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Grains Prices Movement Trend in Ethiopia: Analysis Focused on Thirteen Markets Experiences

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Abstract

Ethiopia is among the high grain producers in the horn of Africa, and production has been increasing since 2005. The increase in production, however, does not reflect in market prices. Consumers have been complaining on the rise in food prices. There are also complaints on price variation between markets. This study investigated price change integration between thirteen city markets. The quantitative research approach was applied because it aimed to compare the mean prices' differences. Data were collected from the central statistics agency database. The finding showed that between 2011 and 2020, the price changes of white maize was 212.11% of the base year price, while white teff was 205.64%, white barley was 198.44%, and white wheat was 193.70% of the base year price. Overall, the four items price change was 201.96% of the base year. The white maize price change was higher than white teff, white barley and white wheat, but the white wheat price change was lower compared to others. Overall grains prices were higher at Gambella, followed by Jigjiga, but relatively lower at shashemane. Despite prices variation, there was no significant price change difference between four items. Except for white wheat at the Gambella, there was market integration between thirteen markets. This indicates the improvement of transport facilities and communication technology. It implies that improvement in information movements helped grains transfer from excess to deficit areas which contributed the integration and co-movement of the market prices.

Key terms: cities, grains, market integration, price change, price co-movement

1. Introduction

The food price crisis is a current hot issue in developing countries because any shock in food supply negatively affects the socio-political and economic status of the country. Market price plays a key role in food accessibility and availability. The degree to which the food availability and stability of prices is related to market integration in different segments. As defined in the literature, market integration refers to the equilibrium between two or more markets on the price of comparable goods. In integrated markets, price change in one market will influence the connected market on other corners. This implies that market integration plays a crucial role in food flow, availability, accessibility and price stability. Well-integrated markets assure market forces constantly movement of goods to related locations. This helps food flow from excess to deficit areas quickly and give relief for the shortage market. An increase in prices of goods in deficit areas rewards suppliers to increase exports, which makes food available.

This system pushes prices to decline and goods to be available for consumers (Goletti and Tsigas, 2000, and Matthias, Joachim, and Maximo eds. 2016).

There is recent history on the price co-movement at the global level. Between 2007 and 2008 food price crisis affected the world population. The price surge was small from the 1970s to the early 2000s, but since 2006, it increased and reached the highest in the next two years at the global level. Then after it showed a decline in the next two years, but in 2011, it re-surged (Matthias, Joachim, and Maximo, 2016 and Andersen ed., 2015). During this period, the food price crisis shocked almost many markets.

In the East Africa case, particularly in Ethiopia, the food prices crisis was a headache for the low-income consumers during 2007 and 2008. During global food prices, 2007-2008, Ethiopia fell highly on price shock victims in the Sub-Saharan countries, except very few countries. It affected the purchasing power of the consumers, and more than 60% of the monthly income was wasted for the food cost. Currently, food prices change, moving mostly in a positive direction. There was also the sign of price co-movement between some cities, but it needs research investigation (Assefa, 2015 and CSA, 2018a).

2. Statement of the Problem

The increase in crop production, particularly since 2005, does not reflect the rise in food prices in Ethiopia (FAO, 2018, and Getachew et al., Jan 2018). Nevertheless, the roaring of food prices threatens citizens badly (Thome et al., 2017). Most cited reasons associated with the problem of food prices crises were rise of demand, food availability, monetary and agriculture policy, income inequality and price volatility (Berhane, 2017, Hill and Porter, 2017, and Bachewe et al., 2018). Most people who live in urban areas are food buyers. The number of food buyers in rural areas also is increasing. The roaring of food prices badly affects both urban and rural dwellers consumers at large. Now the food budget is sharing the largest percentage of consumers' expenditure (Wossen et al., 2018 and CSA, 2018b).

In the last fifteen years, food inflation was one of Ethiopia's attention-seeking political and economic agendas because it has been insistently increasing, and general inflation stayed double-digit for years. The rise of staple food such as teff, wheat, sorghum, barley, and maize was a puzzle for policymakers and consumers. Therefore the food inflation issues become the agenda of policymakers, politicians, academics and development agents at the national level. It was political and economic agenda since the middle of the first decade of 21th C. Government was attempting to stabilize the food prices roaring. Since 2006 government involvement increased in the market, and applied subsidies, price controls, grains distribution from the reserve, and export bans on food products to ensure market stability (Assefa, 2015).

Despite these efforts, today consumers are still complaining about the roaring of food prices and are facing high food price challenges. Consumers were complaining that the price change was not the same way between different market centres. Some market centres claimed by consumers that there was a high food price change than the others, but not identified by scientific studies and no sufficient research outputs that approved the existence of variation of price movement between different markets.

Therefore, assessment to identify relevant evidence and inform policymakers about prevailing situations over time is highly important for those who want to intervene in the market before the food crises become acute. In addition, it is believed that market price analysis is important to explore the characteristics of how one market responds to price changes in other markets.

3. Significance of the study

This study will contribute information for those who are working to bring food price stability at national and regional level. Understanding market integration and the nature of price movement in the different centres is important to enhance supply. It is evident that poor market integration causes high variation in price volatility in other localities, which increases the difficulty of estimating requirements during emergence for food crisis management. In the highly integrated markets, the price co-movability is strong among the different market centres. On the other hand, in a weakly integrated market region, price variability is high among the markets. So, this study provides information on overall grains market characteristics for policymakers to use as inputs for strategic plans on food price stability. Besides, knowledge of food price change and market integration is very important for business investment. Thus it is expected that business organizations will benefit from this study. In addition, it contributes academic knowledge in the marketing and related areas.

4. Scope of the study

The limit of this investigation focused on employing price change trends in selected eleven regional state cities and two city administrations. The study considered Addis Ababa, Mekele, Asayita, Jigjiga, Diredaw, Harari, Gambella, Adama, Asossa, Bahir Dar, Jimma, and Hawassa focus areas for the analysis. Teff, maize, barley and wheat mean prices change trend and price co-movement was the target concept for investigation. The study's time frame was bounded between 2010 and 2020. The methodology of the study is a quantitative research approach.

5. Review Literature:

5.1 Price Interrelation between Markets

Market integration is a market linkage that is connected by price co-movement. It can be vertical or spatial integration. The former deals with the flow of price indicators from one marketing network to another, while the second refers to the diffusion of price signs between markets in various localities. Price integration occurred when a change in one market center, changes revealed in the same way at other localities. The price variation is a common feature of the market, but if it is highly volatile, it can negatively affect both producers and consumers or the whole population. The market effectiveness to allocate resources is determined by the nature of the price circulation and stability. If there is no integration between markets, price indicators will not be spread from high to low market prices. Spatial market analysis is also instrumental in understanding how markets are freely linked to balance excess and deficit of resources. For example, the effects of product failure in the source region are limited if the market system is unintegrated or independent. But if the markets are very integrated good opportunities or threat easily flow from one part to another area through trading (Van Campenhout, 2007 and Minot, 2010).

5.2 Empirical Study on Integrated Market and Price co-movement

There are many studies on market integration. Some literature identified there were integrated markets and also partially integrated, which has sign for future integration. As Firdaus and Gunawan (2012) identified, shallot, red chilli, potatoes, cabbage, and tomatoes markets were integrated into Sumatera and Java Island and the central market in Jakarta. Nancy et al. (2014) identified that potato market linkages and prices flow were not completed in Kenya.

In Ethiopia, the studies conducted ten years ago shows that grains prices were strongly integrated, but market integration was a short life span before 2000. In addition, coffee marketing in Sidama, Illubabor and Jimma was identified that there was as local and central market integration, but there was a difference between local and central markets (Admasu, 1998). There was a finding that cabbage prices in Kombolcha and Jigjiga markets showed an upward movement trend between 2010 and 2014. Besides, cabbage and potato markets have been co-integrated (Yohanes, 2015).

In Ethiopia, grains prices were low and revealed stability before 2004. However, it was highly increased in 2007-2008. The food price or grains price surged since 2007. Food price inflation strangely rose, which peaked in September 2008 and moved above other goods. In between December 2006 and September 2008, cereals increased by 190% of the base year. After 2008, it re-roar in the next two years because of the failure of the sufficient production. The price of major grains moved up in the early two years of 2020 (Assefa, 2015 and; Getachew et al., January 2018).

The nominal price of teff doubled in mid-2007 and jumped about four times since mid-2008, and wheat prices increased by four times but remained sticky compared to all others. In contrast, maize and sorghum were four-fold dropped by different changes, but teff price has hardly declined at all, and the nominal price was adjusted for consumer price index. The nominal price of wheat, maize and sorghum showed more volatile than teff. Compared to 2007, in 2008 the real price of teff was moved up more than 22%, while maize, wheat and sorghum were more than five, three and two times respectively. The food prices had been increasing in 2007-2008. Although there was a decline in the next two years, it was not returned to before 2007 levels. Sorghum prices at Addis Ababa and Dire Dawa were more than fifty percentage, 50.5% and 58%, respectively, between 2007 and 2008. The real prices of Dire Dawa were somewhat higher than Addis Ababa (FAO 2014 and Assefa, 2015).

There were different understandings on the integration of food markets. Some studies identified the weakly integration in food markets. In contrast, others identified strong integration while some others denied it. There is literature that proves the integration of different markets. In Ethiopia case, researches focused on food and none price inflation between 2007 and 2008. After these years, there was an indication of a decline in food and no food price decline in the next two years, but it also was re-surging after that years. There was no support by sufficient research that attempted to compare the price variation on different markets throughout the country to provide knowledge for the concerned bodies. The last ten years situation was not well studied, especially inclusively on grains price change variations. This gap was considered as disconnection of research study, and designed this study to conducted and to compare price change variation between thirteen markets between 2010 and 2020

6. Research objective

The study aimed to explore the overall grains mean price change trend in city markets in Ethiopia in the last ten years.

Specific objectives

1. Analyze mean price change trend of four grain items of thirteen markets in the last eleven years.
2. Identify grain items that showed more mean price change in the study period.
3. Compare grains mean prices change variation between selected eleven regional state cities and two city administrations markets.
4. Identify high retail prices of grains among the thirteen markets.

7. Hypothesis

1. Null hypothesis (H_0) = each four grain item's mean price change was same between 2011 and 2020 compared to 2010.
   - Alternative hypothesis (H_1) = each four grain item's mean price change was not same between 2011 and 2020 compared to 2010.
2. Null hypothesis (H_0) = overall four grain items mean retail prices were same between 2011 and 2020 compared to 2010
   - Alternative hypothesis (H_1) = overall four grain items mean retail prices were not same in between 2011 and 2020 compared to 2010
3. Null hypothesis (H_0) = each grain item's mean price change between thirteen markets was the same in the study period.
   - Alternative hypothesis (H_1) = each grain item's mean prices change between thirteen markets was not the same in the study years.
4. Null hypothesis (H_0) = each four grain items mean retail prices were same between thirteen markets
   - Alternative hypothesis (H_1) = each four grain items mean retail prices were not same between thirteen markets.

8. Research Method and Data Sources

This study touched almost all major regional states and two city administrations market centres. North represented by Mekele and Bahirdar, northeast Asayita, east Jigjiga, Diredaw, and Harari, south-west Hawassa and shashemane, west Gambella, Asossa, Jimma, from centre Adama and Addis Ababa, were included in the study. They are considered representative of the country in the north, west, northeast, east, south-west and west of Ethiopia. The study gave attention to the four items grains prices change trends between 2010 and 2020.

The study used a quantitative research approach because the study's objective was to compare the mean difference of two or more market centres of price change trends of the four items of grain in the last ten years. Besides this, the data were numerical.

Almost all data were derived from secondary sources, and yearly grain average retail price data were used, which was compiled at the central statistical agency level. The data sources were the Ethiopia Central Statistical Agency and reports of the National Bank of Ethiopia. The Central statics agency of Ethiopia official collected raw data on retail prices and documented it in its database. From this data source, eleven years of grain retail prices were collected and used for the analysis.

Time series trend analysis was applied to investigate the price change in the studied period and markets. Grain prices change trend was analysed by descriptive statistics method. In addition, data were analysed by comparing mean differences using an independent sample test to understand the

changes in the price in the studied period. One sample test was used to test price change between the studied and base years. Besides t-statistics, particularly one sample and independent sample test, and one-way ANOVA was also applied to test the mean difference of grains price change trends between thirteen market centres. After all, data were collected and checked, SPSS 20 version was used to calculate and analyse the result.

9. Data presentation and Discussion

Before data analysis and interpretation, the normality of data was tested by the Shapiro-Wilk test.

Hypothesis for data normality test:

Null hypothesis (H_0): Each grain of data are normally distributed.

Alternative Hypothesis (H_1): Each grain of data are not normally distributed.

Explore result

Table 4.1 Normality test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	S.t.	d.	Sig	S.t.	d.	Sig.
White teff price index	.174	10	.200*	.945	10	.611
White wheat price index	.180	10	.200*	.925	10	.399
White barley price index	.226	10	.160	.917	10	.333
White maize price index	.277	10	.029	.893	10	.182
all four grains price index	.171	10	.200*	.938	10	.531

*. lower bound of the true significance.

*s.t.= statistics, d = difference, and sig= significance

Source CSA 2010 – 2020 data base

From the above table 4.1, it was observed that under the Shapiro-Wilk test column P-value of all grain items, the price index was greater than sig. = 0.05 at 95% confidence interval level of difference. Therefore, the null hypothesis was failed to reject. Thus all data satisfy normality distribution.

9.1 Price Change Trend Analysis of Four Grain Items

T-test

Table 4.2 One-Sample Statistics

	N	M	Sd.	Sd. Err. M
• White teff price index	10	205.64	78.60	24.85
• White wheat price index	10	193.70	71.73	22.68
• White barley price index	10	198.44	77.28	24.44
• White maize price index	10	212.11	78.61	24.86
• all 4 grains price index	10	201.96	75.59	23.90

- n= numbers of years, M= mean, Sd = standard deviation, and Err = error

Sources CSA 2011-2020 database

As it was shown on the one-sample statistics, the white teff mean index was 205.64 at 78.60 standard deviations, white wheat was 193.70 at 71.73 standard deviations, white barley mean was 198.44 at 77.28 standard deviations, white maize mean was 212.11 at 78.61 standard deviations, and all four grain items mean index was 201.96 at 75.59 standard deviations.

Table 4.3 One-Sample Test

	Test Value = 0					
	s.t.	d	Sig. (2-td)	M. D.	95% Confidence Interval of the Difference	
					Lb.	Ub.
• White teff price index	8.274	9	.000	205.64	149.42	261.87
• White wheat price index	8.539	9	.000	193.70	142.38	245.01
• White barley price index	8.120	9	.000	198.44	143.16	253.72
• White maize price index	8.532	9	.000	212.11	155.87	268.35
• all fou grains price index	8.448	9	.000	201.96	147.88	256.04

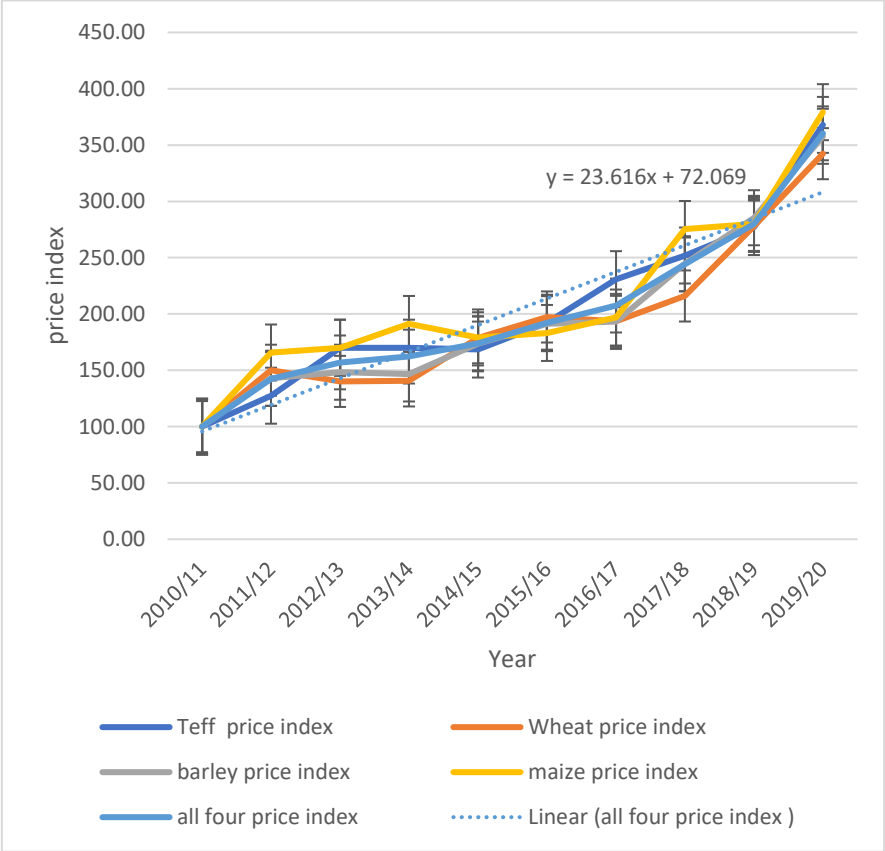
*s.t.= statistics, d = difference, and sig= significance, td = tailed, and M.D = mean difference, Lb = lower boundary and Ub = upper boundary

Source CSA 2011-2020 database

As presented on table 4.2, one sample test shows that white teff price index t= 8.274 and sig. (2-tailed) = .000, white wheat price index t = 8.539 and sig. (2-tailed) = .000, white barley price index t = 8.120 and sig.(2-tailed) = .000, white maize price index t = 8.532 and sig.(2-tailed) = .000 and overall four grain items mean prices index t = 8.446 and sig. = .000. The lower and upper values of each item didn't include zero. Since each of the grain item test value = .000 < p-value = .05 at 95% confidence interval level of the difference, the null hypothesis, which stated that there was no significant difference of each grain (teff, wheat, barley and maize) mean price change between 2010 and 2020 compared to base year was rejected.

The research output shows that the mean difference of each grain item mean price was increasing. Furthermore, the mean difference of all items was positive. This indicates that the mean price of teff, barley, maize, and wheat increased between 2011 and 2020 compared to 2010. The highest variation was revealed on white maize, which was followed by white teff, white barley, and white wheat, respectively. Between 2011 and 2020, the price change of white maize was 212.11% of the base year price, while others like white teff were 205.64%, white barley was 198.44%, and white wheat was 193.70% of the base year price. Overall, four items change was 201.96% of the base year.

Figure 4.1 Four(white teff, wheat, maize and barley) grains price index trends



Source CSA 2011-2020 database

As presented on figure 4.1, the White maize price change was higher from 2010/11 to 2014/15, and 2017/18 to 2018/19, but in the rest years, the distance was close to others. Again after 2018/19, white maize moved upper than the others. On the other hand, the white wheat price change was relatively lower than the other except between 2014/15 and 2015/16. This shows that the price change of all

items was moving in the same direction. Overall, grains prices were changing itself by 23.616 times the base years with the increase of the years.

9.2 Comparison of Prices Change Trends between Four Grains Items

one-way ANOVA

Table 4.4 Price index

	Sum of Squares	d	Mn Square	F.	Sig.
Between Groups	1961.734	3	653.911	.111	.953
Within Groups	211273.267	36	5868.702		
Total	213235.001	39			

* d = difference, Ms = mean squares and sig= significance

Source CSA 2011-2020 database

As presented on the above one way ANOVA table 4.4, there were no statistically significant price change differences between four grains items. ANOVA price index F (3, 36) = .111 and sig. = 0.953. The test value was greater than the p-value 0.05 at the 95% confidence interval of the differences. Therefore, the null hypothesis was accepted, which said there was no significant variation of mean grains prices changes between four grain items.

This implies that white maize, white barley, white wheat and white teff price change increased in the same way between 2011 and 2020.

9.3 Retail Price Comparison between Four Grain Items

One-way ANOVA

Table 4.5 Retail price

	Sum of Squares	d	Ms	F.	Sig.
Between Groups	759.677	3	253.226	8.921	.000
Within Groups	1021.823	36	28.384		
Total	1781.499	39			

* d = difference, Ms = mean squares and sig= significance

Source CSA 2011-2020 database

As presented on the above one way ANOVA table 4.5, ANOVA price index F (3, 36) = 8.921and sig. = 0.000. The test value was less than the p-value of .05. There was significant variation of mean retail price between four grain items. Thus the null hypothesis that said no significant mean retail price variation between four grain items in the last ten years was rejected.

Despite no substantial mean price change variation between white teff, white maize, white barley and white wheat, there was a significant retail price variation, except between white barley and white

wheat. The retail price of white teff was very higher than the other grains. On the other hand, the white maize retail price was lower than the others.

9.4 Comparison of Grains Price Change Variation between Thirteen Markets

Table 4.6 one-way NOVA

		Sum of Squares	d	Ms	F.	Sig.
Barley price index	Between Groups	64439.026	12	5369.919	.802	.647
	Within Groups	783125.548	117	6693.381		
	Total	**847564.574**	**129**			
Maize price index	Between Groups	84007.779	12	7000.648	.905	.544
	Within Groups	905141.973	117	7736.256		
	Total	**989149.752**	**129**			
Teff price index	Between Groups	15666.914	12	1305.576	.209	.998
	Within Groups	730039.368	117	6239.653		
	Total	**745706.282**	**129**			
Wheat price index	Between Groups	130946.323	12	10912.194	1.864	**.046**
	Within Groups	684921.734	117	5854.032		
	Total	815868.057	129			

* d = difference, Ms = mean squares and sig= significance

Source CSA 2011-2020 database

ANOVA table 4.6 revealed that barley price index F (12,117) = 0.802 and Sig. = 0.647, maize price F (12,117) = 0.905 and sig. 0.544, teff price index F (12,117) = 209 and sig. = 0.99 and wheat price index F (12, 117) = 1.864 and sig. = 0.046. Except for White wheat, all test values were greater than p-value 0.05 at a 95% confidence interval of the difference. Therefore the null hypothesis of white barley, white maize and white teff that stated no statistically significant difference of each grain item mean price change between all thirteen markets was accepted, except white wheat mean price change. There was no sufficient evidence to reject each (white barley, maize and teff) null hypothesis, but the hypothesis on white wheat was rejected because the test value of the Gambella market was less than p-value .05 at 95% confidence interval level of the difference with every twelve markets.

This implies that the Gambella white wheat market price change was different from others. However, there was price co-movement between thirteen city markets of all four grains items prices in the last

ten years. The retail price of white barely was converging in the same direction. But after 2017/18, it was diverging at Gambella, while at Asayita, it was diverging after 2018/19. At other markets, the retail price of the white barely was converging, except at Gambella and Asayiata, it was diverging after 2017/18 and 2018/19, respectively. At Gambella and Asayiata, the white barley retail price was higher, while at Shashemane relatively lower than others. However, the white maize retail price was higher at Jigjiga, while at Asosa, it was relatively lower than other market centres. The retail price of white teff was moving close to each market throughout the study years except between 2012/13 to 2014/15. It showed a wider distance gap between shashemane toward lower than others. At Jigjiga, teff retail price was higher, followed by Diredaw, while at Shashemane it was relatively lower than other markets. The movement feature of the retail price of the white wheat varied from other grain items. At Gambella, it was higher than others from the beginning. Jigjiga followed Gambella. At Shashemane, it was moving at the lower boundary from the beginning and followed Nazareth, except 2017/18.

Overall mean retail prices of grains were higher at Gambella, which Jigjiga followed after 2014/15. At Shashemane, it was relatively lower than others throughout the studied years. Next to Shashemane, Nazareth's retail price was moving on the lower side of the graph line.

10. Recommendation

Policymakers should be alerted and designed to respond to why food prices are higher and higher and how to react to bring normal or create market price stability. Understanding the roaring of the food prices at the policymaking level and reacting very actively is very crucial. Unless otherwise, the life of the lower-income class will be negatively affected by the effects of high food prices.

11. Conclusion

Ethiopia is one of the countries that produce the largest grains comparable to other horn African countries. Although grains production has been increasing since mid of the first decade of the 21st century, the increase of production is not revealed in the market prices. The food supply has been threatened by the rise of prices more than in the last ten years. Between 2011and 2020, the price of white maize was 212.11% of the base year price, while others like white teff was 205.64%, white barley was 198.44%, and white wheat was 193.70% of the base year prices. Overall, four grains item prices change was 201.096% of the base year. The price change movement of these four items was in the same way in the last ten years. There was no significant change differences between four grain items price changes. It was identified that there was price co-movement between thirteen markets on all four grains prices, but the white wheat price at the Gambella market was diverging than the others. This implies that there was market integration in the between studied markets, except Gambella.

This study coincided with other findings. As stated by FAO (2014) and Gebresilassie et al. (2017), the wheat price increased 257% at the Addis Ababa market, but at the gate market, it was 292% time 2001 to 2020. However, in the time range, 2000/01 and 2012/13, the bread wheat price increased only 116% in Addis Ababa. It was expected to increase in the future unless there was a demand and supply change. According to CSA (2017), grain prices, especially teff, wheat, barley, maize, and sorghum, were highly increasing. However, the white wheat mean prices change was lower than the others. This finding coincided with Rashid (2010), which stated that the government intervention into the wheat market gave temporary relief holding the rise of the domestic market price. This resulted because wheat was

one of the subsidized grains than other cereal crops. This is an indicators that the wheat price change index was lower than teff, maize and barley.

Assefa (2015) stated that price trends varied between regions, but Addis Ababa, Amhara, and Oromia markets had integrated markets in the early 2010s. Besides this, there was price integration in the surplus market areas as one market entity and similar signs in supply deficit regions in later years. The integration of market co-movement of cereal prices resulted from improved infrastructure like transportation and communication technology. As identified in the literature, market prices move together across more expansive areas because of the co-integration of the different market centres. Except in the northern and eastern tip markets, there was co-movement of market prices between state regions. Accordingly wheat and barley were supplied from the Oromia region, specifically from Bale and Arsi to Hawassa, Sodo, and Dilla in the South Nation Nationalities and People Regional State by wholesalers. Similarly, teff from the Amhara region, particularly the West Gojam zone, transported and sold in the Mekele market in the Tigray region. The flow of teff to deficit eastern Ethiopia, specifically like Dire Dawa from Addis Ababa. This free grains movement from surplus to deficit market centres shows the integration and co-movement of the market price between different regional state regions (Getachew et al.,January 2018).

Generally, changes in urbanization, improvement in transport facilities, and communication technology promoted the spatial price co-movement and market integrations between regional states. Therefore from early studies and this research finding, it was observed that the grains marketing system was integrated in the last years in Ethiopia.

In conclusion, overall grains price was highly increased in the last ten years. If it continues in the same way for the future, it increases worsen the availability of food for net food buyers. The majority of the low-income social categories will be highly affected by the shortage of food. *Injera* (food prepared by teff) will be the food of the economically higher social class. Maize which was common for the lower economic class, will also run away from the poor home. Bread from wheat will be available for those who have high incomes. Obviously, the roar of food prices will become more critical for low-income class and badly hit the majority of the population. One thing that should be taken into consideration is failure to availability of food is an indication of the failure in food security policies.

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