Even though livestock forms a major component in the counties of Oklahoma panhandle, the model does not include this component, which is another major limitation for the study. The model can be improved by addition of livestock production activity. This addition would greatly improve the model results and would give more accurate picture of the future conditions of the region.

China's Import Demand Analysis of Grain Sorghum from USA

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Abstract

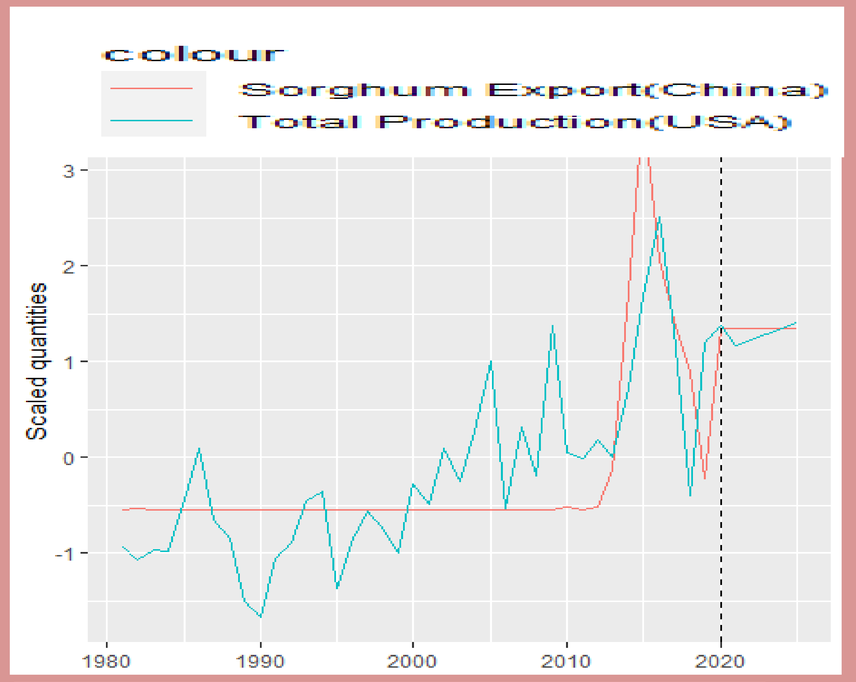
Sorghum is an ancient grain which is most commonly used feed grain for livestock. The United States is the world's second largest producer and top exporter of sorghum. China, one of the fastest growing economy, is the major destination of U.S. grain sorghum. This research study examines the determinants of an import demand function for U.S. sorghum in China considering the macroeconomic variables such as Gross national Products (GNP) and exchange rates (Yen-US$). The time series data from 1991-2020 were used for this analysis. This research follows the single equation import demand model by Thursby and Thursby (1984). China's import demand for sorghum was determined as a function of derived demand of sorghum which is constructed as with the grain sorghum import price, domestic corn price, exchange rate, the country's GDP, and number of livestock production. The estimated results of the model show that income measured by the real gross national products, the Chinese exchange rate and number of livestock are statistically significant in explaining the variation observed in the quantity of imported sorghum during the period.

Introduction

Sorghum, also called milo, is one of the top cereal crops and grown in tropical regions in the world. It is an important cereal with higher nutritious value with less requirement of water and fertilizer. The Sorghum belt starts from South Dakota and runs to Southern Texas. The US is the largest source of China sorghum purchase and about 85-90 percent of imports come from the United States. China is enormously dependent imports for sorghum grains imports from United States. It has been showing an impressive growth in importing sorghum from the United States since 2013. In recent years, China's demand for grain sorghum has increased significantly as grain sorghum an important source to feed their livestock. It is projected that China will be largest importer of sorghum during the year 2023. There are number of reasons for importing sorghum by China. The increased amount of import demand is a combination of agriculture and industrial demand. China domestic production is not enough for supporting increasing consumption for food and feed grain.

Research Objectives

- To provide an overview of the US and China sorghum trade
- To assess the factors affecting the import volume of sorghum



Method

The sorghum import quantity demand model can be specified as:

Ln (SIQ) = β0 + β1Ln (PS) + β2Ln (PC) + β3Ln (GNP) + β4Ln (ER) + β5Ln (LP) + ε

where SIQ is sorghum import quantity by China (in thousand Mton); PS is the imputed sorghum domestic price (in thousand dollars/Mton); PC is the imputed corn domestic price (in thousand dollars/ Mton); GNP is gross national income; ER is the exchange rate; LP is poultry and beef production in China (in thousand Mton).

The prices of sorghum and corn are used as a proxy variable e.g. imputed price. The imputed sorghum price calculated by dividing China's annual import value of sorghum (in thousand dollars) with annual sorghum import quantity (in Mton). The corn price used the same imputed method.

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Results and Discussion

Parameter	coefficient	t-stat	p-value
Sor_imputedprice	0.13312	0.17	0.863
Cor_imputedprice	-0.68931	-0.54	0.591
Chinaexchangerate	-3.9033***	-2.38	0.025
ChinaGNP	3.8393***	8.33	0.000
Livestock	2.1982***	5.46	0.035

- The estimated income elasticity of import demand for sorghum is positively statistically significant. This suggests that the import demand for sorghum is income-elastic, implying that a 1% increase in income would be associated with an increase in the quantity of imported sorghum by 3.8%.
- A possible explanation is that increasing income causes consumers to require more ready-to-eat food.
- The estimation of swine and poultry production are positive as expected which indicate that one percent increase of the livestock production will contribute double sorghum consumption.
- Our estimated elasticities for the exchange rate (domestic currency per U.S. dollar) have statistically significant but had negative impact.

Conclusion

- U.S. sorghum export market is largely depending on China's sorghum import demand.
- This analysis is beneficial for US sorghum producers in assessing their export potential not only to China's livestock industry but also for other export markets.

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