

অসম চৰকাৰ



Government of Assam



ARIAS WORKING PAPER

(WP/22/01)

Benchmark Market Selection for Five Selected APART Agriculture Commodities in Assam

Prepared under
Assam Agribusiness and
Rural Transformation Project (APART)

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Section I

Introduction

Prices of some agricultural commodities are not determined solely on market forces, such as through intersection of demand and supply of the commodities concerned in states like Assam. The commodities which have dominant national markets may tend to influence the price level of those goods in some smaller markets at the state level. This may, more particularly, happen if the commodities produced in the local markets are nominal to have an effect from the interplay of market forces (Demand and Supply of the commodities concerned). Prices for such commodities are transmitted from the major national markets to the states where production and consumption is relatively negligible compared to the all-India figures. Such agricultural commodities include Black gram, Lentil, Mustard seed, Potato, Maize, etc. Mainly, these commodities are produced seasonally and in certain geographically identified pockets in fewer districts only. Technologically upgraded milling services are also relatively in short supply for these commodities, resulting in the failure to compete in quality against the produce coming from other major production locations, complicating further the price discovery at the local level. Moreover, as the produce is supplied in the state for a few months only, its price is influenced by the places with national reputations of producing and exporting in bulk to our state. However, there is competition among national markets because commodities like Black Gram, Lentil, Rapeseed and Mustard, etc. are not controlled or exported by single market. Instead, set of multiple markets from different high producing states of India are found to export commodities to a state like Assam. This is confirmed through interactions with traders dealing in agricultural commodities other than perishable horticultural crops in various markets. In this case, identifying a single reference market with prices transmitted to the state of Assam would be laborious, as several markets in different states export the commodity of our interest to the state, and the price movement is also more or less similar across markets. The complications are exacerbated further by the lack of price data for specific

markets. A cursory view of graphical representations of price movement over the last several years reveals that it is difficult to isolate one or two specific markets that influence the price of the commodity of our interest concerning the price of agricultural commodities in the state. The present working paper is an effort to identify the benchmark markets of major agricultural commodities such as Lentil, Black gram, Maize, Rapeseed and Mustard and Potato whose prices have day to day influence on the prevailing prices in Assam. The working paper is expected to provide valuable insights in terms of selection of benchmark markets and thereby making the farmers of these commodities in the state aware of the prices in few days/weeks ahead through short term forecasting by calculating the parity price (excluding costs related transportation, handling, etc.), especially during their harvesting period.



The key objectives

- » *Identification of the national benchmark markets for selected agriculture commodities of the state whose price movement exhibit statistically significant trend with that of Assam.*
- » *Facilitate in the regular diffusion of prices of the identified national benchmark markets to the farmers in order to enhance bargaining power and farmers' income.*

Section II

Data and Framework of Analysis

The paper has primarily used secondary data collected from sources such as Agmarknet.in, Indiatatagri.com and data repository of Assam State Agricultural Marketing Board (ASAMB). These data were compiled for commodities such as Black gram, Maize, Rapeseed & Mustard, Lentil and Potato. The monthly data are longitudinally arranged for Black gram from June 2003 to December 2019, Maize from 2003 to December 2019, Rapeseed and Mustard from March 2003 to November 2019, Lentil from January 2011 to September 2016 and Potato from July 2008 to December 2019. Few markets of national importance for each commodity of our interest have been identified from which benchmark markets that influence or that have similar association in the price movement with the markets in Assam. The markets national importance identified for Lentil include Delhi, Hapur, Kanpur and Kolkata. For Black gram, Jahnsi (Uttar Pradesh), Ramaganj-Kota (Rajasthan), Ahmednagar (Maharashtra), Guntur (Andhra Pradesh), Vidisha (Madhya Pradesh) and Delhi were identified to select one or more benchmark markets. Important national markets for maize included Delhi, Devangere (Karnataka), Gadag (Karnataka), Jalgodra (Maharashtra), Ludiana (Punjab), Sanli (Maharashtra) and Shimoga (Karnataka). For Mustard Agra (Uttar Pradesh), Alwar (Rajasthan), Bikaner (Rajasthan), Hissar (Haryana), Jaipur (Rajasthan), Kota (Rajasthan), Morena (Madhya Pradesh), Najafgarh (Delhi) and Narela (Delhi) were identified as the possible set of markets of national importance to select benchmark market. The group of national markets for potato are Agra (Uttar Pradesh), Alipurduar (West Bengal), Deesa (Gujarat), Coochbehar (West Bengal), Jalandhar (Punjab) and Mathura (Uttar Pradesh). The markets for all the five commodities were identified through discussion with the traders in various districts of Assam and availability of price data for a sufficient time period to make statistical analysis. Discussion with traders gave a rough idea that the price of the commodities of our interest may resemble the price in the source state because of arrival in bulk from these markets, mainly during the off-season.

¹ Although the reference period is little older, it is assumed that the price movement would exhibit similar trend after adding price data of latest years.

The price data of the commodities were arranged in MS excel and presented graphically through line diagrams to see the similarity in trend. For inter-quartile comparisons and the spread of the price data in each market box plot visualization technique is also used. Given that as the price trend is more or less same across markets, more in-depth econometric analysis has been used where OLS regression has been employed to see any statistically significant association between the price series (price in Assam market versus price in identified national markets). Box plot, regression analysis etc. are carried out in STATA 17 software.

OLS Regression: Given the non-linear nature of the data, it is treated as cross-section distribution and thus analyzed using Ordinary Least Square (OLS) model to interpret the association in price variation between markets of our interests. For understanding the association between the price in the Assam market and price in the identified national markets, the regression equation of the following form is used. Regression models are carried out commodity-wise in STATA 17

With 'm' number of identified national markets the OLS regression model writes as:

$$Y = \beta_0 + \sum_{j=1}^m B_j X_j + \varepsilon \dots\dots\dots(1)$$

Where, Y is the price level in Assam market as the dependent variable, β_0 is the intercept of the model, X_j corresponds to the J^{th} number of identified national markets as explanatory variables of the model ($J= 1$ to m) and ε is the random error with expectation 0 and variance δ^2 .

Section III

Results and Discussion

Benchmark Markets for Potato

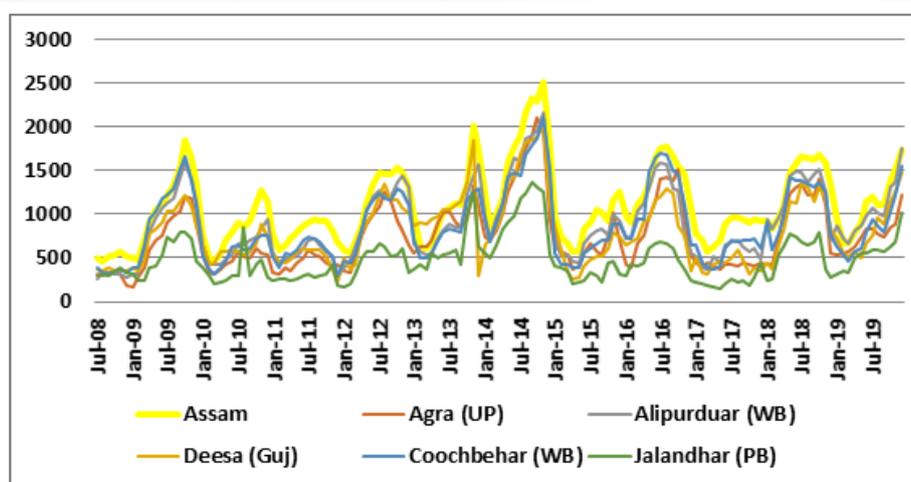
The Potato price trend of the comparable national markets is indicated in Figure 1. It is envisaged that price is fluctuating highly during the period under consideration with mean price across period seems not to be rising. The period hovering the month of January every year showed decline in price as during this period local potato variety



arrives in the market. The price of Potato of Assam remains higher compared to the remaining national markets as indicated by the yellow line in the figure. As against potatoes in Jalandhar are priced less compared to other national markets under consideration all throughout the period. Because the trend is almost the same across markets in Figure 1, it is practically difficult to differentiate the price trend of one National market to consider it the benchmark market. In this context, we have delved into the regression results which is presented in Table 1. A perusal of the table shows that like the other models discussed previously the present regression model is also significant at 1% level with R² value equivalent to 93.50% showing that the model is a good fit with well capturing of variations in the dependent variable by the explanatory variables. Among the identified national markets, Alipurduar and Coochbehar show a significantly strong and positive association ($P=0.005$) with the price trend of Assam market, where the coefficient indicates that 1 rupee increase in price of potato at Alipurduar and Coochbehar is associated with respectively 1.36 and 1.51 more rupee increase in Assam. The next significant and positive association in the price change between the pairs of markets includes Assam with Delhi with the level of significance at 5%. It indicates that as the price of potato increases by 1 rupee in Delhi, the price of the same increases by Rs. 1.17 more in Assam. The Jalandhar market is not associated with the

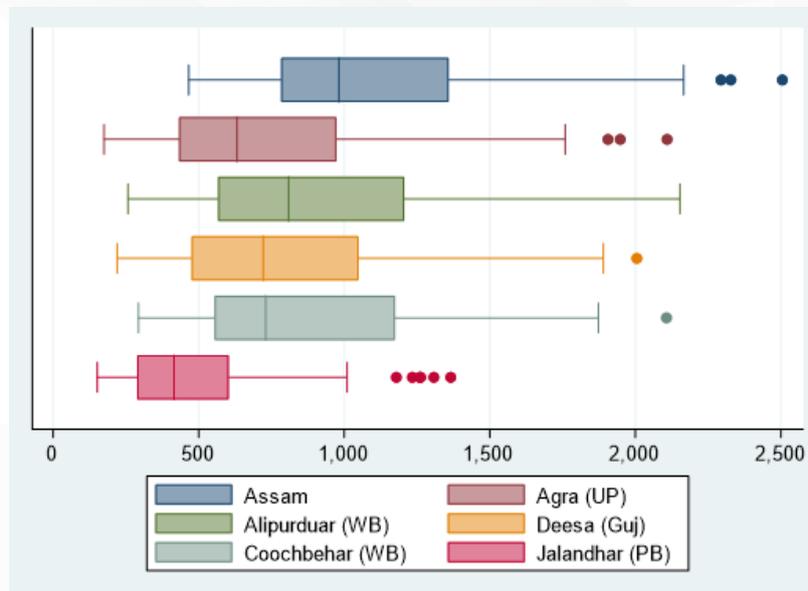
price series in Assam for the period under consideration. This is because the relationship is negative and statistically non-significant. Thus, for Potato the benchmark markets in the order of priority is markets of West Bengal followed by Agra. Price transmission has remained significant for Assam markets from these two markets.

Figure 1: Price Trend for Potato of Assam vs Benchmark Markets



The histogram in relative prices displayed through box plot in Figure 2 indicates that the price series for potato in Assam has concentration of data points towards lower quartiles, and with presence of outliers. The remaining markets such as Agra (UP) and Jalandhar are found to have some data points as outliers. Other than the outliers, the reasonable range of data are well concentrated in Jalandhar (Punjab) compared to the remaining markets. Markets such as Agra, Alipurduar, Deesa, Coochbehar and Jalandhar show concentration of potato price data towards lower quartiles. The median value of the price series is not same across markets with higher median value in Assam, followed by Alipurduar and Coochbehar.

Figure 2: Inter-quartile Comparison of the Price Series of Potato in Assam Vs Other National Markets



Note: Histogram of relative prices. In each box the central mark indicates the median and the box edges denotes the 25th and 75th percentiles of the distribution. The 'whiskers' extend to the extreme data points still not considered outliers, whereas the respective coloured thick dots indicate the outliers.

Table 1: OLS regression results for identification of Benchmark markets for prices of Potato in Assam

Source	SS	df	MS	Number of obs = 138		
Model	24286198.4	6	4047699.74	F(6, 131) = 313.94		
Residual	1689028.15	131	12893.3446	Prob > F = 0.0000		
Total	25975226.6	137	189600.194	R-squared = 0.9350		
				Adj R-squared = 0.9320		
				Root MSE = 113.55		
assam	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
agra_up	.1735822	.0797132	2.18	0.031	.0158905	.3312738
alipurduar_wb	.3653032	.0977975	3.74	0.000	.1718364	.55877
deesa_guj	.087978	.0650995	1.35	0.179	-.0408043	.2167604
coochbehar_wb	.5171804	.1153709	4.48	0.000	.2889493	.7454115
jalandhar_pb	-.0387109	.0870858	-0.44	0.657	-.2109874	.1335656
sheroaphuly_wb	-.0633551	.0683946	-0.93	0.356	-.1986559	.0719457
_cons	192.4477	23.58223	8.16	0.000	145.7965	239.099

Source: Authors' own estimation

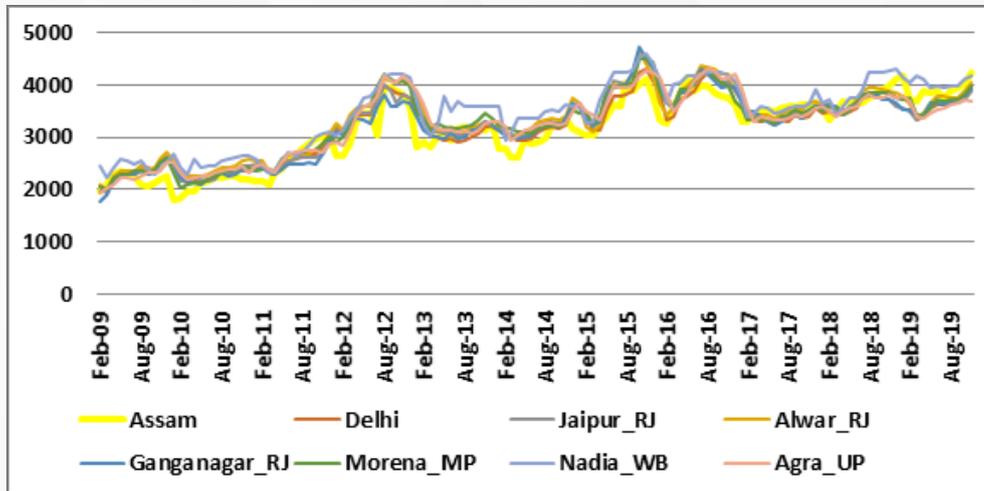
Benchmark markets for Rapeseed and Mustard

Based on the price trend of Rapeseed and Mustard from February 2009 to August, 2019 for 8 markets including Assam, it is seen that these markets are almost highly integrated in terms of changes in prices. From the price trend in Figure 3 it is observed that the dispersion in prices among the markets is not visibly seen. In other words, the prices have moved in equal trend. However, the price



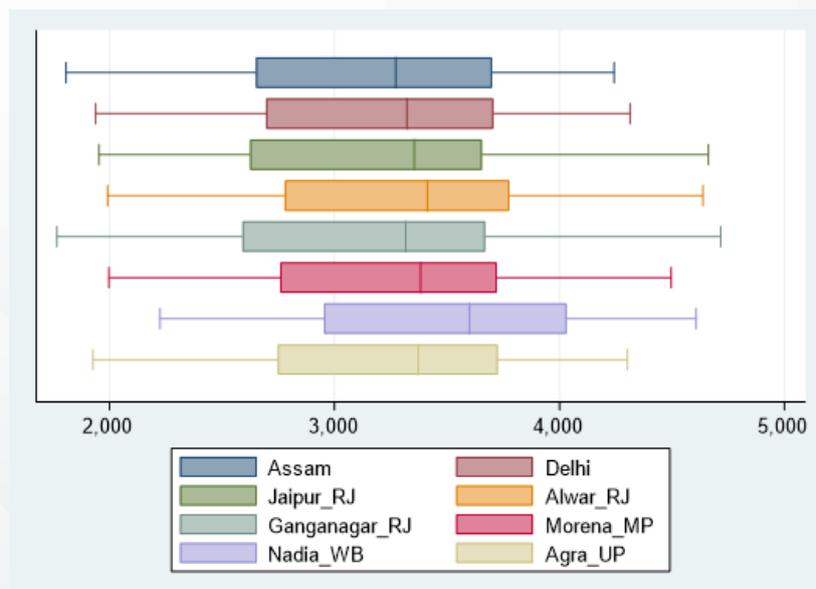
of Rapeseed and Mustard has almost doubled for all the markets during the period under consideration. However, the graph can hardly explain the national markets whose changes in price of Rapeseed and Mustard are exactly influencing the price in Assam. For this we have tried to analyze the price series of identified national markets with transaction of Rapeseed and Mustard and vis-à-vis the Rapeseed and Mustard price series for Assam through one Ordinary Least Squares (OLS) technique to sort out the individual effect of price series on the Rapeseed and Mustard price of Assam. This would help select the benchmark markets for Assam and disseminate the price of Rapeseed and Mustard of the selected benchmark market would help the farmers in taking informed decisions on the marketing of Rapeseed and Mustard. The Result of the OLS regression is presented in Table 2. It is indicated that among the national markets identified Nadia of West Bengal is positively and significantly ($P=0.00$) associated with the price series of Assam. The coefficient of association is 0.62 indicating that 1 rupee increase in the price of Rapeseed and Mustard leads to 1.62 more rupee increase in the price of Rapeseed and Mustard in Assam. A similar positive and significant association is observed for Mustard price in Morena and Delhi but at 5% probability level. Price of Rapeseed and Mustard of Ganganagar is associated with Assam in Border line significance (10% probability level). The states which have marketing linkage of Rapeseed and Mustard with Assam thus are Rajasthan, Madhya Pradesh and West Bengal. Delhi is the main conglomeration point for many of the pulses and oilseeds produced in Madhya Pradesh, Rajasthan and Uttar Pradesh, etc. The changes in price of Rapeseed and Mustard produced in these states are also found to be collinear with the change of price in Assam.

Figure 3: Price Trend for Rapeseed and Mustard of Assam vs Benchmark Markets



The histogram in relative prices displayed through box plot indicates that the price data for Rapeseed and Mustard of all the selected markets stretches almost evenly across markets. However, the boxes' upper quartile concentrates more data than its lower quartile counterpart. Against all other markets median price in Assam is relatively lesser. The median price of Mustard of Assam is in proximity with Delhi and Ganganagar (see Figure 4).

Figure 4: Inter-quartile Comparison of the Price Series of Rapeseed and Mustard in Assam Vs Other National Markets



Note: Histogram of relative prices. In each box the central mark indicates the median and the box edges denotes the 25th and 75th percentiles of the distribution. The 'whiskers' extend to the extreme data points still not considered outliers, whereas the respective coloured thick dots indicate the outliers.

Table 2: OLS regression results for identification of Benchmark markets for prices of Rapeseed and Mustard in Assam

Source	SS	df	MS			
Model	50784291.7	7	7254898.81	Number of obs =	130	
Residual	4953497.9	122	40602.4418	F(7, 122) =	178.68	
Total	55737789.6	129	432075.888	Prob > F =	0.0000	
				R-squared =	0.9111	
				Adj R-squared =	0.9060	
				Root MSE =	201.5	

assam	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
delhi	.5989874	.2799295	2.14	0.034	.044839	1.153136
jaipur_rj	-1.002714	.3641253	-2.75	0.007	-1.723536	-.2818911
alwar_rj	.0605542	.2701621	0.22	0.823	-.4742586	.595367
ganganagar_rj	.4939363	.2752626	1.79	0.075	-.0509735	1.038846
morena_mp	.495216	.2033605	2.44	0.016	.0926436	.8977885
nadia_wb	.6282638	.108204	5.81	0.000	.4140631	.8424645
agra_up	-.2743882	.1679419	-1.63	0.105	-.6068459	.0580695
_cons	-196.3714	103.9253	-1.89	0.061	-402.1018	9.359049

Source: Authors' own estimation

Benchmark Markets for Lentil

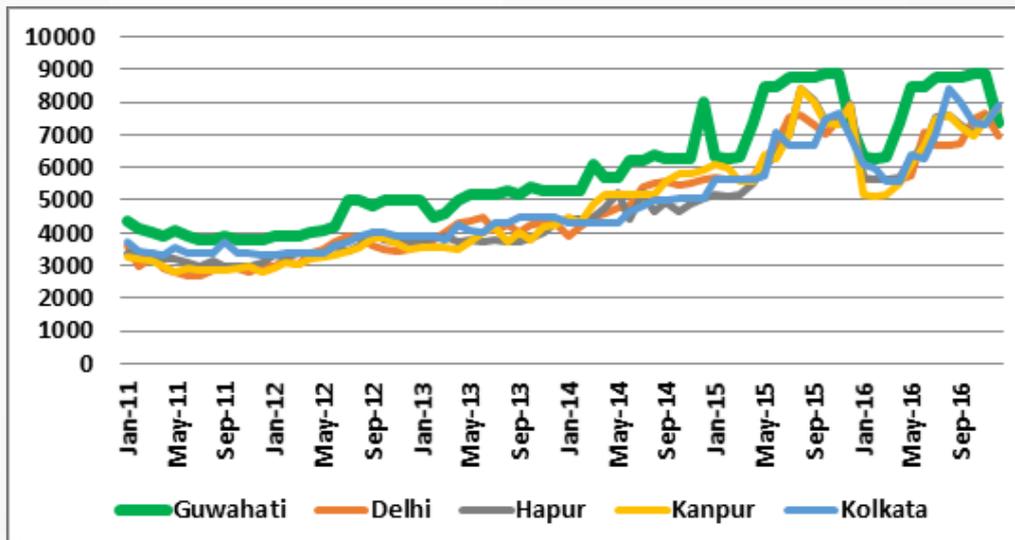
The lentil price trend of the comparable national markets is indicated in Figure 5. It is envisaged that price has over the years increased with slight downward fall during the month of January and February of 2016. The price is always high in Guwahati market compared to the comparable national markets like Delhi, Hapur, Kanpur and Kolkata.

As because the trend is almost the same across markets in Figure 5, it is practically difficult to differentiate the price trend of one National market to consider it as the benchmark market. In this context, we have delved into the regression results which is presented in Table 3. Perusal of the table shows that the model is significant at 1% level with R2 value equivalent to 93.14% showing a good fit of the model. Among the identified national markets, Delhi shows a significantly strong and positive



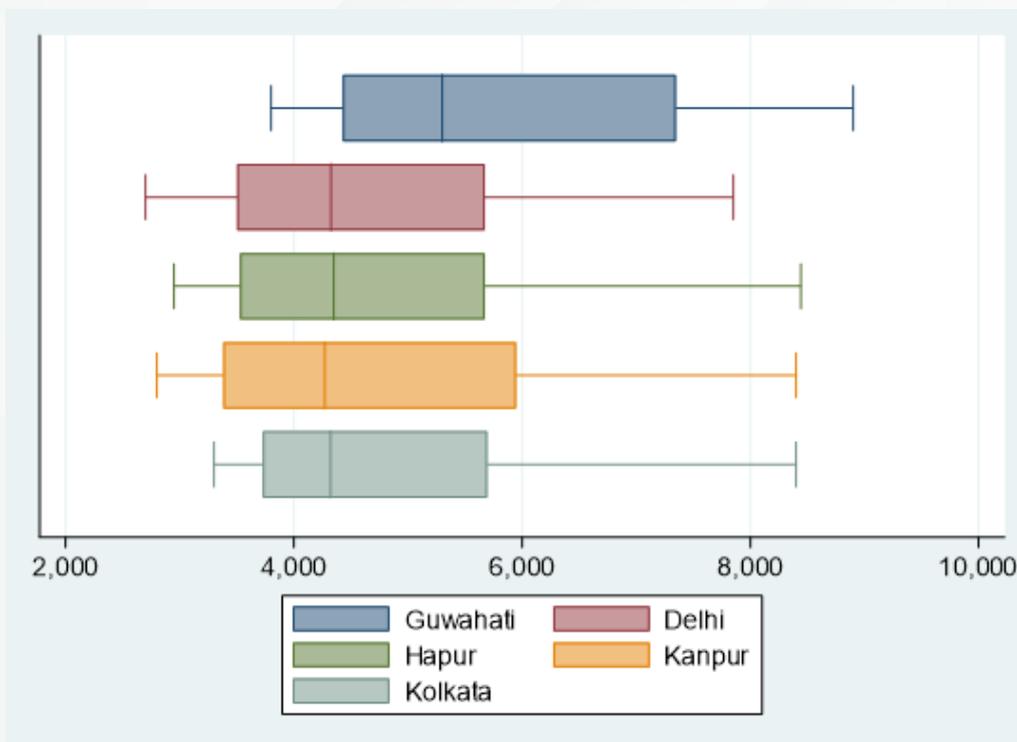
association ($P=0.005$) with the price trend of Guwahati, where the coefficient indicate that 1 rupee increase in price of Lentil at Delhi is associated with 1.48 more rupee increase in Assam. The next significant and positive association in the price change between the pairs of markets includes Guwahati with Kolkata with the level of significance at 5%. It indicates that as the price of Lentil increases by 1 rupee in Kolkata, the price of the same increases by Rs. 1.33 more in Guwahati. The association of Guwahati with Kanpur is positive but with borderline significance and the price series association may not be viewed in line with Delhi and Kolkata. The Hapur market is not associated with the price series in Guwahati for the period under consideration. This is because the relationship is negative and statistically non-significant. Thus, for Lentil the only benchmark markets in the order of priority is Delhi and Kolkata. Price transmission has remained significant for Guwahati from these two markets.

Figure 5: Price Trend for Lentil of Assam vs Benchmark Markets



The distribution of the price series in Box Plot indicates that 50% of the data points stretching within the box are evenly distributed for Delhi and Hapur markets (see Figure 6). In case of Assam, price data is concentrated more in the lower quartiles. This is also the same for other markets, as evidenced by whiskers extending on both sides of the box. The median price is almost the same for all the markets other than Assam, as Assam price of Lentil is higher than the remaining markets.

Figure 6: Inter-quartile Comparison of the Price Series of Lentil in Assam Vs Other National Markets



Note: Histogram of relative prices. In each box the central mark indicates the median and the box edges denotes the 25th and 75th percentiles of the distribution. The 'whiskers' extend to the extreme data points still not considered outliers, whereas the respective coloured thick dots indicate the outliers.

Table 3: OLS regression results for identification of Benchmark markets for prices of Lentil in Assam

Source	SS	df	MS	Number of obs = 72		
Model	194173720	4	48543430	F(4, 67) = 227.43		
Residual	14300967.4	67	213447.275	Prob > F = 0.0000		
Total	208474688	71	2936263.2	R-squared = 0.9314		
				Adj R-squared = 0.9273		
				Root MSE = 462		
guwahati	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
delhi	.4888302	.1670919	2.93	0.005	.1553134	.822347
hapur	-.0253102	.1860241	-0.14	0.892	-.3966159	.3459954
kanpur	.3086824	.1844894	1.67	0.099	-.0595599	.6769247
kolkata	.3262245	.1473403	2.21	0.030	.0321321	.6203169
_cons	611.2428	204.7402	2.99	0.004	202.5798	1019.906

Source: Authors' own estimation

Benchmark Markets for Black Gram

Figure 7 indicates the Black Gram price trend of Assam and comparable national markets. It is evident from the figure that price of Black Gram is increasing across the national markets identified till March 2016. Thereafter, price fell to the lowest during the later months of 2018. The peak price as shown in the trend lines was that export of Black gram to other countries happened in

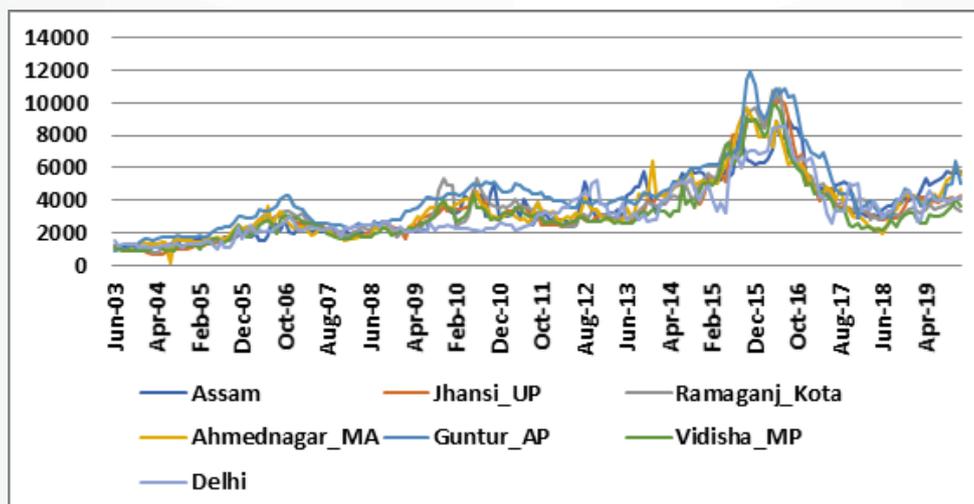


sizeable quantities during this period, leading to a rise in average prices in the domestic market. The markets selected show almost the similar trend in the changes of prices. Thus, because the trend is almost the same across markets in Figure 7, it is practically difficult to differentiate the price trend of one national market to consider it the benchmark market. In this context, we have delved into the regression results which is presented in Table 4. Perusal of the table shows that the model is significant at 1% level with R² value equivalent to 86.31% showing a good model fit. Among the identified national markets to see the association with the average price in the Assam markets, except Vidisha in Madhya Pradesh, all the remaining markets exhibits a positive association in the changes of prices with Assam markets. However, highly significant markets for Black Gram are Delhi, Guntur in Andhra Pradesh, Ahmednagar in Maharashtra, and Jhansi in Uttar Pradesh. While, prices in Delhi, Guntur and Ahmednagar are associated with 1% level of significance, Jhansi is significant at 5% level. The coefficient of association of the statistically significant markets is 0.25% to 0.52%, indicating that if price increases by 1 rupee in the benchmark market, average price in the Assam market increases by the range of 0.25 to 0.52 rupee more. The changes in the prices of Black Gram in these markets may explain the changes in the price in the Assam market if taken into consideration the transportation and other handling charges of Black Gram in reaching our state of Assam.

² During 2016-17, the share of Moong/Urad was 7.69% in the export of total pulses vis-à-vis 6.37% during 2018-19 (Department of Commerce, Govt. of India)

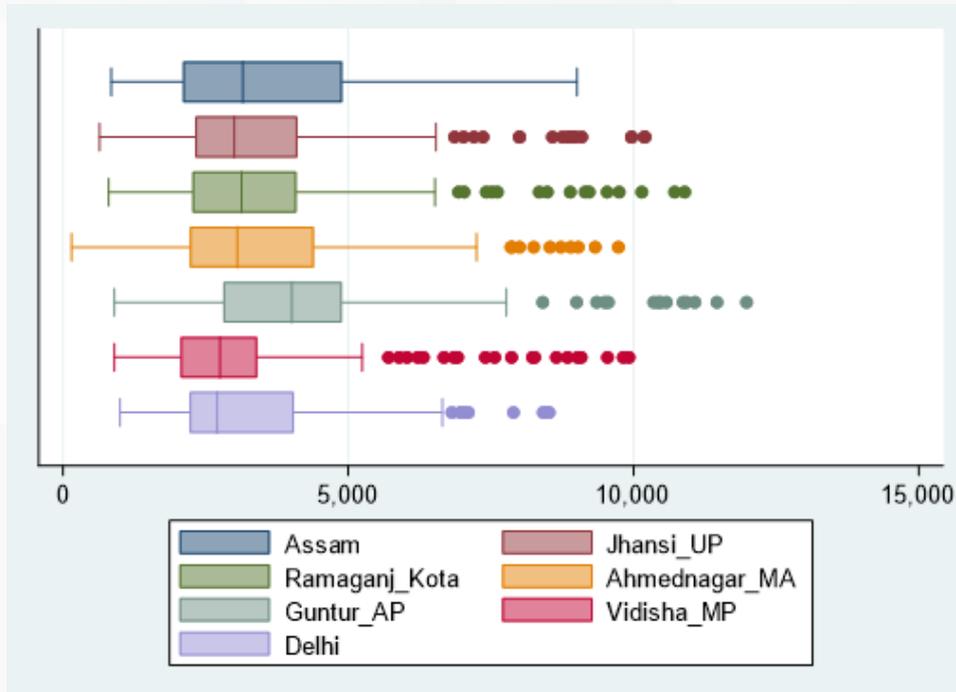


Figure 7: Price Trend for Black Gram of Assam vs Benchmark Markets



The histogram in relative prices displayed through boxplot in Figure 8 indicates that the price series for Black Gram in Assam stretches widely compared to the remaining markets with concentration of data points towards lower quartiles, and with presence of any outlier. The remaining markets are found to have some data points as outliers. Other than the outliers, the reasonable range of data are well concentrated in Vidisha (Madhya Pradesh) followed by Jhansi. Markets such as Delhi, Vidisha, Ahmednagar, Ramaganj and Jhansi show a Black Gram price data concentration towards lower quartiles. The median value of the price series is almost the same across markets like Jhansi, Ramaganj, Ahmednagar and Guntur. Those are in line with the median price of Black Gram in Assam.

Figure 8: Inter-quartile Comparison of the Price Series of Black Gram in Assam Vs Other National Markets



Note: Histogram of relative prices. In each box the central mark indicates the median and the box edges denotes the 25th and 75th percentiles of the distribution. The 'whiskers' extend to the extreme data points still not considered outliers, whereas the respective coloured thick dots indicate the outliers.

Table 4: OLS regression results for identification of Benchmark markets for prices of Black Gram in Assam

Source	SS	df	MS	Number of obs = 199		
Model	553289794	6	92214965.6	F(6, 192) = 201.80		
Residual	87736884.9	192	456962.942	Prob > F = 0.0000		
Total	641026679	198	3237508.48	R-squared = 0.8631		
				Adj R-squared = 0.8589		
				Root MSE = 675.99		
assam	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
jhansi_up	.2713653	.1213193	2.24	0.026	.0320755	.510655
ramaganj_kota	.1017974	.1274908	0.80	0.426	-.1496651	.3532598
ahmednagar_ma	.5268054	.0816083	6.46	0.000	.3658414	.6877694
guntur_ap	.3061735	.0874803	3.50	0.001	.1336277	.4787193
vidisha_mp	-.5951726	.1533886	-3.88	0.000	-.8977158	-.2926294
delhi	.2510885	.0659263	3.81	0.000	.1210557	.3811213
_cons	159.8372	122.8032	1.30	0.195	-82.3793	402.0538

Source: Authors' own estimation

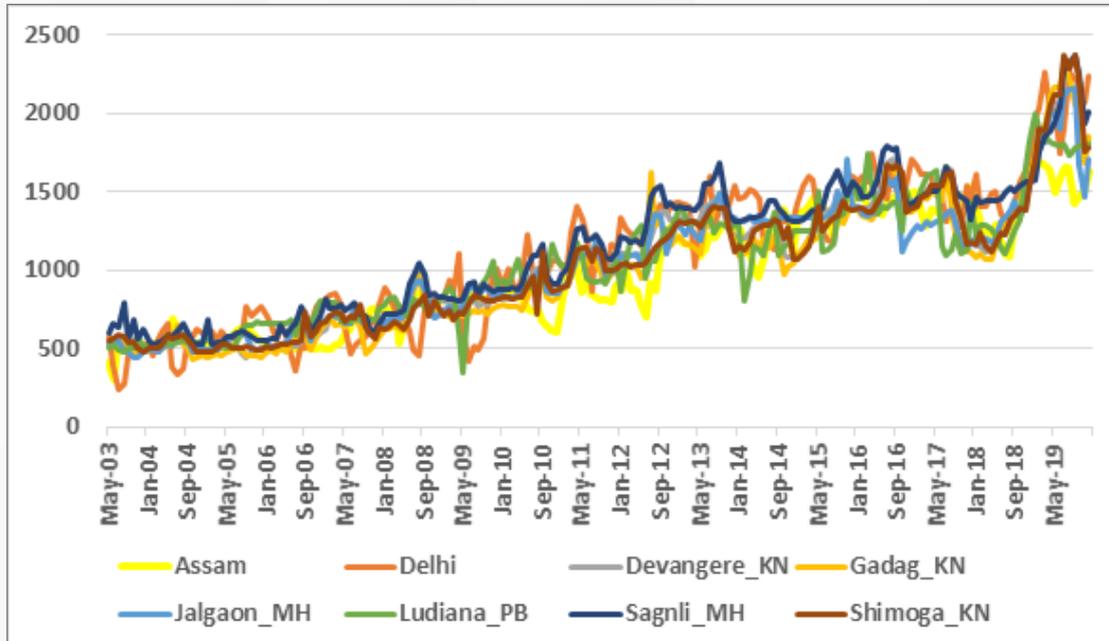
Benchmark Markets for Maize

Till 2016, Maize price has seen a steady growth across all the national markets identified (see figure 9) for the time period under consideration. From the price trend, the dispersion in prices among the markets has also gone up. During the last 4-5 years, cropping pattern has moved more towards production of Maize in some selected pockets in Assam, as a



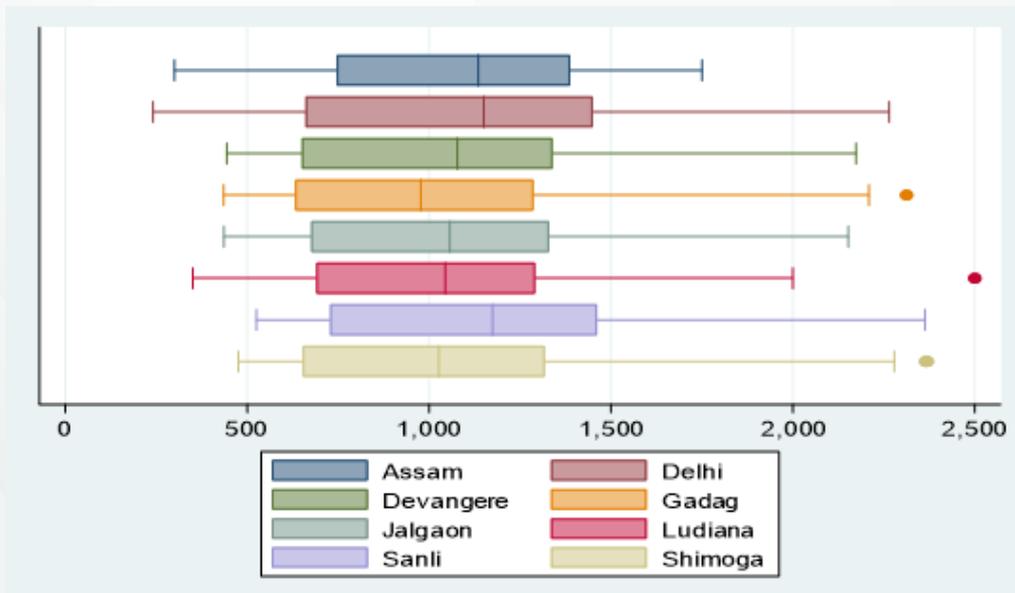
result of which production has increased notably in the recent period. The price of Maize in the domestic markets has fallen during 2019 as seen in the figure. However, the graph can hardly explain the national markets whose changes in price of Maize are exactly influencing the price in Assam. For this we have tried to analyze the price series of identified national markets with transaction of Maize vis-à-vis the Maize price series for Assam through one Ordinary Least Squares (OLS) model to sort out the individual effect of price series on the Maize price of Assam. This would help in selecting the benchmark markets for Assam and disseminating the price of Maize of the selected benchmark market would help the farmers in taking informed decisions on marketing of Maize. The Result of the OLS regression is presented in Table 5. It is indicated that among the national markets identified Ludiana of Punjab is positively and significantly ($P=0.00$) associated with the price series of Assam. The coefficient of association is 1.32 indicating that 1 rupee increase in the price of Maize leads to 0.32 more rupee increase in the price of Maize in Assam. Similar positive and significant association is observed for Maize price in Delhi, Jalgaon and Devangere but at 5% probability level. Discussion with traders and aggregators, however, revealed that in case of Maize, major transactions happen with Maize markets in Bihar such as Gulabg, Poornia, etc. However, the price of Maize for the period under consideration was not available. These markets mostly procure Maize from Assam at the same time when good quality Maize comes to the markets of Assam from Bihar.

Figure 9: Price Trend for Maize of Assam vs Benchmark Markets



The histogram in relative prices displayed through box plot in Figure 10 indicates that the price series for Maize of all the selected markets stretches almost evenly. However, the whiskers in the lower quartile of the markets like Devangere, Gadag, Jalgaon, Ludiana, Sanli and Shimoga extends lesser indicating overall concentration of the price data of these markets towards lower quartiles compared to the remaining markets. Again median data seems to be closer for Assam with that of Delhi.

Figure 10: Inter-quartile Comparison of the Price Series of Maize in Assam Vs Other National Markets



Note: Histogram of relative prices. In each box the central mark indicates the median and the box edges denotes the 25th and 75th percentiles of the distribution. The ‘whiskers’ extend to the extreme data points still not considered outliers, whereas the respective coloured thick dots indicate the outliers.



Table 5: OLS regression results for identification of Benchmark markets for prices of Maize in Assam

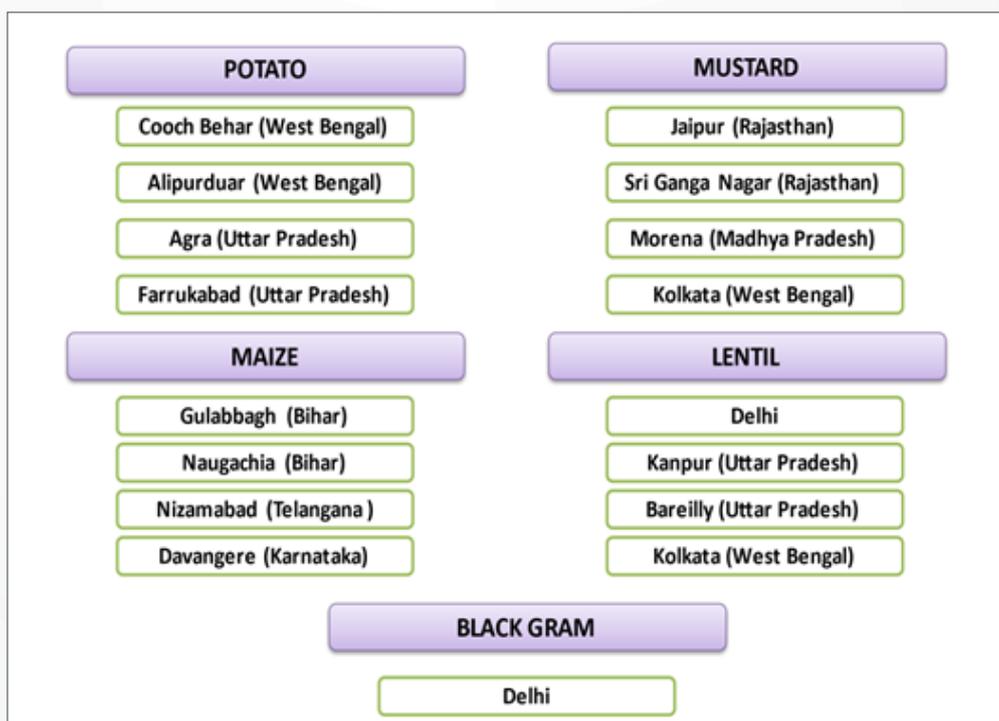
Source	SS	df	MS	Number of obs = 200		
Model	23997091.5	7	3428155.93	F(7, 192) = 197.09		
Residual	3339622.59	192	17393.8677	Prob > F = 0.0000		
Total	27336714.1	199	137370.423	R-squared = 0.8778		
				Adj R-squared = 0.8734		
				Root MSE = 131.89		
assam	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
delhi	.1377992	.0630153	2.19	0.030	.0135079	.2620904
devangere_kn	.4359235	.1962289	2.22	0.027	.0488823	.8229647
gadag_kn	-.2910213	.1420544	-2.05	0.042	-.571209	-.0108337
jalgaon_mh	.2487511	.1193673	2.08	0.038	.0133115	.4841907
ludiana_pb	.322354	.07936	4.06	0.000	.1658246	.4788833
sagnli_mh	.163394	.1372318	1.19	0.235	-.1072815	.4340694
shimoga_kn	-.1418203	.1529137	-0.93	0.355	-.4434268	.1597862
_cons	32.9322	31.51173	1.05	0.297	-29.22142	95.08582

Source: Authors' own estimation

Section IV

Concluding Remarks

The present working paper tried to find out certain markets whose trend of price movement is statistically significantly associated with the price movement in Assam for commodities like Black Gram, Lentil, Potato, Rapeseed & Mustard and Maize. In this regard, data of the potential markets were collected from available sources that helped to see the comparative trend of price movement among markets, along with distribution of data in a boxplot and association through regression analysis. It is found that the following markets may act as benchmark markets for the prices of commodities of our interests in Assam.



To enhance the bargaining power of the farmers the price information of these markets should be disseminated among them on a regular basis through the identified dissemination channels of the AMIU. If disseminated properly during the harvesting period, there is every likelihood that the local traders/aggregators would find it difficult to exploit the farmers in the state.



Interaction with Traders to Identify Probable Markets for Selection as Benchmark Markets

অসম চৰকাৰ



Government of Assam



ARIAS WORKING PAPER

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