El Niño – Myths and reality

With expectations of an El Niño this year, there is trepidation about the impact on the agri sector and food inflation. This fear is based on the experience of 2009, when we had the worst south-west monsoons since 1972. The same year saw a sharp jump in food inflation. The worry about El Niño and its impact on food inflation can be summarized as follows:

1. El Niño leads to droughts in India
2. Drought causes fall in food / agri output
3. Fall in output causes prices to rise

There is a subsidiary assumption here that all these processes occur over the course of a single year. We look through the data to arrive at some meaningful conclusions.

El Niño leads to droughts in India

El Niño refers to the warming of the Pacific Ocean which has a significant impact on the flow of moisture across the Pacific. As such it is said to have a significant impact on the weather across the Pacific and on the monsoon across the Indian Sub-Continent. El Niño is associated with weak monsoons, while the converse La Niña (cooling phase) is associated with strong monsoons.

The table below summarizes the SW monsoon and the Oceanic Niño Index for each year since 1990. What can be observed at a glance is that most drought years are El Niño years, but not all El Niño years are drought years. Indeed, since 1950 there have been 23 El Niño years, but only 13 drought years in India[1].

Year	Monsoon (% of LPA)	Oceanic Niño Index	Comments
1990	108%		
1991	98%	1.6	Normal rainfall/El Niño
1992	95%		
1993	99%		
1994	110%	1.2	Excess rainfall/El Niño
1995	102%	-0.9	
1996	99%		
1997	97%	2.4	Normal rainfall/Strong El Niño
1998	99%	-1.7	
1999	93%	-1.7	
2000	89%	-1.7	Drought/La Niña
2001	92%	-1.7	
2002	78%	1.3	Drought/Moderate El Niño
2003	101%		
2004	90%	0.7	Drought/Mild El Niño
2005	98%	-0.9	
2006	99%	1.0	Normal rainfall/El Niño
2007	105%	-1.5	Excess rainfall/La Niña
2008	98%	-0.8	
2009	78%	1.6	Drought/Moderate El Niño
2010	102%	-1.5	
2011	101%	-1.0	
2012	92%		

Monsoon: June to September rainfall as percent of 100 year average. Oceanic Niño Index: >0.5 indicates El Niño, <-0.5 indicates La Niña, between -0.5 and 0.5 indicates neutral conditions. Drought defined as 90% or lower rainfall (highlighted in gray). Worst year for El Niño highlighted in black.

[1] Shweta Saini, Ashok Gulati http://www.financialexpress.com/news/column-preparing-for-el-ni-o/1242955/0

In fact the worst El Niño of the last 25 years – in 1997/98 – was associated with a normal monsoon. And the deficient/drought year of 2000 was associated with a La Niña year, which one would normally associate with a good monsoon. Thus it is not clear that the El Niño expected this year will lead to deficient rainfall or drought.

Drought causes fall in food/agri production

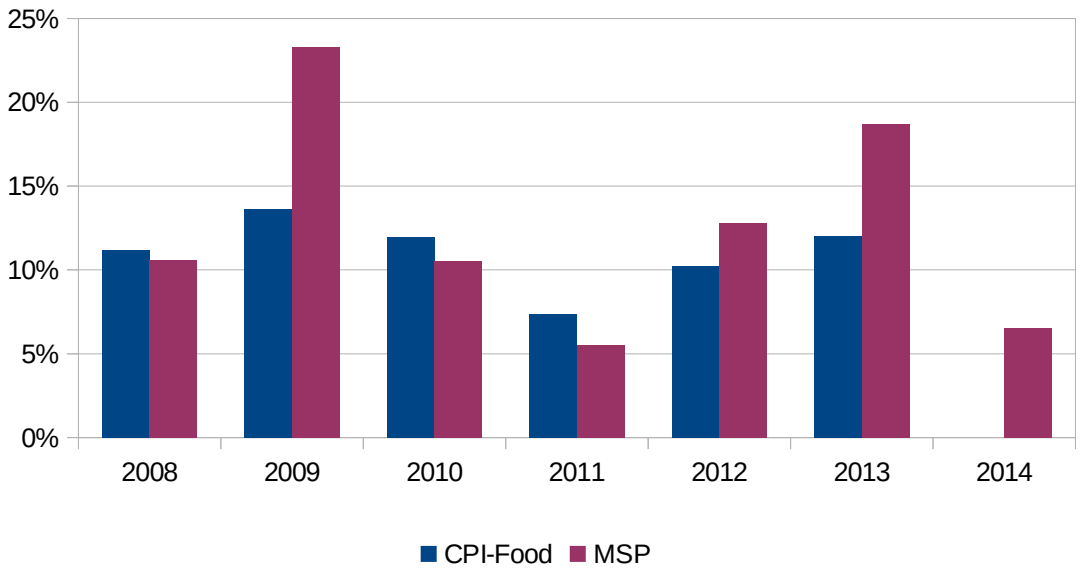
The second assumption is that deficient rainfall or drought leads to a sharp fall in agriculture production. A quick look at the GDP data tells us that in the last 10 years, Agri-GDP has increased in each year including the drought years of 2004-05 and 2009-10. Food grain production too increased during 2008-09, while it was negative in the previous poor rainfall years. Looking further back, 2002-03 and 1997-98 saw declines in Agri-GDP. The lower impact of poor monsoon on agriculture recently could be attributed to the larger share of rabi crop (mostly irrigated) as compared to kharif (mostly rain fed) as well as better agri management during poor rainfall years.

Fall in output causes prices to rise

Economists have been warning that a fall in food production will cause prices to rise. The dismal scientists fail to explain the sharp rise in food prices in the recent past despite record output. Food inflation in the last five years has remained in double digits on average despite normal to excess rains and record production. On the other hand the period from 1999-2004 which saw four below normal monsoons, including three droughts saw food inflation of only 4% on average. We once again quote Ashok Gulati (former chairman of the Commission on Agriculture Costs and Prices):

> "It may be worth reminding that during 1998/99-2003/04, food inflation, on an average, hovered around 4%; went to 6% in 2004/05 to 2008-09, and then, got out of control in 2009-10 to 2013-14 at above 10%."[2]

Thus high and low food inflation has depended more on political choices rather than the fate of the rains. In fact we can further narrow the political choice to the impact of the increases in Minimum Support Prices as the chart below demonstrates:



During the past six years we have seen substantial increases in MSP of major crops. Each large increase in MSP has led to a corresponding large jump in food inflation. For the chart above the MSP bars have been lagged by one year in tune with the harvesting cycle. For example between 2005-06 and 2012-13, MSPs for rice and wheat have increased by 119% and 108% respectively[3]. That is a compound annual growth rate of 12% and 11% respectively. Is it any wonder that food inflation has remained in double digits in this period?

[2] Paraphrased from http://www.financialexpress.com/news/column-tame-the-killer-inflation-first/1252241/0

[3] http://www.pib.nic.in/newsite/erelease.aspx?relid=96401

Timing is everything

In 2009 bad rainfall coincided with a spike in food inflation. However the cycle of food production does not allow for these to be causally related. Kharif crop which is planted during the monsoon is harvested during the festive season and reaches the retail market by the end of the calendar year. Rabi crop which is irrigated from the same rains, is planted in the winter. Thus both kharif and rabi harvest affects the food output/prices in the year following the south-west monsoon. The 2009 spike in food inflation was not due to the bad rainfall, but due to the large increase in MSP handed out in 2008. The 2009 harvest which should have affected 2010 prices actually saw inflation coming down relative to the previous year. The small increases in MSP in 2013 thus augurs well for inflation in calendar year 2014.

Summary and Conclusion

In our look at the impact of El Niño on food inflation, we looked at the major propositions:

Proposition	Myth or Reality?
El Niño causes droughts	**MYTH**. The evidence is mixed. Drought has occurred in about half of El Niño years.
Droughts cause fall in agri output	**MYTH**. In the last decade, agri GDP has increased in each year despite poor rains. Food grain production too rose each year except 2004-05 in the last 10 years.
Fall in output leads to price increase	**MYTH**. Output levels are not correlated to prices. In fact increases in MSP appear to determine food inflation.
2014 El Niño will affect 2014 food inflation	**MYTH**. Due to crop cycles, any poor rainfall this year can be only expected to have an effect on 2015 prices. The evidence of 2009-10 suggests that even then it will be MSP increases that we have to watch.

The fears of El Niño appear to be more bark than bite. And with the Indian Metereological Department not forecasting a drought we would be well advised not to be fearful of a large increase in food inflation this year. Additional comfort comes from record foodgrain stock and reservoirs still holding water from the previous monsoon. Indeed with low MSP increases for the current crop year it may well be that food inflation this year could be substantially lower than the double digit inflation we saw in 2013.

Sources of data: Ministries of Agriculture and Labour, Central Statistical Organisation, National Sample Survey Organisation, Office of the Economic Advisor, Reserve Bank of India, Bloomberg. Open Government Data Platform India, United States National Oceanic and Atmospheric Administration. Data as at 26th May 2014