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**AGRARIAN PERFORMANCE AND FOOD PRICE INFLATION
IN INDIA: INSIGHTS AND LESSONS FROM PRE- AND
POST- ECONOMIC LIBERALISATION EXPERIENCES**

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AGRARIAN PERFORMANCE AND FOOD PRICE INFLATION IN INDIA: INSIGHTS AND LESSONS FROM PRE- AND POST-ECONOMIC LIBERALISATION EXPERIENCES

It has been argued that the rising food inflation in India in recent years is rooted in the dismal performance of the Indian agricultural sector after the economic reforms period. In this context, this paper examines the impact of agrarian performance on food inflation in India from a long-run perspective. For the purpose, the growth path of Indian agricultural sector is divided into four phases: pre-Green Revolution (GR) period (1950-51 to 1966-67), initial stage of GR (1967-68 to 1979-80), maturing stage of GR (1980-81 to 1991-92) and post-economic reform period (1992-93 to present).

The results show that despite the decline in the agricultural sector during the post-economic reforms period, food was relatively cheaper during this period compared with the best phase (1980-81 to 1991-92) of Indian agriculture. The much celebrated maturing stage of GR has not turned out to be price friendly. In our view, there are two reasons for this outcome. First, thanks to open trade and comfortable foreign exchange reserve position, since 1992 India has managed to import adequate quantities of food whenever a domestic supply-shock emerged. Second, the growth path of Indian agriculture was more stable during the post-economic reforms period than the other periods, implying that from the point of view of food prices stability of growth is more important than high and fluctuating growth.

Key Words: Indian agriculture, Food inflation, Economic reforms

INTRODUCTION

A major economic challenge facing India in the recent years has been the stubbornly high food prices. It began with the rising inflation, measured by year-on-year changes in the wholesale price index (WPI) (Base: 2004-05), of manufactured food products from January 2008 followed shortly by primary food articles. Persistence of food price inflation over a long period of time such as the recent one has some undesirable consequences. As poverty level and household spending on food are high in India, increasing food prices hurts low-income and vulnerable households (Basu 2011b; Bose 2012; Carrasco and Mukhopadhyay 2012).² High food prices necessitate aggressive monetary tightening by the central bank thereby causing a moderation in

² A 10% increase in food prices has the potential to push approximately 30 million more Indians into extreme poverty (Carrasco and Mukhopadhyay 2012).

economic growth. Further economic slowdown can occur if persistently high food prices reduce the consumption of non-agricultural goods (Bose 2012; Carrasco and Mukhopadhyay 2012).

Several factors are held responsible for high food prices in India since 2008 (see Basu 2011a; Chand 2010; Kumar et al 2010; Nair and Eapen 2011, 2012). Among them, the decline in the agricultural sector has received considerable national attention. The post-economic reform period has been characterised by deceleration in the growth rate of overall agricultural output and crop yields due to various structural factors (see Bhalla and Singh 2009; Desai et al 2011). Accordingly, it is argued that, the problem of rising food inflation is rooted in these agrarian woes witnessing India since the initiation of economic reforms in 1991 (Bose 2012; Carrasco and Mukhopadhyay 2012; Desai et al 2011; GoI 2012; Kumar et al 2010). However, a clear long-term link between the slowdown in agricultural growth and rising food prices is yet to be established. The present understanding of the impact of agrarian slowdown on food inflation is based on the recent experience (since year 2008) with rising food prices (see Nair and Eapen 2012). Many critical questions which have significant policy implications are left unanswered as a result. They are: (a) How did food prices behave in India in response to the growth of agricultural gross domestic product (GDP) and food production during the post-economic reforms period as a whole?; (b) Is the food price scenario experienced during the deceleration phase (post-1991) of agricultural growth significantly different from the one witnessing the pre-economic reforms phase?; (c) What are the root causes of various instances of food price spiral witnessed during the pre- and post-economic reforms period? (d) How did India meet its food requirements and control the food prices throughout the post-reform period of decelerating agricultural output? Is the strategy followed during this period to control food prices effective?

The objective of this paper is to assess the impact of agrarian performance on food prices in India from a long-run perspective – from 1951 to present - by way of answering the aforementioned research questions. In the light of the rising food inflation in recent years, there has been growing demand for introducing long-term structural reforms in the farm sector aimed at expanding domestic production of agricultural goods (Bose 2012; Carrasco and Mukhopadhyay 2012; Desai et al 2011;

GoI 2012; Kumar et al 2010). The suggested reforms, among others, include the controversial proposals such as allowing more private/corporate sector participation in agriculture, reforms in the Agricultural Produce Marketing Committee Act, expanding the involvement of organised trade/retail in agriculture, permitting foreign direct investment in multi-brand retail, and modernising the supply chains (GoI 2012). The underlying assumption behind these reform proposals is that the structural imbalances in Indian agriculture due to years of neglect of the sector are instrumental in driving rising food inflation. However, to appreciate the need and urgency for initiating such radical reforms, we need to have clearer understanding of the long-run impact of agrarian performance on food prices.

The research process followed in this paper is descriptive. The long-term trends (from 1950-51 to present) in the WPI inflation rate of various food items is examined in relation to the trends in various indicators of agrarian performance such as growth rate of production of the food items and agricultural GDP. For this purpose, following Bhalla (2007) and Bhalla and Singh (2009), the growth performance of Indian agricultural sector is divided into four phases: pre-Green Revolution (GR) period (1950-51 to 1966-67), initial stage of GR (1967-68 to 1979-80), maturing stage of GR (1980-81 to 1991-92) and post-economic reform period (1992-93 to present).³

The paper proceeds as follows. Section 2 presents a performance analysis of Indian agriculture under various policy phases. In Section 3, the trends in food inflation witnessed during various policy periods are discussed. Section 4 explains the reasons for the price trends emerged under the agrarian policy regimes. The last section summarises the findings of the paper and draws policy conclusions.

2. Performance of Indian Agriculture since Independence:

2.1. Pre-GR Period (1950-51 to 1964-65):

At the time of Independence, India witnessed acute shortage of food owing to the disruption caused to the agricultural sector following the partition of the British India in 1947 (Bhalla 2007; Swaminathan 2012). The partition has led to loss of rich fertile

³ Following Panagariya (2004), we start the post-economic reforms time-line from 1992-93. As the economic reform programme was introduced from July 1991, its effect on the economy could not have been felt prior to 1992-93.

lands to Pakistan and large-scale migration of population from India to Pakistan and vice versa. The government met the country's immediate food requirement through large scale import of food aid, primarily using the PL480 programme of the United States of America (USA). In addition, serious attempts were made to attain self sufficiency in food production by way of large public investment in agricultural infrastructure such as irrigation, power projects and fertilizer production; implementation of land reforms; and introduction of rural developmental schemes such as Community Development Programme, Intensive Agricultural District Programme and Intensive Agricultural Area Programme (Bhalla 2007).

The impact of these measures was encouraging. As compared to the British period, the growth performance of the Indian agriculture during the pre-GR period was remarkable. The growth rate of income from the agriculture sector was 2.66% pa during the pre-GR period (Table 1). In contrast, the most optimistic estimate of growth rate of the primary sector (mainly agriculture) during 1900-01 to 1946-47 presents the figure of just 0.76% pa.⁴ As regards the growth rate of agricultural output, according to Sivasubramonian (2000), output of 25 major crops grew only at 0.41% pa during 1900-01 to 1946-47. Against this, the growth rate of output of all the major crops was healthy during 1950-51 to 1964-65 (see Table 2).

The major concern with the pre-GR phase of Indian agriculture was the unimpressive contribution of yield growth to agricultural output growth. During this period, the contribution of yield growth to output growth was only 38.4% against the figure of 50.16% for area growth (Bhalla and Singh 2009). The main reason identified for the lower dominance of yield growth on output growth was the poor response of the existing crop varieties to fertilizer application (Bhalla 2007; Swaminathan 2012). The crops grown had tall and thin straw and could not survive when fertilizers were applied (Swaminathan 2012).

⁴ This estimate was arrived by Maddison (1971). According to the estimate done by Heston (1982), the growth rate of the primary sector (mainly agriculture) during 1900-01 to 1946-47 was 0.65% pa (As quoted in Bhalla 2007).

Table 1: Compound Annual Growth Rates of Gross Domestic Product (GDP) and Agricultural GDP (Base: 2004-05)

Period	Total GDP	Agricultural GDP
1950-51 to 1964-65	3.95	2.66
1967-68 to 1979-80	3.45	2.19
1980-81 to 1991-92	5.21	3.09
1992-93 to 2010-11	6.88	2.33

(Percent)

Note: The GDP data in 1999-2000 base was converted to 2004-05 base using linking factor.

Source: Handbook of Statistics on Indian Economy (HBSIE), Reserve Bank of India (RBI), (Various Issues).

Table 2: Annual Compound Growth Rate of Production and yield of various Food Commodities (%)

Items	1950-1 to 1964-5		1967-8 to 1979-0		1980-1 to 1991-2		1992-93 to 09-0/10-1	
	Output	Yield	Output	Yield	Output	Yield	Output	Yield
Total Foodgrains	3.54	2.12	2.16	1.73	2.74	3.01	1.35	1.36
Cereal	3.76	2.43	2.47	2.08	2.87	3.20	1.38	1.48
Rice	4.35	2.86	1.95	1.18	3.71	3.12	1.20	1.14
Wheat	4.27	1.53	5.48	2.30	3.63	3.24	1.65	0.94
Coarse cereals	2.75	1.68	0.72	1.81	-0.01	1.73	1.28	2.25
Pulses	2.19	0.40	-0.54	-1.08	1.33	1.27	0.92	0.54
Nine Oilseeds	3.54	0.89	1.83	0.67	6.06	2.73	1.82	1.51
Sugarcane	6.36	3.07	2.79	1.16	3.67	1.44	1.29	-0.07
Tea	-	-	3.33*	-	2.76	1.87	1.81	-0.32
Coffee	-	-	5.01*	-	2.67	1.17	2.40	-0.41
Milk	1.64≠	-	2.23⊗	-	5.14	-	4.09	-
Egg	4.63≠	-	6.49⊗	-	7.71	-	5.90	-
Fish	-	-	-	-	5.14	-	3.28	-
Marine	-	-	-	-	4.74	-	0.80	-
Inland	-	-	-	-	5.74	-	5.65	-

Notes: - Not available; * - From 1970-71 to 1979-80; ≠ - From 1950-51 to 1960-61 based on point-to-point data; ⊗ - From 1960-61 to 1979-80 based on point-to-point data

Source: Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India (<http://agricoop.nic.in/Agristatistics.htm>).

2.2. Initial Stage of GR (1967-68 to 1979-80):

The “yield consciousness” among agricultural scientists and policy makers has eventually led to the introduction of new High Yielding Varieties (HYV) seed-

fertilizer strategy, popularly known as Green Revolution, starting from mid-1960s.⁵ The key components of this strategy were supply of HYV seeds, fertilizer, irrigation water and other inputs mostly at subsidised rates; provision of agricultural credit through formal channel; increased investment in agricultural research and extension; reorganisation of the agricultural research system; setting up of new institutions to ensure assured supply of modern agricultural inputs; and remunerative price support to the farmers (Bhalla 2007).

But, the influence of this new strategy on the performance parameters of the Indian agriculture was not encouraging during the initial stage (1967-68 to 1979-80) of GR. This is evident from the noticeable drop in the growth rate of output and yield of all the major crops during the initial stage of GR with wheat standing out as an exception (see Table 2). The growth rate of agricultural GDP has also decelerated during the same period to 2.19% pa from 2.66% pa recorded in the earlier period. Several factors are believed to have contributed to this outcome (Bhalla 2007; EPW 1967a, 1967b). They include limited crop (only wheat) and geographical (only Punjab, Haryana and Western Uttar Pradesh) coverage of GR strategy to start with; after effects of severe crop failure for two successive years in 1965-66 and 1966-67 due to severe drought conditions; after effects of 1962 Sino-Indian war, 1965 Indo-Pak war, 1971 Indo-Pak war and oil crises emerging during 1973-74 and 1978-79; threat of stoppage of concessional food supply, particularly from the USA; and sharp reduction in foreign aid.

2.3. Maturing Stage of GR (1980-81 to 1991-92):

Consequent to the spread of HYV seed-fertilizer strategy to more crops and more geographical areas, India's agrarian economy witnessed a revival during the 1980s. Compared with the initial stage of GR, the growth rate of agricultural GDP, output and yield of majority of the crops recorded an improvement during the period 1980-81 to 1991-92 (Tables 1 and 2). In fact, the GDP growth figure of 3.09% pa achieved for agricultural sector as a whole during the maturing stage of GR was the highest till date. Other encouraging features of agrarian performance during this period are:

⁵ For details of the events leading to the introduction of this strategy, see Bhalla 2007 and Swaminathan 2012.

emergence of yield as the predominant contributor to output growth⁶; and spread of benefits of HYV seed-fertilizer strategy to more crops⁷ and almost all the regions of India (Bhalla 2007). Due to these reasons, the maturing stage of GR is considered to be a turning point in India's agricultural development (Bhalla and Singh 2009).

2.4. Post-Economics Reforms Period (1992-93 to Present):

The economic liberalisation strategy introduced in India since June 1991 has no explicit mandate to liberalise Indian agriculture sector and integrate it with the global economy (Bhalla 2007; Chand et al 2007; Landes and Gulati 2004). However, the various changes introduced in India's macro-economic, industrial and trade policies as part of economic liberalisation have influenced the agrarian environment in varied ways. Measures such as devaluation of the Indian rupee, removal of protection to industry and trade liberalisation have reduced the discrimination against agriculture thereby improving the terms of trade of agricultural commodities.⁸ Another important impact was felt through India's compliance with world trade organisation (WTO) obligations - India almost completely removed quantitative restrictions on import of agricultural commodities by year 2001 and migrated to the bound *tariff only* regime (Hoda and Gulati, 2007). As a consequence of liberal investment policy, the private sector is now more interested in expanding its presence in the agricultural sector than before. Corporate firms are now entering every area of agribusiness namely contract farming, food processing, seed research and agri-exports (Gulati et al Undated; Landes and Gulati 2004).

The absence of a comprehensive package of measures to guide the path of agricultural sector in a liberal economic regime took its toll on the performance of the sector. All the vital indicators of agricultural growth deteriorated in the post-reforms period (1992-93 to 2010-11) compared with the maturing stage of GR. The growth rate of agricultural GDP decelerated to 2.33% pa during the post-reforms period against 3.06% pa recorded during the maturing stage of GR (Table 1). The growth rate of

⁶ During 1980-81 to 1990-91, the yield growth accounted for 80.25% of growth of output, against the figures of 58.45% and 38.41% recorded during 1949-50 to 1964-65 and 1967-68 to 1980-81 respectively (Bhalla 2007).

⁷ Crops namely rice, pulses, cotton, sugarcane and oilseeds benefited immensely during the maturing stage of GR.

⁸ In addition, the higher support prices for farm products, in particular, rice and wheat has also turned relative prices in favour of agriculture (Landes and Gulati 2004).

output and yield of majority of the food commodities has decelerated during the post reforms period (See Table 2).

The deterioration in the overall performance of Indian agriculture during the post-economic reforms period is attributed to numerous factors (Bhalla 2007; Chand et al 2007; Landes and Gulati 2004). Important among them are decline in the yield growth, inadequate private investment compared to the private investment boom experienced in the rest of the economy; decline in the public investment, in particular, surface irrigation system; fragmentation of land holdings; increasing cost of production; poor level of agriculture research; falling growth of credit to small and marginal farmers; decline in viability of farming; poor performance of rainfed and dryland agriculture; lack of interest among majority to take up agriculture as a profession; lack of availability of quality seeds; slow pace of diversification; decline in supply of electricity to agriculture; over exploitation of ground water; institutional impediments to larger private investment in agriculture such as Essential Commodities Act, small scale industry reservation, and Agricultural Produce and Marketing Committee (APMC) Act.

3. Behaviour of Food Prices During various Agrarian Eras:

In this section we examine the trends in two components⁹ of food inflation namely food articles and food products witnessed during pre-GR period (1950-51 to 1967-68); initial stage of GR (1967-68 to 1979-80); maturing stage of GR (1980-81 to 1991-92) and post- economic reforms period (1992-93 to present).

3.1. Trends in Food Articles Inflation:

Since April 1954 India experienced fourteen episodes of high food articles inflation (see Table 3). On all these occasions, the impact of the price build-up was broad-based, implying that almost all the commodity subgroups under food articles category were subject to high inflation rate.¹⁰ The longest episode of high food articles inflation was the 62 months period from July 1979 to August 1984, followed closely by 57 months from June 1963 to February 1968 and the ongoing phase starting from

⁹ The WPI of food consists of two sub components, namely primary food articles and manufactured food products.

¹⁰ The complete data set are available from the authors upon request.

March 2008. The inflationary episode which has produced highest food articles inflation rate (20.22%), on an average, was the 36 months period from June 1972 to May 1975.

During the pre-GR period, food articles experienced high price pressure on four occasions (Table 3). The average inflation recorded during these inflationary episodes range from 8.50% to over 15%. In the 13 years covering the initial stage of GR, India experienced three episodes of high food articles inflation. The peak average inflation rate recorded during these episodes was 20.22% with the minimum being 10.96%. During the maturing stage of GR spanning 12 years food articles price build-up has occurred on three occasions with an average inflation rate ranging from 9.88% to 15.11%. Notably, the duration of all the inflationary episodes witnessed during this stage was quite longer. During the 20 years since the introduction of economic reforms, India experienced four episodes of high food articles inflation. The average inflation rate recorded during this period range from 9.22% to 12.99%. Interestingly, among all agricultural policy phases, post-economic reforms period was witness to lowest level of peak average inflation rate (13%) recorded in a given episode.

On the average basis, the maturing stage of GR has recorded highest food articles inflation rate of 10.20% followed by post-economic reforms period (7.73%), initial stage of GR (5.98%) and pre-GR period (4.48%) (Table 3). This trend is evident across individual food articles as well (Table 5).

3.2. Trends in Food Products Inflation:

Since April 1972, the period from which data is available, the incident of high inflation of food products group has struck India on eleven occasions, the longest being the 72 months period from April 1989 to March 1995 (Table 4). The period from April 1979 to June 1981 had experienced highest inflation rate of 37.72%, on an average. Except for the periods from December 1976 to June 1977 and from April 2011 to June 2012, on all other occasions, the impact of food products price build-up was spread across majority of the food items.¹¹

¹¹ See footnote 9.

Table 3: Average WPI Inflation Rate Recorded during various Episodes of Food Articles Price Inflation since Independence (%)
(Based on WPI Index with Base 2004-05)

Period	Duration (in months)	Food Articles	World Food Inflation Rate
Pre-GR Period (1950-51 to 1964-65)			
March 1956 to August 1957	18	15.02	-
July 1958 to May 1959	11	9.91	-2.47
May 1962 to November 1962	7	8.50	3.08
June 1963 to March 1965	22	13.70	3.16
Overall Period	-	4.48	-
Initial Stage of GR (1967-68 to 1979-80)			
June 1972 to May 1975	36	20.22	27.76
February 1977 to January 1978	12	13.15	-3.47
July 1979 to March 1981	21	10.96	11.56
Overall Period	-	5.98	8.03
Maturing Stage of GR (1980-81 to 1991-92)			
April 1981 to August 1984	41	11.67	-4.59
April 1986 to February 1989	35	9.88	5.11
April 1990 to February 1993	35	15.11	-0.98
Overall Period	-	10.20	-2.46
Post-Economic Reforms Period (1992-93 to Present)			
June 1994 to April 1997	35	11.47	3.84
May 1998 to April 1999	12	12.99	-11.30
October 2005 to September 2007	24	9.22	10.58
March 2008 to June 2012	52	11.51	5.66
Overall Period	-	7.73	3.56

Note: For the calculation of WPI inflation rate, the WPI available in various bases is converted into a common (2004-05) base using linking factor.

Source (Basic Data): (i) HBSIE (March 2006), RBI.

(ii) Central Statistical Organisation (<http://eaindustry.nic.in/>).

(iii) International Financial Statistics, International Monetary Fund.

The initial and maturing stages of GR were witness to three episodes of high food products inflation each (Table 4). The average inflation recorded during the three episodes of high inflation in the initial stage of GR range from 15% to 37.72%. The same figure for the maturing stage of GR is 8.68% to 10.86%. During the post-economic reforms period, India experienced five episodes of high food products inflation with the average inflation rate ranging from 6.89% to 12.20%. A comparison of average food products inflation rates experienced during the various phases of

agricultural growth reveal that the initial stage of GR (12.57%) was subject to highest price pressure followed by maturing stage of GR (7.24%) and post-economic reforms period (5.76%). This trend is more or less evident across individual items of food products as well (Table 5). As regards the reasons behind food price pressures witnessed during various policy periods, our analysis reveals that each episode of food articles and food products inflation was triggered by a supply-shortfall.

The above analysis of the trends in food inflation during the various phases of India's agricultural growth clearly shows that, when read against the dismal performance of Indian agriculture during the post-economic reforms period, food prices were far more comfortable in this period compared to the best phase of Indian agriculture; that is maturing stage of GR. On an average basis, the food articles and food products inflation rate recorded during the maturing stage of GR respectively was 10.20% and 7.24% (Tables 3 and 4). Against this, the same figure for post-economic reforms period was only 7.73% and 5.76%. The prices of majority of the individual food articles and food products were turned out to be lower, on an average, in the post-economic reforms period compared to the maturing stage of GR (Table 5). Another interesting trend is that, the average food articles and food products inflation rate recorded during the maturing stage of GR was the highest and second highest respectively among all the phases of agricultural growth in India.

4. Understanding the Behaviour of Food Prices:

We give the following explanations for the relatively moderate food articles (compared with the maturing stage of GR) and food products (compared with initial and maturing stages of GR) inflation rate witnessed during the post-economic reforms period notwithstanding the marked slowdown in agricultural growth since 1991 reforms.

(i) It seems that opening up of international trade and comfortable foreign exchange reserve position, both as a result of economic liberalisation, has enabled India to import more quantities of food to meet her food requirement at times of domestic shortage and escalating domestic food prices. This is evident from Figure 1, which reveals two interesting trends. First, compared to all other policy periods, India's food import has responded overwhelmingly to domestic food price escalation during the post-economic reforms period. Second, the quantum of food imports was significantly

larger during the post-economic reform years compared with all other policy periods. In contrast, during the pre-economic reforms period including the maturing stage of GR, one can spot several instances of India facing great difficulty in meeting her food requirement through imports because of foreign exchange shortage and adverse balance of payments position (see EPW 1967a; 1967b; 1973a; 1973b; 1975; 1983). The fact that, on an average basis, world food inflation rate was quite low during the post-economic reforms period (see Tables 3 and 4) has also helped India to meet her food shortage through cheap imports. Interestingly, during the maturing stage of GR India could not benefit out of the similar situation of lower world food prices because of her inability to resort to imports due to perennial foreign exchange shortage situation (EPW 1983).

Table 4: Average Inflation Rate Recorded during various Episodes of Food Products*
Price Inflation since Independence (%)
(Based on WPI Index with Base 2004-05)

Period	Duration (in months)	Food Products	World Food Inflation Rate
Initial Stage of GR (1967-68 to 1979-80)			
April 1972 to June 1975	39	15.00	56.84
December 1976 to June 1977	7	18.31	6.38
April 1979 to June 1981	27	37.72	10.84
Overall Period	-	12.57	9.47
Maturing Stage of GR (1980-81 to 1991-92)			
April 1983 to August 1984	17	10.57	-4.86
February 1986 to October 1988	33	8.68	-21.28
April 1989 to March 1993	48	10.86	-3.28
Overall Period	-	7.24	-2.63
Post-Economic Reforms Period (1992-93 to Present)			
April 1993 to March 1995	24	12.20	1.26
December 1996 to March 1999	28	9.46	-16.71
March 2003 to January 2005	23	7.29	22.04
January 2008 to July 2010	31	10.20	2.22
April 2011 to June 2012	15	6.89	18.45
Overall Period	-	5.76	3.58

Note: * - WPI data on food products and its sub-groups is available only from April 1971

Source (Basic Data): As in Table 3.

Table 5: Average Sub-group wise WPI Inflation Rate of Food Articles and Food Products under various Agrarian Policy Regimes (%)

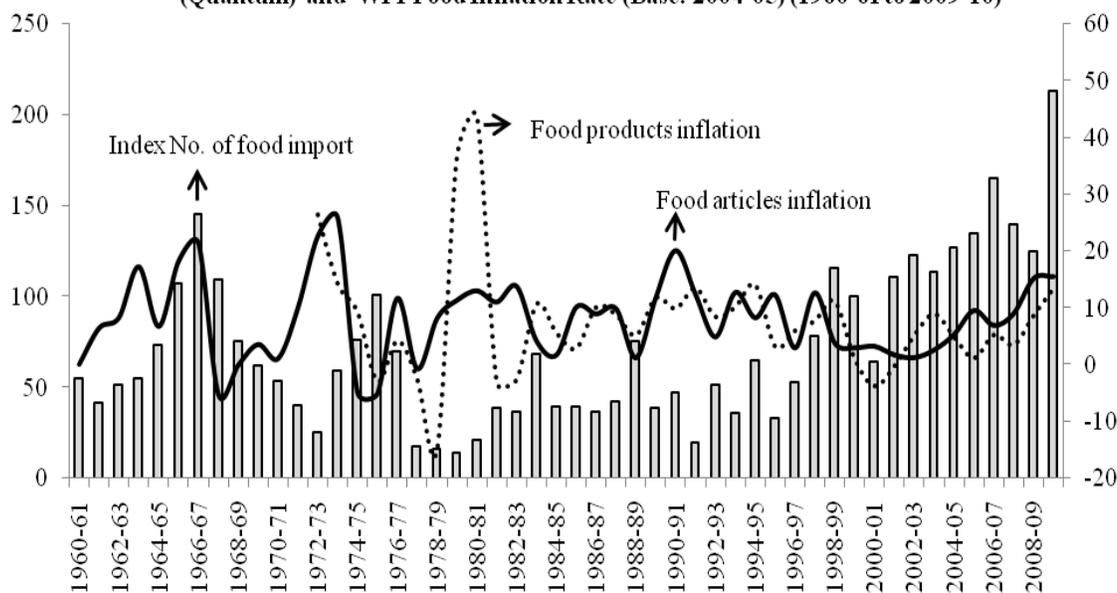
(Based on WPI Index with Base 2004-05)

	Pre-GR Period	Initial Stage of GR Period	Maturing Stage of GR Period	Post-Economic Reforms Period
Food Articles				
Food Grains*	-	5.10	9.89	6.67
Cereals	3.69	5.40	9.94	6.79
Pulses	8.34	7.54	9.00	7.56
Fruits & Vegetables	6.62	6.87	9.81	7.79
Milk	4.09	5.07	10.28	8.21
Eggs, Meat & Fish	7.42	8.64	9.59	9.34
Condiments & Spices*	-	4.34	18.89	7.38
Food Products ≠				
Dairy Products	-	8.96	10.21	7.05
Grain Mill Products	-	6.17	9.43	4.99
Sugar, Khandsari & Gur	-	11.39	2.32	6.76
Edible Oils	-	11.14	9.64	4.21
Oil cake	-	10.49	8.32	7.80
Tea & Coffee Processing⊗	-	-	6.66	5.64

Notes: * - Until April 1963 foodgrains and condiments and spices classification were not existent; ≠ - WPI data on food products and its sub-groups is available only from April 1971; ⊗ - Tea and Coffee processing classification is available only from April 1982.

Source (Basic Data): As in Table 3.

Figure 1: Yearly Movements in Index Number (Base: 1999-00) of Food Imports (Quantum) and WPI Food Inflation Rate (Base: 2004-05) (1960-61 to 2009-10)



Source: HSIE RBI (For Import Index) and CSO (For Inflation)

Table 6: Standard Deviation of Y-o-Y Growth Rates (%)

	1951-52 to 1964-65	1967-68 to 1979-80	1980-81 to 1991-92	1992-93 to 09-10/10-11
Foodgrains	8.40	12.52	9.51	8.83
Total Cereals	7.75	11.90	9.36	8.56
Rice	10.20	14.80	13.43	9.69
Wheat	12.74	14.91	8.10	6.50
Pulses	14.66	19.27	13.94	14.26
Nine Oilseeds	10.32	18.91	18.00	21.59
Sugarcane	16.51	13.04	8.37	11.76
Tea	-	3.49	4.34	3.46
Coffee	-	24.06	46.16	10.89
Milk	-	-	2.19	1.00
Egg	-	-	3.31	4.50
Fish (Total)	-	-	5.65	2.75
Agricultural GDP	5.05	9.05	6.49	5.18

Source: As in Table 2.

(ii) One striking aspect of India's agrarian performance during the post-economic reforms period was that, although at a lower level, the growth of agricultural output and GDP was more stable during this period compared with the initial and maturing stages of GR (see Table 6). The standard deviation of year-on-year growth rate of output of majority of the food commodities and agricultural GDP was relatively lower in the post-economic reforms period. The implication is that even if the overall growth of agricultural output is high in a given period, frequent fluctuations in growth in the absence of open trade and adequate foreign exchange reserves can cause serious disruptions in supply and hence lead to high food inflation. For instance, the much celebrated high growth performance of Indian agriculture during the maturing stage of GR was made possible due to extraordinary growth achieved in just three years namely 1980-81, 1983-84 and 1988-89. The year-on-year growth of agricultural GDP recorded during these three years was 14.44%, 10.75% and 16.85% respectively. The same figure for food grain output was 18.13%, 17.64% and 21.07% respectively. In all the other years the year on year growth rates of agricultural GDP and food grain output was either negative or quite low. This finding suggests that, although serious concerns have been raised about the lackluster growth performance of Indian agriculture in the last two decades or so, the performance has a virtue in the form of smooth growth which helped to moderate food inflation.

5. Summary and Conclusions:

In this paper, we have analysed the behavior of food prices in India in relation to the performance of the agricultural sector since Independence. For the purpose, the growth path of Indian agricultural sector is divided into four phases: pre-Green Revolution (GR) period (1950-51 to 1966-67), initial stage of GR (1967-68 to 1979-80), maturing stage of GR (1980-81 to 1991-92) and post-economic reform period (1992-93 to present).

It is revealed that despite dismal performance by the farm sector during the post-economic reforms period, food was relatively cheaper during this period compared with the best phase (1980-81 to 1991-92) of Indian agriculture. The much celebrated maturing stage of GR has not turned out to be price friendly with both food articles and food products inflation rate, on an average, remaining high during this phase. In our view, this unexpected outcome has emerged due to two reasons. First, thanks to open trade and comfortable foreign exchange reserve position, since 1992 India has managed to import adequate quantities of food whenever domestic supply-shock struck her. In contrast, the periods before economic liberalisation were marked by perennial foreign exchange shortage and the consequent difficulty in exercising the import option. Second, the growth path of Indian agriculture was more stable during the post-economic reforms period than the initial and maturing stages of GR. The agricultural growth, though higher, was more volatile in the maturing stage of GR. This finding has a major implication. From the point of view of food prices, stability of growth is more important than high and fluctuating growth.

The policy implication of our findings is that, a combination of liberal external sector regime and stable but not necessarily high agricultural growth can be helpful to keep food inflation under control. At least from an inflation angle, the concerns about the deceleration of agricultural growth during the post-economic reforms period need to be revisited. Along with the level of growth we need to focus on stability of growth. The findings also align with the notion that economic (trade) liberalisation and the consequent strengthening of foreign exchange reserve position have made the government to be less focused on agricultural self-sufficiency since 1992 (Landes and Gulati 2004).

However, these policy implications need to be received with one caveat. Too much dependence on liberal trade for meeting country's food requirement can at any time invite the risk of stoppage of trade owing to "politics of trade" (Basu 2011a) or short-supply in the international market due to climatic reasons. In fact, post-independent India was witness to many crunch situations due to denial or delay of food supplies purely because of unfavourable relationship with the Western world (See for example EPW 1967a; EPW 1974). Looking from this angle, the need for maintaining some reasonable level of self-sufficiency in food cannot be ignored.

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