



## Paper and Paper Products and Wood and Wood Products Sectors Competition Analysis: BRICS Countries and Turkey

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**Abstract:** Financial crises on a world scale cause the emergence of new economic structures and powers. While the financial efficiency of developed countries decreases, developing countries are increasing their positions. BRIC (Brazil, Russia, India and China), which emerged as an alternative economic power after the financial crisis in 2008, started to be known as BRICS countries with the addition of South Africa in 2011 and became an important economic structure. Its economic and demographic strength of thanks and wishing to take part in the active position in the world Turkey is willing to take part in the BRICS. Determination of Turkey's infrastructure sector as competitive with these countries is extremely important. In this study of the important sectoral groups of Turkey Paper and Paper Products and Wood and Wood Products Sector is intended to determine whether a location opposite of how the BRICS countries. Revealed Comparative Advantages approach was used in the study covering the years between 2010-2019. As a result of the study, countries were compared at year level and superior sectoral structures were determined.

**Keywords:** BRICS, Turkey, paper-paper products, wood-wood products, revealed comparative advantages.

## Kağıt-Kağıt Ürünleri Sanayi ve Ahşap-Ahşap Ürünleri Sanayi Sektöründe Rekabet Analizi: BRICS Ülkeleri ve Türkiye

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**Öz:** Dünya ölçeğindeki finansal krizler, yeni ekonomik yapıların ve güçlerin ortaya çıkmasına neden olmuştur. Gelişmiş ülkelerin finansal verimliliği düşerken, gelişmekte olan ülkeler konumlarını yükseltmektedir. 2008 yılındaki finansal krizin ardından alternatif bir ekonomik güç olarak ortaya çıkan BRIC (Brezilya, Rusya, Hindistan ve Çin), 2011 yılında Güney Afrika'nın da eklenmesiyle BRICS ülkeleri olarak bilinmeye başladı ve önemli bir ekonomik yapı haline geldi. Ekonomik ve demografik gücüyle dünyada aktif pozisyonda yer almak isteyen Türkiye, BRICS'e katılmaya isteklidir. Türkiye'nin sektörel yapısının bu ülkelerle rekabet konumunun belirlenmesi son derece önemlidir. Bu çalışmada Türkiye Kağıt ve Kağıt Ürünleri ile Ağaç ve Ağaç Ürünleri Sektörünün BRICS ülkelerine karşı nasıl bir konumda olduğunun belirlenmesi amaçlanmıştır. 2010-2019 yıllarını kapsayan çalışmada Karşılaştırmalı Üstünlükler yaklaşımı kullanılmıştır. Çalışma sonucunda ülkeler yıl bazında karşılaştırılmış ve üstün sektörel yapılar tespit edilmiştir.

**Anahtar kelimeler:** BRICS, Türkiye, kağıt-kağıt ürünleri, ahşap-ahşap ürünleri, rekabet analizi.

### INTRODUCTION

With the end of the cold war, countries in different parts of the world began to become visible with the economic power they caught, and they argued that an order in which many powers would be effective, not just one power, was adopted in the world economy (Chen, 2003;

Poyraz, 2019). The conflicts, especially due to lack of resources, forced the formation of different economic unions and created alternative economic power centers to the USA and liberal economic thought. China, Russia, Brazil, India and Turkey adopted to create alternative to the IMF and World Bank (Ateş, 2012; Çelik, 2017).

Established in 2006 under the name of BRIC countries (Brazil, Russia, India, China) and later named BRICS with the addition of South Africa in 2011, the formation created an alternative center of attraction and new cooperation opportunities for developing countries (Önder, 2019). In 2001, according to the report published by Jim o Neill, the chairman of the board of directors of Goldman Sachs, an international investment bank, it took its place in the economic structure (O'Neill, 2001; Sezer, 2018). In a report prepared in 2003, in less than 40 years, BRIC countries; It has been hypothesized that France, Germany, Italy, Japan, the UK and the USA will catch up with the G6 countries and then these countries will become the main engine of new demand growth and spending power that will balance the slowing growth and population in developed economies (Atabay Baytar, 2012). According to the economic predictions made for the near future, it is stated that the BRICS countries will surpass the G7 countries in 2035 (Öniş and Kutlay, 2015), and they will be among the top 10 economies of the world in 2050 (Wilson and Purushothaman, 2003). The last 20 years have shown that Turkey's economic success is also considered one of the leading countries in 2050 is stated to be Turkey. Therefore it emphasized the necessity of Turkey's inclusion in this association and Turkey has expressed he wanted to be a member of this mechanism in 2018.

Turkey's membership of BRICS searching for new markets, and technological partnerships will help support their desire to become a global actor. Therefore, Turkey should revise the existing economic structure. When examining the literature of Turkey and the BRICS member countries seem to be limited studies comparing economic performance. In this study, it is aimed to determine the competitive position of Paper and Paper Products Industry and Wood and Wood products industry groups, which are sub-industrial groups of the Forest Products Industry Sector, against BRICS countries. It is important for the future of the country to support industrial groups that have a high competitive position against BRICS countries and to plan their resource use in this direction.

**Paper and Paper Products Industry and Wood and Wood Products Industry in Foreign Trade:** The foreign trade figures of the countries within the scope of the study in the field of paper and paper products and wood and wood products are given in the tables below.

Table 1 show that Brazil has a significant foreign trade surplus at both sectoral levels. When the situation is evaluated in terms of the years analyzed, it is seen that the foreign trade surplus in the field of paper and paper products increased by 143%. The increase in the foreign trade surplus in the wood and wood products industry is around 55%. Paper and paper products industry realized

approximately 0.8% of Brazil's average exports between 2010 and 2019, while this rate is 1% for the wood and wood products industry. A portion of 1.1% of the average paper exports made throughout the world within the specified years was realized by Brazil. In the field of wood and wood products industry, approximately 2.2% of the average export realized between 2010 and 2019 was made by Brazil.

**Table 1.** Brazil's export-import level by years (1,000 dollars).

Years	Paper and Paper Products			Years	Wood and Wood Products		
	Export	Imports	Current Account Balance		Export	Imports	Current Account Balance
2010	2.008.555	1.540.653	467.902	2010	1.917.872	133.087	1.784.785
2011	2.187.577	1.754.203	433.374	2011	1.900.096	176.455	1.723.641
2012	1.951.228	1.606.042	345.186	2012	1.887.658	167.639	1.720.019
2013	1.970.194	1.505.819	464.375	2013	2.003.924	144.449	1.859.475
2014	1.922.181	1.441.538	480.643	2014	2.243.112	150.617	2.092.495
2015	2.020.964	957.817	1.063.147	2015	2.271.395	116.236	2.155.159
2016	1.871.020	738.456	1.132.564	2016	2.361.479	98.880	2.262.599
2017	1.013.080	838.173	1.074.907	2017	2.779.920	96.932	2.682.988
2018	2.072.495	883.457	1.189.038	2018	3.182.252	100.556	3.081.696
2019	1.986.916	846.891	1.140.025	2019	2.886.205	108.418	2.777.787

Foreign trade data of Russia can be seen in Table 2. As a result of the evaluation made, it is seen that the foreign trade deficit in the field of paper and paper products between 2010 and 2017 turned into a foreign trade surplus in 2018 and 2019. This change shows that Russia is turning into a production center in the paper and paper products sector. When the level of exports in the field of paper and paper products is analyzed, it corresponds to approximately 0.4% of Russia's overall export level in terms of the average of all years. Russia realizes 1.2% of the paper exports made worldwide. When the data of the wood and wood products sector are examined, an increasing foreign trade surplus of Russia in all years draws attention. The foreign trade surplus, which increased approximately by 53% between 2010 and 2019, shows Russia's effectiveness in this area. The wood and wood products industry sector, which has a share of 1.7% in Russia's total foreign trade average, constitutes 5.6% of the world's wood and wood products exports.

**Table 2.** Russia's export-import level by years (1,000 dollars).

Years	Paper and Paper Products			Years	Wood and Wood Products		
	Export	Imports	Current Account Balance		Export	Imports	Current Account Balance
2010	1.457.976	3.844.758	-2.386.782	2010	6.093.699	860.844	5.232.855
2011	1.732.652	4.309.085	-2.576.433	2011	6.973.754	1.087.167	5.886.587
2012	1.924.464	3.748.744	-1.824.280	2012	6.734.568	1.450.095	5.284.473
2013	2.055.067	3.814.418	-1.759.351	2013	7.330.193	1.653.171	5.677.022
2014	2.260.193	3.542.705	-1.282.512	2014	7.763.748	1.323.914	6.439.834
2015	1.790.874	2.250.991	-460.117	2015	6.151.899	691.874	5.460.025
2016	1.899.540	2.255.626	-356.086	2016	6.523.925	601.922	5.922.003
2017	2.197.132	2.404.796	-207.664	2017	7.901.564	657.998	7.243.566
2018	2.737.863	2.653.242	84.621	2018	9.009.168	707.265	8.301.903
2019	2.491.263	2.454.115	37.148	2019	8.619.543	616.044	8.003.499

The data of India in the field of paper and paper products industry and wood and wood products industry are shown in Table 3. India has a significant foreign trade deficit in both product groups (Table 3). Although the foreign trade deficit in the field of paper and paper products

has decreased over the years, the deficit in wood and wood products has gradually increased. In India's average export, the paper and paper products sector is 0.4%, and the wood and wood products sector is 0.1%. In the evaluation made by taking into account the world export figures, it is seen that India has a share of 0.7% in the paper and paper products sector and 0.2% in the wood and wood products sector.

**Table 3.** India's export-import level by years (1,000 dollars).

Paper and Paper Products				Wood and Wood Products			
Years	Export	Imports	Current Account Balance	Years	Export	Imports	Current Account Balance
2010	784.177	1.887.451	-1.103.274	2010	163.784	1.697.604	-1.533.820
2011	906.988	2.454.710	-1.547.722	2011	220.651	2.410.817	-2.190.166
2012	930.360	2.266.894	-1.336.534	2012	258.874	2.606.741	-2.347.867
2013	1.139.895	2.364.880	-1.224.985	2013	351.496	2.680.339	-2.328.843
2014	1.115.993	2.610.041	-1.494.048	2014	353.812	2.703.642	-2.349.830
2015	1.127.113	2.425.519	-1.298.406	2015	427.377	2.435.878	-2.008.501
2016	1.183.920	2.662.456	-1.478.536	2016	400.748	2.145.530	-1.744.782
2017	1.284.054	3.069.063	-1.785.009	2017	415.073	2.186.864	-1.771.791
2018	1.827.352	2.994.535	-1.167.183	2018	435.525	2.227.212	-1.791.687
2019	2.061.320	2.886.570	-825.250	2019	477.641	2.178.456	-1.700.805

The foreign trade figures of China at both sector levels are shown in Table 4.

**Table 4.** China's export-import level by years (1,000 dollars).

Paper and Paper Products				Wood and Wood Products			
Years	Export	Imports	Current Account Balance	Years	Export	Imports	Current Account Balance
2010	9.561.194	4.611.778	4.949.416	2010	9.651.544	11.234.863	-1.583.319
2011	12.905.511	5.054.829	7.850.682	2011	11.354.387	15.857.712	-4.503.325
2012	13.721.805	4.596.226	9.125.579	2012	12.315.248	14.937.027	-2.621.779
2013	15.987.710	4.372.835	11.614.875	2013	12.748.095	18.768.839	-6.020.744
2014	17.818.529	4.308.838	13.509.691	2014	14.469.960	22.797.545	-8.327.585
2015	18.849.401	4.046.927	14.802.474	2015	14.211.187	18.627.016	-4.415.829
2016	18.172.109	3.944.806	14.227.303	2016	13.613.182	19.596.941	-5.983.759
2017	18.417.669	4.985.630	13.432.039	2017	13.693.413	23.411.325	-9.717.912
2018	19.460.630	6.201.170	13.259.460	2018	14.888.332	24.914.414	-10.026.082
2019	22.008.827	5.265.825	16.743.002	2019	13.410.436	21.976.449	-8.566.013

When the data in Table 4 are examined, it is noteworthy that the foreign trade figures are high. Especially in recent years, China, which has become the production center of the world, has created trade activity at the level of sectors. The foreign trade volume of paper and paper products in 2010 reached 27 billion dollars in 2019 from approximately 14 billion dollars. Within the same period, the foreign trade surplus increased approximately 4 times. On average, 0.7% of all exports made by China in the years 2010-2019 were realized by the paper and paper products industry sector. Considering the average of world paper exports for the years 2010-2019, it is seen that 10% of it was made by China. Having a foreign trade deficit in the field of wood and wood products, China realized an average of 10.1% of world exports. The share of wood and wood products in China's own exports is 6% in terms of the 2010-2019 average.

South Africa's foreign trade data are shown in Table 5. Having a negative foreign trade balance in the paper and paper products industry for all years, South Africa is in a position to have a foreign trade surplus in the field of wood and wood products. The paper and paper

products industry sector has a 0.8% share in the country's foreign trade, while the share of wood and wood products in foreign trade is 0.5%. In the world trade, South Africa has a share of 0.4% in paper and paper products and 0.3% in wood and wood products.

**Table 5.** South Africa's export-import level by years (1,000 dollars).

Paper and Paper Products				Wood and Wood Products			
Years	Export	Imports	Current Account Balance	Years	Export	Imports	Current Account Balance
2010	910.164	992.383	-82.219	2010	513.759	334.443	179.316
2011	916.871	1.080.319	-163.448	2011	538.660	400.081	138.579
2012	809.829	1.048.274	-238.445	2012	471.249	400.126	71.123
2013	733.495	1.057.978	-324.483	2013	451.334	393.037	58.297
2014	727.116	1.043.424	-316.308	2014	510.265	396.521	113.744
2015	665.762	973.476	-307.714	2015	500.958	375.820	125.138
2016	635.106	896.427	-261.321	2016	475.342	346.874	128.468
2017	625.648	909.485	-283.837	2017	535.495	360.382	175.113
2018	706.252	1.076.186	-369.934	2018	588.922	382.758	206.164
2019	595.931	1.035.157	-439.226	2019	516.639	362.633	154.006

Turkey's foreign trade figures in Table 6 are also shown. When the figures in Table 6 are examined, it is seen that both sectors have a positive foreign trade trend. The increase in exports in the paper and paper products industry over the years has an important effect on reducing the foreign trade deficit. Paper and paper products forming part about 1% of Turkey's trade with Turkey has the capacity to add to the positive change that has industrial economy. Paper and paper products in world trade, which owns a 0.8% share at the level of Turkey holds the power industry, this rate may increase rapidly. When the foreign trade figures of wood and wood products are examined, it is seen that the balance, which was negative over the years, has moved to positive with the increase in exports. sector, which has a weight of 0.4% in Turkey's foreign trade is a 0.5% share of world trade in general.

**Table 6.** Turkey's export-import level by years (1,000 dollars).

Paper and Paper Products				Wood and Wood Products			
Years	Export	Imports	Current Account Balance	Years	Export	Imports	Current Account Balance
2010	1.216.835	2.819.743	-1.602.908	2010	573.203	1.098.395	-525.195
2011	1.427.255	3.109.936	-1.682.681	2011	652.927	1.427.786	-774.860
2012	1.033.096	2.882.665	-1.849.569	2012	657.954	1.619.738	-961.783
2013	1.140.574	3.091.816	-1.951.242	2013	724.631	1.563.578	-838.948
2014	1.203.724	3.170.718	-1.966.994	2014	853.305	1.487.632	-634.328
2015	1.185.524	2.683.944	-1.498.429	2015	692.752	1.505.159	-812.407
2016	1.353.499	2.684.714	-1.330.141	2016	675.873	1.265.054	-589.131
2017	1.520.374	2.811.916	-1.291.542	2017	763.956	1.132.785	-369.895
2018	1.715.787	2.749.839	-1.034.052	2018	826.635	827.893	-1.258
2019	1.796.339	2.513.824	-717.485	2019	885.456	405.913	479.543

## MATERIALS AND METHOD

BRICS countries and Turkey's Paper and Paper Products Industry and Wood & Wood Products 2010-2019 year study of competition in the industry sector analysis of foreign trade data are used. The data used for analysis was obtained from the TradeMap (2020) website.

In order to measure the competitiveness of the firm, industry and countries, it primarily uses foreign trade data. In our study; The Revealed Comparative Advantage (RCA) method, which was created by Liesner (1958) to

measure competitiveness and later developed by Balassa (1965) and has been widely used until today, was used. The Balassa index was formulated as follows:

$$RCA_{ij} = (x_{ij} / X_j) / (x_{iw} / X_w) \tag{1}$$

where;

RCA<sub>ij</sub>; revealed comparative advantage index for the *i*th goods of the *j*th country.

*x<sub>ij</sub>* : *j*th country's *i*th exported goods

*X<sub>j</sub>* : *j*th country's total exports

*x<sub>iw</sub>* : *i*th goods of the global exports

*XW* : total global exports

A value less than 1 to be obtained as a result of the analysis made indicates that the country does not have competitive power in terms of comparative advantages explained at the relevant goods level, that is, it has a disadvantage, and a value greater than 1 indicates that it is specialized in that product group, that is, it has announced mutual advantage.

### RESULTS AND DISCUSSION

BRICS countries and Turkey Paper & Paper Products Industry Sectors competitive analysis of the results in Table 7 are also seen. As a result of the analysis of the competitive power of countries, when the values in Table 7 are examined, it is seen that all countries have averages less than 1, which is the accepted competitive power value indicator in terms of years average.

**Table 7.** BRICS countries and Turkey: Paper and Paper Products Industry

Years	Brazil	Russia	Indian	China	South Africa	Turkey
2010	0,896	0,330	0,320	0,545	0,992	0,962
2011	0,829	0,325	0,292	0,660	0,824	1,027
2012	0,903	0,412	0,361	0,752	0,920	0,761
2013	0,904	0,533	0,376	0,804	0,857	0,834
2014	0,938	0,428	0,386	0,835	0,862	0,839
2015	1,124	0,571	0,545	0,878	0,865	0,876
2016	1,063	0,700	0,477	0,902	0,872	0,999
2017	0,512	0,678	0,478	0,893	0,770	1,067
2018	0,954	0,673	0,623	0,862	0,819	1,129
2019	0,996	0,662	0,716	0,989	0,740	1,179
<b>Average</b>	<b>0,9119</b>	<b>0,5312</b>	<b>0,4574</b>	<b>0,812</b>	<b>0,8521</b>	<b>0,9673</b>

In comparison with the countries in its internal years Turkey has the highest value in terms of average. It is seen that it has a competitive advantage in the field of Paper and Paper Products industry against BRICS countries. Turkey is followed by Brazil and South Africa. Changes occurring in the country in the years when it is observed that increased 22.5% between the years 2010-2019 at the level of Turkey's competitiveness. Especially in recent years, it can be clearly seen that it has exceeded the accepted value of 1 in 2017, 2018 and 2019 and is in an increasing trend in this direction. With the BRICS countries in terms of foreign trade data owned by Turkey Paper and Paper Products are in position to compete in the industrial area has a structure.

Brazil, which ranks second in terms of average values, has achieved an 11% increase in competitive power over the years. It could not maintain the competitive advantage it had achieved in 2015 and 2016.

South Africa reduced its competitiveness value in 2010 in 2019 and showed a decline of -25% in annual average. In general, South Africa, which does not have a competitive value of 1 or more, shows a negative situation in the field of Paper and Paper Products Industry.

China, which has been effective in the world economy in recent years, has a competitive position far from expected in the field of Paper and Paper Products Industry. The competitive advantage it has in many different areas is not seen in this product group. Considering the change over the years, it can be seen that China, which has increased by 81%, will have a say in this field in the near future.

Russia and India share the last places in the ranking of competitive advantage in this product group. When it is considered that both countries showed annual growth (in Russia 100% India 124%) between Paper and Paper Products Industry in the BRICS countries and Turkey is seen that there will be serious competition to the war. Analysis results of Wood and Wood Products Industry sectors are shown in Table 8.

When Table 8, which includes the competitiveness of countries in the field of Wood and Wood products industry, is examined, it is clearly seen that Russia has a significant competitive advantage in this field in terms of both annual average value and values in all years. Brazil and China follow Russia.

Russia increased its competitiveness value in 2010 (2,183> 1) by 30% in 2019 (2,839> 1). During this period, Brazil showed an increase of 33% and showed that it was a significant power in competition..

**Table 8.** BRICS countries and Turkey: Wood and Wood Products Industry.

Years	Brazil	Russia	Indian	China	South Africa	Turkey
2010	1,351	2,183	0,105	0,870	0,884	0,715
2011	1,124	2,043	0,110	0,906	0,756	0,733
2012	1,215	2,005	0,139	0,939	0,745	0,674
2013	1,199	2,014	0,151	0,836	0,688	0,691
2014	1,365	2,136	0,152	0,846	0,754	0,741
2015	1,584	2,459	0,215	0,830	0,816	0,642
2016	1,593	2,856	0,191	0,803	0,775	0,592
2017	1,649	2,858	0,189	0,778	0,772	0,628
2018	1,745	2,638	0,176	0,785	0,814	0,640
2019	1,794	2,839	0,205	0,747	0,795	0,720
<b>Average</b>	<b>1,4619</b>	<b>2,4031</b>	<b>0,1633</b>	<b>0,834</b>	<b>0,7799</b>	<b>0,6776</b>

China and South Africa, which can provide an alternative to these two countries, showed a decrease of approximately 14% and 10% within this period and showed that they were losing power in competition. India's increase in this area remained far from a competitive position.

Turkey has managed to maintain its competitiveness although that experience increases and decreases in the studied years. Turkey in this area who wants to take part in the BRICS countries are quite difficult to compete with Russia and Brazil.

## CONCLUSION

Technological infrastructure and power that Turkey has experienced production Paper and Paper Products are qualities that can have a significant competitive advantage the BRICS countries across the industry. The analysis, which has adopted a position on the standard values in some years it was increasing its strength over the years indicate that Turkey's power in the market may be effective in this area. Paper and paper products with the support of Turkey will be held in the investment industry and will have an important place in the economic growth of the sector and will consist seems to be able to access the production center of Turkey in the world order. Turkey, paper and paper products are in a strong position in the industrial area opposite the BRICS countries. Turkey is in the paper and paper products industry can compete with Brazil and South Africa.

In the field of wood and wood products, the undisputed superiority of Russia and Brazil is seen in the analysis results due to the raw material availability they have among the BRICS countries. There is no country that can rival these two countries within the scope of the years examined. Turkey should act in this area and knowing the position which should encourage rational investment resources.

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