urea	DAP	MOP
From June 29, 1983	2150	3350	1200
From Jan 31, 1986	2350	3600	1300
From July 25, 1991	3300	5040	1820
1993-94*	-	6600	3800
1999-00*	-	8600	3978
2010-11*	-	10750	5055
2011-12*	-	17749	10361
2012-13*	-	26075	20636
2013-14*	5360	25184	17972

Source: Gulati et al, 2015

* Simple average of prices in each quarter.

Towards Rationalising Fertiliser Subsidy: Some Policy Initiatives

Increasing subsidies that led to high fiscal deficits, coupled with a foreign exchange crisis, led to a 40 per cent increase in the prices of fertilisers (prices for urea DAP and MOP all were increased by 40 per cent) in July 1991 (Gulati. et al, 2015). In this pretext, the first major attempt in reforming fertilizer subsidy was initiated in 1991 when the government set up a Joint Parliamentary Committee (JPC) on fertilizer policy. The JPC recommended decontrolling of prices of fertilisers particularly P and K (except urea) and following the JPC's recommendations, the government implemented the same. Farm gate prices of Fertilizers, which were stagnant till then, started rising sharply, expecting lower subsidy burden on the government.

Despite decontrolling of prices of P & K fertilisers, fertilizer subsidy continued to increase contrary to the expectations. Much of rise in the fertilizer subsidy was due to continued high subsidy on urea. Since P & K prices increased after price decontrolling, farmers started shifting to urea in large quantity for its low price. In view of increasing fiscal pressure, to deal with firmly, a High Powered Fertiliser Pricing Policy Review Committee (HPC) with Prof.Hanumantha Rao as Chairman was set up. The Committee recommended for introducing a new pricing methodology called Normative Referral Price (NRP) and based on that suggested to fix the farm gate price of urea at Rs. 6500 per MT and ₹12,800 for DAP with effect from January 1, 1998. Though the implementation of the Committee's recommendations would have resolved the problem of rising subsidies and worsening fiscal position, realizing the political sensitivity, the government dumped the suggestions.

Later, once again in the year 2000 to examine the issue of rationalizing fertilizer subsidy, the Expenditure Reforms Commission (ERC) was established under the Chairmanship of M.P. Geethakrishnan. One of the major recommendations of the Commission was to completely dismantle fertilizer price controlling system and increase urea price by 7 percent every year and this way price would reach ₹6,903 per MT by 2006. Again, this was never implemented by the government. Therefore, rising subsidy and heavy consumption of urea over P & K has not been resolved. The Commission also recommended for introducing New Pricing Scheme (NPS) for urea and following this, it was implemented in 2003.

In the recent years, especially in 2008-09, subsidy burden of the government has been increasing rapidly. As already identified, this is mainly due to high import dependency. During the year, the fiscal deficit bloated to 6 percent of the GDP against much lower target. Realizing the need of the time to contain the fiscal deficit and hold subsidies under control, the government brought in a series of reforms since 2010. To begin with the reform series, the method of granting subsidy was replaced from product – based subsidy system to Nutrient – Based Subsidy (NBS) in fertilizer subsidies. In this system, subsidy would be given on the nutrient content (per kg) of fertilisers. The objective was to enhance farmers' share in the total cost of fertilisers. Data prove the success of this new subsidy delivering policy in meeting the objective of reducing the subsidy burden. In 2009-10, 38 percent of the total cost of DAP was farmers share, which increased to 66.58 percent in 2012-13. Similarly, farmers' share of the total cost of MOP increased from 25.6 percent to 61.1 percent during the same period. Since the introduction of NBS, it is very evident that pressure on fertilizer subsidy is being released steadily.

Policies under Consideration

Recent policy initiatives, undoubtedly, are helping in reducing the mounting pressure of fertilizer subsidy. Still further rationalization of fertilizer subsidy policy is necessary if the government has to meet its twin objectives of gradual phasing out of farm subsidies as committed to WTO and keep fiscal figures at the acceptable limit. In meeting these, the government is considering to speed up reforms in fertilizer sector.

Economic Survey 2014-15 expressed fear that rich and large size farm holders could benefit more from the fertilizer subsidization than the poor. Hence, the government is considering to directly transferring cash to farmers' adhaar linked bank accounts similar to LPG subsidy, instead of subsidizing fertilizer plants. The Finance Budget 2016-17 has made an announcement in this regard. This would ensure curtailing huge misappropriation, diversion and leakages of fertilizer subsidy and in turn helping the government in saving huge subsidies.

Gas is a major feedstock in the production of urea. Since gas price is high in India, it becomes a large cost component in its production. India signed an agreement for 15 years with effect from 2006 to off take urea with Oman where gas price is cheaper. Undoubtedly, this saves government from subsidy burden to some extent.

Recently, the decision of pooling gas prices was taken which has paramount significance in ensuring uniform gas prices to all urea plants so as to keep cost of production of urea uniform. This will encourage energy use efficiency amongst urea plants; Government of India also expects that it will increase domestic production by around 3.71 MMT of urea in existing fertiliser units over the next four years (i.e., 2015-16 to 2018-19), reduce imports and save subsidy worth ₹1550 crore over the same period (Gulati, et al, 2015). Similarly, Iran has agreed to supply gas to India at a pre-determined lower price.

Studies and recent statistics concluded that neem-coated urea increases the nitrogen use efficiency (NUE) and reduces the wastage unlike normal uncoated urea. Because of the increasing yields associated with higher NUE, the government removed the cap on neem-coated urea production and allowed indigenous producers to neem-coat 100 per cent of their subsidized production of urea. Taking this further, the fertiliser ministry, in a notice to domestic urea manufacturers, made it mandatory to neem-coat at least 75 per cent of their production. This particular decision is expected to reduce fertiliser subsidy by ₹6500 crore (Gulati et al, 2015).

Recently, the government launched "Soil Health Card Scheme", which aims at issuing soil health cards to 14 crore farmers in the next three years. The card will contain the nutrient status of the soil and also recommended fertilizer for use. Effective implementation of the scheme, apart from higher crop productivity, is expected to rationalize the fertilizer use and minimize diversion of government funds.

In its latest move, in May 2015, the Central Government approved a comprehensive New Urea Policy 2015 for the next four financial years. The Policy has the objectives of maximizing indigenous urea production and energy efficiency in 30 urea units to reduce subsidy burden on the Government. The Policy envisages adopting best available technology in the world. It is also expected that import dependency in the urea sector would decline. On account of revised specific energy consumption norms and import substitution, total saving of subsidy of about ₹2211 crore during the next four years is expected.

4. Fuel Subsidy

India has historically subsidized fuel with the objective of protecting the households and manufacturers from high as well as volatile international prices. The sheer intention of the government was to protect poor section. However, over the years financial burden on the government was mounting up on account of fuel subsidy owing to persistent rise international market. Apparently, country's import of petroleum products also increased due to growth in domestic manufacturing, automobile industries and even in agriculture. Unfortunately, India could not meet rising demand for fuel by substituting domestically. Further, the global oil prices shot up to the sky in multiple times since 2008-09. As a result, the fuel subsidy liability of the Government also increased parallely and reached the peak of ₹ 96880 crore in 2012-13, accounting for 37.6 percent of total subsidies (refer Table-22) Incidentally, this happens to be the highest ever share of fuel subsidy to the total subsidy of the Central Government. Recent reduction in fuel subsidy could be owed to implementation of fuel sector reforms since 2013.

Table-22
Fuel Subsidy in India -2002-03 to 2014-15
(Rs. in crore)

Year	Fuel Subsidy	Annual Growth Rate (%)	% Share to Total Subsidy
2002-03	6265	-	14.04
2003-04	6351	1.37	14.33
2004-05	2956	-53.46	6.43
2005-06	2683	-9.24	5.65
2006-07	2724	1.53	4.77
2007-08	2820	3.52	3.98
2008-09	2852	1.13	2.2
2009-10	14951	424.23	10.58
2010-11	38371	156.65	22.13
2011-12	68484	78.48	31.42
2012-13	96880	41.46	37.6
2013-14	85480	-11.77	33.45
2014-15 (BE)	63426.95	-25.80	24.8

Source: Indiastat.com

It could be noted from Table-23 that under recovery in the oil sector is rapidly increasing. Diesel appears to

be the prime contributor to the price under recovery. This trend of burgeoning oil price under recovery is on account of widening gap between desired price (inclusive of costs plus freight and transportation charges paid by Oil Marketing Companies to the oil refineries plus their marketing margins) and the actual retail sales price. Though international oil prices increased in multiple times in the recent past, in India sales price was hiked by a lesser proportion, resulting in heavy under recoveries to the Oil Marketing Companies (OMCs). Generally, such under recoveries are financed by upstream oil companies, the Government and a small fraction by the OMCs themselves. Though upstream oil companies such as ONGC, GAIL, and OIL bear the burden of under recoveries in the form of cash discounts, the major share of under recoveries is financed to the OMCs by the government by granting subsidies.

Table-23
Under-recoveries on Major Fuel Products (₹ in crore)

Particulars	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012-13	2013-14
Petrol*	2,723	2,027	7,332	5,181	5,151	2,227	-	-	-
Diesel	12,647	18,776	35,166	52,286	9,279	34,706	81,192	92,061	62,837
Domestic LPG	10,246	10,701	15,523	17,600	14,257	21,772	29,997	39,558	46,458
PDS Kerosene	14,384	17,883	19,102	28,225	17,364	19,484	27,352	29,410	30,574
Total	40,000	49,387	77,123	1,03,292	46,051	78,190	1,38,541	1,61,029	1,39,869

Source: Petroleum Planning and Analysis Cell* Since 2010 with decontrolling of petrol prices, under recoveries are not included.

Table-24
Under-recoveries per Unit of Major Fuel Products
(as on 2nd fortnight of August 2014)

Particulars	Under-recoveries (₹)
High Speed Diesel	1.78 / litre
PDS Kerosene	32.67 / litre
Domestic LPG	427.87 / cylinder

Source: http://www.moneycontrol.com/

In view of heavy under recoveries the government subsidy liability is high. The subsidy of the Government per liter of kerosene is about Rs.28, while it is nearly ₹410 per cylinder of LPG. Presently these are the two major fuel items subsidized heavily by the government (refer Table-25). Kerosene is the most subsidized fuel product (more than 60 percent of the price). Even LPG price is subsidised by about 45 percent. It is pertinent to note that since 2010 the government has been de-regulating certain fuel

products to relieve the subsidy burden. Petrol subsidy has been removed since 25th June 2010 and diesel since 18th October 2014.

Table-25
Fuel Subsidy Per Unit (as on 2014-15)

Fuel Product	Unit of Measurement	Retail Sales Price (₹)	Subsidy (₹)
Petrol	Per litre	63.94	Nil
Diesel	Per litre	53.17	Nil
LPG	Per cylinder (14.2 kg)	432	409.72
Kerosene	Per litre	15.24	27.93

Source: Petroleum Planning and Analysis Cell

Fiscal Cost of Fuel Subsidy

With rising fuel subsidy, the fiscal pressure on the Central Government is also mounting and this is evident from Table-26. Since 2008-09, fuel subsidy as

percentage of fiscal deficit continued to rise drastically from 0.8 percent to about 20 percent by 2012-13. Though, thereafter fiscal pressure of fuel subsidy is being released gradually, still 12 percent share of fuel subsidy to fiscal deficit is very high.

Table-26
Fiscal Burden of Fuel Subsidy (₹ crore)

Year	FUS	FD	% of FD
2002-03	6265	145072	4.3
2003-04	6351	123273	5.2
2004-05	2956	125794	2.3
2005-06	2683	146435	1.8
2006-07	2724	142573	1.9
2007-08	2820	126912	2.2
2008-09	2852	336992	0.8
2009-10	14951	418482	3.6
2010-11	38371	373592	10.3
2011-12	68484	515990	13.3
2012-13	96880	490190	19.8
2013-14	85480	502858	17.0
2014-15	63426.95	512628	12.4

Source: Indiastat.com and RBI Handbook of Statistics on Indian Economy, 2015

It is noteworthy that diesel subsidy was contributing the most to the total fuel subsidy with the share of 57 percent in 2011-12 (Table-27). The total financial burden on the government due to diesel subsidy was ₹ 81,192 crore. The fiscal burden of LPG was ₹32,134 crore in the same year having a share of 23 percent to the total fuel subsidy. In the case of kerosene, the budgetary burden to the Central Government was ₹ 28,215 crore. Such huge fuel subsidy financing adds fiscal pressure on the government.

Table-27
Fuel Subsidy Burden by Product (2011-12)

Product	Subsidy (₹. crore)	% Share to Total Fuel Subsidy
Diesel	81,192	57
LPG	32,134	23
Kerosene	28,215	20

Source: Ministry of Petroleum & Natural Gas, 2014.

Fuel Subsidy Reforms in India

Reform Design : Over the last one decade considerable debate was made on the shortcomings of fuel subsidy which was spearheaded by the IMF. IMF (2013) felt that fuel subsidies were both inefficient and inequitable. Arze, et.al (2012) believe that fuel subsidies encourage overconsumption of fuel, delay the adoption of energy-efficient technologies, and

crowd out high-priority public spending including spending on physical infrastructure, education, health and social protection. Further, most of the benefits of fuel subsidies go to higher income groups who tend to consume more fuel. Such debates led to further discussions on the ways of replacing fuel subsidies with better targeted measures. Recognizing the merits of the discussions, fuel subsidy reforms have been made as the integral part of policy reforms of the Government of India. Since 2006 a number committees were set up to analyse the effective mechanism of fuel pricing, the need for fuel subsidy reforms and appropriate policy measures.

Rangarajan Committee in 2006 recommended for more market based approach to pricing and suggested to consider international prices as a yardstick to determine domestic retail price. The Committee also recommended to raise retail price of LPG and restrict kerosene subsidy to below poverty (BPL) families.

Parikh Committee in 2010 recommended for fully liberalising the prices of diesel and petrol. Its additional recommendations included: subsidized kerosene sold through PDS be targeted to BPL families and raise its price yearly according to the growth in nominal agricultural GDP per capita; non-PDS kerosene price be set close to diesel; and subsidized LPG should be quantity rationed, or replaced by direct cash transfers to BPL households with LPG prices fully liberalized.

A **Task Force** set up by the Government under the leadership of Nandan Nilekani, in its interim report of 2011, argues that replacement of in-kind fuel and fertilizer subsidies by direct cash transfers to households using unique identification(UID) system would substantially reduce fiscal cost of subsidies by eliminating the leakages.

Later, **Kelkar Committee 2012** report rolled out a road map for fiscal consolidation. It recommended for elimination of diesel subsidies over a two-year period followed by full price deregulation in 2014. It also recommended for removal of LPG subsidies over next three years, and the reduction of kerosene subsidies by one-third over the same period.

In the meantime, pressure from international bodies was mounting up on the Government of India to

phase out domestic fuel subsidies. In the G-20 Pittsburg Communique in September 2009, the Indian Government signed an agreement on energy subsidy, as per which India has agreed to remove completely fuel subsidies. Again, in 2012 at the Los Cabos meeting of G-20 countries India reaffirmed her commitment to phase out fuel subsidies.

Reform Implementation

From the analysis of the previous sections, it is clear that with rising international fuel prices and widening under-recoveries, the subsidy burden on the Government was mounting up. Realizing the budgetary burden and commitment to international pacts, India initiated the process of de-controlling fuel prices in 2002. However, it was undone by re-instating the administered pricing mechanism in 2004 by the new Government at the Centre. Subsequently there was steep rise in fuel subsidy expenditure forcing the Government to act swiftly to reform fuel subsidy and de-regulate fuel pricing based on the recommendations of various committees.

De-regulation of petrol price : In June 2010, the Government initiated a bold reform in fuel sector by decontrolling the petrol price completely. Henceforth, petrol price was linked to international price ensuring zero subsidy. This was done at the backdrop of a huge petrol price under-recovery of ₹ 5,151crore in 2009-10.

De-regulation of diesel price: Simultaneous to the petrol price deregulation, diesel was also partially de-controlled, but still Government control over the price continued to avoid sudden spike in inflation parallel to global market. Following the recommendations of Kelkar Committee 2012, in January 2013, the Government adopted a policy of gradual phase out of subsidy on diesel by increasing the price of diesel by 50 paise every month. Consequently, during the period between January 2013 and December 2013, the diesel prices went up by more than 12 per cent reducing the subsidy burden on the Government. India was back on reforms again in October 2014 when the Government announced a full deregulation of diesel prices and letting the market to determine the retail price with no government control. Now domestic sales price is linked to international price. It has eased the Government from a huge fiscal burden

and freeing more resources for social schemes and poverty alleviation measures.

LPG pricing and subsidy reforms: Besides de-regulating diesel, considering the growing LPG subsidy burden, the Government executed much needed reforms in the field of LPG. New gas pricing policy and new method of remitting gas subsidy was implemented. The new gas pricing formula is the modification of the Rangarajan methodology. Under the new methodology, price was expected to take into consideration the provision of a sufficient incentive for oil and gas exploration by the companies and also not excessively burdensome for the consumers. A weighted average price of four global gas benchmarks — the US-based Henry Hub, Canada-based Alberta gas, the UK-based NBP, and Russian gas — is the criteria to fix the price. The new formula does not take into account the price of gas imported into India or into other Asian markets, where it is typically costlier. India's gas imports come mostly from Qatar. Hence, the new formula resulted in lower domestic price than import price. In another effort of fuel sector reforms, the Government launched the direct benefit transfer (DBT) scheme for LPG in which cash subsidy will be directly transferred to the bank accounts of consumers and restricting the supply of subsidized cylinder to 12 per annum. This was a historic policy decision against the diversion of subsidized LPG cylinders to black market.

In a very recent fuel subsidy reform move, the Central Government has approved to remove the subsidized LPG to the families having annual income more than ₹ 10 lakhs. To begin with, all those who have reported annual income more than 10 lakhs in the financial assessment year 2014-15 would lose subsidy benefit with effect from January 1, 2016. According the Government estimates, nearly 20.26 lakh assesses reported for having income more than Rs.10 lakh in the Financial Year 2014-15. This is expected to save about ₹ 450 crores of subsidies annually to the Government.

Reforms in kerosene subsidy: The subsidy granted by the Government to the PDS kerosene was ₹29,400 crore in 2012-2013. The kerosene subsidy has been justified on the ground that kerosene is the major source of fuel of the poor. National Council of Applied Economic Research, 2005 conducted an intensive

study and concluded that the novel objective of reaching out poor by subsidizing the kerosene has not met. Its results reveal that 30 to 40 per cent of subsidized kerosene was diverted to black market, mainly to adulterate diesel. In view of this, following to Parikh Committee report 2010, the subsidised PDS kerosene price has been gradually raised from ₹9 per liter which was prior to 2010 to ₹15 currently. In order to avoid further diversion of subsidized kerosene to black market, the Government is considering to supply subsidized kerosene only to the BPL families.

Impact of the reforms: Fuel sector reforms started providing positive results in a span of just a year. The under-recoveries of the upstream companies fell drastically from nearly ₹1,40,000 crore in 2013-14 to about ₹72,000 crore in 2014-15. With the introduction of DBT scheme for providing LPG subsidies, the number of LPG consumers in the country fell from 16.35 crore to 14.78 crore. The new scheme eliminated all inactive customers and duplication in rolls or multiple connections to the same customer. Owing to the series of reforms in terms of deregulation of diesel price, new method of gas pricing, introduction of direct benefit scheme for providing gas subsidies directly to the account of the customers, capping the number of subsidized cylinder a year etc., the budgetary subsidy burden of the Central Government fell phenomenally from ₹85480 crore in 2013-14 to ₹63427 crore in 2014-15. Further, the budget estimate of 2015-16 has a whopping 50 percent cut in petroleum subsidy to ₹30,000 crore owing to better subsidy targeting and price de-control.

5. Impact of Explicit Subsidies on Fiscal Deficit in India

Subsidising essential consumer products like food, fertilisers and fuel is a common trend in many developing economies including India. Subsidies are generally backed up by the desire to protect consumers, especially poor households, from high and volatile prices. However, from the recent experiences and empirical studies it appears that such objective of subsidies is self-defeating. Increasing government subsidies put mounting pressure on the fiscal position of the Government.

From the data presented in the Table- 28, it could be noted that the proportion of subsidies in the fiscal deficit kept on rising since 2002-03 from about 31

percent. By 2007-08 the situation became very worse with proportion of total subsidy to fiscal deficit reaching to the highest level ever of 56 percent. Though in the very next year there was some release in the fiscal pressure due to subsidies, but again started rising and reached to nearly 53 percent of the fiscal deficit in 2012-13. Some reform efforts of the government especially in fuel subsidy sector resulted in slight improvement and the share of the subsidies in the fiscal deficit has decreased to about 50 percent. But it is not adequate considering the fact that still half of the fiscal deficit is comprised by subsidies.

Table-28
Proportion of Subsidy to the Fiscal Deficit
(₹. in crore)

Year	Total Subsidy	FD	Total Subsidy as % of FD
2002-03	44618	145072	30.8
2003-04	44323	123273	36.0
2004-05	45957	125794	36.5
2005-06	47522	146435	32.5
2006-07	57150	142573	40.1
2007-08	70926	126912	55.9
2008-09	129708	336992	38.5
2009-10	141350	418482	33.8
2010-11	173420	373592	46.4
2011-12	217941	515990	42.2
2012-13	257654	490190	52.6
2013-14	255516.3	502858	50.8
2014-15	255707.6	512628	49.9

Source: Indiastat.com

An empirical investigation has been carried out to study the impact of subsidies on the fiscal position of the Government of India. The present study tests the impact of three prominent explicit subsidies: food subsidy; fertilizer subsidy; and fuel subsidy. The estimating model used to examine the impact of such variables on fiscal deficit is:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where,

Y = Fiscal deficit (dependent variable)

a = Intercept of Y which is constant

β_1, β_2 & β_3 = Beta coefficients of X_1, X_2 & X_3 (explanatory variables) respectively

X_1 = Food Subsidy (+)

X_2 = Fertiliser Subsidy (+)

X_3 = Fuel Subsidy (+)

e = error term

As per the theoretical framework, all the independent variables of this model are positively related to the dependent variable. In other words, any increase in the food subsidy, fertiliser subsidy and fuel subsidy or any one of them will lead to increase in fiscal deficit and vice-versa. Hence, positive signs are expected preceding to the beta coefficients of explanatory variables.

Regression equation has been estimated for annual time series data from 2002-03 to 2014-15 using linear regression method and the estimates are reported in Table-29.

Table-29
Estimation Results for Impact of Subsidies on Fiscal Deficit in India

Particulars	Coefficients	Std. Error	t value	sig	VIF
Intercept	28802.054	27940.512	1.031	.330	
Food Subsidy	1.699	.998	1.702	.123	7.143
Fertiliser Subsidy	3.305	.771	4.289	.002	2.942
Fuel Subsidy	1.221	.690	1.769	.111	4.500
R^2	.959				
Adj R^2	.945				
D-W	2.147				
F	70.003			.000	

The regression estimation results indicate that nearly 95 percent variation in fiscal deficit is explained by the model (Adj R^2 = 0.945). The goodness of fit of the model is tested and validated by Durbin-Watson test (for auto correlation), F- test and VIF test (for collinearity). Among the explanatory variables, fertilizer subsidy has the highest impact on the fiscal deficit. Food subsidy is the second most governing factor of fiscal subsidy which is followed fuel subsidy. All the three independent variables have the expected signs. It could be interpreted from the results that 1 percent increase in the fertilizer subsidy would result in 3.3 percent increase in the fiscal deficit of the Central Government. Similarly, 1 per cent increase of food subsidy pushes up fiscal deficit by about 1.7 per cent and 1.2 per cent additional fiscal burden is estimated for a unitary percentage raise in the fuel subsidy, given the condition of other explanatory variables being equal. Though, all the three explanatory variables have profound positive influence on the fiscal deficit, fuel subsidy has statistically significant impact on the Centre's fiscal deficit.

The results of the study is comparable with the results derived by Jeena and Nayak (2014). The regressors found explaining nearly 51 percent change in fiscal deficit whereas the current study finds that these three independent variables have about 94 percent of combined influence on fiscal deficit of the government. The positive impact of all the three regressors under study corroborates the results of Jeena and Nayak. Both the study results show that the impact of change in food subsidy on the fiscal front is the highest. Jeena and Nayak's study indicate that food and fertiliser subsidies have significant impact on fiscal deficit, whereas, as stated earlier, this study finds that only fertiliser subsidy is significantly impacting fiscal deficit. On the whole, the study reaffirms the significant role of explicit subsidies in shaping up the national fiscal figures.

6. Conclusion

Summary and Major Findings

The main objective of the study was to investigate the trends in explicit subsidy of the Government of India and its impact on the fiscal health of the Government. Following are the major observations of the study.

In India, the budgetary subsidy has increased enormously over the period of time, which is indicated by more than six-fold rise during 2002-03 and 2014-15. Prominently, explicit subsidy has comprised of more than 96 percent of the total budgetary subsidy of the Government of India.

It has also been observed that the composition of central explicit subsidy has changed slightly over the last one and half decade with marginal reduction in the proportion of food subsidy and substantial rise in the share of fuel subsidy component to total explicit subsidy.

Though the share of food subsidy to the explicit subsidy has declined, the outstanding food subsidy bill continued to increase. The study explores that

multi-fold increase in the APL subsidy allocation on wheat and rice was the prominent reason for such phenomena. In addition, rising economic costs of foodgrains since 2001-02 forced the Government to increase its subsidy allocation on food sector to ensure foodgrains are distributed at the unchanged low price. Among the economic cost factors, Minimum Support Price appears to be the most significant influential factor in food subsidy. Food procurement volume and distribution costs are also found to be leading factors to high food subsidy.

The study identifies that fertiliser consumption, in India, has increased rapidly but domestic fertilizer production did not increase proportionately. This has led to heavy import of fertilisers and fertilizer feedstocks. Further, import prices of fertilizer feedstocks such as urea, phosphoric acid, ammonia and sulphar increased continuously but the gate prices/sales prices remained unchanged for long. Consequently, to meet the increased cost of domestic production as well as import and facilitate distribution at unchanged low gate price, subsidy allocations are increased. The Government raised subsidy heavily (9-fold increase during 2002-03 and 2014-15) to the fertiliser manufacturers/agencies for concessional sale of fertilizer.

The study also finds out that increasing under recovery of the Oil Marketing Companies (OMCs) was the major reason for rising fuel subsidy. Major part of the under recoveries are being financed by the Government to the OMCs in the form of subsidies. Consequently, fuel subsidy as proportion to the fiscal deficit increased to more than 12 percent in 2014-15 from about 4 percent in 2002-03.

It is noteworthy that currently, the total central subsidy alone is 50 percent of the fiscal deficit, which was 31 percent during 2002-03. It is learnt from the empirical results that all the three prominent explicit subsidies have positive and direct impact on the fiscal deficit of the Central Government. Among the three explicit subsidies, fertilizer subsidy is the most influential and significant factor in fiscal deficit. Food subsidy is the second most influential factor with positive impact on fiscal deficit followed by fuel subsidy.

The study reveals the magnitude/extent of the impact of explicit subsidies on the fiscal deficit. It is learnt that 1 percent increase in the fertilizer subsidy leads to 3.3 percent increase in the fiscal deficit of the Central Government. Similarly, 1 per cent increase of food subsidy pushes up fiscal deficit by about 1.7 per cent and 1.2 per cent additional fiscal burden is estimated for a unitary percentage raise in the fuel subsidy.

Policy Recommendations

From the results it is evident that the explicit subsidies have significant impact on fiscal deficit of the Central Government and thereby affects national economic efficiency. The onus of lowering the fiscal burden and consolidating fiscal position of the nation is on the Central Government. Subsidy by itself is economically inefficient. Several studies have proved that long term subsidies would de-motivate the labour supply, labour productivity and lead to unemployment. Beneficiaries of the subsidy continue to be dependent on the government for livelihood which further adds to the fiscal burden of the Government. Instead, the Government must withdraw most of the subsidies and channelize the saved funds towards socio-economic infrastructure and building up the stock of human capital in the nation. While withdrawing or reforming subsidies utmost care has to be taken that principle of social equity is not compromised. The future subsidization policies must be designed wherein no trade off would happen between social equity and economic efficiency. In view of this, the following policy recommendations are made for efficient subsidy policies in the major areas of explicit subsidy.

Rational Distribution and Pricing Policies for Food Subsidy

Since MSP significantly impacts food subsidy, it is essential to have a scientific methodology to fix minimum support price which is currently lacking. Though the Commission for Agricultural Costs and Prices (CACP) recommended standard MSPs for food procurement, it has been noted that the Government purchased foodgrains at much higher prices than the prices recommended by the CACP. If the Government follows the CACP recommendations, huge amount of subsidy could be reduced.

The food distribution cost should be reduced by cutting down mainly freight costs which have major impact on the food subsidy. In view of this, the Government may shift from the current system of

central pooling and central distribution of foodgrains to local procurement and local distribution. This may be at the taluk or district level.

From the study it is noted that there is a wide gap between the economic cost and issue price of foodgrains. In order to bridge the gap and relive the burden of subsidy, the Government must implement the recommendations of the High Level Committee on Long Term Grain Policy (HLC), 2003. The Committee recommended that APL price should be raised to 80 per cent of economic cost and BPL price to 50 per cent of the economic cost excluding statutory levies. Implementation of this recommendation would address the grievance of APL absorbing the subsidies and ensuring better targeting.

The Government should re-design its PDS network to avoid leakages and malpractices which eat away a large part of Government resources. For better targeting, the PDS subsidy to the BPL customers to be given under Direct Benefit Transfer (DBT) scheme to their bank accounts linked to aadhar, similar to LPG subsidy delivery mechanism. Through local administrations, the BPL status of the customers should be tested and validated.

Targeted Delivery Policy for Fertiliser Subsidy

If the Government has to meet its fiscal targets, containing fertiliser subsidy is a necessity. Towards that direction, it is essential for the Government to decontrol urea pricing. Steps should also be taken to ensure that interests of the small land holders are not comprised in the bargain. This attempt of decontrolling must aim at ensuring that large farm holders do not enjoy the benefits of subsidised fertilisers.

Hence the government must have more targeted approach. Steps should be taken earliest possible to identify and build up a data bank of the real and genuinely deserving farmers to entitle subsidized fertilisers. With the success of direct benefit transfer of LPG subsidy to the beneficiaries through aadhar to the bank account, the process of delivering fertilizer subsidy directly to the farmers must gather momentum to avoid further leakages and heavy loss to the government.

Though the government launched the process of digitization of land records in 2008, no further developments have taken place. Digitization of land records eliminates proxy beneficiaries and non-farm beneficiaries of fertilizer subsidy. Effective implementation of this scheme is undeniably politically challenging to the government but it is needed to cut the wastage of government funds.

Efficient Pricing Policy for Fuel Subsidy

Inorder to bring down the fuel subsidy, it is suggested for efficient fuel pricing mechanism, better targeting of the beneficiaries and effective subsidy delivery mechanism. It is suggested for removal of PDS kerosene subsidy which is currently ₹28 per liter in a phased manner over the next three years. This could leverage the PDS kerosene price with the open market price leading to possible reduction in large scale black marketing and leakages of PDS kerosene and adulteration of diesel. While to protect the interest of the BPL families, they would be given cash assistance of 50 percent of the price of kerosene, which could be remitted directly to their bank accounts which are linked to aadhar. The PDS kerosene should be provided only to the BPL customers and APL should be kept out of its purview. To avoid large scale black marketing and leakages of PDS kerosene and adulteration of diesel, the PDS kerosene price should be leveraged with the open market price and the BPL customers may be given their subsidies through Direct Benefit Transfer (DBT) scheme crediting the subsidy directly to their bank account which is linked to aadhar.

Inferences

At this stage what appears clear is that provision of subsidy is economically inefficient. Theoretically there is trade- off between national economic efficiency and social equity in the provision of subsidy. Over the past more than six and a half decade, Indian fiscal policies were dominated by subsidies to achieve greater social equity. But unfortunately, it was at the cost of national economic efficiency, leading to alarmingly high fiscal deficit. Explicit subsidies created a large sized 'community of dependents' on Government provisions and the benefits procured are short- lived. Further, the very purpose of achieving equitable society was also not been able to achieve due to failure in effective implementation and several loopholes in the policy mechanism. Such model of growth is economically inefficient and ineffective in the long-run.

Alternatively, Government may invest on the capability building programmes such as education, vocational training, skill enhancement, and help in getting wage employment or self-employment. Such investment on human capital has multiplier effect on the national GDP. This makes people highly self-dependent and self-reliant. Such an economy, in which people have the potential to earn their livelihood, has high voluntary consumption spending which ensures increased domestic aggregate demand. This in turn, accelerates domestic economic activities and contributes to the national GDP. Such growth model is not only financially viable and efficient but also socially equitable. Emerging economies, in general, Indian economy in particular, need to shift from subsidy-supplemented approach of growth to investment-led growth paradigm.

However, under investment-led growth approach the danger of compromising with social equity cannot be ruled out. This is because, market economy has no concern towards society. A mixed economy like India which is the blend of capitalism and socialism would be able to generate more inclusive growth through effective investment policies, which could not be achieved by socialist mechanism like subsidies. From the results derived from this study, it is clear that subsidies never led to economic growth, instead was an obstacle to the growth drivers. Indian case appears similar to many other countries such as Germany in the past, which when raised the budgetary subsidy tend to contract the growth of the domestic economy. For India, 'minimum subsidy and maximum economic efficiency' should be the key for future fiscal policies.

The current study is limited to only explicit subsidies. Future studies may incorporate other prominent components of subsidies of the Central Government. Again, the subsidies of the state government are omitted in the present study which are very bulk in volume. Any aggregate study of subsidies of the center and the states and their impact on fiscal discipline would give us more reliable macro fiscal picture of the country as a whole.

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