

Original Research Article

Performance of External Agricultural Trade during Period of Political Disturbance in Afghanistan

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ABSTRACT

The article analysed the performance of external agricultural trade in Afghanistan during the period of political disturbance of about four decades (1980-2019). The study was based on the secondary data collected from FAOSTAT website on exports/ imports of various items of agriculture origin in value terms (US\$). The study was conducted to assess the performance, growth rate and instability of exports and imports of major agricultural commodities viz. fruits, vegetables, pulses, cereals and total agricultural products. In order to assess the performance in addition to descriptive analysis of item-wise data the exponential form of growth function (CAGR) and Cuddy Della Valle Index (CDVI) were applied and t statistics was used to test the significance of CAGR. The period under consideration was parted in two sub-periods i.e. 1980- 2000 and 2001-2019. First period began with interference of Soviet Union forces in Afghanistan, while the second period began with intervention of USA/NATO forces. The country was historically known globally for her variety of fruits and vegetables production and exports, but political disturbance in the country not only adversely affected the external agricultural trade due to emergence of threat of business risk but also caused a damage to the country's infrastructure and irrigation structure, which resulted in decline in agricultural production, turning a country into a major importer of food grains, fruits & vegetables that was once approaching to self-sufficiency in crop production. The analysis revealed that the performance of external agricultural trade, particularly of exports over two periods had been lopsided. The export of total agricultural products during I period had been negative and significant, but during II period it was positive and significant. Also, the external agricultural trade, though, was unstable during the period of political disturbance, but the instability during I period was more severe than that in second period. This calls for implementation of well thought agricultural development policy under the direction of a committed leadership.

Keywords

External agricultural trade, Instability, Compound growth rate, Export and import

Introduction

The destiny has been quite cruel and unkind to Afghanistan particularly during last quarter of 20th century and the agony continues even in 21st century. Unfortunately, the process of desertification is already advanced in many areas of Afghanistan and the severe drought

of the past years and adverse effect of the war had the most negative effects on natural resources and caused expansion of deserts. About 80 percent of the people i.e. farmers and shepherds depend directly upon the natural resource base for their survival and because of that, with the degraded environment, they would face even greater

difficulties in making a living and feeding themselves and their families.

Infrastructure has been damaged; populations have been put to miseries of war and all pervasive poverty. Such circumstances paved the way for the unplanned exploitation of the country's natural resources and degradation of its land and agricultural development and trade became the major casualty of prolonged war ravages.

Nevertheless, agriculture is still playing an important role in the economy of Afghanistan. About 80% of Afghans are dependent on agriculture and related agribusiness for their livelihoods and the share of agriculture in the economy is estimated at 21% of gross domestic product (GDP) of the country, 2018.

Afghanistan is well known regionally as well as globally for its variety of fresh and dried fruits. The grapes, raisins, pomegranate, almonds and melons are famous export commodities of the country. The fruits, fresh and dried together, constitute more than 50 percent of the total exports of the country. Hashime (2011) studied the status of agricultural sector of Afghanistan and found that, changes in production of different agricultural commodities during the period (1980-2003) such as barring wheat, potato and vegetables, the production of all other commodities had decreased drastically in Afghanistan.

The most striking feature of agriculture during the period of disturbance and turmoil hadled a considerable decline in production of exportable commodities, particularly grapes and almonds. During the period, production of grapes decreased by about 20 per cent and that of almonds by about 56 per cent. Needless to mention, grapes and dry fruits form the backbone of Afghani

economy, but the proverbial menace 'mines for vines' brought demise of flourishing fruit orchards. The decrease in production of major commodities had weakened the internal food security and had increased the dependency on imports for food. And suggested that, there is a dire need to formulate well thought out plan for agricultural development.

Afghanistan is slowly emerging out from the ravages of war and now international outlook is essential for restarting the process of reconstruction, planned economic development and tacking of many socio-economic problems.

Since international trade can change the fundamental facets of economy, therefore, it has literally become a matter of new lease of life for socio-economic transformation of Afghanistan. Trade in general and agricultural trade in particular is an important sector contributing to the gross national product of the country. The current trade between Afghanistan and other countries as per the official record of exports stood at about US\$875 million (about 11%) during 2018-19 against the imported goods worth US\$ 7.439 billion (about 89%).

Major markets for exported commodities of Afghanistan have been Central Asian republics, United States, Russia, Pakistan, and India, while the imported agricultural items include cereals, sugar, milling products, etc. The major suppliers of imported commodities are Central Asian republics, Pakistan, India, Iran and others.

Due to political instability in Afghanistan, since 1979, infrastructure has been destroyed and the irrigable area has declined by about 60%, turning a country that was approaching self-sufficiency in crop production into a major importer of food grains, fruits &

vegetables. Though exports of agricultural commodities such as dried fruits and fresh fruits are still a significant source of foreign exchange, but they are much below the level that had been during 1980s. Before Russian intervention in Afghanistan the share of grapes and raisins in global market was 7.87% and 11.48%, and that in Asian market it was 60.33% and 25.43%, respectively. But recently in 2017 the share of grapes and raisins in global and Asian market has reached 3.23% and 2.99% and 11.83% and 5.01%, respectively. Analysis of available statistics shows that over the period of political instability the agricultural production has declined sharply and there have been wide fluctuations in agricultural trade. Keeping this in view an attempt has been made to examine the status of trade in agriculture commodities in Afghanistan.

Materials and Methods

This study is based on the secondary data collected from various sources. Time series secondary data on exports and imports of agricultural commodities in value terms for the period of 39 years from 1980 to 2019 were collected from the official website of FAOSTAT, National Statistics & Information Authority (NASI) of Islamic Republic of Afghanistan and published reports. For analysis of data the entire disturbance period was divided into two sub-periods based on the external interference in the country. Period I (1980–2000) began with interference of Soviet Union forces in Afghanistan in December, 1979 and ended with the end of era of Islamic Amarat of Afghanistan in 2001; and Period II (2001–2019) began with intervention of USA/NATO forces in Afghanistan in September, 2001 and is continued till date. In order to assess the performance of external agricultural trade of Afghanistan during period of political disturbance descriptive analysis was done.

The triennium average of export/import (in US million Dollars) during beginning year and ending year pertained to various items of trade was compared and the difference between the two was expressed as proportionate change in export/import during the period. The analysis was done for entire period of political disturbance as well as for sub-periods I and II. The compound growth rates of exported/imported agricultural commodities from and to Afghanistan (in US\$) were computed separately for period I (1980–2000) and period II (2001–2019) and also for entire time period (1980–2019). Various functional forms were tried using value of export and import of different agricultural commodities viz. linear growth function ($Y=a+bt$), exponential function ($Y=ab^t$) and quadratic function ($Y=a+bt+ct^2$). However, it was found that the exponential form of the function ($Y_t=ab^t$) was better; and most frequently used form, hence was used for the present analysis. To examine the significance of growth rates Student's t test was applied. Growth rate was worked out using following formulae.

$$Y_t = ab$$

In logarithmic terms as given by:

$$\text{Log } Y = \text{Log } a + t \text{Log } b$$

$$\text{CAGR}(\%) = [\text{antilog}(\text{log } b) - 1] \times 100$$

Where;

Y= Dependent variable (value of export/import of agricultural commodities in US\$)

a=Constant/intercept

b=regression co-efficient,

t=time variable in years, 1, 2, 3...N, and

e =Error terms

To test the significance of the coefficients student's 't' test and Z test were used as given below:

$$t^* = \frac{\hat{b}}{SE \hat{b}} \dots \text{when } N < 30$$

$$Z^* = \frac{\hat{b}}{SE \hat{b}} \dots \text{when } N > 30$$

The co-efficient of variation was used as a measure of the variability in export/import of agricultural commodities from and to Afghanistan. The coefficient of variation or index of instability was computed using following formula:

$$CV = \frac{\text{Standard Deviation } (\sigma)}{\text{Mean } (\bar{X})} \times 100$$

Trend was fitted to the original data of export and import of agricultural commodities, separately for the periods under consideration. The trend coefficients were tested for their significance, whenever, the trend of series found to be significant the variation around the trend were used as an index of instability rather than the variation around mean.

The instability was estimated by generating Cuddy Della Valle Index (CDVI); suggested by Cuddy and Della Valle (1978), used by (Mokashi and Hosamani, 2014) and (Anjum and Madhulika, 2018). That is co-efficient of variation (CV) was multiplied by the square root of the difference between the unity and coefficient of multiple determinations (\bar{R}^2) in the cases where (\bar{R}^2) was significant to obtain the instability index.

Instability index (CDVI)

$$= CV \times \sqrt{1 - \bar{R}^2}$$

Where,

$$\bar{R}^2 = 1 - \frac{(1 - R^2)(N - 1)}{N - k - 1}$$

$$R^2 = 1 - (RSS/TSS) = \text{Goodness of fit}$$

RSS = Regression sum of square

TSS = Total sum of Square

The value taken by CDVI has been categorized by into different classes. The ranges of the CDVI in each class are as follows;

Low instability 0 to 15

Median instability >15 to 30

High Instability > 30

Results and Discussion

This section deals with the presentation findings of the study based on the methodological procedure applied. To present the results of the study and discussion in a logical manner without any bias of interpretation, following sections have been generated.

Performance of agricultural exports from and imports to Afghanistan over time

In order to examine the performance of external agricultural trade of Afghanistan during the period of political disturbance the value (triennium average) of major items of agricultural exports and imports (in US\$) in the beginning and ending years of the disturbance period (1980 to 2019) and that pertained to sub-periods (period I, 1980–2000 and period II, 2000–2019) was compared; and the percentage change over time in the same was examined. The level (in million

US\$) of different items of agricultural exports and imports in the ending and beginning years of disturbance period and its phases viz. period I and period II along with percentage change in the same over time has been presented in Table 1. A look on the Table indicates that the level of exports of total agricultural products in the beginning year of the political disturbance (i.e. in the year 1980) was recorded at US\$ 299.75 million which increased to US\$ 699.66 million in the ending year (i.e. in the year 2019) with a proportionate change of 133.42 per cent. The level of export of fruits and pulses in the beginning year was recorded at level of US\$ 179 million and US\$ 1.63 million, which increased to US\$ 370.93 million and US\$ 56.06 million in the ending year with a proportionate change of 107.22 per cent and 3332.49 per cent, respectively. Due to unavailability of data on export of vegetables and cereals pertained to different years the level of the same in the beginning and ending years and hence the proportionate change could not be calculated.

Table also reveals that the level of export of total agricultural products from the country in the beginning year of I period of political disturbance (i.e. in 1980) was recorded at US\$ 299.75 million which decreased to US\$ 43.48 million in the ending year (i.e. in 2000) with a proportionate change of -85.50 per cent, whereas the level of export of fruit in the beginning year was recorded at US\$ 179 million, which decreased to US\$ 24.26 million in the ending year with a proportionate change of -86.45 per cent.

Again the level of export of pulses in the beginning year of I period (i.e. in 1980) was recorded at US\$ 1.63 million which increased to US\$ 2.90 million in the ending year with the proportional changes of 77.55 per cent, whereas due to unavailability of data on export of vegetable and cereals the levels of

the same and proportionate changes could not be worked out.

Further, it is evident from the table that level of export of total agricultural products in the beginning year of II period of political disturbance (i.e. in 2000, which is ending year of I period) was at US\$ 43.48 million, which increased to US\$ 699.66 million in the ending year (i.e. in 2019) with a proportionate change of 1509.21 per cent.

The level of export of fruits, vegetable and pulses in the beginning year was recorded to be US\$ 24.26 million, US\$ 1.67 million and US\$ 2.90 million, which increased to US\$ 370.93 million and US\$ 77.17 million and US\$ 56.06 million, respectively with a proportionate change of 1429.24 per cent, 4527.56 per cent and 1833.24 per cent, respectively.

Table also indicates that the level of agricultural imports of total agricultural products to Afghanistan in the beginning year (i.e. in 1980) was recorded at US\$ 147.38 million reached to US\$ 3051.43 million in ending year (i.e. in 2019) with a proportionate change of 1970.46 per cent.

The level of import of fruits and cereals which was recorded at US\$ 1.75 million and US\$ 23.67 million in the year beginning year increased to US\$ 146.25 million and US\$ 924.84 million with a proportionate change of 8271.28 per cent and 3807.60 per cent, respectively.

In can be drawn from the above that in Afghanistan the period of last about four decades – considered as a period of political disturbance, which commence with interference of Russian forces and is still continued today despite presence of USA/NATO forces – had not been encouraging from external agricultural trade

performance view point. During this period, especially during I period the agricultural exports either decreased (fruits and total agricultural products) or grown very sluggishly (vegetables and pulses).

However, during this period the agricultural imports to the country witnessed an increase, but during I period they could increase lethargically. The first phase (1980 to 2000 i.e. before entry of USA/NATO forces) had been more devastating for external agricultural trade.

Growth in agricultural trade of Afghanistan

Item-wise compound growth rates of exports and imports of fruits, vegetables, pulses, cereals and total agricultural products pertained to different periods (Table 2) depict that during entire period of political disturbance (1980–2019), the export of fruits, vegetable, pulses and total agricultural products registered a positive growth with a CAGR 1.56 per cent 40.87 per cent and 6.76 per cent and 1.95 per cent, respectively, but the same were found to be statistically non-significant.

Table also reveals that during I period (1980–2001) the export of fruits and total agricultural products from Afghanistan registered a negative growth with a CAGR of -11.21 per cent and -10.23 per cent, respectively, and the growth rates of export of all items except that of pulses were found to be significant, while the export of vegetables registered positive and significant growth with CAGR of 62.16 per cent. Again, during II period (2001–2019) the export of

fruits, vegetables, pulses and total agricultural products registered a positive and significant growth with a CAGR of 16.62 per cent 25.38 per cent, 22.63 per cent and 17.63 per cent, respectively.

The growth rates of item-wise agricultural imports to Afghanistan (Table 2) show that during period of disturbance the import of fruits, vegetables, cereals and total agricultural products registered a positive growth, with the compound growth rates of 16.42 per cent, 46.90 per cent, 43.08 per cent, 12.76 per cent and 10.21 per cent per annum, respectively, but the growth rate pertained to these commodities were statistically non-significant.

Further, during I period the imports of fruits to Afghanistan decreased significantly and registered a negative growth of -4.63 per cent per annum, whereas, during this period the imports of vegetable, pulses, cereals and total agricultural products increased significantly with a compound growth rate of 28.82 per cent, 27.14 per cent, 7.84 per cent and 1.37 per cent, respectively.

During II period the import of fruits, vegetable, pulses, cereals and total agricultural products to Afghanistan increased significantly with compound annual growth rates of 27.24 per cent, 29.34 per cent, 24.32 per cent, 12.13 per cent and 13.8 per cent per annum, respectively.

It can be drawn from the above results that alopsided scenario of agricultural exports and imports has been vividly portrayed through growth structure in different items over the period of 1980 through 2000.

Table.1 Performance of Agricultural exports from and imports to Afghanistan during different phases of period of political disturbance (Value in million US\$)

Particulars	Level of Exports			Change during		
	1980	2000	2019	I Period	II Period	Overall Period
Exports						
Fruits	179.00	24.26	370.93	-154.75 (-86.45)	346.68 (1429.24)	191.93 (107.22)
Vegetables	0.00	1.67	77.17	1.67 (-)	75.50 (4527.56)	77.17 (-)
Pulses	1.63	2.90	56.06	1.27 (77.55)	53.16 (1833.24)	54.43 (3332.49)
Cereals	0.00	0.00	1.23	0.00 (-)	0.00 (-)	1.23 (-)
Total Agricultural products	299.75	43.48	699.66	-256.27 (-85.50)	656.18 (1509.21)	399.91 (133.42)
Imports						
Fruits	1.75	2.90	146.25	1.15 (65.92)	143.35 (4945.30)	144.50 (8271.28)
Vegetables	0.06	1.05	118.82	0.99 (1692.61)	117.77 (11197.97)	118.76 (-)
Pulses	0.00	2.08	104.75	2.08 (-)	102.67 4936.09	104.75 (-)
Cereals	23.67	133.38	924.84	109.71 (463.56)	791.46 (593.38)	901.17 (3807.60)
Total Agricultural products	147.38	299.69	3051.43	152.31 (103.35)	2751.74 (918.19)	2904.05 (1970.46)

Note: 1. Figures in parentheses indicate proportionate change in exports and imports during respective periods.
 2. Due to unavailability of data the proportionate changes in case of vegetables, pulses and cereals could not be computed.

Table.2 Compound growth rates of agricultural exports (in US\$) from Afghanistan over different periods (Per cent)

Particulars	Compound Annual Growth Rates ¹ (%) over		
	Period I (1980-2000)	Period II (2000-2019)	Overall Period (1980-2019)
Exports			
Fruits	-11.21*(1.44)	16.62*(1.24)	1.56(1.57)
Vegetables	62.16*(10.40)	25.38*(2.33)	40.87(48.28)
Pulses	0.92(7.35)	22.63**(9.48)	6.55(6.76)
Cereals	-	-	-
All agricultural products	-10.23*(1.04)	17.63*(1.22)	1.95(1.97)
Imports			
Fruits	-4.63*** (2.92)	27.24*(3.76)	16.42(17.70)
Vegetables	28.82*(7.21)	29.34*(4.27)	46.90(56.49)
Pulses	27.14*(10.65)	24.32*(2.66)	43.08(51.26)
Cereals	7.84*(2.53)	12.13*(1.73)	12.76(13.54)
All agricultural products	1.37*** (0.93)	13.8*(1.13)	10.21(10.71)

*, **, and *** indicate 1%, 5% and 10% level of significant respectively.
 Figures in parentheses show standard errors

Table.3 Instability indices and coefficients of variation of agricultural exports from and import to Afghanistan during period of political instability (Per cent)

Particulars	Instability Indices		
	Period I (1980-2000)	Period II (2001- 2018)	Overall Period (1980-2018)
Exports			
Fruits	10.74	3.34	41.66
Vegetables	26.55	7.20	12.96
Pulses	45.84	61.45	95.89
Cereals	-	-	-
Total Agricultural products	6.42	2.79	40.46
Imports			
Fruits	28.76	11.12	29.58
Vegetables	67.34	15.26	10.84
Pulses	86.39	9.78	18.06
Cereals	25.44	8.44	8.99
Total Agricultural products	13.76	2.96	8.98

Note: During the period under study the cereals were not exported, therefore instability indices could not be computed.

¹ Due to unavailability of data the compound growth rates of exports of cereals could not be computed, whereas the compound growth rates for vegetables and pulses have been computed for period of available data.

Though, the agricultural exports from and imports to Afghanistan grown during the period of political disturbance, but I period was more demoralizing from agricultural trade view point, which held back the country's agricultural trade greatly and caused a negative growth of varying magnitudes in various items of agricultural trade.

Instability of agricultural trade

The simple coefficient of variation overestimates the level of variability in time series data characterized by long trend, whereas the Cuddy-Della Valle index corrects the coefficient of variation by taking multiple determination (R^2) into account. Therefore, to examine the extent of instability involved in external agricultural trade of Afghanistan Cuddy–DellaValle index (corrected coefficient of variation) – which takes into consideration the term trend –was employed for different phases as well as entire period of political disturbance in Afghanistan.

The instability indices of agricultural exports from and imports to Afghanistan were analyzed and findings of the same have been presented in table 3. The agricultural exports from Afghanistan during the period of political disturbance were unstable. The instability index of export total agricultural products during overall period was 40.46 per cent, whereas the same for export of fruits, vegetables and pulses for similar period was 41.66 per cent, 12.96 per cent and 95.89 per cent, respectively, indicating a higher level of instability in export of all mentioned agricultural products.

The instability in agricultural exports in general, and fruits and vegetables in particular, during I period was more pronounced as compared to II period, as the

instability indices of exports of fruits, vegetables and total agricultural products were 10.74 per cent, 26.55 per cent and 6.42; and 3.34 per cent, 7.20 per cent and 2.79 per cent for I and II periods, respectively. Moreover, the instability of pulses during I period was 45.84 per cent, whereas the same during II period was 61.45 per cent.

Further, the instability index of import of total agricultural product for overall period was 8.98 per cent, while the same in case fruits, vegetable, pulses and cereals for similar period was 29.58 per cent, 10.84 per cent, 18.06 per cent and 8.99 per cent, respectively, reflecting a higher level of instability in imports of fruits and pulses and moderate level of instability in imports of vegetables, cereals and total agricultural products, respectively. The instability indices of import for fruits, vegetables, pulses, cereals and total agricultural products during I period were 28.76 per cent, 67.34 per cent, 86.39 per cent, 25.44 per cent and 13.76 per cent, respectively, whereas the same during II period were 11.12 per cent, 15.26 per cent, 9.78 per cent, 8.44 per cent and 2.96 per cent, respectively. The fluctuations – measured through instability indices – in agricultural imports of Afghanistan were more pronounced during first phase of political disturbance than that during second phase.

The foregoing analysis shows that the external agricultural trade, though, was unstable during the entire period of political disturbance, but the instability during I period was more severe than that in II period. The findings of the study are inconsistent with the findings of Goyal and Berg (2012). Also, the instability of agricultural exports for entire period was higher than that of imports, but the pattern of instability of both was same during various phases of political disturbance, i.e. the instability was high during first period. The political disturbance

in the country especially during then Soviet Union interference served as a barrier to promote external agricultural trade in Afghanistan and encouraged the threat such as business risk to the traders, particularly for exporters dealing in agricultural goods.

The foregoing analysis clearly reveals that prolonged political instability due to war has caused irreparable loss to agriculture – the main stay of people and *pro tanto*– economy of Afghanistan. The political instability coupled with severe droughts during this period had negative effect on agricultural production and external agricultural trade; and endangered the livelihood security of those who depend upon agriculture for their survival. During entire period of political disturbance the external agricultural trade (exports and imports) in Afghanistan was grown very sluggishly.

Though, disturbance during first phase caused a great halt to external agricultural trade (both exports and imports), but second phase did not show much negative effect and trade grown positively. As evidenced from instability indices the external agricultural trade, however, was unstable during the entire period of political disturbance, but the instability during I period was more severe than that in II period, which led an emergence of threat of business risk to the traders, particularly for exporters dealing in agricultural goods. Therefore, there is a dire need to formulate well thought out plan for

agricultural development and reconstruction of self-reliant and stable Afghanistan under a committed leadership.

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