Performance of External Agricultural Trade during the Last Two Decades in Afghanistan

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Abstract

The study analysed the performance of external agricultural trade in Afghanistan during last two decades (2000-2019). The study was based on the secondary data collected from FAOSTAT official website on imports/exports of different agricultural commodities in value terms (US$). The study aims to assess the performance, growth rate and instability of exports and imports of key agricultural commodities viz. cereals, fruits, vegetables, pulses and total agricultural products. In order to examine the performance in addition to descriptive analysis the exponential form of growth function (CAGR) and Cuddy-Della-Valle-Index (CDVI) were also applied and t statistics was used to test the significance of compound growth rate. In fact Afghanistan is well known globally for its variety of fruits (fresh and dried) and vegetables production and exports, but political disturbance in the country has adversely affected the external agricultural trade due to emergence of threat of business risk, also caused a damage to the country's infrastructure and irrigation system, which further resulted in decline in agricultural production, turning a country into a major importer of cereals, fruits & vegetables that was once approaching to self–sufficiency in crop production. The analysis revealed that over the period the performance of external agricultural trade, particularly of exports had grown significantly. Also, the external agricultural trade, though, was unstable during the period, but the instability was varied depended on the type of the commodities. This calls for implementation of well thought agricultural development policy under the direction of a committed leadership.

Key words: compound growth rate, trade, instability, import and export.

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 fried 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 and Sharma (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 had led 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.

Data and Methodology

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.

In order to assess the performance of external agricultural trade of Afghanistan during last two decades (2000-2019), 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.

The compound growth rates of exported/imported agricultural commodities from and to Afghanistan (in US$) were computed for the period from 2001 to 2019. Various functional forms were tried using value of export and import of different agricultural commodities viz. linear growth function ($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.

$$Y_t = ab^t e$$

In logarithmic terms as given by:

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

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

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:

The $Z^* = \frac{\hat{b}}{b}$ ..... when $N > 30$

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

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 ($\overline{R}^2$) in the cases where ($\overline{R}^2$) was significant to obtain the instability index.

$$\text{Istability index (CDVI)} = \text{CV} \times \sqrt{1 - \overline{R}^2}$$

Where,

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

R^2= 1 – (RSS/TSS) = 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 2000–2019 was computed; and the percentage change over time in the same was examined.

The level (in million US$) of different items of agricultural exports and imports in the ending and beginning years of the period along with percentage change in the same over time has been presented in Table 1.A look on the Table indicates that the level of exports of total agricultural products in the beginning year of the period (i.e. in the year 2000)was recorded at US$ 43.48 million which increased to US$ 699.66 million in the ending year (i.e. in the year 2019)with a proportionate change of 1509.21 per cent. The level of export of fruits and pulses in the beginning year was recorded at level of US$ 24.26 million and US$ 2.90 million, which increased to US$ 370.93 million and US$ 56.06 million in the ending year with a proportionate change of 1429.24 per cent and 1833.24 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 1: Performance ofAgricultural exports from and imports to Afghanistan during different phases of period of political disturbance

(Value in million US$)

Particulars	Level of Exports		Change over the period
	2000	2019	
Exports			
Fruits	24.26	370.93	346.68 (1429.24)
Vegetables	1.67	77.17	75.50 (4527.56)
Pulses	2.90	56.06	53.16 (1833.24)
Cereals	0.00	1.23	0.00 (-)
Total Agricultural products	**43.48**	**699.66**	**656.18 (1509.21)**
Imports			
Fruits	2.90	146.25	143.35 (4945.30)
Vegetables	1.05	118.82	117.77 (11197.97)
Pulses	2.08	104.75	102.67 4936.09
Cereals	133.38	924.84	791.46 (593.38)
Total Agricultural products	**299.69**	**3051.43**	**2751.74 (918.19)**

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 also indicates that the level of agricultural imports of total agricultural products to Afghanistan in the beginning year (i.e. in 2000) was recorded at US$ 299.69 million reached to US$ 3051.43 million in ending year (i.e. in 2019) with a proportionate change of 918.19 per cent. The level of import of fruits and cereals which was recorded at US$ 2.90 million and US$ 133.38 million in the beginning year increased to US$ 146.25 million and US$ 924.84 million with a proportionate change of 4945.30 per cent and 593.38 per cent, respectively.

In can be drawn from the above that in Afghanistan the period of last about two decades – considered as a period of political disturbance, had not been encouraging from external agricultural trade performance view point. During this period, the agricultural exports increased largely, especially in case of pulses, fruits and total agricultural products. However, during this period the agricultural imports to the country increased faster than exported commodities.

Growth in agricultural trade of Afghanistan

Item-wise compound growth rates of exports and imports of fruits, vegetables, pulses, cereals and total agricultural products showed in Table 2, indicate that, during the period (2000–2019) 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.

Table 2: Compound growth rates of agricultural exports (in US$) from Afghanistan over the period (2000-2019)

(Per cent)

Particulars	Compound Annual Growth Rates[1] (%)
Exports	
Fruits	16.62*(1.24)
Vegetables	25.38*(2.33)
Pulses	22.63**(9.48)
Cereals	-
All agricultural products	17.63*(1.22)
Imports	
Fruits	27.24*(3.76)
Vegetables	29.34*(4.27)
Pulses	24.32*(2.66)
Cereals	12.13*(1.73)
All agricultural products	13.8*(1.13)

* And **, indicate 1% and 5% level of significant, respectively.

Figures in parentheses show standard errors

The growth rates of item-wise agricultural imports to Afghanistan (Table 2) show that during period the import of fruits, vegetables, cereals and total agricultural products registered a positive growth, with the compound 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, and the growth rate pertained to these commodities were statistically highly significant.

During the 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 a lopsided scenario of agricultural exports and imports has been vividly portrayed through growth structure in different items over the period of 2000 through 2019. Though, the agricultural exports from and imports to Afghanistan grown during the period, but the growth rate of imports were faster than exports especially in case of fruits, vegetables and pulses, which held back the country's agricultural trade greatly and causes chronic agricultural trade deficit in the country.

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 determinations (R^2) into account. Therefore, to examine the extent of instability involved in external agricultural trade of Afghanistan Cuddy–Della Valle index (corrected coefficient of variation)

[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.

– 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 were unstable. The instability index of export of total agricultural products during the period was 2.79 per cent, whereas the same for export of fruits, vegetables and pulses for similar period was 3.34 per cent, 7.20 per cent and 61.45 per cent, respectively, indicating a low level of instability in export of total agricultural products, fruit and vegetable, while, high instability in the export of pulses.

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
Exports	
Fruits	3.34
Vegetables	7.20
Pulses	61.45
Cereals	-
Total Agricultural products	2.79
Imports	
Fruits	11.12
Vegetables	15.26
Pulses	9.78
Cereals	8.44
Total Agricultural products	2.96

Note: During the period under study the cereals were not exported, therefore instability indices could not be computed. Further, the instability indices of import for fruits, vegetables, pulses, cereals and total agricultural products during the 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 at low level during the period. The foregoing analysis shows that the external agricultural trade during the period was stable, except, in case of pulses export, which showed high level of fluctuation. The findings of the study are inconsistent with the findings of Goyal and Berg (2012). Also, the instability of only pulses exports for entire period was higher than that of imports. 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.

Conclusions

The foregoing analysis clearly reveals that prolonged political instability due to war has caused irreparable loss to agriculture – the mainstay 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 the external agricultural trade (exports and imports) in Afghanistan was grown significantly. As evidenced from instability indices the external agricultural trade, however, was unstable in case of the export of pulses, but the instability during the period was more severe in case of pulses export, which led an emergence of threat of business risk to the

traders, particularly for exporters dealing in this 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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