

# **Dynamics of Food Price Trends and Policy Options in Ethiopia**

**(Preliminary Draft Report)**

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**Draft report for ASARECA's Project on Food Price Trend Analysis and Policy Options.**

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## **Abstract**

*The recent surge in food prices continues to be a concern for policy makers as well as for the public at large. To better understand this phenomenon, this study explores current developments in food price trends in Ethiopia and compares them to regional and global prices. The analysis based on monthly average wholesale prices of major cereals obtained from the Ethiopian Grain Trade Enterprise (EGTE) and Central Statistical Agency (CSA) and International price data basis. As anecdotal results indicate: (1) Ethiopia's cereal prices rose faster than those of many other countries and were an important source of overall food price inflation; (2) a divergence between nominal and real food prices for major cereals emerged as a result of high food price inflation between 2007 and 2012; and (3) between December 2006 and March 2012, domestic wheat prices have on average been more than 16 percent higher than the Import Parity Price (IPP), implying that there are non-price factors discouraging private traders from importing. We note that if the private sector was able to import wheat during this period, they would have limited the rise in domestic wheat prices. In general, the food prices in Ethiopia are abnormally high. Thus more has to be done in terms of short and long term policies to ensure food security and price stabilization.*

## **1. Introduction**

Food is former necessity to survival. It is among the most important ingredients for human development and national stability. The accessibility or existence of food is a big issue in livelihood and it is obvious that any shock in the existence of food affects the nation negatively. A country which can produce sufficient food can be indicated as low level of infant (adult) mortality, low level of malnutrition; good health status, strong and active citizen and this will help that country to grow faster as it has capable citizens that can produce effectively and efficiently. This makes a circle of balanced diet, high productivity, and sufficient food. As some anecdotal evidences indicate, aggregate food production at global level is more than enough for all human population, the only problem is distribution.

The current food price inflation is global phenomenon. Except for differences in the severity, no country is fully immune from its current surge. Global food situation from the 1970s until the early 2000s, food prices on the international market remained relatively stable. However, in 2007, they began to soar and by mid-2008, they had reached their highest level in 30 years. Food price stabilized in the 2009/10 and start to soar for the second time beginning January 2011 and reached peak in the December 2011 exceeding its 2008 level. As FAO Food Price Index (March 2012) shows, it was averaged 214 points in April 2012, down 1.4% from March. The decline was largely driven by falls in sugar and dairy prices followed by cereals which more than offset strong gains in oils and a slight rise in meat prices. The FAO Food Price Index (FFPI) moved up

steadily in the first quarter of 2012 and while it fell in April, it still remained above the December 2011 level. When we consider cereal prices, the FAO's cereal price index averaged 224 points in April, down 2% from March. Maize quotations declined most, by 2.5 percent, reflecting good production prospects. Wheat prices fell slightly, by just over 1 percent, while rice values were also down marginally (See Annex Fig. 1). These surges were brought on by weather-related shocks in major producing countries like drought in Russia, followed by the country's decision to restrict grain exports, as well as flooding in Australia and the United States, caused shortfalls in food production and supplies as a result of climate change

When we consider price situation in the Eastern Africa as well as in Ethiopia, the first quarter of 2011 showed an upward trend in domestic food prices above the highest reported peak experienced during the global food crisis in year 2008. During the 2007-2008 food price crisis, some governments acted in haste, imposing export restrictions or engaging in panic buying and hoarding, which disrupted world markets and made an already difficult situation worse.

The rising food price further worsens those below minimum income putting their purchasing power low. According to USAID (2010) report on progress towards MDG goals, though much has been achieved, much remains to be done in the pace of recent food price surge. In Sub-Saharan Africa, while the proportion of people living on less than \$1.25 per day has fallen, the absolute number of people living in poverty has continued to rise to nearly 400 million. The global food price hike in the recent years has aggravated this situation further.

Ethiopian economy was historically known for its low inflation. At present, however, this history has changed. It has been experiencing two digit inflation and considered as one of the most affected countries, with the exception of Zimbabwe and some small island economies, had the strongest acceleration in food price inflation in Sub-Saharan Africa (IMF, 2008a, 2008c; Minot, 2010, Durevall et al., 2010). The food price in Ethiopia is not only high but also relatively more volatile. This abnormal food price surge put millions of rural and urban net food buyer at risk. In Ethiopia where large proportion of household income (60%) goes for its purchase, let alone large surge slight increase has great implication for welfare of millions of households. Indeed, the Government has made several policy responses to circumvent its negative effects<sup>1</sup> on

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<sup>1</sup> Ethiopian government policy responses include: provision of subsidized wheat & edible oil to the urban poor, export ban on certain food items, lifting value added & turnover taxes on [imported] foodstuffs, etc.

the welfare of people, yet it is not curved. Indeed, for the government's policy measure to be effective, it requires the identification of the root causes of the food price surge and valuing their relative importance.

So far, there is no consensus on why Ethiopia experienced such high food price surges. The puzzle is that the increase in inflation in the recent years coincided with relatively favorable harvests, whereas in the past inflation Ethiopia had typically been associated with agricultural supply shocks due to droughts. Besides, the world food price increases are believed to have small effects in Ethiopia because of the limited size of food trade. The International Monetary Fund (IMF) and World Bank view as increased government expenditure which financed by an increased money supply (through money printing) and testifies the current inflation as miss management of money supply. Malfunctioning market at different levels and lack adequate increase in food production due to structural factors are considered as major causes. Although agricultural production has shown drastic growth as stated in the government's official statistics, high cost of transportation limited its movement from food surplus to deficit area are considered as underlining causes.

The future is not gloomy; however, if current food price situation is not circumvented, it is expected to be the major source of welfare deterioration for the urban and rural poor (net food buyers). Hence, inflation in food prices is more critical for low-income economies like Ethiopia as it hits large number of low-income households disproportionately. As some of anecdotal evidences indicate, the failures in the food security policies in many developing countries including Ethiopia may account that policy makers lack the evidence needed to make informed policy decisions. The negative effects of high food prices could have been ameliorated if policy makers had been better informed about the food price situation. Understanding its dynamics overtime has great importance for policy makers as well for public at large.

Thus generating policy relevant evidences and informing policy makers about prevailing situation overtime is highly relevant to intervene before food crisis. The major aim of the study is to examine the dynamics of food price trends, underlining causes of its movement, explore causality between major factors, and to suggest possible policy option required to be adopted to curve current situation. In other words it is to assist contingency planning which mainly requires

increased information generation and synthesis of potential crises, developing strategies, putting in place arrangements and procedures to address the needs of those adversely affected by crises.

## **2. Method and data sources**

To explore the dynamics of food price mainly major cereals price movement using monthly average prices compiled from Ethiopian Grain Trade Enterprise (EGTE), National Bank of Ethiopia, Ministry of Trade (MoT), Ministry of Finance and Economic Development (MoFED), Central Statistical Agency (CSA), and international data sources (FAOSTAT, etc).

Granger Causality and other related descriptive methods (price trends, import and export parity analysis, correlation and coefficient of variation) will be applied for empirical analysis. Granger causality is a term for a specific notion of causality in time-series analysis.

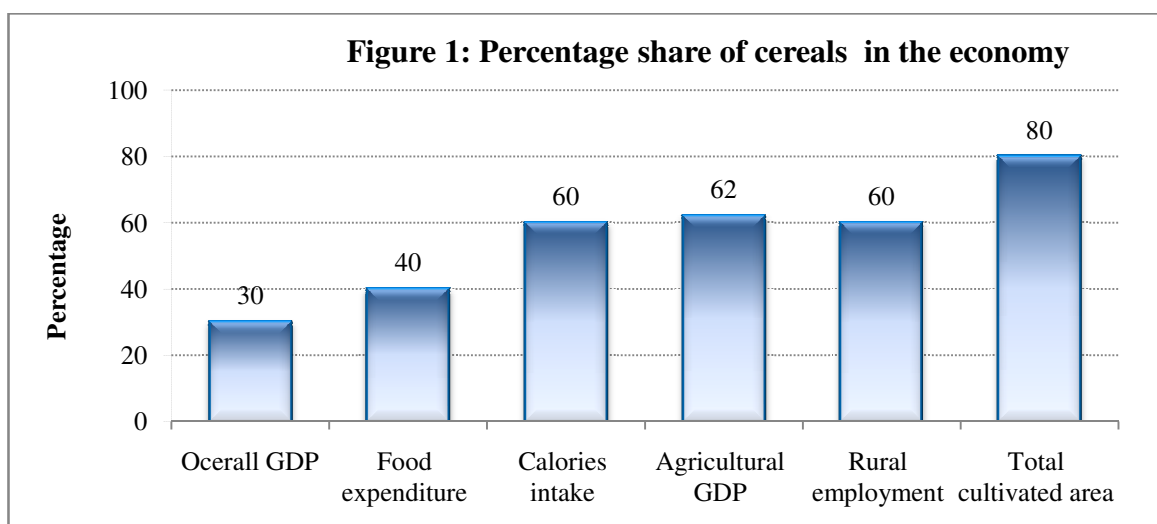
## **3. Production and Price trends of major cereals in Ethiopia**

### **3.1 Cereals production**

#### **3.1.1 Importance of cereals**

Cereal production and marketing are the means of livelihood for millions of households in Ethiopia. It is the single largest sub-sector within Ethiopia's agriculture, far exceeding all others in terms of its share in rural employment, agricultural land use, calorie intake, and contribution to national income. Over the past half century, cereals production and marketing has influenced agricultural policy thinking of all three political regimes in Ethiopia (Shahid, 2010). Cereals production, marketing and processing accounts for considerable contribution in terms of employment, income, agricultural trade, as share of household consumption.

The extent of food price inflation could be explained in Ethiopia evaluating price trends of four major cereals (i.e., teff, wheat, maize, sorghum and barley) which account for about 60% of total calorie consumption, with maize and wheat representing 20 percent each. The share of teff and sorghum is account for 13.7 and 10.3 percents respectively.



Source: Shahidur, 2010.

### 3.1.2 Trends of major cereals production

Teff has always accounted for the largest share of cereal area cultivated (Table 1). The average share of area covered with teff out of cereals in between 2004 and 2011 was 28.4% while its production share is 19.8% only implying low productivity per hectare. Over the past eight years (2004 to 2011) annual average growth in the area planted with teff was 3.5% while production grew 13.5%. The average share of area covered with maize was about 20% while its production contribution was 27.2% in the same period implying better productivity of maize. Area covered with maize grew from 1.4million hectares in 2004 to 2.1 million hectares or by 47.5%.

Wheat on average account for about 17% of area and 18.2% share of cereal production over 2004 and 2011. Growth in area for wheat production is remained marginal. It increased from 1.39 million hectares to 1.43 million hectares (2.8%) in the 2012. Sorghum has registered considerable expansion in area (53.5%) in 2011 compared to 2004. The area covered with barely has decline from 1.1 to 0.98 million hectares (-13.5%). On average over the same period area covered with cereals grew by 25.6% and production is doubled from 90 to 188 million quintals. Average yield also has grown from about 1.2 tons to 1.96tons over the same period. In general, cereal sector performance remained promising over the periods under consideration.

<b>Table 1: Estimates of Agricultural Production of Major Crops</b>										
	Area (000Has) & production (000'Qtls)									
Major cereals	2004	2005	2006	2007	2008	2009	2010	2011	Change b/n 2004 & 2011 (%)	Average Annual % change
<b>Teff</b>										
Area	2136	2246	2405	2565	2481	2589	2761	2731	27.9	3.5
Production	16773	20255	21756	24377	29929	30280	31794	34835	107.7	13.5
Yield/ha	7.9	9.0	9.0	9.5	12.1	11.7	11.5	12.8	62.4	7.8
<b>Wheat</b>										
Area	1398	1460	1474	1425	1454	1684	1553	1438	2.8	0.4
Production	16144	21766	22191	24630	23145	25376	30756	28557	76.9	9.6
Yield	11.5	14.9	15.1	17.3	15.9	15.1	19.8	19.9	72.0	9.0
<b>Maize</b>										
Area	1393	1526	1694	1767	1768	1772	1963	2055	47.5	5.9
Production	25430	23942	33368	37764	37497	39325	38972	52189	105.2	13.2
Yield	18	16	20	21	21	22	20	25	39.1	4.9
<b>Barely</b>										
Area	1095	998	1019	985	978	1129	1047	948	-13.5	-1.7
Production	10797	13281	12707	13521	13548	15194	17504	17033	57.8	7.2
Yield	9.9	13.3	12.5	13.7	13.9	13.5	16.7	18.0	82.3	10.3
<b>Sorghum</b>										
Area	1254	1468	1464	1534	1615	1619	1898	1924	53.5	6.7
Production	17425	17160	21736	23160	26591	28044	29713	39599	127.3	15.9
Yield	13.9	11.7	14.8	15.1	16.5	17.3	15.7	20.6	48.1	6.0
<b>Total Cereals</b>										
Area	7634	8081	8462	8706	8770	9233	9691	9588	25.6	3.2
Production	90007	100298	116243	128658	136456	144964	155342	188099	109.0	13.6
Yield	11.8	12.4	13.7	14.8	15.6	15.7	16.0	19.6	66.4	8.3

Source: CSA database, 2011

### 3.1.3 Sources of cereal production growth

Cereal production growth in the recent years comes from combination of two potential sources: area expansion and yield improvement. For the three major cereals (maize, wheat, and teff), both acreage and yield have increased significantly since 2004 (Table ). Total production of these cereals has jumped from 9 million tons in 2004 to 18.8 million tons in 2011, representing an overall growth of 66.4 percent. Of the five cereals, Sorghum experienced the most growth (125%), followed by teff (107%), maize (105%), wheat (76.9% ) and barely (57.8%).

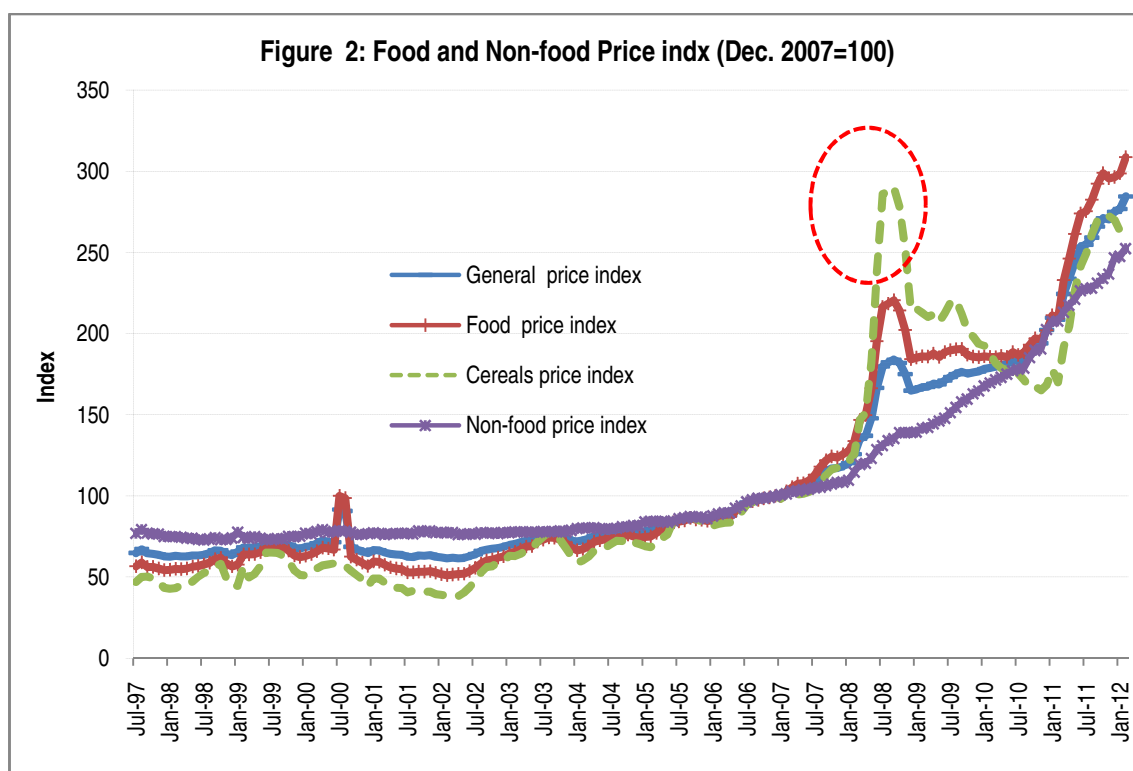
### 3.1.4 Cereals consumption

Given the size and diversity of Ethiopia, the level and type of grain consumption varies by region, due to differences in household preferences, income, prices, and so on. Among rural households, per capita consumption of *teff* is significantly higher for non-poor households than for poor households and is higher in the northern highlands than the south-central highlands. The regional pattern is reversed for maize and wheat, for which per capita consumption of rural

households is higher in the south-central highlands than in the northern highlands (Jeni Klugman and Josef Loening, 2007).

### 3.2 Price trends of food and non-food products

In Ethiopia, cereal prices have historically low and stable since mid 20004. It had gentle upward trends since price drastic price increase in the 2008. With the food price surge beginning in 2008, however, this trend changed. Food price inflation abnormally hiked and rose above non-food price inflation peaking in the September 2008 (Figure 2), nominal food prices have risen faster than real food prices. In between December 2006 (base year) and September 2008 food, cereals and non-food price increased 120%, 190% and 35% respectively. Food prices stabilized in 2009 and 2010 due to strong policy interventions by the government and lower international food prices; it began to soar faster than non-food prices again beginning mid-2010 and in the first quarter of 2012, overall food prices exceeded their peak in the 2008. An increase beginning first quarter 2012 mainly account for failure of *Belg* season (short harvest period which extend from February to June) due to rain shortage in many belg producing areas which spike drought expectation and thereby increase in prices of major cereals.

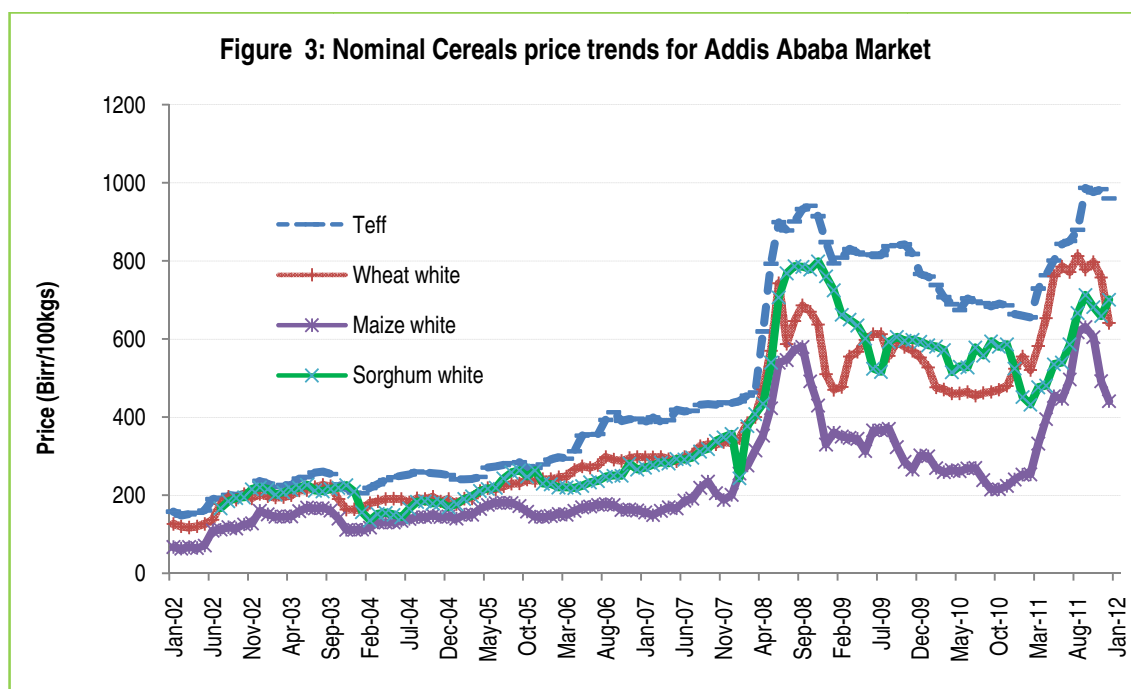


Source: EGTE Database, 2012



### 3.2.1 Nominal price of major cereals

The nominal prices of teff and wheat rose gradually over the period 2005-2007 before more than doubling between mid-2007 and mid-2008. In contrast, maize and sorghum prices were relatively stable over 2005-2007, but jumped about four-fold between mid-2007 and mid-2008. Since mid-2008, prices of all of them have fallen at different rates. Maize price declined by almost half and wheat prices by almost a quarter, but teff prices have hardly declined at all and remained sticky compared all others.

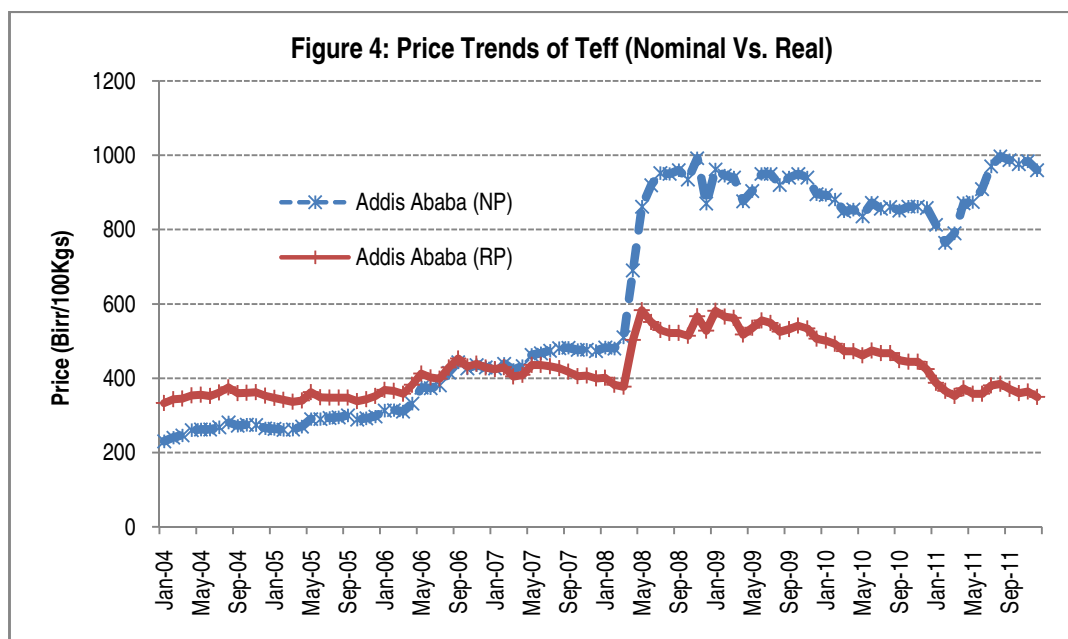


Source: EGTE Database, 2012

### 3.2.2 Nominal and real prices of cereals

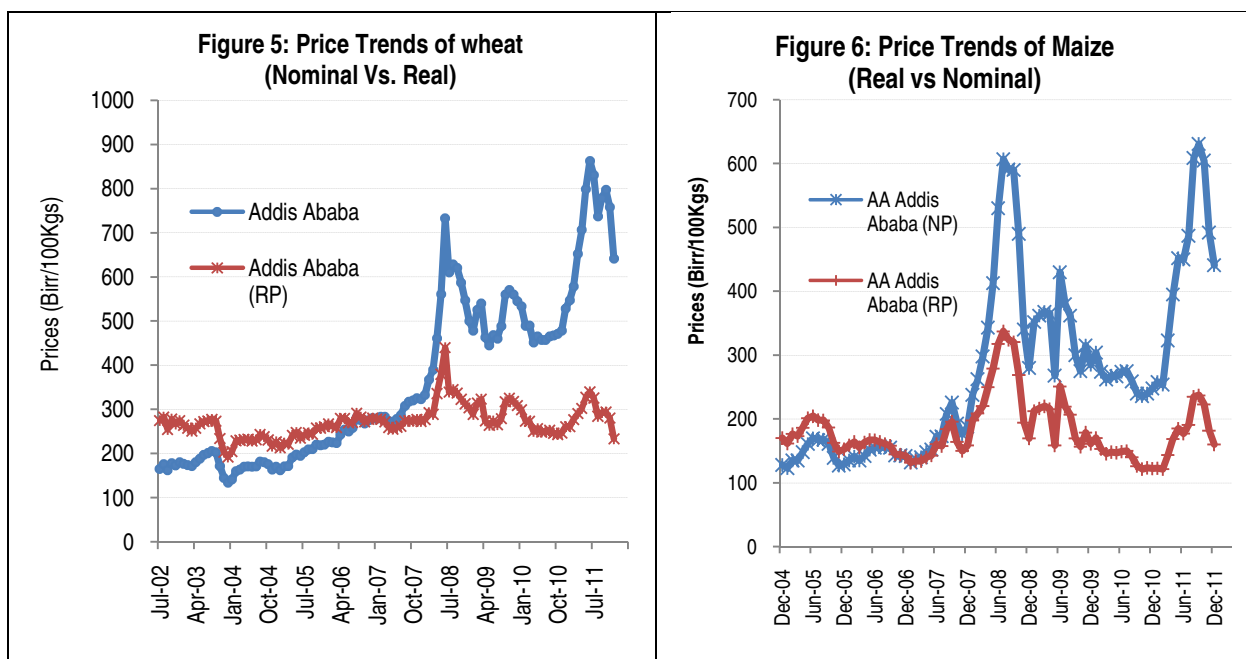
Real food prices are refers to prices adjusted for inflation and nominal prices are adjusted for inflation by deflating in Consumer Price Index (CPI). As shown in Figures 4-7, real staple food prices remained above nominal price since December 2006 implying low cereal price inflation. Figures 4 illustrate trends in nominal and real prices of teff in Ethiopia. Real price of teff was higher than nominal price till December 2006. Divergence between nominal and real price started to widen and moved far apart beginning May 2008 with drastic price inflation. Despite surge in the nominal price in the later period, real prices exhibited falling since January 2009

implying high price of cereals is mainly account for general price inflation which robbed its actual value.



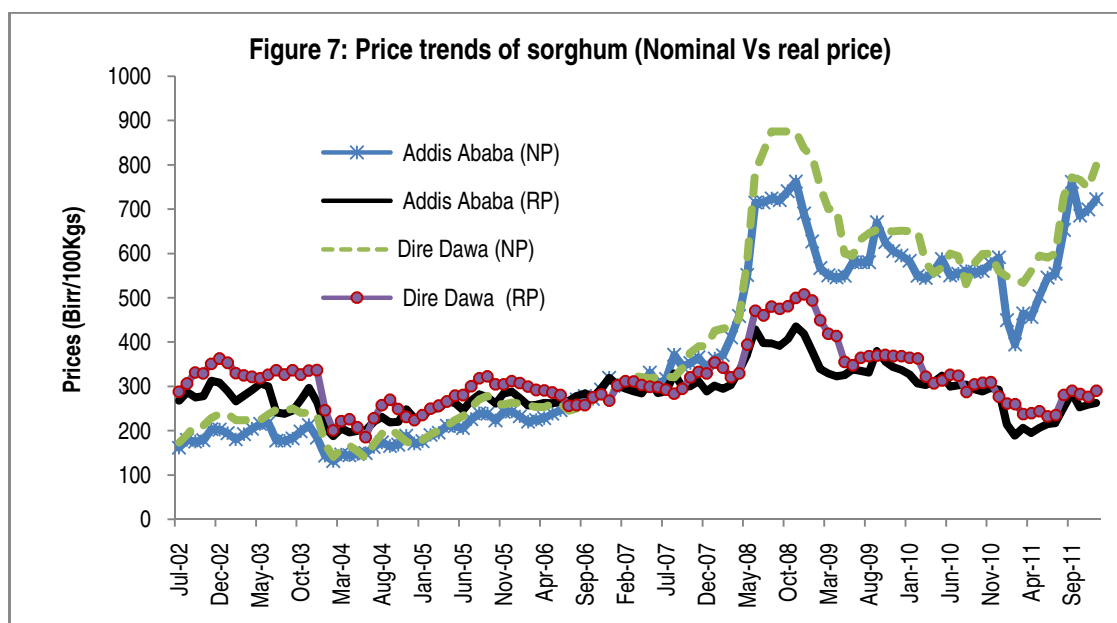
Source: EGTE Database, 2012

The nominal prices of wheat, maize and sorghum have been more volatile than teff, although their real prices are near their pre-2008 levels and even below. The real prices of the three staple food crops have declined to varying degrees since then. Compared to mid-2007, the real price of teff in mid-2008 was around 22% higher, while the corresponding increases from maize and wheat and sorghum were 113%, 69%, and 51%. Thus, real staple food prices increased significantly in the 2007-2008 period; they have since declined, but have not returned to their 2007 levels. However, most of the nominal increases in staple food prices were the result of general inflation.



Source: EGTE Database, 2012

Figure 7 shows nominal and real prices of sorghum for Addis Ababa and Dire Dawa markets. For both markets real prices were above nominal price in between July 2002 and December 2006. Real sorghum prices for Addis Ababa and Dire Dawa in between mid-2007 and mid-2008 was increased 50.5% and 58% respectively. Both nominal and real prices of Dire Dawa were slightly higher compared to Addis Ababa because of food deficit situation of the area.

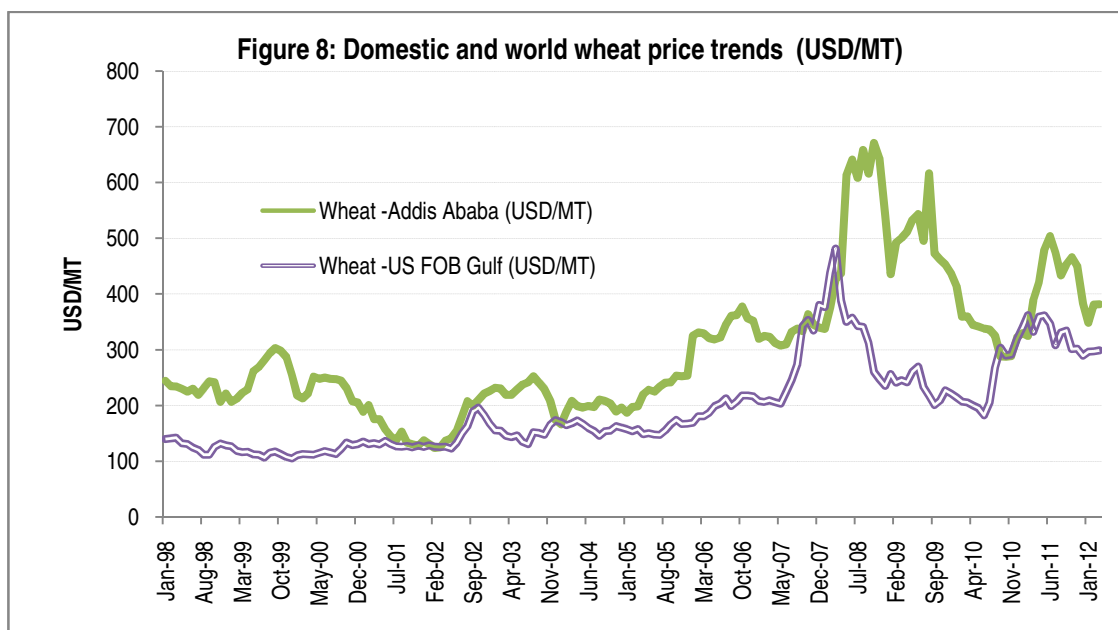


Source: EGTE Database, 2012

### 3.2.3 Domestic and world prices

Domestic and world prices of wheat and maize are presented in Figure 8 and 9. Addis Ababa wholesale price of wheat and maize and similarly United States Gulf wheat (#2 hard red winter) and maize (US Gulf yellow #2) were considered as representative price for domestic and world prices. In both cases the Ethiopian price even before price surge was above world price. With price increase, the domestic price of wheat and maize increased sharply following the global price surge. World price of wheat peaked in early in the August 2007 and exhibits a sharp descent till it start to surge for the second time in the first quarter of 2011. Domestic prices have somehow followed similar trends with world prices. Following the world price surge, domestic wheat price in Ethiopia peaked in the mid-2008 and stabilized in 2009 and 2010 start to ascend beginning late 2010 and peaked in the late 2011.

Until about June 2009, Ethiopian currency was overvalued by roughly by 40 percent. During July-August, the government devaluated the currency by about 25 percent. Therefore, until the summer of 2008, the gap between world and domestic prices was artificially high. In other words, if the exchange rate had been in equilibrium, the domestic price of maize and wheat would have been smaller. However, this does not mean that domestic prices would have come below import parity because the balance of payment crisis continues in the country and the private sector cannot obtain foreign exchange to import (Shahidure, 2010).



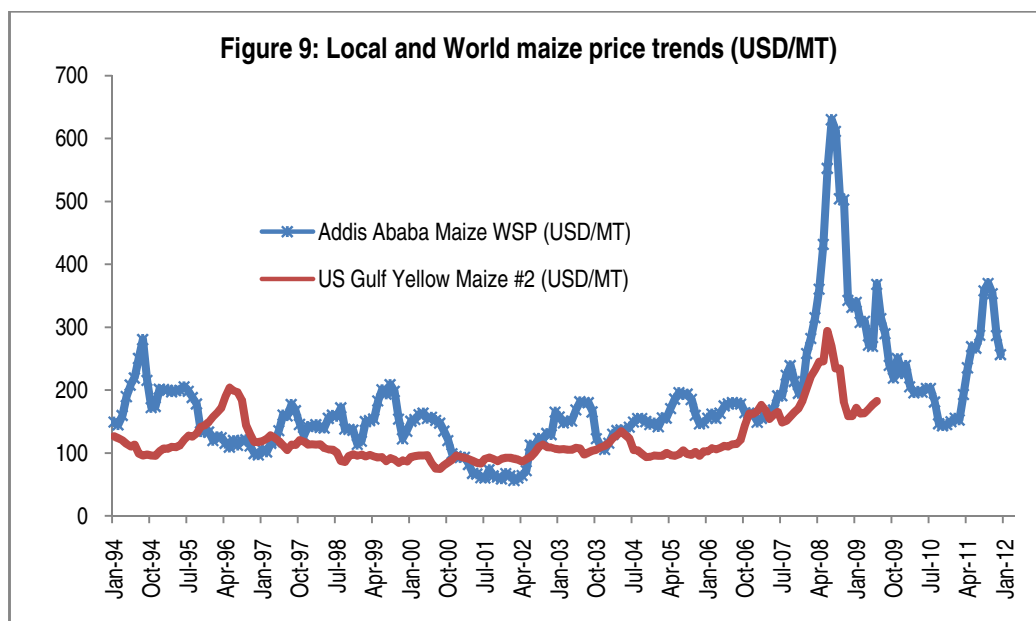
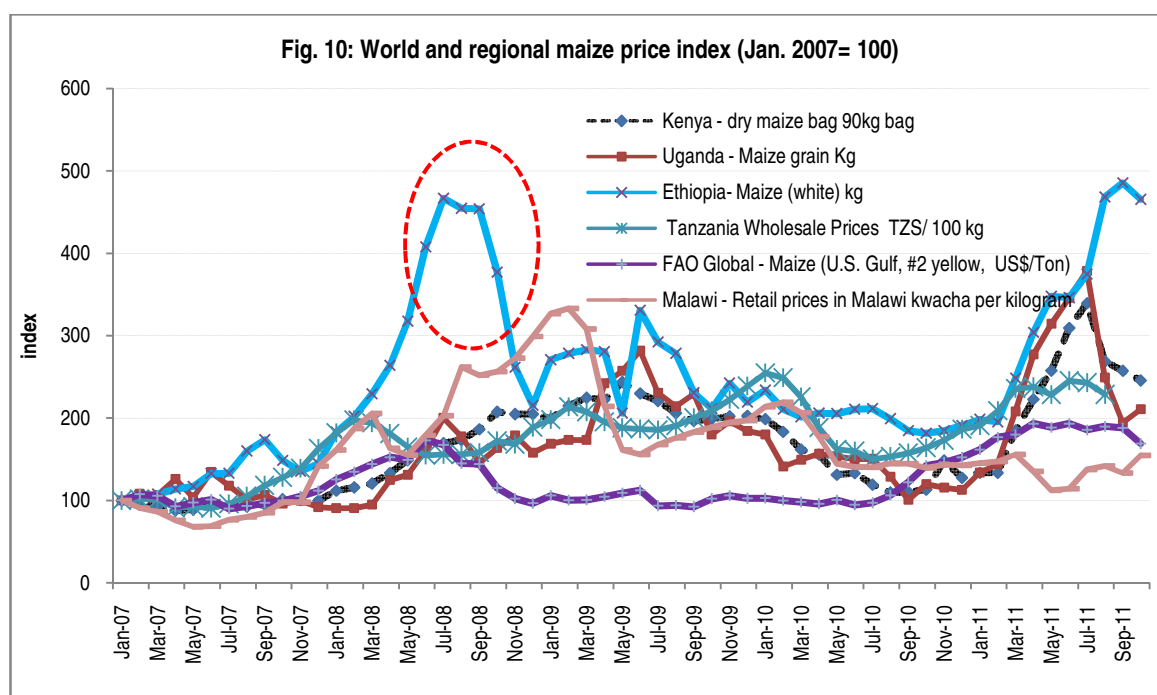
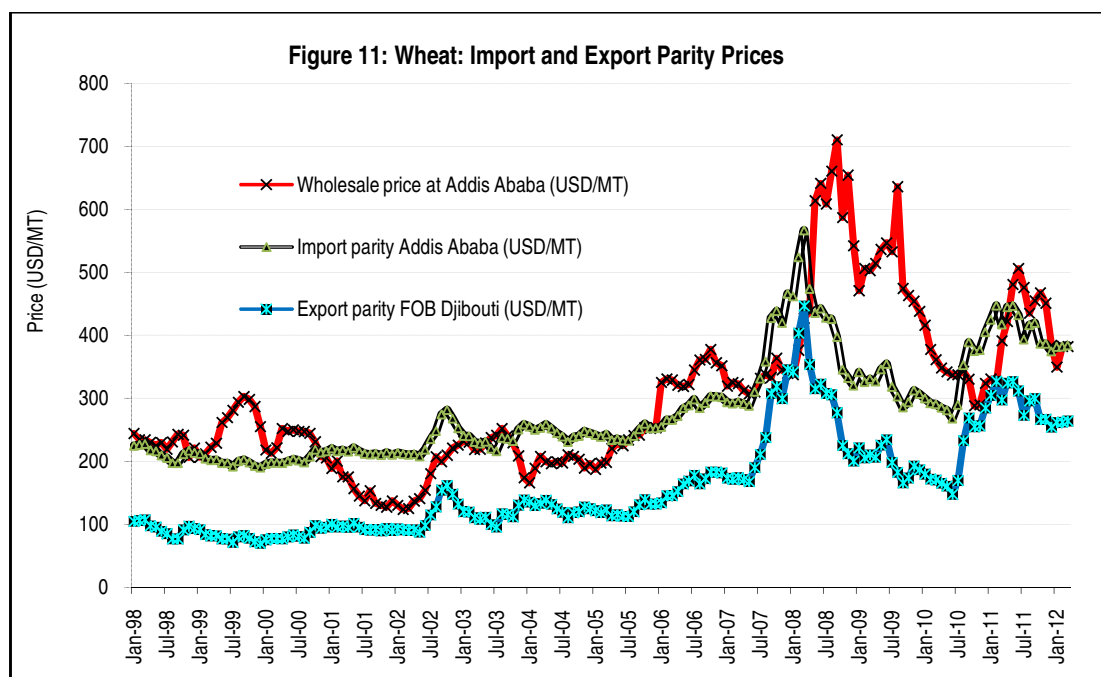


Figure 10 depicts the world and regional (Kenya, Uganda, Ethiopia, and Tanzania) maize prices index (January 2007=100) over 2007 to 2011/12 periods. Maize price index of Ethiopia still remained higher compared to others. Uganda's price index beginning January 2011 followed Ethiopia's trend. However it dropped sharply while the Ethiopian price index increased sharply.



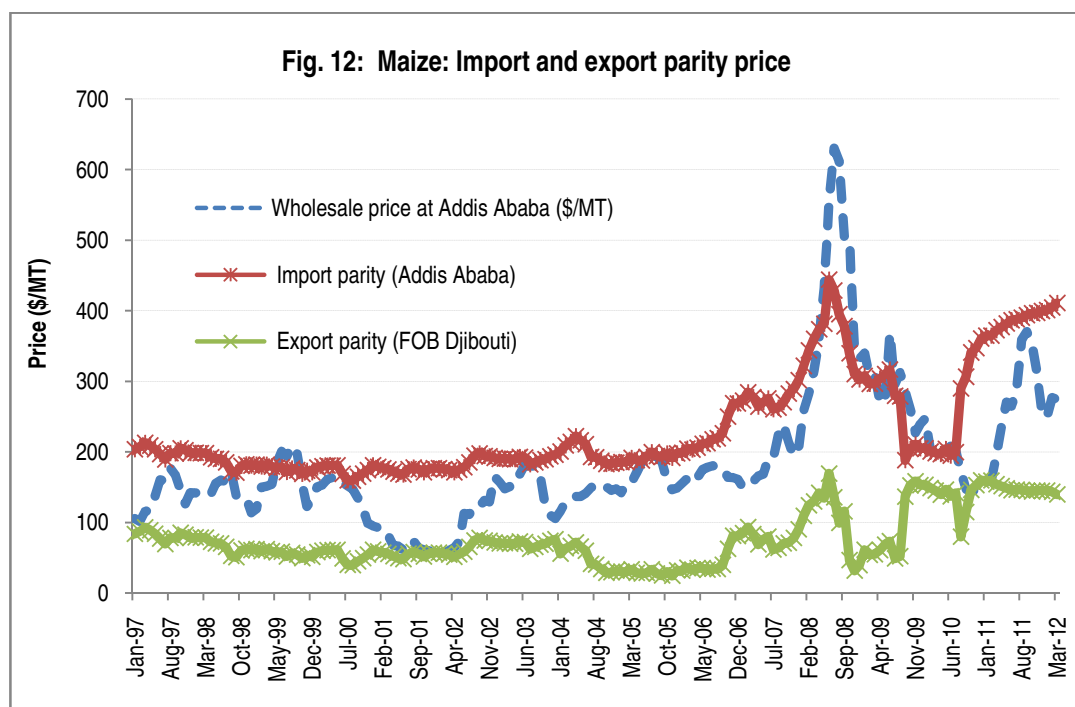
### 3.2.4 Export and Import parity prices for wheat and maize

In between 1998 and early 2000 domestic prices of wheat was above import parity price. From mid-2000 through 2006, domestic prices of wheat in Addis Ababa were generally below import parity levels but above export parity levels, thus providing little incentive for private imports or exports of ordinary wheat (Figure 11). Domestic prices were on average 14 percent below import parity levels in this period, in part because food aid inflows helped to depress prices to the benefit of net wheat consumers and the detriment of net wheat producers.



From early 2006 to early 2007, domestic prices of wheat (wholesale, Addis Ababa) exceeded import parity prices following global food price surge, providing some opportunity for private importers. Since early 2008, domestic price of wheat skyrocketed with failure belg rainfall, rise in concerns about adequacy of rainfall for planting of the upcoming 2008 meher season (October-December) coupled with international food price surge resulted in sharp drastic wheat price increase exceeding import parity prices which left an opportunity for private traders to import or wheat import found profitable. However, restrictions on foreign exchange for imports of wheat (and other goods) were imposed in March 2008 limiting opportunity for import.

Figure 12 shows domestic, import and export parity prices of maize over 1997 to 2012 period. Opposite to wheat price, domestic price of maize (Addis Ababa wholesale price) constantly remained below import parity price in between 1997 to late 2007 limiting profitability for private traders to import. With price surge in 2008, it exceeded import parity price (IPP) but was not possible for private traders to import due to foreign exchange shortage. Domestic price of maize was lower by 36.5% compared to import parity price in between over 1997 to late 2007.



#### 4. Price Interrelation among major markets

Interrelation between spatially separated markets has great economic and social implications. Ascertaining the extent and nature of spatial price relationships provides insights into the flow of information and goods between markets. Poor market linkages are characterized by persistently high transaction costs which reflect the inadequacy of important infrastructure. Market integration is an outcome of the arbitrage process where agents exchange between markets to realize gains in excess of transaction costs.

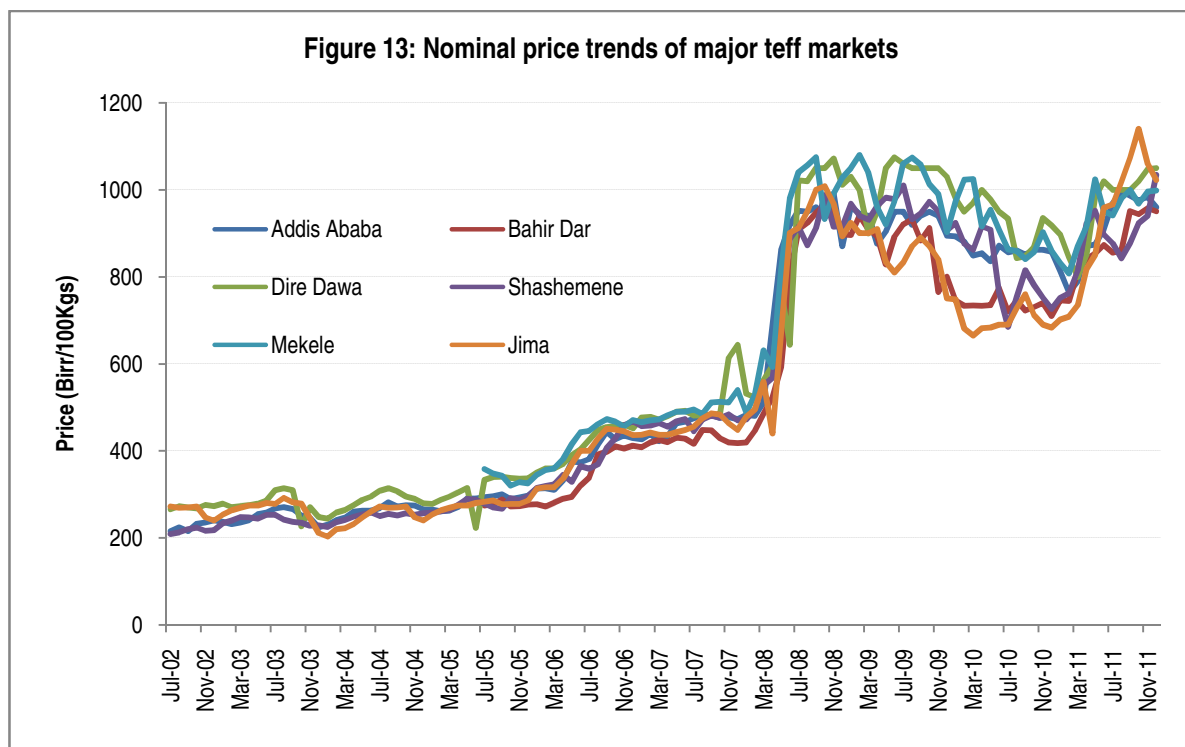
Spatial market analysis is also instrumental in understanding how responsive related markets are to changes in supply and demand. In developing economies, the risk of crop failure in important production regions may have far reaching effects on prices and food security in dependent areas linked through trading relationships. The expected duration of regional food shortages is

ultimately linked to the level of integration between markets, as well as the efficiency with which trade can take place (Ravallion, 1986; Van Campenhout, 2007). Although the situation of market relation has been changing due to drastic infrastructure expansion in the recent years, the price difference between regions and markets is common phenomenon.

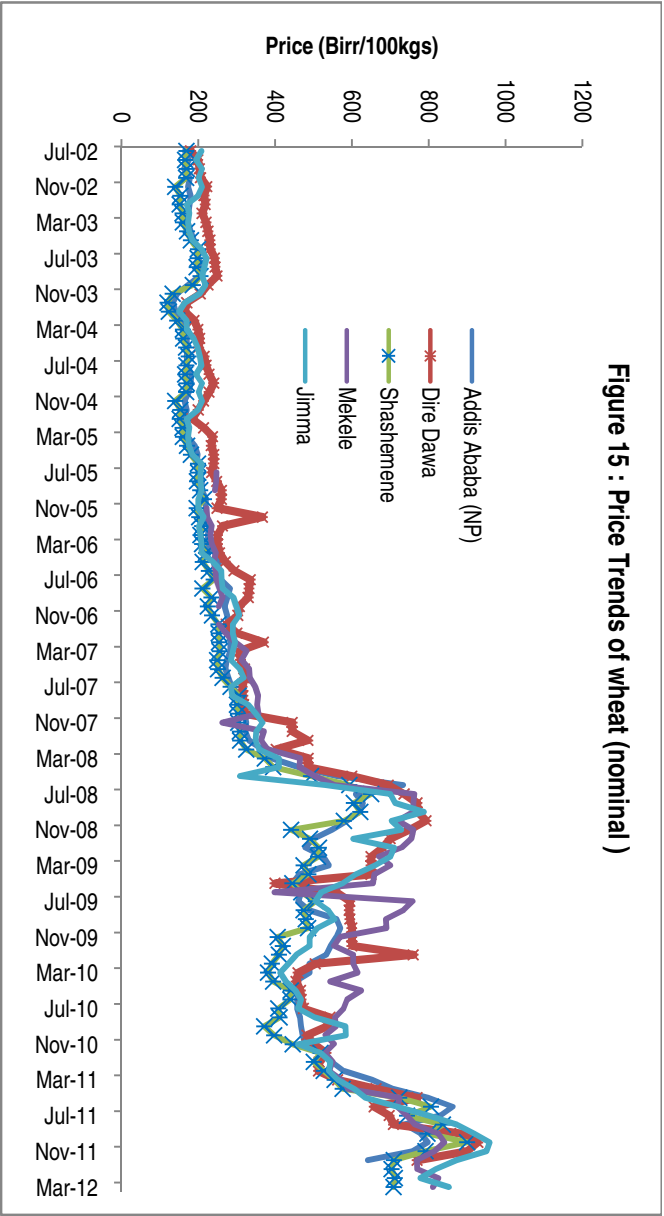
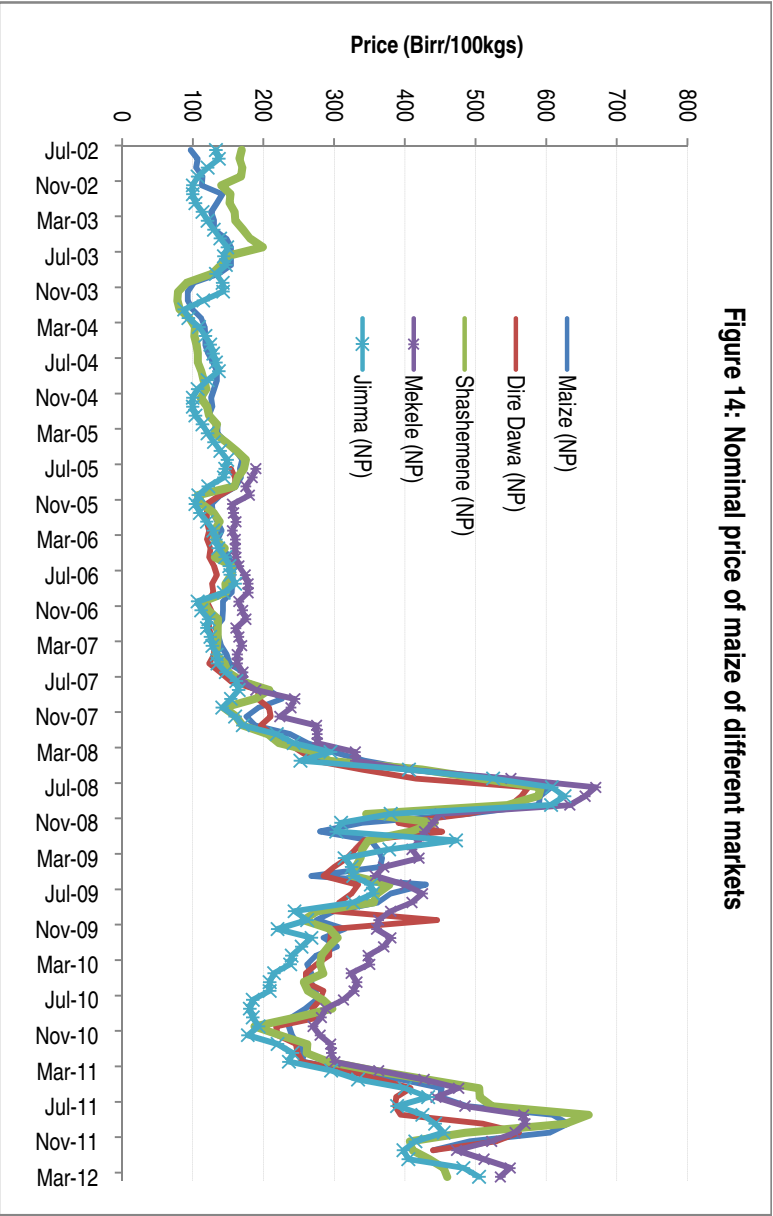
Analyzing price relation between markets requires deeper econometric approach to explore on how one market respond or adjust for price changes in the other markets. However, in this study employed simple price trends, price difference between reference market (Addis Ababa) and other regional markets. Towards this end, Addis Ababa, Bahir Dar, Mekele, Shashemene, Jimma and Direedawa were considered. Teff, maize and wheat commodities price movement are assessed.

#### 4.1 Spatial teff price trends

Figure 13 shows nominal *teff* price trends of six major markets in the country. Average teff price over 2002 to 2007 of all selected markets moved together. It start to diverge with food price inflation in the later periods.







## 4.2 Results of Granger Causality

The idea of Granger causality is based on idea that (1) only past values of X can temporarily “cause” Y; (2) it is based on assumption of ergogeneity (Sims, 1972), a necessary condition for X to be exogenous of Y is that X fails to Granger-cause Y; (3) independence - variables X and Y are only independent if both fail to Granger-cause the other. Granger causality is thus a powerful tool, in that it allows us to test for things that we might otherwise assume away or otherwise take for granted.

Freeman (1983) was identified two sets of for determining Granger Causality Testing. ARIMA models/Cross-Correlations - If the series in question are stationary ARMA (p,q) processes:

$$\phi_{p_Y} L^{p_Y} Y_t = \theta_{q_Y} L^{q_Y} u_{Yt} \quad (1)$$

$$\phi_{p_X} L^{p_X} X_t = \theta_{q_X} L^{q_X} u_{Xt} \quad (2)$$

then we can consider the cross-correlation functions of the two series. In particular, under the null hypothesis of independence (no Granger causality in either direction), the cross-correlations of the innovations  $u_{Xt}$  and  $u_{Yt}$  will be zero at all positive and negative lags.

Granger causality assessed in a more direct way: by regressing each variable on lagged values of itself and the other, e.g.:

$$Y_t = \beta_0 + \sum_{j=1}^J \beta_j Y_{t-j} + \sum_{k=1}^K \gamma_k X_{t-k} + u_t \quad (3)$$

We can then simply use an F-test or the like to examine the null hypothesis = 0 Critical is the choice of lags J and K; insufficient lags yield autocorrelated errors (and incorrect test statistics), while too many lags reduce the power of the test. This approach also allows for a determination of the causal direction of the relationships, since we can also estimate the “reverse” model:

$$X_t = \beta_0 + \sum_{j=1}^J \beta_j X_{t-j} + \sum_{k=1}^K \gamma_k Y_{t-k} + u_t \quad (4)$$

Granger causality testing should take place in the context of a fully-specified model. If the model isn't well specified, “spurious” relationships may be found, despite the fact of no actual

(conditional) relationship between the variables. In many instances, analysts automatically difference variables they believe to be  $I(1)$ .

Table 2 depicts results of causality test. Addis Ababa cereal market is considered as reference (leading) market for five major markets (Shashemene, Bahir Dar, Jimma, Mekele and Dire Dawa). These markets are selected as representative for major national cereal markets. Shashemene is selected as representative for Southern, Jimma from Western, Mekele and Bahir Dar from Northern, Dire dawa from Eastern and Addis Ababa selected as central market.

Before running causality test, stationarity of each price series tested using ADF tests and all price series are get stationary after first differences. Thus differenced prices are used for Granger Causality Test (GCT). Results of GCT indicate, teff price of Addis Ababa Market does not Granger Cause other markets is rejected at below one percent significance level – implying all other markets have high dependency on Addis Ababa markets price situation. Causality runs from other markets to Addis Ababa is limited to Shashemene *teff* market. Thus as results indicate causality is dominated by uni-directional path which run from Addis Ababa to others but not vice versa. This implies that any teff price distortion or imperfection in information can directly pass to other teff markets and improving its effectiveness has great value on others.

Wheat markets interdependence is partly bi-directional. For instance, Addis Ababa teff market does Granger cause Shashemene and Jimma and conversely, Shashemene and Jimma does Granger Cause Addis Ababa – implying bi-direction flow of causality. On the other hand, Addis Ababa market does Granger Cause Mekele and Diredawa but not vice versa.

For maize it is fully bidirectional, Addis Ababa market does Granger Cause all others and Shashemene, Bahir Dar and Mekele also does Granger Cause Addis Ababa while Jimma has weak effect, Dire Dawa does not Granger cause Addis Ababa.

**Table 2: Results of Granger Causality Test**

Leading market	Null hypothesis	Follower markets	F-Statistic	Probability	Causality from follower market to leading (reference market)
<b>Teff market Addis Ababa</b>	Teff price of AA market does not Granger Cause	Shashemene	13.0662	0.0000	Yes, 5% sign.
		Bahir Dar	15.5089	0.0000	No, very weak
		Jimma	19.3666	0.0000	No, non existent
		Mekele	25.6120	0.0000	No, very weak
		Dire Dawa	18.4743	0.0000	No, non existent
<b>Wheat market Addis Ababa</b>	Wheat price of AA market does not Granger cause	Shashemene	7.23532	0.0014	Yes, 1% sig
		Jimma	15.1370	0.0000	Yes, 10% sig
		Mekele	10.9383	0.0000	No, non existent
		Dire Dawa	9.35685	0.0003	No, non existent
<b>Maize market Addis Ababa</b>	Maize price of AA market does not Granger cause	Shashemene	2.98561	0.0570	Yes, 1% sig stronger
		Bahir Dar	12.0024	0.0000	Yes, 1% Sig.
		Jimma	5.90576	0.0043	Yes, 10% sig.
		Mekele	3.59248	0.0327	Yes, 1% significant
		Dire Dawa	8.21027	0.0006	No, non existent

Source: Authors computation using EGTE data

In general, although it not adequate to draw concrete evidence only from simple GCT result, there are implications that commodities like teff price is highly affected/depend on what happens in the Addis Ababa teff market. Thus improving market information and related institutional arrangements have high value in the future success.

## 5. Causes behind the price puzzle in Ethiopia

### 5.1 Major Causes

As economic theories indicate, Inflation exists when money supply exceeds available goods and services. It also may attribute to deficit financing which may be financed by the additional money creation. Cause of inflation broadly could be categorized in to two views: monetarists and Keynesians views. Monetarists attribute inflation as mismanagement of money flow while Keynesians attribute inflation to increase in real demand other things kept constant.

Demand-pull inflation is caused by due to a shift in economy's demand curve. An increase in aggregate demand can be caused by the increase in both government and private consumption or money supply this will in turn leads to high price. Cost- push inflation on the other hand is caused by decrease aggregate supply of goods and services caused by high production costs. The higher production cost is the lower the production that means low aggregate supply which leads to inflation.

Regarding Ethiopia's inflation, there appears to be little consensus on why Ethiopia experienced such a rapid rate of inflation. World Bank (2007) and IMF (2008) argue that excess aggregate demand generated by expansionary monetary policy were key driving factors, calling for forceful policy tightening. Indeed, a 2007 World Bank study argued that, during 2004-2006, money supply increased by 108 percent, and real GDP increased by 48 percent. That is, growth of money supply was 40 percent faster than GDP growth. This helps explain the growth in nominal food prices over this period. Loose monetary and fiscal policies are the principal sources of inflation in Ethiopia. The pro-growth monetary and fiscal policies with massive financing of the budget deficit for infrastructure have led to the inflation hike. Money supply can be interpreted by government expenditure, private and public investment, salary and wage increment which allows increase in general demand or consumption.

Economic growth in the country resulted in a new job creation, disbursement of large volume of credit, remittances, monetization of food aid, etc. Even though there is no exact estimate of this amount, the amount of Ethiopian remittances is believed to be in the range of \$1.1 billion to \$1.4 billion every year. The increased demands by those who receive and spend the remittances exacerbate the inflationary pressures created mainly by the existing shortages, salary increment for government employees, etc all are behind increase in money supply.

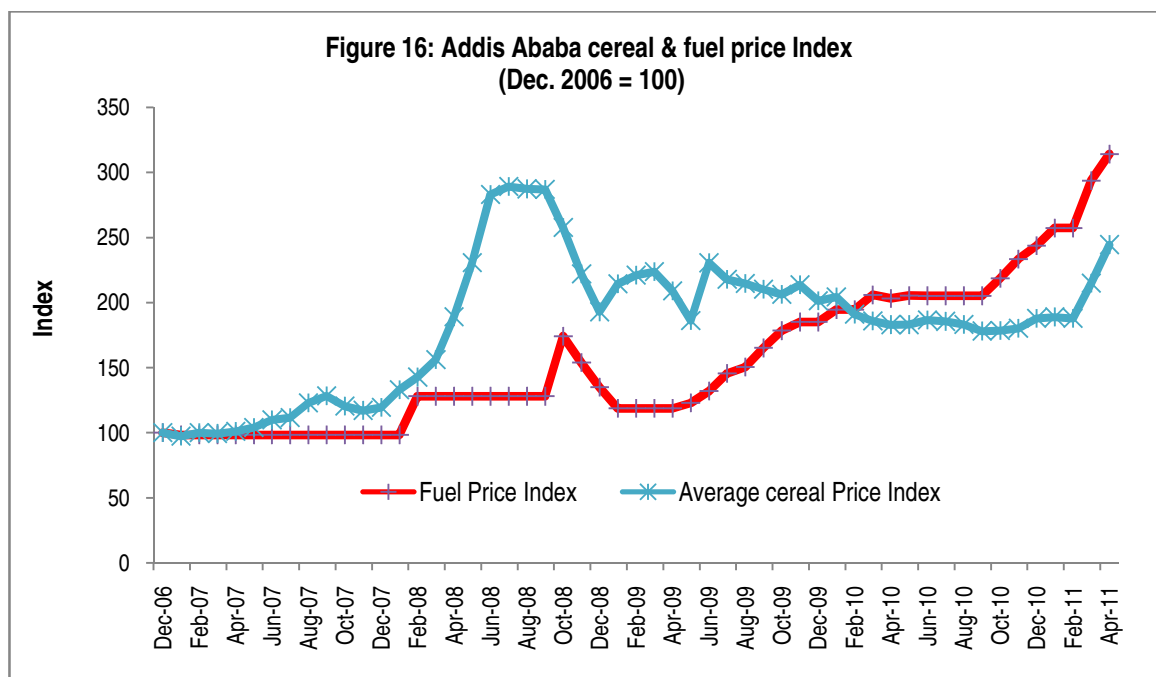
EDRI (2007) and FAO (2008b) however point out that domestic and external factors account for the recent inflation, among them (i) increase in international commodity prices including oil prices; (ii) structural change and continued good economic performance; (iii) increasing supply of money and injection of cash into the rural economy; (v) changes in farmers' behavior to supply products more uniformly over the year (improvements in access to micro-credit, storage facilities, marketing information, etc; and (vi) increased local purchases by governmental food security institutions, agricultural cooperatives, and relief agencies.

More recently, Loening *et al.* (2009) have argued that in the short to medium run, agricultural supply shocks and inflation inertia strongly affect domestic inflation in Ethiopia, causing large deviations from long-run price trends. In the long-run however, domestic food and non-food prices are determined by the exchange rate and international food and goods prices which means that the exchange rate and international prices explain a large fraction of Ethiopia's inflation. Whatever the causes were however, there has been unprecedented high rate of inflation in Ethiopia during 2005-2008 mainly driven by food price inflation mainly of cereal prices.

The puzzling price trend may account for an over-estimation of cereal production. The price trend in 2007-2008 was going up despite reported growth of about 15 percent in cereal production in the official government statistics. As the cereal availability study by IFPRI and EU's key findings of the study was indicated that production estimates of cereal was found roughly 30 percent lower than the official estimates (Minot, 2008). Indeed, there are unaccounted flow of cereals through cross-border trade, stock-holding/hoarding behavior of traders, and reduction in the food-aid inflow, *belg* failure in 2008 and expectation for price increase may also aggravated the price situation.

Mismatch in between demand and supply - Demand has out-paced due to overall economic growth and rapid urbanization. In particular, Increased rural effective demand, booming construction sector has created job opportunity for urban poor and migrant labors, micro-credit opportunity for farmers, large scale cash based social safety net programs; booming of livestock, oilseeds & pulses and other cash crops due to improvement in market opportunities, irrigation facilities, boom in agricultural exports to \$1.2 billion in 2006, Soaring agricultural input price, especially fertilizer and seeds, and oil price increase.

Increasing oil price coupled with Ethiopia's high dependence on imports of petroleum products and on imports of major grains (rice, wheat and maize) for domestic consumption is listed. Ethiopia is one of the vulnerable countries because of dependence on imports of petroleum.



According to Ethiopian Government the causes of inflation are: increasing demand for food due to economic growth; increase in international commodity prices including oil; malfunctioning of wholesale markets, rapid increase in money supply, inflationary expectations by traders, consumers and producers; institutional weakness to manage abnormal price movement (Answers by H.E Ato Melese for Questions raised by MPs, Miazia 8/2004 EFY).

Indeed, the Ethiopian Economy exhibited considerable economic growth (on average about 11%) for the last eight years. This has positive contribution on general price increase. Moderate inflation is an inevitable consequence of sustained economic growth. It can enhance economic growth by mobilizing the resources of a country. For the last eight years, Ethiopia has recorded sustaining economic growth. However, inflation in Ethiopia is beyond the break-even point. Instead of stimulating economic growth, inflationary pressure in Ethiopia seems to be on the verge of distorting the allocation of resources and is likely to be a deterrent to undertaking productive investments. Consumers in general and civil servants in particular are at verge of crisis. Currently in Ethiopia there is no guarantee that today's price level will remain the same for tomorrow. This in turn resulted in uncertainty in consumption and welfare of lion's share of majorities who have hand-to-mouth income.

## **5.2 Impact of increasing food price**

The impact of food price inflation on the welfare of low income groups who have limited means to adjust price change is straight forward. In Ethiopia, food expenditure of total household income estimated to account for more than 60 percent that any increase in food price has negative effect on the wellbeing of large majorities. When food price get inflated, the income of the house-hold will be deviated to purchase food leaving another necessities behind because food is the prior necessity. Hence the majority of income is devoted to buy food, other necessities such as: education, shelter, medication, hygiene, saving, and the like will be interrupted.

At global level, the 2007-2008 food price crises pushed an additional 80 million people into hunger. By 2009, as the world grappled with a financial downturn, the number of hungry people swelled to over one billion – roughly one-sixth of the world's population. Out of these large majorities are located in the developing countries. The global food import bill, which earlier had surpassed a trillion dollars, is expected to reach new heights in 2011 with further surge in food price. For low-income food-deficit countries, this is likely to translate into much higher food import bills. At the national level, higher food import bills threaten exchange reserves, exert fiscal pressure on budgets and disrupt investment and spending on development (FAO, 2011).

Food-price increases are having serious consequences for the purchasing power of the poor. Affected groups include the rural landless, pastoralists, small-scale farmers and the urban poor. Despite the various causes of food crises, the hardships that individuals and communities face have striking similarities across disparate groups and settings. These include: inability to afford food, and related lack of adequate caloric intake, distress sales of productive assets, and migration of household members in search of work and reduced household spending on healthcare, education and other necessities.

World Bank report shows that Ethiopia is a country which registers one of the highest child malnutrition rates in Sub-Saharan Africa. Child stunting, which is measured as abnormally low weight to height for age in children, is an indicator of poor long-run nutritional status. Although the prevalence of child stunting in Ethiopia decreased during the second half of the 20s, the prevalence is still significantly high compared to developing countries average. Early childhood malnutrition (among children between six and 36 months) can cause irreversible damage to brain



and motor-skill development, stifle human capital formation by causing delays in enrollment and later increasing the probability of grade repetition and drop-out, lower current health status, and increase in lifetime risk of chronic disease associated with the premature mortality.

High food price is both blessing and threat. It is blessing for producers who respond for it because it can be an incentive to farmers to increase production provided they have the means to respond to such opportunities and can access markets. It is threat because food prices hit the world's most vulnerable people the hardest, especially the urban poor and landless, who already spend more than two-thirds of their income on food, as well as smallholder farmers who are net food buyers. High food price volatility may erode confidence of both producers and traders by increasing uncertainty which in turn deters the investment that is needed for increasing food production.

In general, we can't avoid different forms of inflation; it has been and will be there as long as mismatch in production and demand situation. The only way out does properly managing inflation mainly understand its underlining causes. If the cause of the inflation is clearly determined, it will be trouble-free to manage. If the cause of inflation is demand-pull which is initiated by high aggregate demand due to high money supply, it can be managed through monetary policy by increasing interest rate which helps to increase saving and decrease consumption, decreasing money supply, imposing tax can be good instruments. On the other hand, if it is known that the cause of inflation is cost-push which is manifested by low aggregate supply due to scarcity of factors of production, high prices of inputs, low production can be equilibrated by reducing input prices through subsidizing and so on. If it is resulted from malfunctioning marketing system, reform in market institutions, building market infrastructure, and enhancing competition are partly means for improving the situation.

## **6. Government policy responses**

Cereal production and consumption in Ethiopia accounts for considerable share of employment and food demand that increasing cereal price or general food prices poses a difficult policy challenges for the Government of Ethiopia (GoE). We shall discuss below some of the responses from the Ethiopian government in mitigating food price hike in the last three years.

The GoE has shifted from subsidizing oil to grain to ease the spiraling cost of food. To this end, the government has removed annual subsidy on petroleum products and transferred to smoothen grain prices hike and as well as eliminated value-added taxes on grains. In addition, the government has also curtailed export of cereals in a way to stabilize the soaring price that hit most of the low-income population. Grain export was banned for an indefinite period of time in a way to stabilize the domestic price of grains.

A subsidized wheat supply of 25kg every month for low-income urban dwellers was introduced in March 2007. The subsidized price of wheat is about 350 birr per quintal (100 kg) while the market price of domestic wheat was around 750 birr per quintal at the time. This urban food transfer served as income transfer for urban poor. This coupled with the removal of domestic taxes on grains resulted in a decline in price. The government also suspended local procurement by the World Food Programme (WFP), the Ethiopian Grain Trading Enterprise country's food logistic agency has awarded responsibility to carry out major activities.

Since 2008 food price surge, bakeries have been rationed imported wheat for subsidized price. This is mainly based on the objective of supplying adequate bread for public at large for relatively stable price. This policy worked well in smoothening bread price throughout the country. This perhaps reflects the fact that risks of price instability—in term of economic, human, and political costs. However, the price level is still very high as compared to initial period in the early 2006.

Apart from the above policy responses, the government has also has increase beneficiaries of Productive Safety Net program (PSNP) beneficiaries and raised the cash wage rate of the largest cash-for-work or of (PSNP) by 33% (World Bank, 2008) in a way to increase the purchasing power of the poor.

The government had imposed price caps in January 2011 in a bid to control major urban food prices – in selected 17 commodities. It had limited success in bringing prices down as expected rather created some confusion between traders and consumers. However, after waiting until June 2011, it lifted the caps, seeing no significant change in the prices. This has caused prices to soar

again to levels unaffordable for many in the country. Its implication was so hastily with limited discussion with stakeholders.

In general, the government responded very quickly and adequately with full commitment to smoothen negative effects of abnormal food price in the welfare of large majority who exhibit hand to mouth in many instances. The intervention was successful in decking prices of major cereals although it was not sustained.

## **8. Concluding remarks**

The aim of this work is to analyze food price trends and underlining causes account for abnormal surge. Its impacts and future policy options are discussed. The analysis is based on official monthly data obtained mainly from Ethiopian Grain Trade Enterprises and Central Statistical Agency.

Ethiopia has successfully raised domestic production of cereals in recent years as part of its overall development strategy. However, steady production growth has not led to sharp declines in real food prices. The current food price surge occurred for reasons different from historical causes – which is mainly emanate from rainfall disturbance and resulting drought. Although inflation in the growing economy is unavoidable, the extent of current level inflation has damaging effect unless considerable policy. As depicted in all price trends:

- Food price inflation is much higher in Ethiopia compared to many countries in the region;
- Although it is not direct, food price in Ethiopia somehow followed global food price hikes;
- Cereals price inflation is one of driving factor for general inflation in Ethiopia;
- Monetary expansion considered unanimously as one of factors aggravated the price situation in Ethiopia;
- Although the government has made considerable efforts to halt food price inflation, the current level of food price in Ethiopia is even higher than 2008 peak level.

Thus it requires understanding underlining causes and well designed interventions need to be designed. Some of possible interventions include:

1. Prudent macroeconomic and fiscal policy management;
2. Deeper understanding current marketing structure and designing alternative and competitive marketing system, mainly for wholesale markets
3. Investing more on agricultural production and productivity, or pursuing more substantive policy on food production and marketing (more incentive and support for private sector to engage in agricultural production)
4. promoting diversification in staples consumption( changes in food culture).

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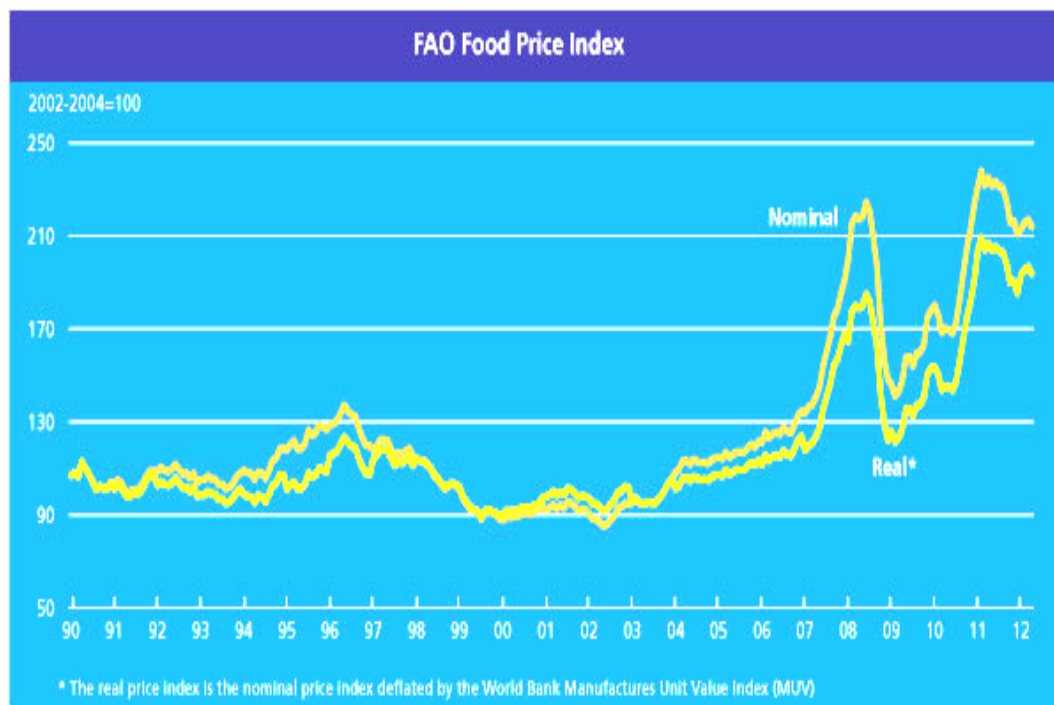
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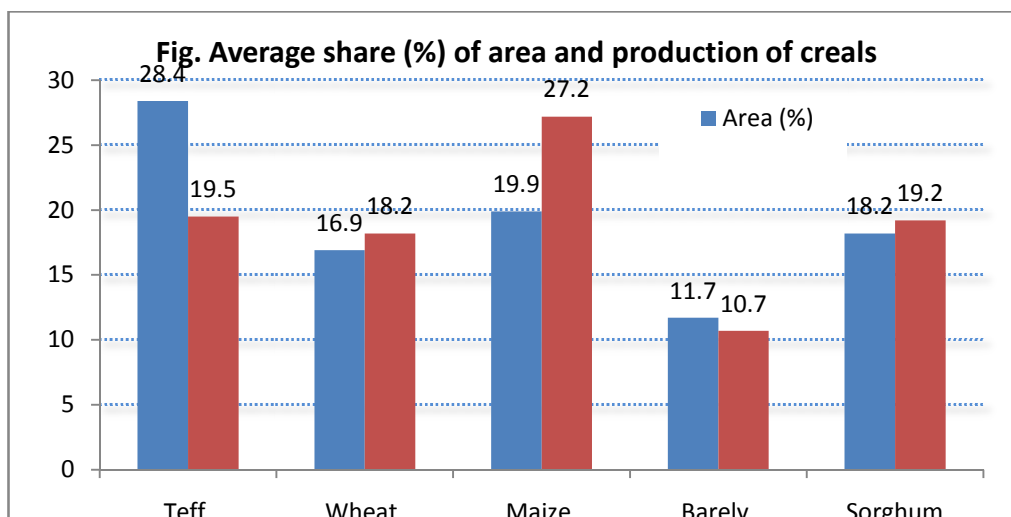
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## Appendices



Source: FAO, April 2012



ANNUAL FOOD PRICE INDICES (2002-2004=100)						
Date	Food Price Index	Meat Price Index	Dairy Price Index	Cereals Price Index	Oils Price Index	Sugar Price Index
1990	105.4	124.0	74.8	97.7	74.0	178.1
1991	103.6	125.4	79.6	97.1	79.1	127.2
1992	108.5	125.2	95.4	102.5	84.3	128.5
1993	104.6	118.1	84.6	99.5	86.0	142.2
1994	110.6	115.0	82.3	104.5	113.4	171.8
1995	123.2	118.4	109.6	119.3	125.0	188.5
1996	129.1	128.4	109.4	140.8	111.2	169.7
1997	118.5	123.2	105.1	112.4	112.5	161.4
1998	107.1	103.2	99.1	99.9	129.9	126.6
1999	92.4	97.8	86.3	90.6	91.6	89.0
2000	90.4	95.8	95.4	85.2	67.8	116.1
2001	93.4	96.5	107.1	86.5	67.6	122.6
2002	89.9	89.5	82.2	94.4	87.0	97.8
2003	97.7	96.8	95.1	98.1	100.8	100.6
2004	112.4	113.7	122.6	107.5	112.2	101.7
2005	117.3	120.1	135.4	103.5	103.6	140.3
2006	126.7	118.5	128.0	121.7	112.5	209.6
2007	158.7	125.1	212.4	166.9	170.0	143.0
2008	199.8	153.2	219.6	237.8	227.2	181.6
2009	156.9	132.9	141.6	173.7	150.9	257.3
2010	185.3	152.2	200.4	182.6	194.2	302.0
2011	227.6	176.6	220.5	246.8	252.3	368.9
2012	214.8	178.7	197.9	225.2	242.1	335.6

Source: FAO, 2012