

COMPETITIVENESS OF SOUTH AFRICAN ORANGES IN ASIAN STRATEGIC MARKETS: THE CASE OF MAIN COMPETITORS



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Abstract

This study employed various descriptive, conceptual, and empirical models to measure South Africa's competitiveness in the Asian strategic markets concerning its competitors from 2003 to 2022. The competitiveness measurements included relative comparative advantage, the net export index, relative trade advantage, and constant market share analysis. The data were sourced from official databases such as the World Bank, FAO, ITC, export potential map, and World Integrated Trade Solutions (WITS). The South African competitiveness of oranges in the specified strategic markets realized a positive competitive effect of 2.46%, indicating a gain in the market due to increased competitiveness of the fresh food sector in the world market. The RCA values were above 1, with most of the values closer to 20 indicating that South Africa has a good comparative advantage in the production of oranges. Egypt and Greece were the competitors, with average values of 16.9 and 19.7, respectively. The South African orange industry has positive export performance, with values close to 100, which indicates that the country is a net exporter of oranges and is experiencing a sustained comparative advantage. The RTA index values were mostly positive.

1. Introduction

The ambiguities in the term "competitiveness" as applied to firms, industries, and countries are discussed in this chapter. It examines several empirical studies that have attempted to quantify "competitiveness" or "price competitiveness," interpreting the measures used as predictors of relative export quantities, relative export shares, or the balance of trade in an industry. Wholesale price index ratios, export unit values, relative unit labor costs, import prices divided by export prices, and relative profits are examples of these measures. Despite the title, there is no definition or strict measurement of international competitiveness. This study suggests that exports, import penetration, and production growth rates are important indicators of a country's

"competitive position" or "importance" in the world at various points.

What exactly is competitiveness? Nabi and Luthria (2002) explained it at the most basic level; it is simply "success" in global markets, which can be measured by South Africa's combined market share in Asian markets; this appears to be the most widely used measure of international competitiveness. Clearly, any change that increases the global sales of South African products while decreasing the sales of foreign products implies an increase in South African competitiveness; however, competitiveness, as defined above, includes the effects of all government-imposed aid and sanctions affecting both South African and foreign industries (Nabi & Luthria, 2002).

Another measure of competitiveness is the profitability of the domestic industry, which is once again extremely sensitive to government-imposed import barriers and export aid. Finally, net domestic investment is an indicator of competitiveness as well as a predictor of future profitability and market share. These latter two measures are likely to be more directly affected by the overall state of the domestic economy than by the share of global consumption or exports (although this will also be affected by macroeconomic, exchange rate, and inflationary factors). However, there are exceptions; in general, all three of these competitiveness indicators will move together and be similarly affected by changes in supply and demand conditions (Edwards & Lawrence, 2006).

According to Zysman and Tyson, a series of industry case studies depict the problems of adjustment and change in response to international competition in seven sectors. They stated that the well-being of firms in these sectors is dependent on defending home markets against foreign firms and selling in international markets (Zysman & Tyson, 1983). This implies international competitiveness in terms of export share and import penetration. They define comparative advantage as the relative export strength of one sector in comparison to other sectors in the same country. Competitive advantage, on the other hand, is defined as a firm's relative export strength in comparison to that of firms from other countries selling in the same sector in international markets (Zysman & Tyson, 1983). As a result, the purpose of this study is to compare the competitiveness of South African orange exports in Asian markets to that of competitors (see 7.4 for more information).

2. Literature Review

The final two papers examine trends in South Africa's export share as an indicator of the country's competitiveness. The comparative advantage of South Africa and its multinational corporations is measured in terms of the distribution of exports across industries (for example, industries with larger shares of South African exports than of world exports are industries in which South Africa has a comparative advantage relative to the rest of the world). Lipsey and Kravis (1986) distinguish between factors influencing the competitiveness of the United States as a manufacturing location and those influencing the competitiveness of US firms (Lipsey & Kravis, 1986). They noted two limitations of using export share movements to measure international competitiveness: (1) a decline in South Africa's share of global trade has accompanied declines in the country's share of global population and income, implying a constant share; and (2) this measure of competitiveness ignores distortions in trade composition caused by government intervention (Lipsey & Kravis, 1986).

It has also been criticized for investigating constant market share analysis, both theoretically and practically. Richardson (1989) examines the characteristics of any change in a country's exports in a specific sector that is caused by a change in "competitiveness" rather than market growth (Richardson, 1989). He also questions the use of relative prices to measure relative competitiveness (ignoring differences in quality, services, and financing between competing products) and suggests that a measure of a country's true competitiveness might be whether the country was increasing its export shares in rapidly growing commodities and markets (Richardson, 1989). This study's additional measure of competitiveness was to focus on the domestic orange industry, although this measure is extremely sensitive to government-imposed import barriers and export subsidies. Finally, net domestic investment is an indicator of competitiveness as well as a predictor of future profitability and market share. These latter two measures are likely to be more directly influenced by the overall state of the domestic economy than by the share of global consumption or exports (although this may also be influenced by macroeconomic factors influencing exchange rates and inflation).

However, there are exceptions; in general, all three of these competitiveness indicators will move together and will be similarly affected by changes in supply and demand conditions (IMF, 2001). For example, an increase in the cost of producing an additional unit of domestic oranges could be due to increases in resource costs, inefficiencies in management techniques, the use of outdated or inappropriate technologies, rising interest rates, high regulatory costs, or the depreciation of the domestic currency value. Cost increases will result in less supply and higher prices for domestic products. As a result, a higher price will stimulate increased global demand for internationally produced goods (IMF, 2001).

Finally, the nature of domestic competition may have an impact on industry success in global markets. In this study, a constant market share analysis is used to assess the factors that limit or enhance the competitiveness of the domestic orange industry in international markets. Cost factors are also considered when assessing competitiveness; for example, transportation costs are an important consideration in world trade because they allow the domestic industry to enjoy a cost advantage, which translates into increases in world export shares.

3. Method and Data

The objective of the study is to analyze South Africa's competitive performance concerning its competitors in the identified markets. We used data on production, exports, and imports for South Africa and major competitors in the Asian

strategic markets for the period 2003–2022 to calculate competitiveness. The revealed comparative advantage (RCA), net export index (NXi), and relative trade advantage (RTA) were used to measure export performance.

3.1. Revealed comparative advantage (RCA)

This index has been used globally as an index in the economic and business literature to measure the comparative advantage of a product by country (Maksymets & Lönnstedt, 2016). Several studies have applied the revealed comparative advantage (RCA) index, first coined by (Balassa, 1965), to measure and analyze industry or sectoral comparative advantage. The country and commodity under consideration are excluded when total exports are calculated. For the i-th country and j-th commodity, the original expression of the RCA is as follows:

$$RCA_{ij} = RXA_{ij} = (X_{ij}/X_{ik}) / (X_{nj}/X_{nk}) \dots \dots \dots (1)$$

3.2. The relative trade advantage (RTA)

Index (Vollrath, Revealed competitiveness of Wheat, 1987) extends Balassa’s index (RCA) to measure competitiveness and avoids double counting when comparing countries (OECD, 2010; Sangu & Antwi, 2014). This index determines the country’s share in the world market of one commodity relative to its share of all traded commodities. It is calculated as the difference between relative export advantage (RXA), which equates to the Balassa index, and its counterpart, relative import advantage (RMA).

The RTA index is mathematically expressed as follows:

$$RTA_{ij} = RXA_{ij} - RMP_{ij} \dots \dots \dots (2)$$

$$RXA_{ij} = (X_{ij} / \sum_{i \neq j} X_{ij}) / (\sum_{k, k \neq j} X_{kj} / \sum_{k \neq i, i \neq j} X_{ki}) \dots \dots \dots (3)$$

$$RMP_{ij} = (M_{ij} / \sum_{i \neq j} M_{ij}) / (\sum_{k, k \neq i} M_{ki} / \sum_{k \neq i, i \neq j} M_{ki}) \dots \dots \dots (4)$$

3.3. Net export index (NXi)

According to Vollrath (1991), with differentiated products, intraindustry trade, and flows of exports and imports, net trade effects should be considered. Balassa also proposed an alternative measure called the net export index (NXi), where 70 net exports are exports minus imports. To calculate the index, net exports are divided by the total value of the trade (exports plus imports) of the commodity in question.

The NXi index formula is expressed mathematically as:

$$NX_i = [(X_i - M_i) / (X_i + M_i)] \times 100 \dots \dots \dots (5)$$

For this objective, constant market share (CMS) will be more appropriate, as changes in market share are interpreted on the assumption that they are purely a reflection of competitive conditions. According to Fragerberg (1987), “Constant market shares (CMS) analysis is a method aimed at providing insight into the underlying reasons for a country’s comparative export performance” (Fragerberg, 1987).

The CMS model is defined as follows:

$$\Delta q = \sum_i \sum_j S_{ij}^0 \Delta q_{ij} + \sum_i \sum_j Q_j^0 \Delta S_{ij} + \sum_i \sum_j \Delta S_{ij} \Delta Q_{ij} \dots \dots \dots (6)$$

Were
 q = target country’s orange exports by value
 S_{ij} = exporter country’s export market share of orange i in country j.
 Q_{ij} = Imports of market j.
 Δ = Annual change.
 0 = Base year.

4. Results

The RCA, NXI, and RTA equations are used to assess competitiveness based on trade performance. According to this quantitative method, competitive advantage can be indicated by the trade performance of 'traded' individual commodities, value chains, and countries, in the sense that a commodity's trade pattern reflects relative market costs as well as differences in nonprice competitive factors such as subsidies, government policies, and other public support measures, i.e., the true cost of doing business by trading a commodity. RTA is the most appropriate technique for measuring industry competitiveness, which is why it is utilized in this study. The RCA# and NXI procedures are only partial assessments of an industry's competitive state.

4.1. Relative comparative advantage (RCA)

Table 1.1 compares the South African orange sector to its competitors in Asian critical markets from 2003 to 2022. All South African values are greater than one and closer to twenty; this merely indicates that South Africa has a good comparative advantage in the production of oranges, which will reach its highest value in 2022. Overall, this is a positive indicator of long-term competitiveness performance. Table 1.1 shows that Egypt and Greece are the largest competitors, with average values of 16.9 and 19.7, respectively.

Table 1.1. RCA indices of South African oranges from 2003–2022

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South A.	20.30	22.30	22.90	25.30	25.70	23.40	22.40	24.20	20.70	23.10
Spain	19.1	20.8	18.1	19.8	19.5	18.5	17.5	16.5	16.7	17.9
Egypt	19.1	28.5	279.1	20.1	25.8	58.1	61.7	60.5	64.1	60.6
US	1.5	1.7	1.5	1	1.3	0	1.4	1.6	1.7	1.6
Türkiye	3.8	2.7	4.1	4.9	3.6	2.9	5	4.5	7.3	5.9
Greece	29.9	19.9	22.7	21.7	24.5	21.7	21.5	24.4	24	17.8
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
South A.	23.10	27.30	27.00	27.10	29.30	30.70	28.70	29.30	26.40	32.20
Spain	18	17	17.5	14.8	14.6	13.6	14.4	14.6	14.9	15.1
Egypt	63.8	69.1	80.7	75.6	72.2	80.6	83.5	76	71	68.9
US	1.4	1.4	1.5	1.5	1.3	1.2	1.3	1.4	1.3	0.9
Türkiye	4.2	4.8	4.3	4.3	3.5	3.4	2	2.5	1.9	2
Greece	19	19.9	15.7	23.8	13.7	14.6	12.9	16.7	15.8	13.1

Source: Authors' calculations (2023)

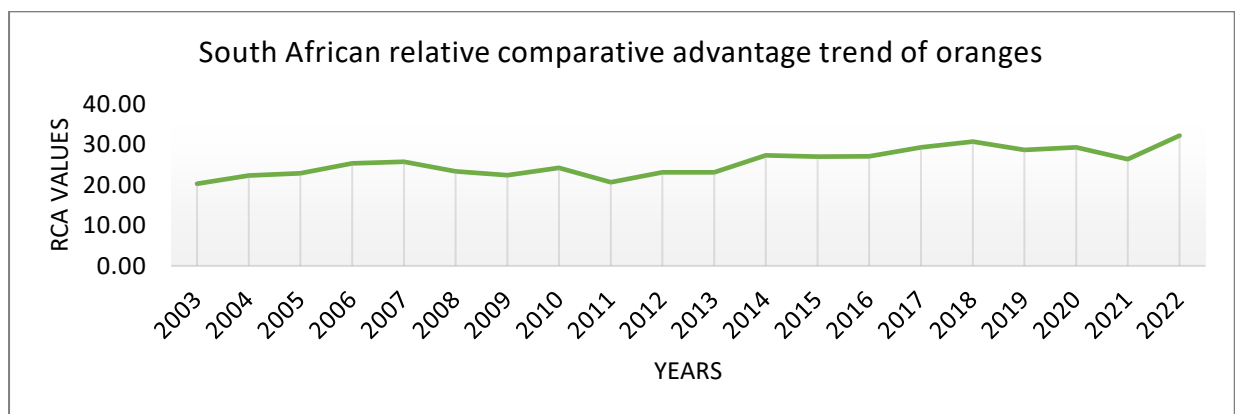


Figure 1.1. Comparison of the advantages of the fresh oranges RCA

Source: Authors' calculations (2023)

4.2. Net Export Index (NXi)

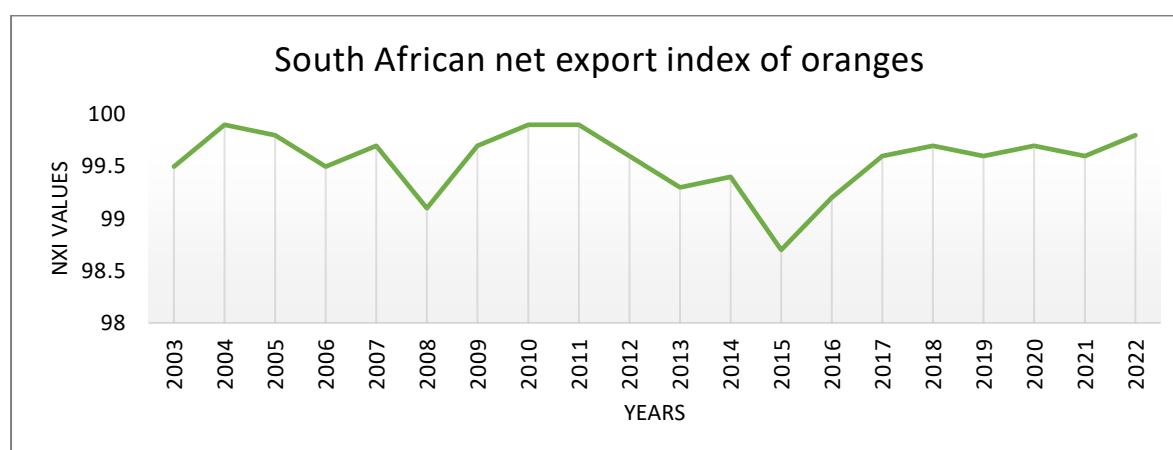
NXi is the value of South Africa's total exports minus the value of total imports, which equals the country's net exports. A positive net export figure implies a trade surplus, whereas a negative figure indicates a trade deficit. The NXi for oranges is reported in Table 1.2 and Figure 1.2. A limit of 100 indicates no imports, while a limit of -100 indicates no exports. Currently, the South

African orange industry has shown favorable net export performance, with values typically near 100 (highlighted in red). This demonstrates that South Africa is a net exporter of oranges and has a persistent comparative advantage. The competitors also have a favorable NXi, with Egypt and Greece displaying some resistance in Asian markets. The graph shows that the NXi changed over time, reaching a low value of 98.7 in 2015.

Table 1.2. Net export index of South African oranges from 2003–2022

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South A.	99.5	99.9	99.8	99.5	99.7	99.1	99.7	99.9	99.9	99.6
Spain	86,5	87,1	80,8	85,7	76,6	81,0	88,3	82,7	86,8	86,1
Egypt	100,0	99,9	100,0	100,0	99,9	100,0	100,0	99,9	99,9	99,8
US	71,8	68,2	64,8	60,0	30,3	67,7	-99,2	64,2	69,5	67,4
Türkiye	80,3	79,6	74,2	89,8	77,7	81,8	89,5	89,8	90,6	90,1
Greece	93,0	52,5	87,2	90,6	75,1	85,2	92,4	93,4	95,5	95,0
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
South A.	99.3	99.4	98.7	99.2	99.6	99.7	99.6	99.7	99.6	99.8
Spain	85,3	86,6	84,9	81,9	80,4	80,4	83,2	77,3	82,3	85,2
Egypt	99,9	100,0	100,0	100,0	100,0	100,0	100,0	99,9	100,0	100,0
US	57,8	57,0	53,8	59,1	53,9	43,9	46,7	44,0	40,8	30,7
Türkiye	88,6	92,5	88,8	89,5	85,5	91,1	78,9	80,4	79,3	78,8
Greece	95,8	97,4	91,3	97,2	93,5	95,7	95,7	95,3	97,9	96,5

Source: Authors' calculations (2023)

**Figure 1.2.** Comparison of the advantages of fresh oranges NXI

Source: Authors' calculations (2023)

4.3. Relative Trade Advantage (RTA)

Table 1.3 and Figure 1.3 show the competitive performance trends for the South African orange sector as evaluated by relative trade advantage (RTA). The RTA index values are positive, with most of them being above the value of 20 over the years under consideration. This illustrates that the South African orange sector did well in Asian markets and has maintained such

performance since 2003, with the performance in 2022 being greater than that in the other years and expected to increase more in the following years. On the competitor side, Egypt had an average RTA of 70.1, which is significantly greater than that of any other country in our research and is considered the principal competitor for South Africa. Greece and Spain came after Egypt, with average RTAs of 19.3 and 15.8, respectively.

Table 1.3. RTA indices of South African oranges from 2003–2022

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
South A.	20.2	22.2	22.9	25.2	25.7	23.3	22.4	24.2	20.7	23
Spain	18.1	19.9	17	19	18.1	17.3	16.7	15.3	15.7	16.8
Egypt	17.9	22.1	278	19.2	23.3	57.2	61.3	60	63.8	60.4
US	1.4	1.4	1.5	1.4	0.7	1.2	-0.2	1.2	1.5	1.5
Türkiye	3.5	2.5	3.8	4.8	3.4	2.7	4.8	4.4	7.1	5.7
Greece	29.6	18.3	22.3	21.4	23.6	21.2	21.2	24.1	23.7	17.6
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
South A.	23	27.3	26.8	27	29.2	30.6	28.6	29.1	26.4	32.2
Spain	16.8	16	16.3	13.6	13.3	12.4	13.3	13	13.6	14.1
Egypt	63.6	69	80.4	75.5	72	80.5	83.4	75.8	70.9	68.8
US	1.3	1.2	1.1	1.3	1.2	1	1	1	1.1	0.9
Türkiye	4.1	4.7	4.1	4.2	3.3	3.3	1.8	2.3	1.7	1.9
Greece	18.7	19.7	15.3	23.7	13.5	14.4	12.8	16.5	15.7	12.9

Source: Authors' calculations (2023)

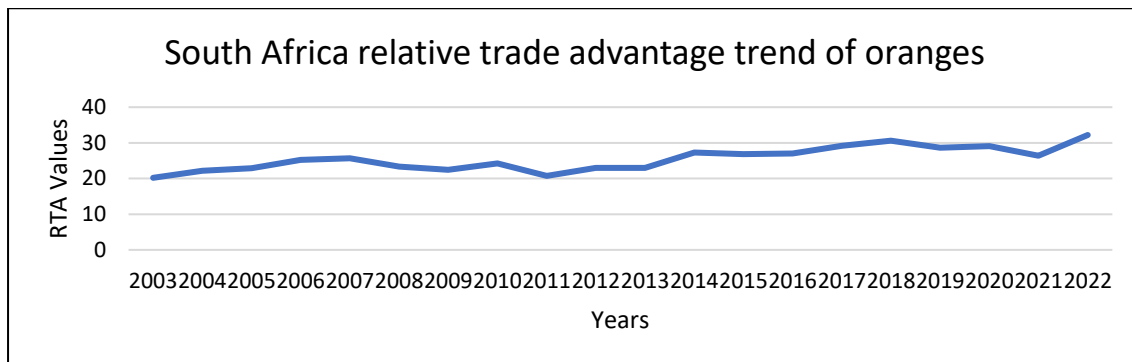


Figure 1.3. Comparative advantage of the fresh oranges RTA

Source: Authors' calculations (2023)

4.4. Constant Market Share (CMS) Analysis

CMS is an important approach for studying trade patterns and trends for policy creation. Constant market share (CMS) analysis was used to examine three aspects that explain the causes of a country's export growth. These are the factors related to the export market's growth relative to global export growth (structural effect), improvements in the exporting country's competitiveness (competitive effect), and the combined effect of competitiveness and structure (second-order effect) (Barbaros R, Akgungor, & Aydogus, 2007). A positive index indicates a competitive environment. Currently, the South African orange industry has shown favorable net export performance, with values typically near one hundred (highlighted in red), which demonstrates that South Africa has a persistent comparative advantage. The

competitors also have a favorable NXi, with Egypt and Greece displaying some resistance in Asian markets.

According to the CMS analysis, export growth is regarded as a coimpact of four factors: the global market growth effect, commodity composition effect, market share effect, and change in competitiveness. The country's statistics can be divided into structural, competitive, and second-order effects. Table 1.4 shows the structural, competitive, and second-order effects of South Africa's orange exports in the Asian strategic market (by country). Between 2003 and 2013, South Africa saw a negative competitiveness effect for Hong Kong, India, and South Korea, indicating that South Africa's orange exports grew more slowly in those countries than the global average, and therefore, the economy lost its market share. However, those markets improved,

resulting in a favorable competitive effect (exports increased) during the period between 2014 and 2022.

On the other hand, the most recent competitive effect showed a loss of value for Thailand and Vietnam, resulting in a loss of market share due to slower export growth.

Table 1.4. CMS analysis of South African oranges from 2003–2022

	2003: 2013			2014: 2022		
	Structural Effect	Competitive Effect	Second order effect	Structural Effect	Competitive Effect	Second order effect
Hong Kong	-0.57	-0.13	0.36	0.00	0.24	-1.64
India	0.17	-0.04	-0.03	-0.02	0.26	-0.08
Indonesia	0.26	0.25	-0.11	-0.78	0.13	-4.66
China	-9.43	0.06	1.29	-6.62	0.39	0,25
Thailand	0.49	0.24	-1.16	2.16	-0.07	-1.75
Japan	0.14	0.35	-0.12	-0.90	0.16	-8.81
Malaysia	0.18	0.22	0.28	0.18	0.15	0.03
Philippines	0.51	0.00	0.24	-0.04	-0.23	0.76
Vietnam	0.11	3.18	0.25	-0.32	-3.35	-0.76
South Korea	-0.34	-0.25	-0.01	20.06	0.00	-156.56

Source: Authors' calculations (2023)

5. Conclusion

The main objective of this paper was to examine the export competitiveness of oranges for South Africa and its main competitors in the Asian strategic markets from 2003–2022. The results revealed that South Africa has a greater relative comparative advantage, with Egypt being the principal competitor in the identified Asian markets. The increasing pattern of RCA and RTA of oranges in South Africa indicates that there is potential for greater growth in this product and can be a source of higher export earnings, which supports the need to strengthen the country's competitiveness in the identified strategic markets. The RTA index values are positive, with most of them above the value of 20 over the years under consideration. This illustrates that the South African orange sector did well in Asian markets and has maintained such performance since 2003, with the performance in 2022 being greater than that in the other years and expected to increase more in the following years.

Because of its relative comparative advantage, South Africa is likely to participate in trade with Asian countries. South Africa has a significant comparative advantage in terms of orange production. It should be noted that the product/destination structure of South African exports explains a large part of the changes in market shares in this analysis, whereas the calculated competitiveness effect is a residual that includes all factors other than prices and structure that could strengthen the country's position in foreign markets but have not yet had time to exert an adequate positive influence. As a result, improving the performance of South African exports would necessitate a change to high-demand products in global markets. This necessitates

additional restructuring of the country's production base to strengthen industries with higher technological content. Of course, receiving significant foreign investment in these industries would be a necessary condition for this to occur. Finally, South African exports should benefit from additional development into more dynamic markets.

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