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Investigating the World Trade of Natural Fibers

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Abstract:

This study investigates the World international trade of jute, abaca, coir, kenaf and sisal products which is abbreviated as JACKS in the literature. The period we cover is 2003–2022 and the technique we use is descriptive analysis. The data collected is based on Harmonized System Codes and the proxy we used as JACKS is HS 53. At first, we handle the data of aggregated textile industry then we study JACKS. The results show that JACKS in the textile industry is not high but there are many researches about these products. We find that the main JACKS' importer and exporter is China and its import and export values are increasing in the long term with some declines in the short term.

Key Words: Natural fibers, Natural fibers composites, international trade, textiles.

1. Introduction

Many types of trade restrictions, such as quotas, have long been used in the global trade of textiles and apparel. These trade obstacles have gradually been reduced over the past 40 years, usually with the support of the World Trade Organization (WTO) or the General Agreement on Trade and Tariffs (GATT), which was the WTO's predecessor (GATT) (Congressional Research Service, 2007). In 1962, the Long Term Agreement Regarding International Trade in Cotton Textiles (LTA) was signed under GATT, in 1974 the Multifibre Arrangement (MFA) was signed by about 40 countries in 1974, then MFA was replaced by the Agreement on Textiles

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and Clothing (ATC) in 1995, which began a 10-year process of removing quotas for international trade in textiles and clothing.

Fibers are an important part of the textile industry. 2009 was designated as the International Year of Natural Fibers by the United Nations and the Food and Agriculture Organization of the United Nations (FAO). Its goals were to increase awareness of natural fibers, to increase demand for them by highlighting the effectiveness and sustainability of the natural fibre industries, and to push governments to adopt the right policies in response to the issues these sectors are now facing. Based on (Senthil Kumar & Suganya, 2017) history of fibers began with silk in the 27th century BC, however (Rohit & Dixit, 2016) states that natural fibers already have been used for the first time 3000 years ago in ancient Egypt, moreover (Kozłowski & Mackiewicz-Talarczyk, 2012) declares based on (Hillers, 1974) that natural fibers have played an important role in human society since approximately over 7000 BCE. Textile fibers have been used to make cloth for the last 4000 or 5000 years. (FAO, 2013) states that jute, abaca, coir, kenaf and sisal (JACKS) are important types of fibers to investigate. JACKS are important for the economy of the producer countries, which are mainly the Least Developed Countries (LDC). The agreement was reached in 2000, phasing out quotas and tariff restrictions for LDC exports to the EU for all commodities by 2009. The Agreement on Agriculture under the Uruguay Round, which contained significant reductions in trade barriers was reached in 2000, phasing out quotas and tariff restrictions for LDC exports to the EU for all commodities by 2009(FAO, 2013). In 2011 the share of jute in JACKS was 60% (FAO, 2013), in 2022 the share is 68% (FAO, 2023).

In this paper, we aim to investigate the foreign trade pattern of JACKS, which was investigated in the literature as some remarkable types of fibre. This paper organizes as follows. The next chapter is the second chapter presents concepts of natural fibers and JACKS, and gives a literature review. The third section employs empirical analysis using descriptive statistics. The last section concludes the article.

2. Natural Fibers and JACKS

International Year of Natural Fibers defines natural fibers as: "(…) Natural fibers are greatly elongated substances produced by plants and animals that can be spun into filaments, thread or rope (…)" (Zimniewska & Wladyka-Przybylak, 2016). (Zimniewska & Wladyka-Przybylak, 2016) classified fibers into two groups which are plant or vegetable fibers and animal fibers. Whereas (Kozłowski & Mackiewicz-Talarczyk, 2012) classified fibers into three groups: plant,

animal and mineral. Vegetable fibers are classified based on their anatomical origin, which are: seed fibers, bast fibers, leaf fibers, fruit fibers, wood and grass and reed. Animal fibers are wool, and hair and silk. (FAO, 2013, 2023) focus on five types of fibers: jute, abaca, coir, kenaf and sisal, abbreviated by JACKS.

Trade of JACKS is investigated on HS Codes of Most Favoured Nation (MFN) Applied Tariffs[1]. In the HS Codes list, there are codes of four fibers from JACKS which are jute, abaca, coconut and sisal. HS Code of jute and jute products is 5307 (Yarn of jute or other textile bast fibers of heading), HS Code of abaca and abaca products is 5305 ("Coconut, abaca ""Manila hemp or Musa textilis Nee"", ramie, agave and other vegetable textile fibers, n.e.s., raw or processed, but not spun; tow, noils and waste of such fibers, incl. yarn waste and garnetted stock"), HS Code of coir and coir products is 530511("Coconut ""coir"" fibers, raw") and HS Code of sisal and sisal products is 5304 (Sisal and other textile fibers of the genus Agave, raw or processed, but not spun; tow and waste of such fibers, incl. yarn waste and garneted stock). The information shows that products of the JACKS take part in product 53 which is "Other vegetable textile fibers; paper yarn and woven fabrics of paper yarn". Product 53 consists of 5301, 5302, 5303, 5305, 5306, 5307, 5308, 5309, 5310 and 5311. The definitions of the products are given in Table 1.

Table 1: 4 Digit Codes of Product 53

Code	Definition
5301	Flax, raw or processed, but not spun; flax tow and waste, incl. yarn waste and garnetted stock
5302	"True hemp ""Cannabis sativa L."", raw or processed, but not spun; tow and waste of true hemp, incl. yarn waste and garnetted stock
5303	Jute and other textile bast fibers, raw or processed, but not spun; tow and waste of such fibers, incl. yarn waste and garnetted stock
5305	"Coconut, abaca ""Manila hemp or Musa textilis Nee"", ramie, agave and other vegetable textile fibers, n.e.s., raw or processed, but not spun; tow, noils and waste of such fibers, incl. yarn waste and garnetted stock"
5306	Flax yarn
5307	Yarn of jute or of other textile bast fibers of heading 5303

[1] is the tariff typically applied to imports from WTO member countries

5308	Yarn of vegetable textile fibers; paper yarn (excluding flax yarn, yarn of jute or of other textile bast fibers of heading 5303 and cotton yarn)
5309	Woven fabrics of flax
5310	Woven fabrics of jute or of other textile bast fibers of heading 5303
5311	Woven fabrics of other vegetable textile fibers; woven fabrics of paper yarn (excluding those of flax, jute, other textile bast fibers of heading 5303 and cotton yarn)

(Abtew et al., 2017) calculate comparative advantage index for textile fibers or fabrics and they select the products "silk (HS code 50), wool, animal hair, horsehair yarn and fabric thereof (HS code51), Cotton (HS code 52), Vegetable textile fibers, paper yarn, woven fabric (HS code 53), Manmade filaments (HS code 54) and Manmade staple fibers (HS code 55)." These six products were considered as textile industry products in (Abtew et al., 2017). These six products were considered as textile industry products in (Abtew et al., 2017). Based on this information we select these six products to represent the textile industry's products.

(Tsang & Au, 2008) investigate textile and clothing (T&C) exports of selected South and Southeast Asian countries[2], which are main suppliers of the USA; by using gravity model in 1990-2005. The authors find that China is the winner in global T&C trade and for the selected countries the ground has lost to be an important trade partner.

(Karaalp & Yilmaz, 2012) examine Turkey's textile and clothing industries to measure the competitiveness of the industries and for the period of 1988-2008, they showed that Turkey has a strong overall comparative advantage compared to the EU market. Another paper to investigate textiles and clothing markets is (Karaalp & Yilmaz, 2013), which find that three of the four selected countries which are Bangladesh, China and Turkey have a strong comparative advantage and Germany has not. (Ahmad & Kalim, 2013) claimed that comparative advantage of Pakistan in textile and clothing sector has declined during 2011-2012. (Chi et al., 2005) selected Eastern European and former Soviet Union Nations for 1995-2004 textile machinery, man-made fiber, textile, and apparel sectors and assert that the nature of products is the significant factor influencing national comparative advantage for the countries. (Wu et al., 2012) reveal that increasing trend in China's textile sector's production and textile sector's both import and export volume.

[2] India, Indonesia, Thailand, Philippines, Sri Lanka, Pakistan, Malaysia, Singapore, Bangladesh and Vietnam

3. Empirical Analysis

The data was collected from (Trademap, 2023) data source. We use product 53: "Other vegetable textile fibers; paper yarn and woven fabrics of paper yarn" for the proxy of the JACKS

Considering Figure 1 import shares, among the products six products, product 52 has the highest share in the last 20 years, the second is product 54 and the third is product 55. Product 52 has the lowest values among the products and product 50 is the second lowest. JACKS (product 53 as a proxy) have a very low share among import of textile products.

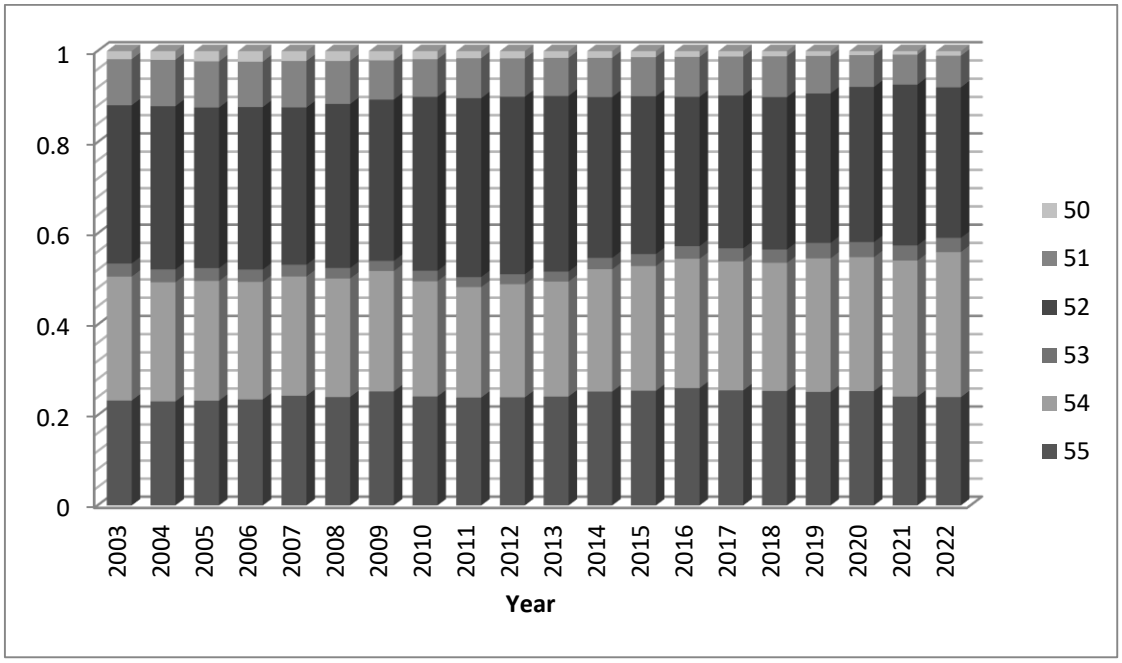

Figure 1: World Import Share of Textile Products 2003-2022

Figure 2 shows shares of the export amount of the six products of the textile industry. Among the products; product 52 has the highest value in 2003 but it is decreasing permanently, product 54 is the second highest product in 2003 and it is increasing permanently but cannot reach first place. The third product is the 55, the fourth one is the 51, the fifth is the 53 and the last is the 50. Similar to the import-export share of product 53 is approximately 3%. JACKS have a very low share in the textile industry. (Townsend & Sette, 2016) present data of World of natural fibers production in 2013: it was estimated at 33 million tons, including 26 million tons of cotton lint, 3.3 million tons of jute, 1.2 million tons of clean wool, and 900,000 tons of coir and all other natural fibers (including abaca, flax, hemp, kapok, ramie, sisal, silk, and other fibers) summed to approximately 1.6 million tons.

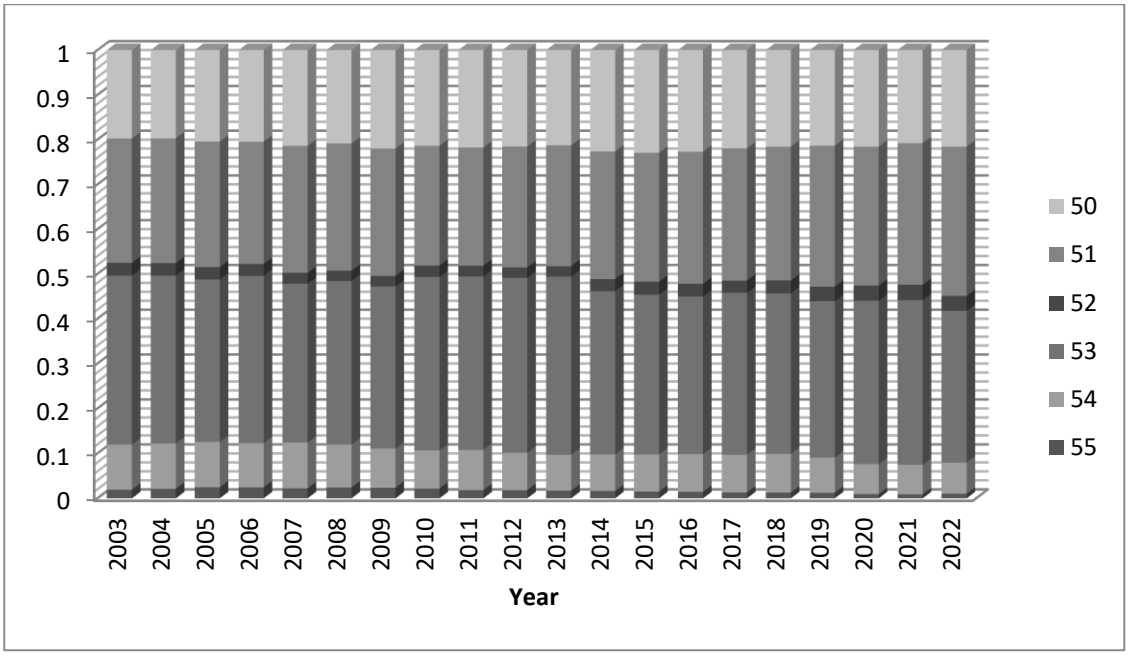

Figure 2: World Export Share of Textile Products 2003-2022 *Source:Authors calculations from trademap data*

Table 1: Descriptive Statistics of Share of the World Import of Textile Products: 2003-2021

	50	**51**	**52**	**55**	**54**	**53**
Mean	0.015550	0.087254	0.353140	0.244741	0.272328	0.026987
Median	0.015256	0.086002	0.352175	0.241688	0.267106	0.027337
Maximum	0.023167	0.101862	0.392152	0.260340	0.319095	0.034106
Minimum	0.007788	0.065597	0.327238	0.230756	0.243399	0.021744
Std. Dev.	0.004758	0.010740	0.019992	0.008927	0.019111	0.003948

Source:Authors calculations from trademap data

Table 1 shows that product 52 has the highest mean and highest maximum value. Although the mean and maximum value of p52 is 7% higher than its closest follower, its standard deviation is very close to its closest follower, which that shows the variation of product 52 is not high. It is the main imported product in all years. The second main imported product is product 54 and the third is product 55.

Table 2: Descriptive Statistics of Share of World Export of Textile Products: 2003-2021

	50	51	52	53	54	55
Mean	0.017371	0.086000	0.366595	0.027616	0.288557	0.213861
Median	0.017651	0.084373	0.364053	0.027538	0.284427	0.214732
Maximum	0.024612	0.101721	0.397200	0.034358	0.333380	0.229331
Minimum	0.008885	0.065752	0.337985	0.022729	0.264308	0.197276
Std. Dev.	0.005184	0.011203	0.015104	0.003719	0.018402	0.008732

Source:Authors calculations from trademap data

Table 2 shows that product 52 has the highest mean maximum and minimum values. The difference between the values of product 52 and other products' values are so high that even the minimum value of value is greater than the others' highest.

Figure 3 and Figure 4 show the share of the countries of export and import of product 53 respectively in 2021 because the latest published data is from 2021. China is the main JACKS importer and exporter in the World.

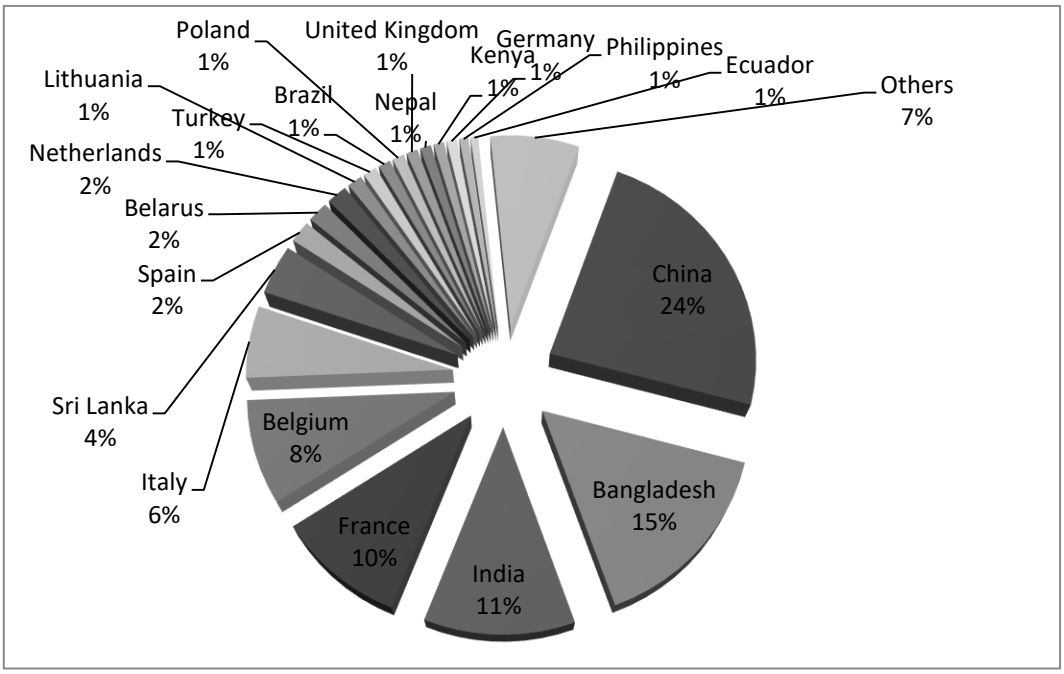

Figure 3: Share of the Countries of Export of Product 53 *Source:Authors calculations from trademap data*

Figure 3 and Figure 4 show that China is the main importer and exporter of other vegetable textile fibers; paper yarn and woven fabrics of paper yarn. The second exporter is Bangladesh, and the third and fourth countries are India and France respectively; which have more than 10%

ratio. Importer countries are different except China. China is the main importer and India and Turkey follow China with a 7% share. China is the main exporter of the World and also it has one of the biggest economies around the World(Jindřichovská & Uğurlu, 2021). China's textile market started to restructure and open outside the country from 1995 to 2005, although in 1999 it became one of the world's leading textile and fabric producer nations, it was a big loser until 2005 because of the quota system (Wu et al., 2012).

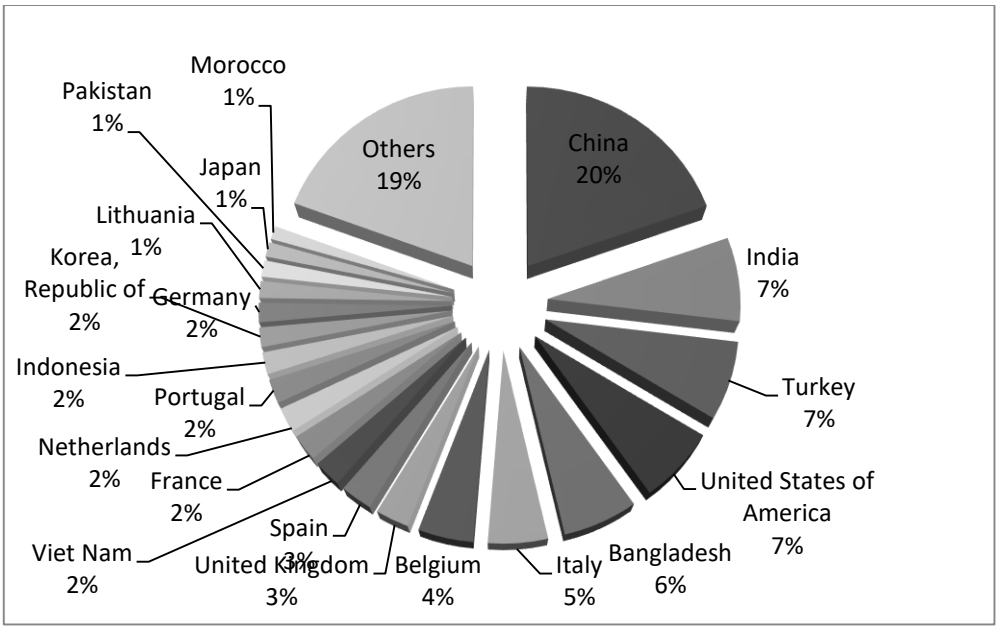

Figure 4: Share of the Countries of Import of Product 53 in 2021 *Source:Authors calculations from trademap data*

2021 data show that China, India, Turkey and the USA are the top four countries in JACKS import of the World. That is why we selected these four countries to analyse their export and import movement of product 53.

Figure 5 shows the export values of four main exporter countries of product 53 for 2003-2022. China is the leading country and among the other three countries India and France have relatively low values compared to Bangladesh. Bangladesh's export values were approximately two times less than China's in all the years but in 2009 and 2010 values of China and Bangladesh were close to each other. About Bangladesh, we cannot reach the data for 2014. Moreover the effect of COVID-19 on export values, for all the countries, we cannot see a significant decrease comparing previous years' variations of exports.

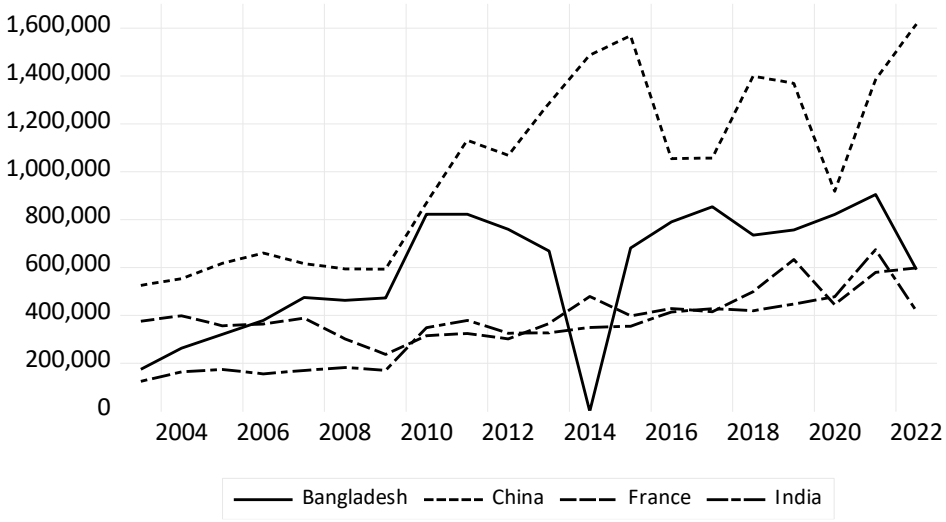

Figure 5: Selected Countries Export of Product 53 from World (USD thousand)

Source:Authors calculations from trademap data

Figure 6 shows that the difference between China's and the other three countries' import values started to increase after 2009 and while China's values are increasing constantly the other countries are relatively stable. Moreover, the effect of COVID-19 on import values is checked and there is no significant decrease after COVID-19 (2020 or 2021).

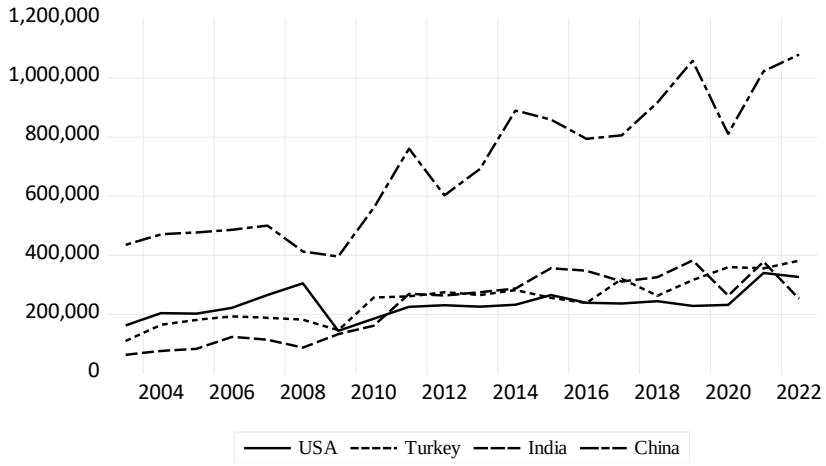

Figure 6: Selected Countries Import of Product 53 from World (USD thousand)

Source:Authors calculations from trademap data

The overall results of the analysis indicate that China is the main importer and exporter of JACKS in the last 20 years. Although China is the leading country in both exports and imports; however, the other main countries are not the same for imports and exports. Furthermore, there is no evidence to say any group of countries in the same regions or any group of the country in the same development level has an advantage in export or import. The main exporters and the

main importers are from different income levels and different regions, except China. We can see the superiority of China in JACKS as natural fibers foreign trade like many products foreign trade in the World.

4. Conclusion

FAO and UN designated 2009 as the International Year of Natural Fibers. Natural fibers are an important part of the textile industry. Moreover, natural fibers consist of many different products and one of the groups, which is abbreviated by JACKS, is investigated in the literature. JACKS are jute, abaca, coir, kenaf and sisal.

In this paper, our goal was to investigate the international trade of JACKS for the last 20 years (2003-2022). Unfortunately, the global trade data are not presented for singular products. We use Harmonized System Codes which include groups of products generally. For the JACKS we used HS CODE 53 product group as a proxy of JACKS.

We used descriptive analysis to investigate the international trade of JACKS and the results showed that China has the highest share in both export and import. Nevertheless, for other major countries, we have different countries for export and import. While for the export, important countries are Bangladesh, France and India; for the import, important countries are Turkey, USA and India. It should be noted that the other countries' values are very close to each other but the China's values are increasing and leaving the pattern of other countries. At last, because our data comprise the COVID-19 times we checked a significant decrease in the international trade of JACKS but there is no significant decrease in JACKS trade.

Conflicts of Interest

The author declares no conflicts of interest.

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