

UNU-WIDER

30 YEARS OF RESEARCH  
FOR DEVELOPMENT

WIDER Working Paper 2015/120

**India's political economy responses to the  
global food price shock of 2007–08**

Learning some lessons

Ashok Gulati, and Shweta Saini\*

December 2015

**Abstract:** India's policy responses to the food price crisis were strong. Exports of basic staples were banned. Domestic support prices of wheat and rice were raised substantially. The urea price increases in global markets were absorbed through enhanced fertilizer subsidies. The government launched the National Food Security Mission in 2007–08 with an objective to raise grain production by 20 MMT over the subsequent five years. The results: India contained food inflation below 7 per cent in 2007–08; grain production increased by 42 MMT over five years leading to government's grain stocks touching 82 MMT in 2012. Backed by robust production and stock levels, rice exports surged when India freed up its exports in September 2011, making it a world leader in rice exports. However, policies followed during the crisis and eventually to combat it, resulted in a high fiscal deficit mainly because of the rising food and fertilizer subsidies, leading to double-digit food inflation after 2009–10. In retrospect, had India reviewed its export bans and opened up exports earlier, it could have avoided excessive grain stocks, reduced its fiscal deficit, and benefited global markets, leading to a win-win situation.

**Keywords:** food security, trade, export bans, global food crisis, India, agriculture policy  
**JEL classification:** Q17, Q18, F42, E60

**Acknowledgements:** The authors would like to thank Per Pinstrup-Andersen for his valuable inputs during the current research work and its finalization.

---

\*Both authors Indian Council for Research on International Economic Relations (ICRIER), New Delhi, India; corresponding author [agulati115@gmail.com](mailto:agulati115@gmail.com).

This study has been prepared within the UNU-WIDER project '[The Political Economy of Food Price Policy](#)'.

Copyright © UNU-WIDER 2015

ISSN 1798-7237 ISBN 978-92-9256-009-6

Typescript prepared by Lesley Ellen for UNU-WIDER.

UNU-WIDER gratefully acknowledges the financial contributions to the research programme from the governments of Denmark, Finland, Sweden, and the United Kingdom.

The World Institute for Development Economics Research (WIDER) was established by the United Nations University (UNU) as its first research and training centre and started work in Helsinki, Finland in 1985. The Institute undertakes applied research and policy analysis on structural changes affecting the developing and transitional economies, provides a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and promotes capacity strengthening and training in the field of economic and social policy-making. Work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.

UNU-WIDER, Katajanokanlaituri 6 B, 00160 Helsinki, Finland, [wider.unu.edu](http://wider.unu.edu)

The views expressed in this publication are those of the author(s). Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

## 1 Introduction

India is a vibrant and a vocal democracy comprising of 17 per cent of the world's population, 3 per cent of its multi-millionaires, and 33 per cent of its poor (HUNGAMA 2011; World Bank 2013). Twenty-two per cent of the 1.2 billion people live below the poverty line (Planning Commission 2014b). One in every three malnourished children in the world is an Indian. The country's per capita income is about 15 per cent of the world's.

Despite becoming one of the largest producers of many food grains, horticulture, and dairy commodities in the world today and becoming one of the largest exporters of rice, beef, and cotton, the country still struggles with widespread and deep-rooted problems of food insecurity at the micro level. Providing food, education, health, and sanitation to all is still an ambition that the country strives for, and rather vehemently in recent years.

Food and its price is a very sensitive issue for the country. Perhaps India is one typical country where price hikes of a crop like onions can lead to a government's failure (Desai 1999). On the consumption side, the sensitivity arises because an average Indian household still spends about 45 per cent of its expenditure on food (NSSO 2013), while the poor spend even more—between 55 and 60 per cent of their expenditure—on food. On the production side, vulnerability arises from the fact that, even today, more than half the country's crop-sown area depends on rains for its irrigation, and more than 70 per cent of the annual rains happen in the four monsoon months of June to September. If monsoon rains happen to be even 10 per cent below the long-period average, the spectre of drought looms large, and that can create panic for policy makers. Not surprisingly, there is a plethora of food-based welfare schemes for consumers and input subsidization and procurement schemes for farmers. Notwithstanding the inherent leakages, pilferages, and wastages in the system, the depth and coverage of such schemes have only expanded overtime. Today, India's food-policy landscape is complex and subject to copious redundancies.

The 2007–08 food price hike—when prices of basic staples like wheat and rice shot up by more than 50 per cent within a period of few months—was one such situation which triggered panic in political circles in India and across the globe. India responded to the global price spikes by putting export restrictions and bans on the export of basic staples, wheat, and rice. How useful was this export ban to India? We look into this in detail in subsequent sections in this paper.

Indian agricultural policy, like in many other developed and developing countries, is not devoid of politics, and the objective of this paper is to present the political economy motivations behind the trade policies followed by the country. The paper is organized as follows. In Section 2, we give a brief overview of India's poverty, malnutrition, and food insecurity problems. In the wake of the highlighted issues, Section 3 then presents a macro-picture of the Indian agricultural policy landscape. Section 4 then considers the policy response of the country during the 2007–08 food crisis, both on the trade and the domestic fronts. The consequences of the policies followed are discussed in Section 5, elaborating on the country's fiscal burden after the 2007–08 crisis. The lessons learnt by the country from the crisis are presented in Section 6.

## 2 India's chronic problem of poverty, malnutrition, and food insecurity

Going by the international poverty line defined as USD1.9 per day per capita, India had 38.4 per cent of its population below the poverty line in 2004, which reduced to 21.3 per cent by 2011 (World Bank 2014). By India's definition of the poverty line, however, India had roughly 22 per

cent of people below the poverty line in 2011, down from 44 per cent in 1993 (Planning Commission 2014b). No matter how one looks at it, almost 250–400 million people in India still struggle to get the basics for their existence.

Poverty manifests itself in inadequate access to food and health care. Sixty per cent of India's children under the age of five were anaemic in 2010 (World Bank 2014). According to the 'Rapid Survey on Children 2013/14', conducted by the Ministry of Women and Child Development together with UNICEF (MWCD 2015), 29.4 per cent of India's children under the age of five years are underweight and 38.8 per cent are stunted. These numbers were 43 per cent and 48 per cent respectively in 2005–06, as per the National Family Health Survey (NFHS–3 2007), thus indicating the progress made by the country on health indicators. Even an International Food Policy Research Institute (IFPRI) estimate, according to which the percentage of undernourished people in the total population fell from 21.5 per cent in 2004–06 to 17 per cent in 2011–13, supports the statement. In fact, India's ranking on the 'hunger' status, under the IFPRI's Global Hunger Index, has now been revised from 'alarming' earlier to 'serious' (von Grebmer et al. 2014). All this progress is attributable to the intensive policies and programmes designed and implemented by the Indian government to alleviate the issues of poverty and malnourishment in the country. Despite this progress, there is an overwhelming view that India could do better on these indicators, and must do it faster. That is a major challenge that policy makers are still facing.

For a country like India, the agriculture sector is not just the one feeding the country, but it is also the sector that employs close to half of its workforce. In the next section, we elaborate on the Indian agricultural sector's policies and programmes.

### **3 India's agricultural policy landscape**

Almost 69 per cent of Indians live in the rural areas and 58 per cent of these rural households are agricultural households (NSSO 2014). The average size of the operational holding is 1.15 ha, according to the 2010–11 Agriculture Census, thus making India's agriculture a small-farm agriculture. Of the total holdings, 85 per cent are in marginal and small-farm categories of less than 2 ha (Government of India 2014). These small farms, though operating only on 44 per cent of land under cultivation, are the main providers of food and nutritional security to the nation, but have limited access to technology, inputs, credit, capital, and markets.

The existing system of food grain management in India, especially for wheat and rice, is characterized by the dominance of the government in procuring and stocking. From pricing of critical inputs such as fertilizers, power, irrigation charges, etc. to post-harvest handling in agri-markets, to cross-border trading, most of the decisions are in the hands of the government today (Saini and Kozicka 2014). The Indian government supports both the farmers and the consumers of food. An Indian farmer is supported primarily through input subsidies, especially for fertilizers, power, and irrigation. The output markets for the final produce (rice and wheat) are regulated in the country. A farmer has the choice of selling his produce to the government or to the open market. There are 23 commodities, like rice, wheat, maize, cotton, jute, etc., for which the government announces a minimum support price (MSP), but procures mainly wheat and rice. Other MSPs are largely indicative. Farmers may sell all or a part of their produce to the government and the rest of the marketable surplus can be sold in the open market. The open markets are regulated through the Agricultural Produce Market Committee Act.

The government procures, stocks, and supplies mainly rice, wheat, and maize to meet subsidized grain distribution commitments, under food-based welfare schemes like the Public Distribution

System (PDS), and to smooth any inter- and intra-year supply fluctuations. There are quarterly grain norms (buffer stocking norms) that are supposed to guide the government operations in aligning procurement with the need to distribute grains through the PDS. In reality, it frequently procures and stocks much more than these norms, much to the detriment of the open market and incurring high costs to the government exchequer.

It is through the PDS that the country's identified consumers are supplied with grain—mainly rice and wheat—at highly subsidized prices, to meet their partial consumption needs. Beneficiaries under the various food-based welfare schemes of the government are identified based on income, nutritional, age, gender, and societal vulnerabilities.

On the agri-trade front, 1991 was a landmark year when the Indian currency was substantially devalued (by more than 40 per cent in two successive bouts) in line with market realities, and as part of the overall economic reform package in the country. This made Indian agri-exports competitive in world markets, indicating that in the earlier years an over-valued exchange rate was discriminating against the agriculture sector. However, the liberalization of grain exports of rice and wheat started towards the end of 1994 for rice and 1995–96 for wheat.

India exports two types of rice—common and basmati. While the former compares to the type supplied by Thailand and Vietnam, the latter is fine-quality rice, supplied by fellow South-Asian countries like Pakistan. Basmati rice has not been subjected to many export restrictions, but it is the common rice, which is consumed by the largest population of the country, mainly its poor, (and thus is crucial for the country's food security), which is subjected to restrictions like quotas, minimum export price (MEP), and bans. With the opening up of exports of common rice in late 1994, India exported almost 5 million metric tonnes (MMT) of rice in the financial year (FY) (April–March) 1995–96, making it the second largest exporter of rice overnight. This led to rising domestic grain prices, creating street protests by opposition parties, and the government had to ban grain exports hurriedly in 1996–97.

Overflowing government granaries (resulting from increased production incentivized by MSP hikes), lower PDS off-takes, and export bans resulted in a grain glut within the country (Saini and Gulati 2016)). Consequently, the country opened up exports in 2000 but plummeting global prices made Indian grain, particularly wheat, uncompetitive. The grain regained its global competitiveness by 2005–06. The country then faced an unexpected situation in the following year, which led it to ban wheat exports again.

Since the days of the 'Green Revolution' of the 1960s,<sup>1</sup> the country has not just become self-sufficient in its wheat production but the surplus, after meeting its consumption and stocking needs, has been exported globally. The government's grain stocks have generally been at levels considerably above the prescribed norms. However, in the year 2006–07, the government could not procure enough wheat to fill its granaries even up to the prescribed norm level (the stock level plummeted to 21.3 MMTs as against the norm of 31.9 MMTs). As a result, the country had to import around 6 MMTs of wheat in the year and exports were banned.

---

<sup>1</sup> Green Revolution refers to the period of the 1960s when Indian wheat production and productivity catapulted to unprecedented levels. Adoption and customization of high-yield-variety (HYV) wheat seeds imported from Mexico and supportive domestic policies, resulted in a revolution of wheat in India. Within the decade, the production and productivity increased from 11 MMTs and 0.85 tns/ha in 1960–61 to 23.8 MMTs and 1.3 tns/ha in 1970–71.

## 4 India's 2007–08 policy response

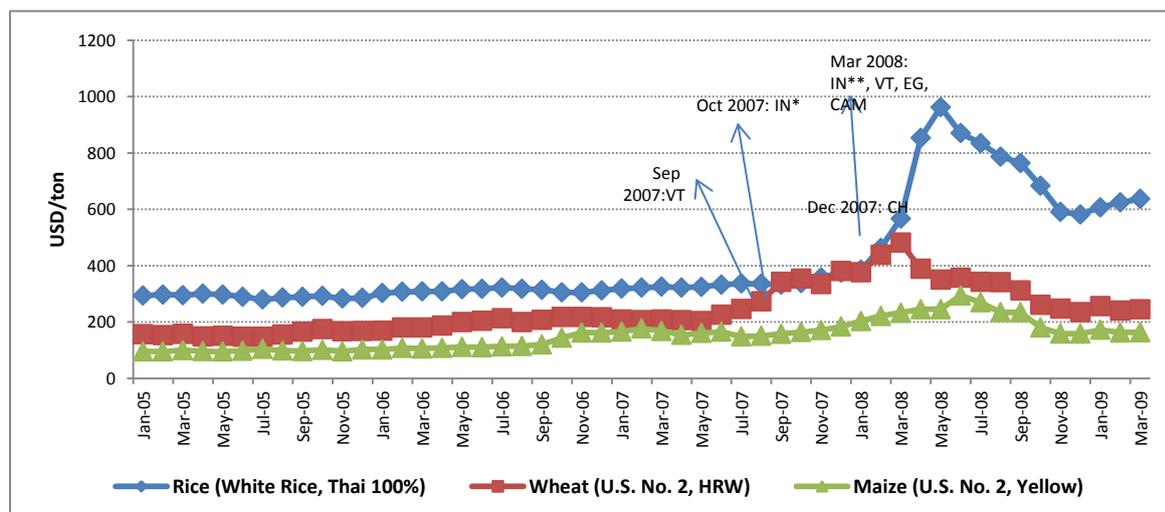
### 4.1 Trade

Indian policy makers were keeping a close watch on international prices of staples, especially after having imported large quantities of wheat (6 MMTs) in 2006–07—maybe the largest wheat import India undertook in more than two decades. Several international agencies such as the Food and Agricultural Organization of the United Nations (FAO) and the IFPRI, among many others, were of the opinion that the high global prices of food would persist for the next ten years or so (Gulati and Dutta 2010). The era of low food prices was declared as an event of history. This made Indian policy makers somewhat nervous, particularly because the stocks of wheat and rice in the central pool (i.e. with the Food Corporation of India (FCI)) fell short of minimum buffer stock norms (Saini and Gulati 2016). At the same time, Indian prices of wheat and rice were way below the unfolding world prices, and therefore were very competitive exports.

Thus, the constellation of factors: deficit in domestic grain stocks compared to their buffer stock norms, India having imported 6 MMT of wheat in 2006–07 after several decades, and Indian wheat and rice being competitive exports in the wake of rising global prices, seemed a perfect storm for Indian policy makers. The first reaction came in terms of restricting exports of rice and wheat. February 2007 saw a complete wheat export ban. However, the common rice exports continued. The restrictions on common rice started in October 2007 with an imposition of a MEP of USD425/MT. The MEP was later increased to USD500/MT in December 2007 with a view to restricting exports (Gulati and Dutta 2010; Sharma 2011). Interestingly, rice exports continued even in the wake of the high MEPs, thus forcing the government to impose a complete ban on its exports in March 2008.

It is worth noting that India had already exported about 6.5 MMT of rice (common and basmati) in 2007–08, when a complete ban was imposed on non-basmati rice in March 2008, which fell to 2.5 MMT (basically basmati) in FY 2008–09. Therefore, India practically withdrew roughly four MMT from the export market when the overall global rice market was hovering at around 28–30 MMT. This may have had an impact in pushing up global rice prices. However, India was not the only one: Vietnam, China, Cambodia, and even Egypt had also joined in. Vietnam, for example, started restricting exports of rice in September 2007, followed by India in October 2007 (with a complete ban on non-basmati rice exports in March 2008), and China in December 2007. By March 2008, even Cambodia and Egypt had also joined in restricting exports of rice (see Gulati and Dutta 2010). This created political uproar in net rice importing countries and created a scare globally, throwing rice prices even above USD900/MT for some time (Figure 1).

Figure 1: Impact of rice export bans on global rice prices



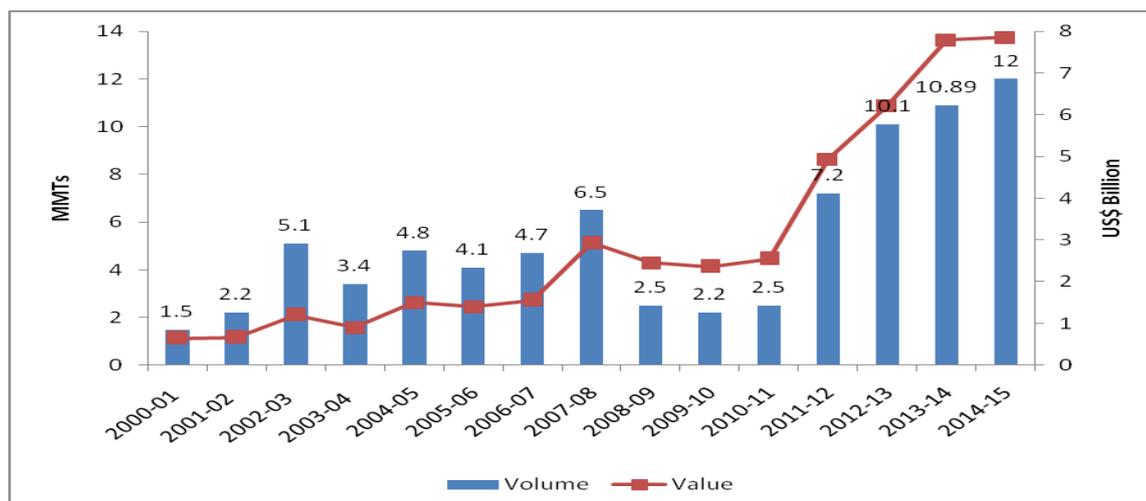
Source: Authors' calculations using data from World Bank (2015).

It is very difficult to estimate what exactly was the impact of the Indian export ban, when others also had joined this bandwagon and increased uncertainty in global markets. But it is clear that prices which were hovering below USD400/MT in 2007 went above USD900/MT within a few months in 2008. That must have hurt the poor consumers in net rice importing countries. However, this depends upon how those countries coped with this situation of rising rice prices to protect their poor consumers. Attempts have been made to capture these effects country by country (Dawe 2010).

The Government of India (GoI) realized the political fallout of its policy, especially on neighbouring countries (like Bangladesh and Bhutan) that were importing rice from India. It therefore, very quickly, within about three months after the ban, opened an export quota for Bangladesh, followed by small export quotas of both rice and wheat for a number of other South Asian and African countries, honouring the existing commitments of exports to these countries. There was no doubt that Indian policy makers' primary focus was to contain food inflation at home, especially of staples, with a view to protecting their own poor, which incidentally are the largest proportion of the poor in the world.

The highly restrictive export policies mostly remained in place until early September 2011. The rice export restrictions began to affect physical exports in a major way around March–April 2008. Rice exports fell to 2.5 MMT in FY 2008–09, down from 6.5 MMT a year earlier. Exports were now primarily of basmati rice, which was exempt from the export ban. The situation remained the same in the subsequent two years. The government finally lifted the ban on wheat and non-basmati rice exports in September 2011. As a result, while exports of rice in FY 2011–12 crossed 7 MMT, wheat exports remained somewhat subdued due to lower international prices. The rice exports galloped further ahead and in the next three years, FY 2012–13 to FY 2014–15, India consistently exported more than 10 MMT of rice, touching even 12 MMT in FY 2014–15, and replacing Thailand to become the biggest exporter of rice in the world (see Figure 2).

Figure 2: Rice exports from India (volume in MMT and value in USD billion)



Source: Authors' calculations using data from DGFT (2015).

Not only did rice become a wonder export, but these three years (FY 2012–13 to FY 2014–15) were remarkably different in terms of overall cereal exports to India's history. During this period, India exported roughly 20 MMT of cereals on average each year, which was nothing short of a cereal wonder at this level of cereal exports. India had never done this in its recorded history (Saini and Gulati 2016)

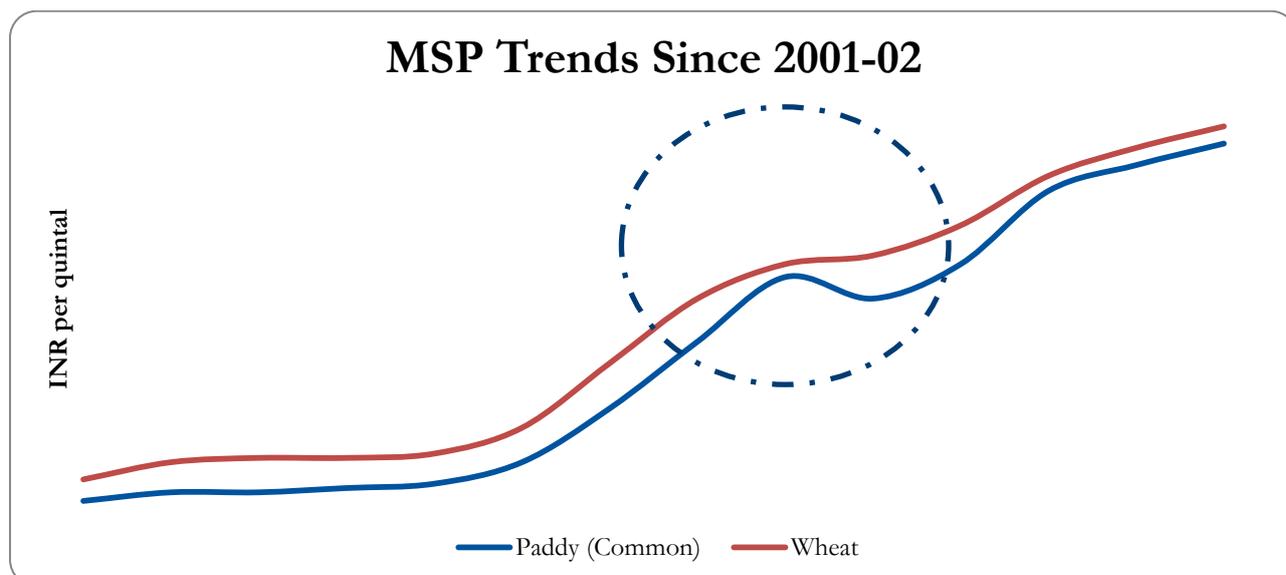
The question that crops up is: how did it happen? From where did so many cereal 'surpluses' emerge, especially when India had imported 6 MMT of wheat only in FY 2006–07? The answer to these questions lies in the political responses to India's domestic food policy in the wake of the 2007–08 global food price shock.

## 4.2 Domestic policy

There were three big stakeholders in the country that the government had to support in the wake of the 2007–08 food crisis: the farmer, the consumer, and the landless labourer (who suffered immensely at the hands of rising food prices).

The farmer was supported in two ways: the MSPs were increased massively and so were the input subsidies on inputs like fertilizers, mainly urea. With a view to increasing the base-line of the production of crops like, wheat, rice, and maize, the government undertook an intensive programme on a mission mode with an objective to increase the production by 20 MMTs in the next five years, i.e. between 2007 and 2012. The programme was called the National Food Security Mission (NFSM) and was launched in 2007 accompanied by massive increases in the MSPs of the crops in order to offer price incentives for farmers to increase production (see the circled area in the Figure 3). This mission resulted in actual production going up by 42 MMTs, more than double the target in the same time-period (2007–12) over 2006–07 levels (Government of India 2012, 2013, 2014).

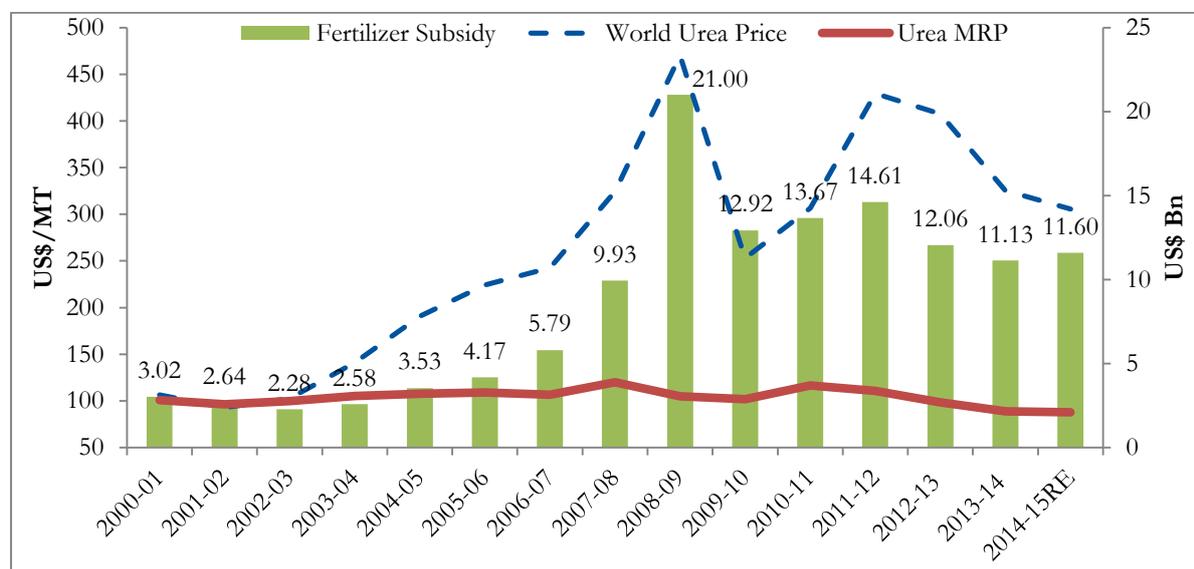
Figure 3: Trends in the MSP of rice and wheat



Source: Authors' calculations using data from CACP (2015).

Rising fuel prices in 2007–08 resulted in escalating urea prices globally. India subsidizes its farmers by selling the urea at a fixed maximum retail price (MRP) (Figure 4). A widening gap between the imported urea price and the MRP, led to a ballooning fertilizer subsidy. From USD9.9 billion, the fertilizer subsidy within the year increased to more than double that level, to USD21 billion and to date has not been able to get back to pre-crisis levels.

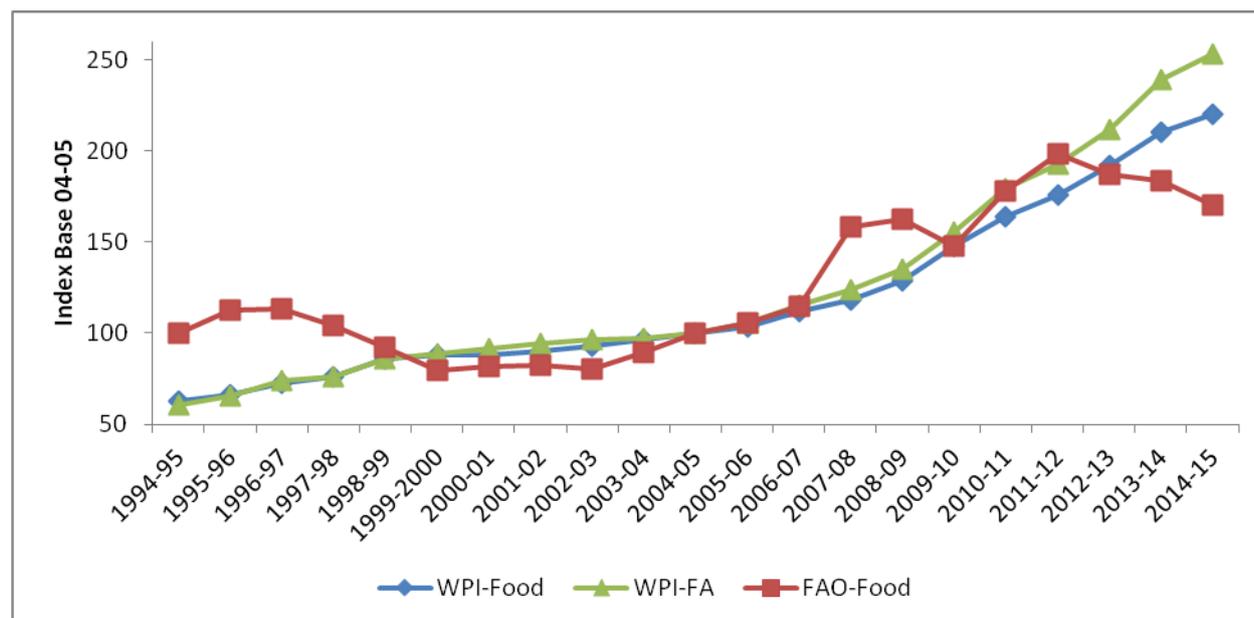
Figure 4: Fertilizer subsidy and urea prices



Source: Authors' calculations using data from World Bank (2015), RBI (2015), CAG (2015), and Government of India, Department of Fertilisers Annual Reports (2004-05, 2007-08, 2011-12, 2014-15).

For consumers, the whole idea of putting the ban in place was to protect them from food price volatility. Clearly, India was able to hold down food inflation within 5–7 per cent in FY 2007–08. Comparing the FAO's global food price index with the Indian wholesale food price index (WPI-Food) and food articles (WPI-FA) index (Figure 5), it is clear that India did not allow the full transmission of global prices into the Indian economy, instantaneously.

Figure 5: Wholesale price indices of food, domestic and global



Source: Authors' calculations using data from MOSPI (2015) and FAO (2015).

One can say that India avoided the global price shock on its millions of consumers that year, and since India has the largest mass of poor, it may also show up in global welfare gains. But, it is also clear from the figure that the Indian food price index (WPI-Food) gradually caught up with global prices by March 2013. In fact, thereafter the Indian food price index has been higher than the FAO food price index with prices falling only in recent times, probably indicating a transmission lag between the two dynamic forces.

So, if one were to quantify the transmission of global prices to domestic prices, one must allow a much longer period of adjustment, at least in the Indian case. The catching up of domestic prices to global prices was much more gradual, subdued, and through myriad means ranging from raising of MSPs to finally giving up export bans.

Another interesting fallout of the 2007–08 turmoil for the Indian consumer was in the form of the National Food Security Act 2013 (NFSA). Buoyed by the impressive production increases resulting from the implementation of the NFSM of 2007, the government decided to expand the depth and the coverage of the subsidized grain distribution system under the PDS. (Saini and Gulati 2015) It enacted the NFSA in 2013, giving a legal entitlement to subsidized grain to 67 per cent of the country's 1.2 billion people.

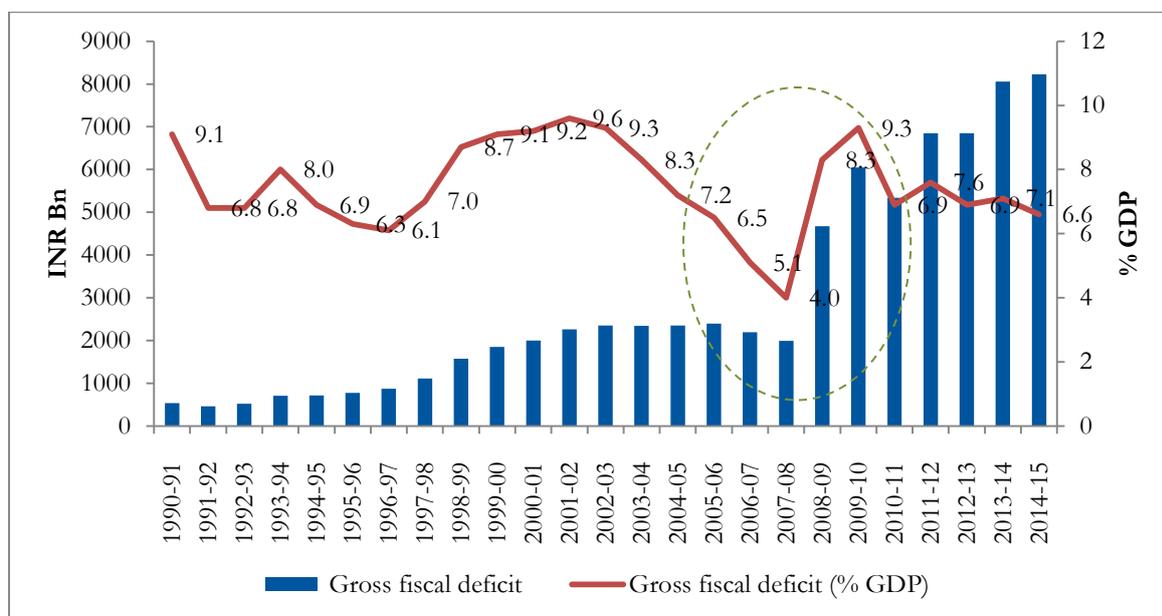
Apart from the farmers and the consumers, the government in 2007–08 also undertook rigorous efforts to expand employment opportunities to rural unskilled labourers and landless farmers under the Mahatma Gandhi National Rural Guarantee Act (MGNREGA) scheme. This scheme entitles unskilled manual labourers to guaranteed wage employment. The budget outlay for the scheme was more than doubled within a year, from INR 12,000 crore in 2007–08 to INR 30,000 crore in 2008–09 (Planning Commission 2013).

## 5 Balancing the country's fiscal situation

All these initiatives and programmes led to a doubling of India's fiscal deficit in a single year (FY 2008–09 over 2007–08). As a part of the G-20 summit, India had agreed to provide economic

stimulus at the same time as other global powers, especially the United States, China, and Europe. India was concerned as its overall GDP growth had fallen from 9.3 per cent in FY 2007–08 to 6.7 per cent in FY 2008–09. So, India undertook fiscal expansion in 2008–09, and injected it through expenditures on various welfare schemes and programmes like MGNREGA, loan waivers for farmers, higher subsidies on food and fertilizers, and so on, which promoted consumption.

Figure 6: India’s combined fiscal deficit



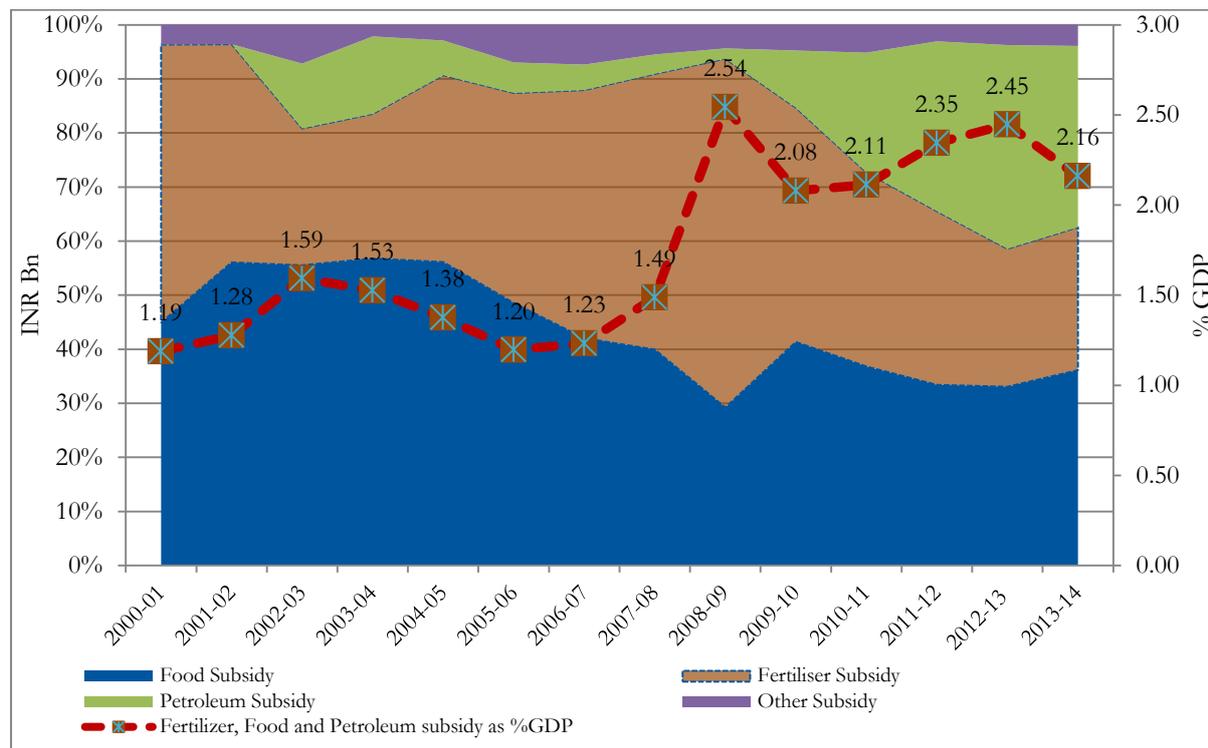
Source: Authors’ calculations using data from Planning Commission (2014a).

The central fiscal deficit reached 6 per cent of GDP in FY 2008–09 and upon adjusting the fiscal deficit of the states, the figure for the country’s fiscal deficit became 8.3 per cent of GDP, way above any prudent norm that GoI had specified under the Fiscal Responsibility and Budget Management Act of 2003 (Figure 6).

This hefty ‘fiscal stimulus’ did give India a chance to revive its overall GDP growth from 6.7 per cent in 2008–09 to 8.6 per cent in 2009–10 and further to 8.9 per cent in 2010–11. The expanding fiscal deficit led to a rising money supply (M3) in the economy, and without commensurate supply response, it led to rising prices in subsequent years. (Gulati and Saini 2013). Until 2013–14, India faced high inflation in general, and food inflation in particular, which hovered around double digits, becoming a major factor behind the ousting of the then ruling political party (UPA) in 2014.

On the food management front too, while higher MSPs and NFSM helped boost grain output, export bans resulted in an accumulation of grain stocks with FCI, which reached 2.5 times the buffer stock requirement by 1 June 2012. This resulted in a rising food subsidy bill (approximately USD20 billion in the FY 2015–16 budget plus unpaid arrears of about USD8 billion) on one hand, and also a fertilizer subsidy (approximately USD12 billion in FY 2015–16 budget and another USD6.5 billion in unpaid arrears) (Figure 7). This is where massive inefficiencies exist, with leakages in the PDS system to the tune of more than 40 per cent (Planning Commission 2005; Gulati and Saini 2015) and diversion of fertilizers (especially urea) to neighbouring countries and for non-agri uses.

Figure 7 India's subsidy burden



Source: Adapted from Gulati and Banarjee (2015).

Owing to fiscal extravagance, the country's total subsidy for the 3 Fs (food, fertiliser, fuel) increased from 1.5 per cent in 2007–08 to 2.5 per cent in the subsequent year (Planning Commission 2014a).

## 6 Lessons learnt

From this, at least three major lessons emerge from the Indian story:

- India could have averted an outright ban on exports of wheat and rice, by raising MEP in a gradual manner. Even if the ban was imposed to protect the poor in India, it should have been reviewed every three months, and exports could have been opened up much earlier when domestic stocks were building up. That would have avoided excessive accumulation of stocks (in relation to buffer stocking norms) at home, and also would have put a little downward pressure on global food prices with a win-win situation, globally and locally.
- Loose fiscal policy in the garb of fiscal stimulus continued for too long, and it could have been wound down much earlier. Also, if fiscal stimulus had to be given, it could have been used more for building infrastructure that would have given a good supply response and also would have enhanced India's competitive strength. Fiscal stimulus, largely for consumption, created too much pressure on prices, including food prices, and took a heavy toll politically. Lesson: short-term gains of higher growth in 2009–10 and 2010–11 through loose fiscal policy were not effective as they damaged the economy through high inflation and politically cost the ruling party its power at the centre.

- India could use a direct income policy (direct benefit transfer) to help its poor consumers on the one hand and small and marginal farmers on the other. This could be done by putting food and fertilizer subsidies through a cash transfer route directly into the accounts of identified beneficiaries. This could reduce leakages in food and fertilizers dramatically, and save large resources of the GoI without compromising on the objectives of helping poor consumers and farmers. These savings could be invested in agriculture (irrigation, agri-research and development, marketing infrastructure, etc.) which would reduce distortions and make Indian agriculture more productive, competitive, and vibrant, reducing rural poverty much faster.

## References

- CACP (2015). Website of the Commission for Agricultural Costs and Prices, Ministry of Agriculture, Government of India. Available at: <http://cacp.dacnet.nic.in/> (accessed on 19 June 2015).
- CAG (2015). Website of the Comptroller Auditor General of India. Available at: [www.saiindia.gov.in/english/index.html](http://www.saiindia.gov.in/english/index.html) (accessed on 1 June 2015).
- Dawe, D. (ed.) (2010). *Rice Crisis: Markets, Policies and Food Security*. Rome, London, and Washington, DC: Food and Agricultural Organization of the United Nations and Earthscan.
- Desai, A.V. (1999). *The Price of Onions*. New York: Penguin USA.
- DGFT (2015). Website of the Directorate General of Foreign Trade (DGFT), Ministry of Commerce and Industry, Government of India. Available at: [www.commerce.nic.in/eidb/default.asp](http://www.commerce.nic.in/eidb/default.asp) (accessed on 4 July 2014).
- FAO (2015). 'FAO Food Price Index: World Food Situation'. Statistics Division of the Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/worldfoodsituation/foodpricesindex/en/> (accessed on 4 July 2015).
- Government of India (2004-05, 2007-08, 2011-12, 2014-15). Annual Reports. Department of Fertilisers, Ministry of Chemicals and Fertilisers. New Delhi: India.
- Government of India (2012, 2013, 2014). 'Agricultural Statistics at a Glance'. Agricultural Statistics Division, Directorate of Economics and Statistics, Department of Agriculture and Co-operation, Ministry of Agriculture. New Delhi: India.
- Government of India (2014). 'All India Report on Number and Area of Operational Holdings'. Agriculture Census Division, Department of Agriculture and Co-operation, Ministry of Agriculture. New Delhi: India.
- Gulati, A., and P. Banarjee (2015). 'Rationalising Fertilizer Subsidy in India: Key Issues and Policy Options'. ICRIER Working Paper 307. New Delhi: Indian Council for Research on International Economic Relations.
- Gulati, A., and M. Dutta (2010). 'Rice Policies in India in the Context of the Global Rice Price Spike'. In D. Dawe (ed.), *The Rice Crisis: Markets, Policies and Food Security*. Rome, London, and Washington, DC: Food and Agricultural Organization of the United Nations and Earthscan.
- Gulati, A., and S. Saini (2013). 'Taming Food Inflation in India'. Commission for Agricultural Costs and Prices Discussion Paper 4, New Delhi: Department Of Agriculture and Cooperation, Ministry of Agriculture.

- Gulati, A., and S. Saini (2015). 'Leakages from Public Distribution System (PDS) and the Way Forward'. ICRIER Working Paper 294. New Delhi: Indian Council for Research on International Economic Relations.
- HUNGaMA (2011). 'Fighting Hunger and Malnutrition. The HUNGaMA Survey Report – 2011'. Available at: <http://motherchildnutrition.org/resources/pdf/HungamaBKDec11LR.pdf> (accessed on May 2014).
- MOSPI (2015). Ministry of Statistics and Programme Implementation: [http://mospi.nic.in/Mospi\\_New/site/home.aspx](http://mospi.nic.in/Mospi_New/site/home.aspx) (accessed on 24 August 2015).
- MWCD (Ministry of Women and Child Development) (2015). 'Rapid Survey on Children (2013–14)'. Survey commissioned by the Government of India with technical and financial assistance from UNICEF, India. Available at: [http://wcd.nic.in/issnip/National\\_Fact%20sheet\\_RSOC%20\\_02-07-2015.pdf](http://wcd.nic.in/issnip/National_Fact%20sheet_RSOC%20_02-07-2015.pdf) (accessed on 25 June 2015).
- NFHS-3 (2007). 'International Institute for Population Sciences (IIPS) and Macro International National Family Health Survey (NFHS-3), 2005–06: India: Volume I'. Mumbai: IIPS.
- NSSO (2013). 'Key Indicators of Household Consumer Expenditure in India, 2011-12 (July 2011–June 2012), Vol. KI of 68th Round'. New Delhi: National Sample Survey Office, Ministry of Statistics and Programme Implementation, Government of India.
- NSSO (2014). 'Key Indicators of Situation of Agricultural Households in India (January–December 2013, Vol. 33 of 70th Round'. New Delhi: National Sample Survey Office, Ministry of Statistics and Programme Implementation, Government of India.
- Pedro, O., K. Beegle, C. Sobrado, and H. Uematsu (2013). 'The State of the Poor: Where Are The Poor, Where Is Extreme Poverty Harder to End, and What Is the Current Profile of the World's Poor?'. Available at: <http://siteresources.worldbank.org/EXTPREMNET/Resources/EP125.pdf> (accessed on 25 June 2015).
- Planning Commission (2005). 'Performance Evaluation of the Targeted Public Distribution System (TPDS)'. New Delhi: Programme Evaluation Organisation (PEO), Planning Commission, Government of India.
- Planning Commission (2013). 'Faster, Sustainable and More Inclusive Growth: An Approach to the Twelfth Five Year Plan'. Available at: [http://planningcommission.gov.in/hackathon/Rural\\_Development.pdf](http://planningcommission.gov.in/hackathon/Rural_Development.pdf) (accessed on 4 July 2015).
- Planning Commission (2014a). Datatables as on 22 December 2014. Available at: <http://planningcommission.nic.in/data/datatable/index.php?data=datatab> (accessed on 10 May 2015).
- Planning Commission (2014b). 'Report of the Expert Group to Review the Methodology for Measurement of Poverty'. New Delhi: Government of India.
- RBI (2015). Website of the Reserve Bank of India. Available at: <http://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics> (accessed on 19 June 2015).
- Saini, S., and A. Gulati (2015). The National Food Security Act (NFSA) 2013-Challenges, Buffer Stocking and the Way Forward. ICRIER Working Paper 297. New Delhi: Indian Council for Research on International Economic Research.

- Saini S., and A. Gulati (forthcoming 2016). 'India's Food Security Policies in the Wake of Global Food Price Volatility'. In M. Kalkuhl, J. von Braun, and M. Torero (eds), *Food Price Volatility and its Implications for Food Security and Policy*. Springer Global.
- Saini, S., and M. Kozicka (2014). 'Evaluation and Critique of Buffer Stocking Policy of India'. ICRIER Working Paper 283. New Delhi: Indian Council for Research on International Economic Research.
- Sharma, R. (2011). 'Food Export Restrictions: Review of the 2007–2010 Experience and Considerations for Disciplining Restrictive Measures'. FAO Commodity and Trade Policy Research Working Paper 32. Rome: FAO.
- von Grebmer, K., A. Saltzman, E. Birol, D. Wiesmann, N. Prasai, S. Yin, Y. Yohannes, P. Menon, J. Thompson, and A. Sonntag (2014). *2014 Global Hunger Index: The Challenge of Hidden Hunger*. Bonn, Washington, DC, and Dublin: Welthungerhilfe, International Food Policy Research Institute, and Concern Worldwide. Available at: <http://dx.doi.org/10.2499/9780896299580> (accessed on 25 June 2015).
- World Bank (2014). World Development Indicators. Available at: [www.povertydata.worldbank.org/poverty/country/IND](http://www.povertydata.worldbank.org/poverty/country/IND) (accessed on 1 December 2015).
- World Bank (2015). World Bank Pink Sheets. Available at: [www.worldbank.org/en/research/commodity-markets](http://www.worldbank.org/en/research/commodity-markets) (accessed on 4 July 2015).