Assessing the U.S. Trade Policies in the Primary Products

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Abstract. This study empirically analyzed the U.S. trade patterns of primary products. We used the H-index weighting to measure the degree of the U.S. trade policies in exports and imports. We find the U.S. has considerably encouraged the imports, and has slightly promoted the exports of primary products. We conclude that the agricultural subsidies, which help the U.S. economic growth and resource saving, are the major determinant for the export patterns of the U.S. primary products.

Introduction

The problem of trade protectionism to international trade is that it is difficult to allocate economic resources effectively in the world by distorting or deviating the realistic trade model and free trade through various policies [1]. From the point of view of free trade, it is not only trade protectionism to restrict imports, but also trade protectionism to promote the export of domestic products and to make the net export capacity of a certain product exceed the comparative advantage.

As for the specific countries implementing trade protection, it is generally believed that the United States regulates imports through tariff and non-tariff means to protect domestic industries at a comparative disadvantage. The existing literatures studies the import restrictions of American agricultural products from multiple perspectives [2, 3, 4]. If the protection of primary products in the United States is true, then the trade policy of the United States is protectionism, but the differences in the import and export policies are left to be analyzed and explained.

Data and Methodologies

Data

This paper employs the three-digit Standard International Trade Classification Revision 2 (SITC rev.2) annual trade data, from UN Comtrade database for the period of 1978 to 2016.

Lall (2000) classified the three-digit classification products under SITC rev.2 according to the technical structure [5]. The author analyzed the basis of his classification and divided the primary products in "primary products" according to Lall’s original intention. Among the import and export trade products with the United States as the reporting country, 48 primary products were identified.

Table 1. The SITC Rev. 2 Coding for All 48 Primary Products.

<table>
<thead>
<tr>
<th>001,011,022,025,034,036,041,042,043,044,054,057,071,072,074,075,081,091,211,212,222,232,244,245,246,261,263,268,271,273,274,277,278,291,292,322,333,341</th>
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Symmetrical Revealed Comparative Advantage

Balassa (1965) was the first to use the indicator of comparative advantage reflected in trade [6]:

\[ RCA_k = \frac{(X_k / X_i)}{(X_{ik} / X_w)} \] (1)
X_{wk} represents the exports of product k in the world, while X_w refers to the world exports. RCA_{ik}>1 indicates that China has comparative advantage in the trade product k [7, 8].

The range of RCA is zero to infinity, but the average is uncertain and the distribution is asymmetric. Only after logarithmic transformation can it be compared with the IC index:

\[ RSCA_{ik} = (RCA_{ik} - 1)/(RCA_{ik} + 1) \]  

RSCA_{ik} is a "symmetric revealed comparative advantage index" for the export of the k-th products in country i. Its range is the same as IC_{ik}, which is [-1, 1], and the average value is also 0. When RSCA_{ik}>0, there is RCA_{ik}>1, indicating that country i has a comparative advantage in the export of the k products. When RSCA_{ik}<0, or RCA_{ik}<1, indicating that country i is at a comparative disadvantage in the export of k products. When RSCA_{ik}=0, the comparative advantage of k exports of country i is the same as that of other countries in the world, and there is neither comparative advantage nor comparative disadvantage in product k’s exports of country i [9].

**Index of Policy Intervention**

Free trade theories argue that a country should export more and import less products with high comparative advantage. In equilibrium, IC_{ik} and RSCA_{ik} should be strictly identical, we thus have

\[ IC_{ik} = RSCA_{ik} \]  

as the equilibrium condition of free trade [10] [11]. The difference between IC_{ik} and RSCA_{ik}

\[ h_{ik} = IC_{ik} - RSCA_{ik} \]  

is the policy intervention index of country i’s import trade in product k. When trade pattern equilibrium is satisfied, h_{ik}=0. If h_{ik}>0, the net export capacity exceeds the level determined by its demonstrated comparative advantage, indicating that country i has adopted trade policies that limit imports and improve the international competitiveness of its products. If h_{ik}<0, it means that the import trade policies adopted by country i are not restrictive but have the characteristics of encouraging imports [12].

**Weighting Average Index of Policy Intervention**

Because the primary products contain n specific product categories, it is necessary to obtain the policy intervention index of import trade of the two categories through weighted average.

\[ H_{ij} = \sum_{k=1}^{n} \omega_k (IC_{ik} - RSCA_{ik}) \]  

H_{ij} is the index of trade policy interventions for category j. The weighting

\[ \omega_k = \frac{(X_{ik} + M_{ik})}{\sum_{i=1}^{n} (X_{ik} + M_{ik})} \]  

for each specific product is the proportion of its total amount of import and export in the U.S. trade in the primary products, because h_{ik} involves both import and export. For the same reason, the weighting of IC_{j} for the product category j is the same as Eq. 6.

\[ IC_{ij} = \sum_{k=1}^{n} (\omega_k \cdot IC_{ik}) \]  

In this study, RSCA_{ik} only involves the exports or the imports of the k-th product, the weighted average RSCA_{ij} of the j-th product category is

\[ RSCA_{Xj} = \sum_{k=1}^{n} (\omega_{ik}^{RSCAX} \cdot RSCA_{ik}) \]
\[ RSCA_M^k = \sum_{k=1}^{n} (\omega_{ik}^{RSCA} \cdot RSCA_{ik}) \]  

(9)

where

\[ \omega_{ik}^{RSCA.X} = \frac{X_{ik}}{\sum_{i=1}^{n} X_{ik}} \]  

(10)

\[ \omega_{ik}^{RSCA.M} = \frac{M_{ik}}{\sum_{i=1}^{n} M_{ik}} \]  

(11)

The weights described in Eq. 10 and Eq. 11 are the proportion of product \( k \) in the total value of the U.S. exports and imports of the U.S. primary products separately.

**Empirical Results**

Fig. 1 depicts the time path of changes of IC\(_{ij}\), RSCA\(_{ij}\) and H\(_{ij}\) index of primary products exports in the United States between 1978 and 2016, while Fig. 2 illustrates those of the U.S. imports.

**Export Patterns**

Firstly, the weighted average IC\(_{ij}\) index of primary products has always been positive, indicating a persistent trade surplus in U.S. agricultural imports; Secondly, the weighted average RSCA\(_{ij}\) for primary products was negative in all other years except in 1978-1980 and 1982. America's trade in primary goods is at a comparative disadvantage, at least in terms of imports; Thirdly, the weighted average H\(_{ij}\) index of primary products is always positive and the value is larger, and the average value reaches 0.639. It reflects that the import policy of American primary products has a strong feature of restriction of import, which deviates greatly from the equilibrium condition of free trade.

**Import Patterns**

Firstly, IC\(_{ij}\) has been negative, indicating the U.S. trade deficit; Secondly, RSCA\(_{ij}\) has been positive, suggesting the U.S. has comparative advantages in the imports of primary products; Thirdly, except for 1991, H\(_{ij}\) index has been negative, implying that the U.S. import policies have been encouraging, instead of being restrictive.
Conclusion

At first, weighting by the exports or the imports will change the results of the competitiveness index. Secondly, the comparative advantages are different for exports and the imports. It is inappropriate to conjecture export patterns by observing the import patterns, or vise versa. Thirdly, contrary to previous studies, the U.S. has not shown protectionism by restricting its imports of primary products. Contrarily, the trade policies tend to encourage imports. This may be due to the higher domestic labor cost in the U.S. Finally, on the import side, there seems to be an inverse correlation between comparative advantage and international competitiveness. In other words, the higher the competitiveness, the lower the degree of comparative advantage. The attempts to increase U.S. comparative advantage by improving the net export capacity are very likely to be futile and even counterproductive.

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