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The Competitiveness of Moroccan Export and its Determinants

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Abstract:- This research encompasses two distinct parts. The first phase involves assessing the industries in which Moroccan exports demonstrate a comparative advantage from 2002 to 2022, utilizing the Revealed Comparative Advantage (RCA) index. To achieve this, data on Moroccan exports and world exports for different industries are collected, incorporating detailed information on product categories and trade volumes. The RCA index, as developed by Balassa (1965), has been computed using these datasets, and a comparative analysis has been performed to determine industries where Morocco enjoys a comparative advantage (Balassa, 1965). Our RCA analysis sorted out a categorization of 3 three different set of industries, distinguishing between industries with high RCA values ensuring sustained competitiveness, emerging sectoral potentials with increasing RCA values, and finally industries facing challenges with declining or fluctuating RCA values.

The second part of the thesis employs a robust empirical analysis, employing panel data models and statistical tests, shedding light on the intricate dynamics shaping export competitiveness in Morocco. The amalgamation of these two components contributes to a holistic understanding of the subject, presenting policymakers and researchers with nuanced insights.

In this empirical study, we investigate the determinants of export competitiveness in Moroccan industries. Employing a panel data approach, our research model encompasses key variables, including the Revealed Comparative Advantage (RCA) index as the dependent variable. Initially focusing on the Fixed Effects (FE) regression model, our analysis reveals nuanced relationships between these variables. Subsequently, we integrate insights from the Random Effects (RE) regression model, the Panel Effects (PE) regression model. Results shed light on the intricate dynamics shaping export competitiveness in Morocco. Drawing on existing literature and cross-referencing, this study contributes to the broader understanding of economic growth and trade dynamics, providing valuable insights for policymakers and researchers alike.

Keywords:- *Exports competitiveness, Revealed Comparative Advantage (RCA).*

I. INTRODUCTION

Morocco, strategically positioned at the crossroads of Europe, Africa, and the Middle East, occupies a pivotal role in the dynamic global trade landscape (IMF, 2021; World Bank Group, 2020). Over recent decades, Morocco's export sector has experienced remarkable growth, establishing itself as a linchpin of the nation's economic vitality (El Alaoui, 2015a; Esaa et al., 2019).

Morocco boasts a diverse export portfolio, encompassing an array of products such as agricultural goods, textiles, phosphates, automotive components, and more (World Bank Group, 2020). Nevertheless, the competitiveness of these exports on the global stage hinges upon a complex web of interconnected factors.

Moroccan exports, representing a vital component of the nation's economic fabric, have been the focus of extensive policy efforts and academic scrutiny. While Morocco has embarked on a strategic journey to enhance the competitiveness of its exports, several pressing issues remain to be addressed.

Firstly, the intricate dynamics of global trade pose significant challenges (UNCTAD, 2020). The international trade landscape is marked by ever-shifting consumer preferences, disruptive technological innovations, and geopolitical complexities. Morocco's capacity to adapt to these changes and retain its competitiveness in international markets is central to its economic future.

Secondly, the structure of Moroccan exports is diversified, comprising both traditional sectors, such as agriculture and textiles, and emerging high-value sectors, such as automotive manufacturing and aeronautics (World Bank Group, 2020). This diversification introduces complexities in assessing the competitiveness of various sectors and discerning where improvements are most urgently required.

Thirdly, export competitiveness is contingent on numerous interconnected factors, including infrastructural quality, trade policies, human capital, and private sector engagement (Hausmann et al., 2007). Identifying which of these factors have the most substantial influence on export competitiveness in the Moroccan context is paramount for policymaking.

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The confluence of these challenges underlines the need for a comprehensive analysis of Moroccan export competitiveness. Such an analysis will provide essential insights into the factors that propel or hinder the nation's export competitiveness, ultimately assisting policymakers, businesses, and academic scholars in charting a course for Morocco's economic growth. As a consequence, the following question arises: "***What are the key determinants of competitiveness within various Moroccan export sectors?"***

As Morocco navigates the challenges and opportunities presented by an increasingly competitive and interconnected global trade environment, understanding the determinants of export competitiveness has become of paramount importance (IMF, 2021; UNCTAD, 2020). The competitiveness of Moroccan exports has ascended to the forefront of economic discourse. This concept encapsulates a complex web of factors, encompassing price competitiveness, adherence to international quality standards, market diversification, and the ability to weather global economic fluctuations (Hausmann et al., 2007). In other words, the question is: "***What recommendations can be derived from our research findings to enhance Moroccan export competitiveness?"***

To thoroughly assess and scrutinize the determinants of Moroccan export competitiveness, this study will adhere to a rigorous, evidence-based approach. Integral to this methodology are key competitiveness indexes, particularly the Revealed Comparative Advantage (RCA) (Balassa, 1965). Rooted in meticulous economic data, these indices will serve as principal tools for measurement and assessment, offering a comprehensive exploration of the driving forces and constraints impacting Morocco's export competitiveness.

This paper is organized as follows: the first part introduces a literature review on the export competitiveness, the second part presents a comprehensive analysis of export competitiveness of Moroccan exports. The last part introduces the results, the main conclusions, and the recommendations of econometric research.

II. LITERATURE REVIEW

Over the years, the field of competitiveness has witnessed a proliferation of approaches, enriching its intellectual landscape. The inception of the theory of absolute advantage, dating back to Adam Smith in 1876, marked a significant milestone in understanding why countries engage in international trade. According to this theory, countries should specialize in producing goods and services where they possess a cost advantage relative to other nations. In contrast, they should import items where cost disadvantages prevail, a dynamic believed to enhance a country's overall prosperity. Smith's theory forms a foundational basis for comprehending how nations accrue benefits by balancing imports and exports (P. R. Krugman & Obstfeld, 2003). However, it is not devoid of paradoxes, as it appears to exclude certain countries from the advantages of international trade.

This paradox birthed the comparative advantage theory, primarily attributed to David Ricardo, which necessitates countries to specialize in products where they excel in efficiency compared to others. This theory challenges the assumption that countries should only export goods and services where they have a cost advantage and, conversely, import items where they lack cost efficiency. It is underpinned by the labor theory of value, regarding labor as the sole factor of production (Salvatore, 2013).

Despite its stringent assumptions, the theory of comparative advantage remains a robust framework for understanding trade gains and has significantly influenced the principles of the WTO (Root, 2001). Multiple empirical studies, such as those by Bernhofen and Brown (2004) and Uchida and Cook (2005), provide substantial support for the validity of this theory.

Acknowledging the limitations of the comparative advantage theory, particularly its inability to explain trade direction, economists introduced the Heckscher-Ohlin theory. This theory seeks to elucidate variations in comparative advantage among countries, emphasizing distinctions in capital and labor intensities in the production of goods and services. The theory considers factors of production, specifically endowments or abundance, as primary determinants of comparative advantage (Salvatore, 2013).

Leontief's seminal empirical study in 1953, although initially surprising, provided important insights by challenging expectations. Leontief found that the United States, often perceived as a capital-intensive product exporter and labor-intensive product importer, demonstrated the opposite pattern. These findings were not unique to the United States; other countries, including India, Germany, and Canada, displayed similar paradoxes (Baldwin, 1979). The persistence of such paradoxes led to the exploration of diverse explanations, encompassing disparities in human capital, technology gaps, and the product cycle theory, among others (Bowen, 1985; Kenen, 1965). While these theories provided clarity regarding inter-industry trade, they struggled to explain intra-industry trade (Scott et al., 1975).

The shift toward two-way trade in similar industries since the Second World War rendered the traditional theory of competitive advantage insufficient. It was especially challenged in explaining intra-industry trade (Linder, 1961). In response, the rise of monopolistic competition models during the 1970s placed greater emphasis on economies of scale in the context of imperfect competition (Krugman, 1990). Consequently, while comparative advantage continued to explain inter-industry trade, economies of scale became the dominant driver of intra-industry trade (B. Smit, 2010).

Subsequent to this evolution, both oligopolistic and monopolistic theories sought to elucidate where production should occur. However, they encountered limitations in this regard (A. J. Smit, 2010). Enter Michael Porter, who introduced a groundbreaking theory encompassing location and national competitiveness advantages. Porter's diamond

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model examines four key determinants: demand conditions, company strategy, structure, and rivalry, related and supporting industries, and factor conditions. Each of these components draws from a variety of economic theories, offering a comprehensive framework for assessing a nation's competitive advantage (Olczyk, 2016).

Although Porter's model has faced criticism, it remains essential in analyzing international competitiveness. Scholars, such as Dunning (Dunning, 1993) and Boltho (Boltho, 1996), have augmented the model with additional variables, including pro-competitive policies, foreign direct investment, and government policies. Meanwhile, others have incorporated human variables, like professionals, workers, politicians, bureaucrats, and entrepreneurs (Cho et al., 2008).

Despite these criticisms, Porter's model has underpinned the creation of crucial competitiveness indices, including the IMD's World Competitiveness Yearbook and the World Economic Forum Report's Growth Competitiveness Index (GCI). These indices are designed to capture the multifaceted nature of international competitiveness by measuring various aspects across twelve competitiveness pillars. Nevertheless, international competitiveness remains an open field with numerous unanswered questions (Berger & Bristow, 2009).

At the end, despite the complexity of defining the concept of competitiveness in the global market, our focus shifts towards the theory of comparative advantage, as it represents solid arguments and a clear understanding regardless of our questions related to export competitiveness.

Although, in estimating a country's comparative advantage or disadvantage in various commodities, industries, or sectors, researchers typically employ a standard approach or methodology known as the Revealed Comparative Advantage (RCA) index. The theoretical underpinnings of the RCA index draw from the work of Nawaz and Rukhsana (Ahmad & Kalim Professor, 2013). In line with the Ricardian theory, comparative advantage arises from technological disparities among nations, whereas the Heckscher-Ohlin (H-O) theory posits that cost disparities stem from differences in factor prices across countries, assuming constant technology. Consequently, classical trade theories hinge on pre-trade relative price differentials across nations.

Nevertheless, there are challenges when measuring comparative advantage through the H-O theory, particularly related to the immeasurability of pre-trade relative prices (Balassa, 1989). To address these issues, Balassa (1965) proposed that it may not be necessary to observe all the factors influencing a country's comparative advantage. Instead, the focus should be on examining trade patterns. Hence, data on exports provides a practical and widely accepted measure of revealed comparative advantage. The Balassa Index primarily focuses on assessing a country's comparative advantage rather than identifying its sources. Subsequent studies have further refined the definition of RCA, including James (Donges & R. James, 1977), Vollrath (Vollrath, 1991), and Bowen (Bowen, 1983), among others.

Balassa (Balassa, 1965) introduced a comprehensive measure that has gained widespread acceptance in the literature, known as the RCA Balassa index, expressed as:

$$\boldsymbol{RCA\ (Balassa\ Index)} = (\frac{\boldsymbol{X_{ij}}}{\boldsymbol{X_{in}}})/(\frac{\boldsymbol{X_{wj}}}{\boldsymbol{X_{wn}}})$$

With $\boldsymbol{X_{ij}}$ as a country's exports of a specific commodity, $\boldsymbol{X_{in}}$ as a set of all exported commodities by the country, $\boldsymbol{X_{wj}}$ as the world's exports of the same commodity, and $\boldsymbol{X_{wn}}$ as the world's exports of all commodities.

The RCA Balassa index offers insights into a country's comparative advantage, with values greater than 1 indicating a comparative advantage, and values less than 1 suggesting a comparative disadvantage in a particular commodity or industry.

The Revealed Comparative Advantage (RCA) index proposed by Balassa stands as a pivotal measure in assessing a country's competitiveness in specific industries within the realm of international trade. Balassa's pioneering work introduced this index as a means to gauge a country's comparative advantage in exporting particular goods.

The RCA index quantifies the relative advantage or disadvantage a nation holds in exporting a certain good compared to the world average. Its application has been widely adopted in empirical studies to identify and prioritize industries in which a country maintains a competitive edge, offering insights into specialization patterns and aiding policymakers in making informed decisions concerning trade strategies (Lall, 2000).

Furthermore, Balassa's RCA index has been crucial in shaping trade policies and guiding strategic decisions for countries seeking to capitalize on their comparative advantages. Empirical studies employing the RCA index have provided valuable insights into the dynamics of international trade and patterns of specialization (Braga, 2014). By evaluating a country's export patterns relative to global trade, the RCA index allows for a deeper understanding of a nation's export structure and the industries driving its competitive edge in the international market (P. Krugman, 1989).

The index has been employed not only to identify sectors where a country excels but also to assess the potential for diversification and expansion into new markets (Tambunan, 2008). Its application has extended beyond academic research, being utilized by governments and international organizations to identify priority sectors for investment and policies aimed at fostering economic growth (Wignaraja, 2011).

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III. ANALYSIS OF MOROCCAN EXPORTS COMPETITIVENESS

A. Major Export Industries:

Analyzing the top 10 exports of Morocco between 2002 and 2022 provides valuable insights into the country's evolving export profile. These categories represent significant trade segments for Morocco, and their percentage share of total exports each year reveals the changing dynamics of the Moroccan export market, as shown in the table below:

Table 1: Exports Industries List

Industry ID	Industry Name
In 1	Fertilizers
In 2	Cars, tractors, trucks & parts thereof
In 3	Electrical machinery and electronics
In 4	Non-knitted clothing accessories
In 5	Inorganic chemicals
In 6	Edible fruits, nuts & fruit peels
In 7	Edible vegetables, roots & tubers
In 8	Salt, sulphur, cement, lime, stone, & plaster
In 9	Preparations of fish, crustaceans, & molecules
In 10	Knitted clothing accessories

Table 2: Morocco's Exports by Category between 2002 and 2022 (in Million $)

Year	In 1	In 2	In 3	In 4	In 5	In 6	In 7	In 8	In 9	In 10
2002	373.36	67.83	1,399.76	1,949	474.68	314.20	273.85	587.04	306.31	788.38
2003	380.78	66.51	1,699.61	2,167	520.50	428.91	350.48	584.02	399.27	953.88
2004	453.11	85.02	2,114.35	2,333	727.15	455.13	409.07	714.01	393.28	965.07
2005	489.29	169.40	2,340.92	2,289	904.88	562.07	490.46	873.70	444.12	892.15
2006	598.32	234.02	2,781.07	2,597	942.30	558.75	460.79	949.54	521.83	943.00
2007	904.40	259.45	3,735.50	2,906	1,160.11	647.45	852.94	1,175.44	506.88	1,131.73
2008	1,502.63	321.86	3,578.76	2,882	2,941.31	754.07	808.38	3,083.88	625.78	1,077.93
2009	760.50	410.23	2,742.75	2,453	1,036.06	633.20	836.34	890.00	624.79	903.29
2010	1,667.75	491.53	3,523.20	2,406	1,644.46	641.36	824.20	1,609.57	637.01	988.47
2011	2,529.81	630.01	4,250.15	2,614	2,151.22	812.75	881.06	2,004.39	599.23	1,103.21
2012	2,520.78	1,183.55	3,858.64	2,645	1,759.83	690.14	844.27	2,254.16	682.54	1,188.44
2013	2,128.58	2,169.50	4,079.72	2,773	1,493.05	775.43	1,034.94	1,914.79	736.11	1,193.13
2014	2,293.17	3,573.68	4,676.45	2,872	1,561.00	828.67	1,112.41	1,763.85	760.70	1,293.97
2015	2,199.09	3,912.71	4,268.15	2,509	1,755.87	1,037.22	1,246.25	1,832.31	676.76	1,073.19
2016	2,522.76	4,440.44	4,177.83	2,798	1,234.00	891.55	1,160.57	1,280.23	659.71	1,119.27
2017	3,074.95	4,918.22	4,934.05	3,289	1,205.23	1,171.76	1,320.54	1,500.23	1,308.96	1,189.70
2018	3,518.75	6,564.89	6,013.96	3,276	1,576.39	1,364.81	1,448.75	1,598.78	1,448.29	1,313.07
2019	3,304.82	5,398.27	5,907.79	3,293	1,573.18	1,518.04	1,462.52	1,459.80	1,293.47	1,256.53
2020	3,723.88	4,605.78	5,290.77	2,641	1,310.90	1,674.77	1,450.39	1,347.57	1,292.38	1,027.97
2021	5,801.55	6,606.69	5,654.34	3,703	2,337.54	1,915.47	1,645.70	1,892.40	1,550.59	1,261.96
2022	9,566.87	7,884.78	7,411.69	3,364	2,943.65	2,365.43	2,102.61	1,997.48	1,996.45	1,332.63

Sources: WITS, UNCTAD, World Bank, HCP, Finances

➢ *The Analysis of the Top 10 Exports for Morocco's Economy Recalls for a Period-Specified Analysis, as Follows:*

- **2002-2006:** Non-knitted clothing accessories, electrical machinery, and electronics consistently dominated the export landscape. They collectively accounted for approximately 46-47% of total exports during these years. Fish, crustaceans, and mollusks were also notable during this period, consistently contributing over 5%.
- **2007-2011:** Electrical machinery and electronics maintained their strong presence, surging to 58% of total exports in 2007. This period also saw substantial growth in fertilizers and inorganic chemicals. However, the export portfolio became more diverse, with the top 10 exports contributing to around 40-45% of total exports, indicating a broader export base.
- **2012-2016:** The export composition continued to evolve, with cars, tractors, trucks, and parts thereof emerging as a new leading category by 2016. The top 10 exports maintained their significant share, accounting for approximately 49-50% of total exports. This suggests a growing diversification in Morocco's export structure.
- **2017-2022:** The top 10 exports kept expanding in terms of diversity and value. Fertilizers became a dominant export by 2022, constituting 18.20% of total exports.

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Electrical machinery and electronics, while still essential, took a relatively smaller share. This period saw a shift towards more value-added exports, with salt, sulphur, cement, lime, stone, and plaster contributing significantly.

These shifts in Morocco's export composition can be attributed to several factors, including global demand, evolving industrial capabilities, and government policies. The increasing importance of fertilizers and cars, tractors, trucks, and parts thereof suggest a growing emphasis on manufacturing and agricultural sectors, while non-knitted clothing accessories and electrical machinery and electronics continue to be significant contributors (UNCTAD, 2020).

It's also important to note that the percentage of the top 10 exports relative to total exports fluctuates, highlighting both the concentration and diversification of Morocco's export base over the years. This diversification is positive as it reduces dependency on a limited set of exports, making Morocco's economy more resilient to global economic fluctuations.

In conclusion, the analysis of Morocco's top 10 exports from 2002 to 2022 showcases a dynamic trade landscape. The country has diversified its export portfolio over the years, reducing reliance on a few key categories and exploring new avenues for growth. This diversification reflects a robust strategy for Morocco's long-term economic sustainability, aiming to balance traditional strengths with emerging opportunities in the global market.

B. RCA (Balassa Index) Calculation:

In the following part, we will use the RCA index (Balassa Index) to calculate the competitiveness of Moroccan top 10 exports. Measuring the Revealed Comparative Advantage (RCA) index for Moroccan exports involves a comprehensive assessment of the country's trade dynamics within the global market. The RCA index, a pivotal metric pioneered by Balassa, offers a nuanced understanding of Morocco's comparative strengths in specific industries concerning its global trade activities. To compute this index, meticulous analysis of Moroccan export data alongside global trade figures is undertaken, relying on the following formula:

$$\boldsymbol{RCA\ (Balassa\ Index)} = (\frac{\boldsymbol{X_{ij}}}{\boldsymbol{X_{in}}})/(\frac{\boldsymbol{X_{wj}}}{\boldsymbol{X_{wn}}})$$

With $\boldsymbol{X_{ij}}$ as a country's exports of a specific commodity, $\boldsymbol{X_{in}}$ as a set of all exported commodities by the country, $\boldsymbol{X_{wj}}$ as the world's exports of the same commodity, and $\boldsymbol{X_{wn}}$ as the world's exports of all commodities.

This involves quantifying Morocco's exports of specific goods $\boldsymbol{X_{ij}}$ against its total export $\boldsymbol{X_{in}}$ and comparing this with the world's exports of the same goods $\boldsymbol{X_{wj}}$ to overall global exports $\boldsymbol{X_{wn}}$.

Table 3: Morocco's RCA Calculation

Year	In 1	In 2	In 3	In 4	In 5	In 6	In 7	In 8	In 9	In 10
2002	10,69	0,06	0,83	8,83	5,41	4,74	5,79	14,97	8,91	4,32
2003	8,98	0,05	0,87	8,76	5,18	5,31	6,30	12,99	10,30	4,52
2004	8,55	0,05	0,92	8,79	6,14	5,17	6,87	13,72	9,07	4,25
2005	7,97	0,10	0,91	8,00	6,27	5,52	7,47	14,78	8,77	3,64
2006	9,34	0,12	0,94	8,33	5,60	5,08	6,13	14,60	9,13	3,31
2007	9,92	0,11	1,07	8,25	5,35	4,86	9,20	14,61	7,45	3,28
2008	8,42	0,12	0,93	7,45	10,18	4,72	7,54	25,56	7,47	2,92
2009	7,88	0,23	0,86	7,25	5,15	4,18	8,11	11,52	8,21	2,72
2010	13,57	0,22	0,94	6,81	6,70	4,00	7,14	18,25	8,36	2,74
2011	15,40	0,25	1,07	6,50	7,42	4,54	7,17	19,61	6,73	2,74
2012	16,25	0,47	0,98	6,97	6,75	3,86	7,43	22,35	7,57	3,08
2013	15,35	0,86	1,05	6,99	6,01	4,05	8,15	18,93	7,87	2,95
2014	16,07	1,32	1,11	6,52	6,14	3,92	8,35	16,60	7,93	2,96
2015	14,97	1,44	0,99	5,65	7,23	4,65	8,92	18,09	7,49	2,43
2016	19,76	1,50	0,91	6,02	5,23	3,58	7,43	13,18	6,80	2,42
2017	22,11	1,51	0,89	6,62	4,44	4,26	8,03	13,81	10,78	2,29
2018	22,49	1,88	1,03	6,21	4,84	4,71	8,92	13,05	10,66	2,78
2019	19,99	1,50	0,98	5,94	5,01	4,86	8,34	11,80	9,28	2,23
2020	26,86	1,65	0,95	5,86	4,89	5,74	8,73	13,14	10,27	2,27
2021	28,21	2,03	0,85	7,45	7,10	5,99	9,14	14,55	11,00	2,22
2022	44,07	2,12	0,98	5,94	7,84	6,49	10,24	13,48	12,43	2,06

The RCA values computed for Moroccan industries from 2002 to 2022 offer insightful perspectives into the comparative export strengths of these sectors. Throughout analysis of these RCA values provides the separation between 3 conclusions: industries with high RCA values ensuring sustained competitiveness, emerging sectoral potentials with increased RCA values and industries facing challenges with declining or fluctuating RCA values.

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- *Industries with High RCA Values Ensuring Sustained Competitiveness:*

Industries like Fertilizers (In 1), Edible vegetables, roots & tubers (In 7) and Salt, Sulphur, Cement, Lime, Stone & Plaster (In 8) consistently demonstrate high RCA values, signaling established comparative advantages. For Fertilizers (In 1), the RCA values depict an intriguing pattern over the studied period. Initially starting at 10.69 in 2002, the industry exhibited a gradual decline until 2005, reaching 7.97, which may suggest a relative decrease in the comparative advantage. However, from 2006 onwards, a consistent upward trend in RCA values emerges, showcasing a significant resurgence in competitiveness. The RCA index peaks at an impressive 44.07 in 2022, indicating a remarkable and sustained growth in the comparative advantage of the Fertilizers industry within Moroccan exports. This substantial surge in competitiveness from 2016 onwards emphasizes a transformative period for this sector, potentially indicating focused strategies, technological advancements, or market demands that have propelled Fertilizers to become a prominent contributor to Morocco's export strengths.

For Edible vegetables, roots & tubers (In 7), the RCA values reveal a consistent pattern from 2002 to 2012, fluctuating around 6 to 7, indicating a moderate to relatively strong comparative advantage in this sector. However, a substantial leap occurs from 2013 onwards, where the RCA steadily climbs to 8.15 and continues rising, reaching 10.24 by 2022. This substantial increase signifies a significant improvement in comparative advantage within the global market for this industry.

Moreover, The RCA values for Salt, Sulphur, Cement, Lime, Stone & Plaster (In 8) exhibit significant fluctuations over the years. Initially, from 2002 to 2008, there's a surge in the RCA, peaking at an exceptionally high value of 25.56 in 2008. This peak might indicate a particularly robust comparative advantage during that period. However, post-2008, there's a steady decline in RCA values, indicating a diminishing comparative advantage. Despite the fluctuations, the industry consistently maintained RCA values above 10, demonstrating a considerable advantage throughout.

- *Emerging Sectoral Potentials with Increased RCA Values:*

The recent ascent in RCA values for Cars, Tractors, Trucks, and their parts industry (In 2), Inorganic Chemicals (In 5), Edible fruits, nuts & fruit peels (In 6) and Fish, Crustaceans, & Molecules (In 9), suggests an emerging opportunity for Morocco in these sectors. This upward trend implies a potential shift or a strategic focus that might lead to new export diversification or increased investment, underlining the need for closer scrutiny and policy attention.

The RCA values for the Cars, Tractors, Trucks, and their parts industry (In 2) portray a clear evolution in comparative advantage within Moroccan exports. Starting insignificantly low at 0.06 in 2002, the industry maintained minimal comparative advantage until around 2008. From 2009 onwards, there is a marked uptick in RCA values, indicating an increasing relative advantage in exporting this category. The industry's comparative advantage consistently grew, surpassing the value of 2 by 2022. This escalating trend signifies a notable progression, highlighting the sector's strengthening competitiveness over the years. The remarkable growth post-2009 signifies substantial improvements in this industry's export capabilities.

For Inorganic Chemicals (In 5) the RCA trend reveals a diverse landscape in Morocco's comparative advantage. From 2002 to 2006, the values fluctuate between 5.41 and 6.27, reflecting a relatively stable competitive position. However, a notable spike in 2008 sees the RCA soaring to 10.18, suggesting a substantial comparative advantage in that specific year. Subsequently, from 2009 to 2019, the RCA values hover between 4.44 and 7.23, depicting moderate fluctuations and indicating varying degrees of competitive advantage. An upward trend from 2020 to 2022 demonstrates a resurgence in the RCA, reaching values of 7.1 and 7.84, signifying an improved comparative advantage.

Additionally, the RCA for Edible fruits, nuts & fruit peels (In 6) indicate a varied landscape in Morocco's comparative advantage. From 2002 to 2012, the RCA values fluctuate between 3.86 and 5.52, depicting a moderately competitive position. A noticeable drop in 2012 suggests a potential loss of comparative advantage, which stabilizes around 4.0 to 4.71 from 2013 to 2019, showcasing a relatively consistent position. However, a significant upsurge occurs from 2020 to 2022, where the RCA escalates to 5.74, 5.99, and 6.49, indicating an enhanced competitive edge within the global market.

Continuing with the emerging industries, The RCA values for Fish, Crustaceans, & Molecules (In 9) portray fluctuations, showcasing a less consistent comparative advantage over the years. From 2002 to 2011, the industry experienced variations in RCA values, indicating a less stable comparative advantage. However, from 2012 onwards, the RCA values show a more pronounced upward trend, reaching the highest value of 12.43 in 2022, which suggests a notable improvement in the industry's comparative advantage.

- *Industries Facing Challenges with Declining or Fluctuating RCA Values:*

Industries like Electrical Machinery and Electronics (In 3), Non-Knitted Clothing Accessories (In 4), Knitted Clothing Accessories (In 10), exhibiting declining or fluctuating RCA values signal potential challenges. A detailed examination of these industries is crucial to diagnose and address underlying factors.

The RCA values for Electrical Machinery and Electronics (In 3) depict fluctuations in the comparative advantage of Moroccan exports. Initially, the industry showed a relatively stable but moderate RCA range from 2002 to 2008, fluctuating between 0.83 and 1.07, indicating a consistent but moderate advantage. From 2009, there's a noticeable decline, hitting its lowest point at 0.86 in 2009 before gradually recovering. Despite this recovery, the industry did not reach the earlier RCA levels until 2013. The subsequent years demonstrate inconsistent and fluctuating

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RCA values, hovering around 1. This fluctuating trend hints at periods of slightly increased and decreased competitiveness in Moroccan exports within the Electrical Machinery and Electronics sector.

For Non-Knitted Clothing Accessories (In 4), the RCA values showcase variations in the comparative advantage of Moroccan exports. The trend indicates a relatively high level of comparative advantage from 2002 to 2006, fluctuating between 8.83 and 8.33, reflecting a robust competitive position. However, from 2007 to 2012, there's a declining trend, gradually diminishing to around 6.5 by 2011, signifying a reduced comparative advantage. This decline appears to stabilize from 2012 to 2016, with values oscillating between 6.52 and 6.02, indicating a moderate comparative advantage. Yet, there's another dip observed from 2017 to 2019, indicating a decrease in comparative advantage. Interestingly, the RCA surged back to 7.45 in 2021, showing a renewed advantage before returning to the lower 5.94 level in 2022. These fluctuations suggest a dynamic scenario where Moroccan exports within Non-Knitted Clothing Accessories experienced periods of both strength and vulnerability.

Moreover, Knitted Clothing Accessories (In 10) displays a relatively stable but gradually decreasing RCA trend over the years. Beginning at 4.32 in 2002, the RCA values demonstrate a consistent decline, with minor fluctuations, reaching 2.06 in 2022.

IV. ESTIMATED MODELS, RESULTS AND DISCUSSION

A. Estimation of Regression Models

In the empirical analysis, the focus shifts towards understanding the determinants of competitiveness within the identified industries from 2002 to 2022. The employed approach will leverage a panel data regression model, with relevant variables such as exchange rate, customs tariff, global demand, and the capital investment. The model includes the RCA index of different industries as the dependent variable and the mentioned relevant variables as independent variables. The regression model aims to analyze how these factors affect the comparative advantage of different export industries in Morocco over time. Using panel data regression allows for controlling unobserved heterogeneity across industries and years, enabling a robust analysis of the determinants influencing the comparative advantage of various export industries in Morocco.

The theoretical foundation of our model lies in the realm of international trade theory, specifically focusing on the concept of comparative advantage as initially developed by classical economists and further refined by modern theories of international trade. The theoretical basis for our model draws heavily from the works of classical economists like David Ricardo, who introduced the idea of comparative advantage.

Ricardo's theory posits that countries can benefit from trade by specializing in the production of goods they can produce more efficiently (or at a lower opportunity cost) than other countries. This specialization allows for increased efficiency, leading to higher overall production and welfare gains for all trading partners. The underlying principle is that even if a country is less efficient in producing all goods compared to its trading partners, it can still benefit from trade by focusing on goods where its relative efficiency is higher.

Our econometric model aims to empirically explore the determinants of comparative advantage using the Revealed Comparative Advantage (RCA) index as the dependent variable. Building upon this theoretical groundwork, the model includes variables like Exchange Rate, Global Demand, Capital Investment, and Customs Tariff as determinants that might influence a country's comparative advantage in specific industries.

The statement of our econometric model can be summarized as follows:

$$\boldsymbol{RCA_{it} = \beta_0 + \beta_1\, Exchange\ Rate_{it} + \beta_2\, Global\ Demand_{it} + \beta_3\, Capital\ Investment_{it} + \beta_4\, Custom\ Tariffs_{it} + \mu_{it}}$$

Where:

$\boldsymbol{RCA_{it}}$ represents the Revealed Comparative Advantage index of Industry $\boldsymbol{i}$ at time $\boldsymbol{t}$.

$\boldsymbol{Exchange\ Rate_{it}}$ signifies the exchange rate of MAD-USD at time $\boldsymbol{t}$.

$\boldsymbol{Global\ Demand_{it}}$ denotes the world's demand for each specific industry $\boldsymbol{i}$ at time $\boldsymbol{t}$.

$\boldsymbol{Capital\ Investment_{it}}$ reflects the investment capacity of Morocco as a percentage of its GDP at time $\boldsymbol{t}$.

$\boldsymbol{Custom\ Tariffs_{it}}$ represents the customs tariff imposed by foreign markets on each industry's products $\boldsymbol{i}$ at time $\boldsymbol{t}$.

$\boldsymbol{\mu_{it}}$ accounts for unobservable factors impacting the RCA index but not explicitly included in the model.

$\boldsymbol{\beta_0}$ is the intercept or the constant term.

And $\boldsymbol{\beta_1 - \beta_4}$ are the coefficients or slopes associated with each independent variable.

This model aims to empirically uncover the factors influencing the comparative advantage of various export industries in Morocco, shedding light on how economic determinants affect an industry's competitiveness in the global market.

Regarding the type of variables used in the model, we have a combination of variables. The dependent variable, the RCA index, is a time-varying variable representing the comparative advantage of various industries in Morocco. Independent variables like Exchange Rate, Global Demand, Capital Investment, and Customs Tariff also vary over time and across different industries.

The analysis in this study will employ Fixed Effects (FE), Random Effects (RE) models, and Panel Effects (PE) models. The choice to incorporate these models stems from the recognition that each model addresses distinct aspects of

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panel data dynamics. The FE model accommodates time-invariant individual heterogeneity by incorporating individual-specific dummies, effectively isolating within-entity variations. On the other hand, the RE model allows for unobserved individual effects to be correlated with the independent variables, offering a broader perspective by considering both within- and between-entity variations.

This dual-model strategy is designed to enhance the robustness and comprehensiveness of the analysis, capturing the complexity inherent in the panel dataset. It facilitates a more nuanced understanding of the factors influencing export competitiveness in Moroccan industries, providing a comprehensive view of both time-varying changes within entities and constant differences across entities. This approach aligns with best practices in panel data analysis and contributes to the reliability and depth of the study's findings.

V. RESULTS OF REGRESSION

Table 4: Results of Regression Models

RCA	FE Model			RE Model			PE Model		
	Coefficient	t	P>|t|	Coefficient	z	P>|z|	Coefficient	t	P>|t|
Exchange Rate	.8225851	2.36	0.019	.8992425	2.56	0.010	1.100202	2.16	0.032
Global Demand	-2.11e-13	-0.19	0.850	-1.47e-12	-1.48	0.138	-5.64e-12	-10.90	0.000
Capital Investment	.2761714	2.24	0.026	.2972351	2.43	0.015	.2925004	1.76	0.081
Customs Tariffs	.0395819	0.37	0.709	-.0254015	-0.25	0.799	-.4165709	-6.49	0.000
_cons	-8.899082	-1.40	0.163	-9.191806	-1.43	0.153	-5.96502	-0.69	0.494

The results of the Fixed Effects (FE) Model offer insights into the relationship between the explanatory variables and Relative Competitiveness Advantage (RCA) in Moroccan industries.

Starting with the coefficient for Exchange Rate, the positive value of 0.8225851 suggests that an increase in the exchange rate is associated with higher RCA values, indicating improved competitiveness. This result is statistically significant (t=2.36, p=0.019), implying that fluctuations in the exchange rate play a role in shaping export competitiveness.

Conversely, the coefficient for Global Demand is close to zero (-2.11e-13), indicating that changes in global demand have negligible effects on RCA. This result is not statistically significant (t=-0.19, p=0.850), suggesting that variations in global demand do not significantly impact Moroccan export competitiveness within the context of the FE model.

Moving to Capital Investment, the positive coefficient of 0.2761714 indicates that higher levels of capital investment are associated with increased RCA values, signifying enhanced export competitiveness. This result is statistically significant (t=2.24, p=0.026), highlighting the importance of investment in infrastructure and technology for improving export capacity.

Regarding Custom Tariffs, the coefficient of 0.0395819 suggests a positive but weak association with RCA, indicating that higher tariff rates may slightly improve export competitiveness, although the effect is not statistically significant (t=0.37, p=0.709).

The constant term (_cons) of -8.899082 represents the intercept of the model, indicating the baseline level of RCA when all other variables are zero. However, this coefficient is not statistically significant (t=-1.40, p=0.163), suggesting that other unobserved factors may influence export competitiveness.

In conclusion, the FE model results suggest that exchange rate fluctuations and capital investment play significant roles in shaping Moroccan export competitiveness, while global demand and custom tariffs have limited effects within this modeling framework. These findings contribute to a deeper understanding of the determinants of export competitiveness and provide valuable insights for policymakers and industry stakeholders.

Secondly, for the results of the Random Effects (RE) model, and Beginning with the coefficient for Exchange Rate, the positive value of 0.8992425 suggests that an increase in the exchange rate is associated with higher RCA values, indicating improved competitiveness. This result is statistically significant (z=2.56, p=0.010), implying that fluctuations in the exchange rate play a role in shaping export competitiveness within the RE model framework.

Regarding Global Demand, the coefficient is approximately zero (-1.47e-12), suggesting that changes in global demand have negligible effects on RCA. This result is not statistically significant (z=-1.48, p=0.138), indicating that variations in global demand do not significantly impact Moroccan export competitiveness within the RE model.

Moving to Capital Investment, the positive coefficient of 0.2972351 indicates that higher levels of capital investment are associated with increased RCA values, signifying enhanced export competitiveness. This result is statistically significant (z=2.43, p=0.015), highlighting the importance of investment in infrastructure and technology for improving export capacity within the RE model.

Regarding Customs Tariffs, the negative coefficient of -0.0254015 suggests a weak negative association with RCA, indicating that higher tariff rates may slightly decrease export competitiveness, although the effect is not statistically

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significant (z=-0.25, p=0.799).

The constant term (_cons) of -9.191806 represents the intercept of the model, indicating the baseline level of RCA when all other variables are zero. However, this coefficient is not statistically significant (z=-1.43, p=0.153), suggesting that other unobserved factors may influence export competitiveness within the RE model.

In conclusion, the RE model results suggest that exchange rate fluctuations and capital investment play significant roles in shaping Moroccan export competitiveness, while global demand and customs tariffs have limited effects within this modeling framework. These findings contribute to a deeper understanding of the determinants of export competitiveness and provide valuable insights for policymakers and industry stakeholders.

Finally, for he results of the Panel Data (PE) model, and Starting with the coefficient for Exchange Rate, the positive value of 1.100202 indicates that an increase in the exchange rate is associated with higher RCA values, suggesting improved competitiveness. This result is statistically significant (t=2.16, p=0.032), implying that fluctuations in the exchange rate play a role in shaping export competitiveness within the PE model framework.

Regarding Global Demand, the coefficient is approximately -5.64e-12, suggesting that changes in global demand have a significant negative effect on RCA. This result is highly statistically significant (t=-10.90, p<0.001), indicating that variations in global demand exert a substantial impact on Moroccan export competitiveness within the PE model.

Moving to Capital Investment, the positive coefficient of 0.2925004 suggests that higher levels of capital investment are associated with increased RCA values, indicating enhanced export competitiveness. However, this result is marginally statistically significant (t=1.76, p=0.081), suggesting that the relationship between capital investment and export competitiveness within the PE model may warrant further investigation.

Regarding Customs Tariffs, the negative coefficient of -0.4165709 indicates that higher tariff rates are associated with lower RCA values, signifying decreased export competitiveness. This result is highly statistically significant (t=-6.49, p<0.001), highlighting the importance of tariff reduction for improving export capacity within the PE model.

The constant term (_cons) of -5.96502 represents the intercept of the model, indicating the baseline level of RCA when all other variables are zero. However, this coefficient is not statistically significant (t=-0.69, p=0.494), suggesting that other unobserved factors may influence export competitiveness within the PE model.

In conclusion, the PE model results suggest that exchange rate fluctuations, global demand, and customs tariffs significantly influence Moroccan export competitiveness. While capital investment also shows a positive association with RCA, the relationship is less robust within this modeling framework. These findings contribute to a deeper understanding of the determinants of export competitiveness and provide valuable insights for policymakers and industry stakeholders.

➢ *Choice of Model*

Table 5: Hausman Endogeneity Test

	(b) fe_results	(B) re_results	(b-B) Difference	sqrt(diag (V_b-V_B)) Std. err.
Exchange Rate	.8225851	.8992425	-.0766574	-
Global Demand	-2.11e-13	-1.47e-14	1.26e-12	5.12e-13
Capital Investment	.2761714	.2972351	-.0210637	.0172788
Custom Tariffs	.0395819	-.0254015	.0649833	.035721
Test of H0: Difference in coefficient not systematic				
Chi2(3) = (b-B)`[(V_b - V_b)^(-1)](b-B) = 150.89				
Prob > chi2 = 0.000 (V_b – V_B is not positive definite)				

The Hausman Endogeneity Test assesses whether the coefficients estimated in the Fixed Effects (FE) and Random Effects (RE) models are consistent and unbiased. The test compares the coefficients obtained from the FE model (fe_results) with those from the RE model (re_results), examining whether the difference between them is systematic.

In this test, the coefficients for each variable in both models are presented. The "Difference" column shows the variance between the coefficients obtained from the FE and RE models. A positive difference suggests that the coefficients in the RE model are larger than those in the FE model, while a negative difference indicates the opposite.

For the Exchange Rate variable, the difference between the FE and RE coefficients is negative (-0.0766574). This suggests that the coefficient for the Exchange Rate is smaller in the FE model compared to the RE model. Similarly, for the Capital Investment variable, the difference is negative (-0.0210637), indicating a smaller coefficient in the FE model. Conversely, for the Global Demand variable, the difference is positive (1.26e-12), suggesting a larger coefficient in the FE model compared to the RE model. Lastly, for the Customs

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Tariffs variable, the difference is positive (0.0649833), indicating a larger coefficient in the FE model.

The test statistic (Chi2) is calculated as the squared difference in coefficients multiplied by the inverse of the variance-covariance matrix of the differences. In this case, the Chi2 value is 150.89, with a probability greater than 0.05, indicating that the null hypothesis cannot be rejected. Therefore, we fail to reject the hypothesis that the difference in coefficients is not systematic, suggesting that the FE and RE models do not exhibit endogeneity. This aligns with the theoretical foundation of the FE model, making it a preferred choice for our study on export competitiveness in Moroccan industries.

➢ *Regression Estimation by Industry*

Table 6: Regression Estimation – Coefficients

RCA	Coefficients									
	In 1	In 2	In 3	In 4	In 5	In 6	In 7	In 8	In 9	In 10
Exchange Rate	5.283266	.2819014	-.040079	-.4492477	-.4144611	-.4093236	-.3013001	-1.290473	-.0560494	-.1284485
Global Demand	3.33e-10	1.87e-12	3.88e-14	-1.10e-11	3.58e-11	1.60e-11	5.66e-11	1.75e-10	8.34e-11	-7.86e-12
Capital Investment	-1.145495	-.1173183	-.0002873	-.1454805	.1648031	-.2924583	-.0966995	.5772274	-.4541106	-.0742899
Customs Tariffs	-1.79343	-.1525072	-.0044924	.185994	1.578696	.0275554	.0110527	4.320125	.0327383	.1147843
_cons	-9.443192	.9343244	1.262156	16.11372	-5.476181	15.46874	10.07867	-4.388408	19.0477	6.88939

Table 7: Regression Estimation – Significance Statement

RCA	P>|t|									
	In 1	In 2	In 3	In 4	In 5	In 6	In 7	In 8	In 9	In 10
Exchange Rate	0.008	0.021	0.207	0.070	0.313	0.173	0.386	0.257	0.906	0.312
Global Demand	0.001	0.000	0.475	0.221	0.036	0.037	0.005	0.138	0.004	0.017
Capital Investment	0.213	0.040	0.980	0.130	0.424	0.010	0.463	0.300	0.020	0.145
Customs Tariffs	0.459	0.012	0.922	0.301	0.018	0.752	0.916	0.041	0.518	0.180
_cons	0.820	0.725	0.044	0.002	0.561	0.007	0.120	0.853	0.033	0.012

A. Fertilizers (In 1):

Firstly, concerning the Exchange Rate variable, the coefficient of 5.283266 demonstrates a statistically significant positive association with export competitiveness at the 0.05 significance level ($t = 3.02$, $p < 0.05$). This implies that fluctuations in the exchange rate significantly impact the sector's export competitiveness.

Similarly, Global Demand exhibits a significant positive relationship with export competitiveness, as indicated by its coefficient of 3.33e-10 ($t = 3.94$, $p < 0.01$). This underscores the substantial influence of international demand dynamics on the sector's export performance, highlighting the importance of market intelligence and adaptability to shifting global demand patterns.

In contrast, Capital Investment fails to demonstrate statistical significance in its impact on export competitiveness (coefficient = -1.145495, $t = -1.30$, $p > 0.05$). This suggests that, within the confines of the model, capital investment may not be a significant determinant of the Fertilizers industry's export competitiveness.

Similarly, Customs Tariffs do not exhibit a statistically significant relationship with export competitiveness (coefficient = -1.79343, $t = -0.76$, $p > 0.05$). This implies that variations in customs tariffs may not exert a discernible impact on the sector's export performance.

B. Cars, Tractors, Trucks & Parts Thereof. (In2):

Beginning with the Exchange Rate variable, the coefficient of 0.2819014 indicates a statistically significant positive relationship with export competitiveness ($t = 2.55$, $p < 0.05$). This suggests that fluctuations in the exchange rate significantly impact the sector's export performance.

Similarly, Global Demand exhibits a significant positive relationship with export competitiveness, as evidenced by its coefficient of 1.87e-12 ($t = 4.56$, $p < 0.001$). This underscores the substantial influence of international demand dynamics on the sector's export performance.

In contrast, Capital Investment demonstrates a statistically significant negative association with export competitiveness (coefficient = -0.1173183, $t = -2.24$, $p < 0.05$). This suggests that higher levels of capital investment may not necessarily translate into improved export performance within the automotive sector, prompting further investigation into the specific mechanisms through which investment decisions impact export outcomes.

Similarly, Customs Tariffs exhibit a statistically significant negative relationship with export competitiveness (coefficient = -0.1525072, $t = -2.83$, $p < 0.05$). This implies that higher tariffs may act as barriers to export growth within the automotive sector.

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C. Electrical Machinery and Electronics (In 3):

Starting with the Exchange Rate variable, the coefficient of -0.040079 does not demonstrate statistical significance (t = -1.32, p > 0.05), indicating that fluctuations in the exchange rate may not significantly impact export competitiveness within the Electrical Machinery and Electronics industry.

Similarly, Global Demand exhibits a coefficient of 3.88e-14, which is not statistically significant (t = 0.73, p > 0.05), suggesting that variations in global demand may not have a significant impact on export competitiveness within the Electrical Machinery and Electronics sector.

In terms of Capital Investment, the coefficient of -0.0002873 is statistically insignificant (t = -0.03, p > 0.05), indicating that levels of capital investment may not have a significant association with export competitiveness within the Electrical Machinery and Electronics sector. This suggests that other factors, such as technological innovation, market access, and supply chain efficiency, may play a more prominent role in determining export outcomes in this industry.

Similarly, Customs Tariffs exhibit a non-significant coefficient of -0.0044924 (t = -0.10, p > 0.05), implying that tariff levels may not be a significant determinant of export competitiveness within the Electrical Machinery and Electronics sector.

D. Non-Knitted Clothing Accessories (In 4):

Starting with the Exchange Rate variable, the coefficient of -0.4492477 does not demonstrate statistical significance (t = -1.94, p > 0.05), suggesting that fluctuations in the exchange rate may not significantly impact export competitiveness within the Non-knitted Clothing Accessories industry. However, the relatively low p-value (0.070) indicates a marginal level of significance, warranting further investigation into the potential effects of exchange rate fluctuations on export performance in this sector.

Similarly, Global Demand exhibits a coefficient of -1.10e-11, which is not statistically significant (t = -1.27, p > 0.05), indicating that variations in global demand may not have a significant impact on export competitiveness within the Non-knitted Clothing Accessories industry.

In terms of Capital Investment, the coefficient of -0.1454805 is not statistically significant (t = -1.60, p > 0.05), suggesting that levels of capital investment may not have a significant association with export competitiveness within the Non-knitted Clothing Accessories sector.

Similarly, Customs Tariffs exhibit a coefficient of 0.185994, which is not statistically significant (t = 1.07, p > 0.05), suggesting that tariff levels may not be a significant determinant of export competitiveness within the Non-knitted Clothing Accessories sector.

E. Inorganic Chemicals (In 5):

Starting with the Exchange Rate variable, the coefficient of -0.4144611 indicates a negative relationship with export competitiveness, although it is not statistically significant (t = -1.04, p > 0.05). This suggests that fluctuations in the exchange rate may not significantly impact export competitiveness within the Inorganic Chemicals industry. However, the relatively low p-value (0.313) suggests marginal significance, warranting further investigation into the potential effects of exchange rate fluctuations on export performance in this sector.

Global Demand exhibits a statistically significant coefficient of 3.58e-11 (t = 2.29, p < 0.05), indicating a positive relationship with export competitiveness within the Inorganic Chemicals industry. This suggests that variations in global demand may have a significant impact on export performance in this sector.

In terms of Capital Investment, the coefficient of 0.1648031 is not statistically significant (t = 0.82, p > 0.05), suggesting that levels of capital investment may not have a significant association with export competitiveness within the Inorganic Chemicals sector. This implies that factors other than capital investment, such as technological innovation, production efficiency, and product quality, may play a more crucial role in determining export performance in this industry.

Customs Tariffs exhibit a statistically significant coefficient of 1.578696 (t = 2.63, p < 0.05), indicating a positive relationship with export competitiveness within the Inorganic Chemicals industry.

F. Edible Fruits, Nuts & Fruit Peels (In 6):

Starting with the Exchange Rate variable, the coefficient of -0.4093236 suggests a negative relationship with export competitiveness, although it is not statistically significant (t = -1.43, p > 0.05). This implies that fluctuations in the exchange rate may not significantly impact export competitiveness within the Edible fruits, nuts & fruit peels industry. However, the relatively low p-value (0.173) indicates marginal significance, warranting further investigation into the potential effects of exchange rate fluctuations on export performance in this sector.

Global Demand exhibits a statistically significant coefficient of 1.60e-11 (t = 2.28, p < 0.05), indicating a positive relationship with export competitiveness within the Edible fruits, nuts & fruit peels industry. This suggests that variations in global demand may have a significant impact on export performance in this sector.

In terms of Capital Investment, the coefficient of -0.2924583 is statistically significant (t = -2.91, p < 0.05), indicating a negative relationship with export competitiveness within the Edible fruits, nuts & fruit peels sector. This implies that higher levels of capital investment may have an adverse effect on export performance in this industry.

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Customs Tariffs exhibit a coefficient of 0.0275554, which is not statistically significant (t = 0.32, p > 0.05), suggesting that tariff levels may not have a significant association with export competitiveness within the Edible fruits, nuts & fruit peels industry.

G. Edible Vegetables, Roots & Tubers (In 7):

The coefficient (-0.3013001) suggests a negative association between the exchange rate and export competitiveness in the Edible vegetables, roots & tubers industry. However, the coefficient lacks statistical significance (t = -0.89, p > 0.05), indicating that fluctuations in the exchange rate may not exert a significant impact on export performance within this sector. The wide confidence interval [-1.017239, 0.4146386] further underscores the absence of statistical significance, suggesting caution in attributing substantive meaning to the observed coefficient.

Conversely, the coefficient for global demand (5.66e-11) demonstrates statistical significance (t = 3.30, p < 0.05), implying a positive correlation between global demand and export competitiveness within the Edible vegetables, roots & tubers industry. This finding suggests that variations in global demand exert a considerable influence on export performance in this sector.

The coefficient for capital investment (-0.0966995) lacks statistical significance (t = -0.75, p > 0.05), suggesting that capital investment may not significantly impact export competitiveness in the Edible vegetables, roots & tubers industry. The wide confidence interval [-0.3694415, 0.1760425] reinforces the absence of statistical significance, indicating that factors beyond capital investment may hold greater sway over export performance within this sector.

Similarly, the coefficient for customs tariffs (0.0110527) fails to attain statistical significance (t = 0.11, p > 0.05), indicating that customs tariffs may not exert a discernible influence on export competitiveness within the Edible vegetables, roots & tubers industry.

H. Salt, Sulphur, Cement, Lime, Stone & Plaster (In 8):

The coefficient estimate for the exchange rate variable (-1.290473) exhibits a negative relationship with export competitiveness in the Salt, sulphur, cement, lime, stone & plaster industry. However, this relationship fails to achieve statistical significance at conventional levels (t = -1.18, p > 0.05), indicating limited empirical support for the hypothesis that fluctuations in the exchange rate significantly impact export performance within this sector.

Contrary to expectations, the coefficient estimate for global demand (1.75e-10) suggests a positive association with export competitiveness in the Salt, sulphur, cement, lime, stone & plaster industry. Nevertheless, the statistical significance of this relationship remains elusive (t = 1.56, p > 0.05), indicating insufficient evidence to conclude a significant impact of global demand on export performance within the sector.

The coefficient estimate for capital investment (0.5772274) fails to achieve statistical significance (t = 1.07, p > 0.05), suggesting that variations in capital investment may not exert a statistically significant influence on export competitiveness within the Salt, sulphur, cement, lime, stone & plaster industry.

In contrast, the coefficient estimate for customs tariffs (4.320125) demonstrates statistical significance (t = 2.23, p < 0.05), indicating a positive relationship between customs tariffs and export competitiveness in the Salt, sulphur, cement, lime, stone & plaster industry. The statistically significant coefficient suggests that higher customs tariffs may correspond to increased export performance within the sector.

I. Preparation of Fish, Crustaceans & Molecules (In 9):

The coefficient estimate for the exchange rate variable (-0.0560494) suggests a negative association with export competitiveness, indicating that fluctuations in the exchange rate may potentially impede export performance within the industry. However, this relationship lacks statistical significance (t = -0.12, p > 0.05), underscoring the ambiguity surrounding the observed effect. The wide confidence interval further accentuates the uncertainty associated with the estimated coefficient.

Additionally, the coefficient estimates for global demand (8.34e-11) reveals a positive correlation with export competitiveness within the Preparation of fish, crustaceans, & molecules industry. This relationship is statistically significant (t = 3.38, p < 0.05), suggesting that heightened levels of global demand coincide with enhanced export performance in the sector.

Contrary, the coefficient estimate for capital investment (-0.4541106) demonstrates a negative relationship with export competitiveness, implying that increased levels of capital investment may potentially hinder export performance within the industry. This relationship achieves statistical significance (t = -2.59, p < 0.05), signifying that fluctuations in capital investment significantly influence export dynamics within the sector.

Finally, the coefficient estimate for customs tariffs (0.0327383) suggests a positive association with export competitiveness, albeit failing to attain statistical significance (t = 0.66, p > 0.05). This implies that variations in customs tariffs may not exert a substantial impact on export performance within the Preparation of fish, crustaceans, & molecules industry.

J. Knitted Clothing Accessories (In 10):

The coefficient estimate for the exchange rate variable (-0.1284485) suggests a negative relationship with export competitiveness in the Knitted clothing accessories sector. However, this relationship lacks statistical significance at the conventional levels (t = -1.04, p > 0.05).

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Similarly, the coefficient estimate for global demand (-7.86e-12) demonstrates a negative correlation with export competitiveness, indicating that a decrease in global demand may potentially impede export performance within the Knitted clothing accessories industry. Importantly, this relationship achieves statistical significance ($t = -2.66$, $p < 0.05$), enhancing confidence in the observed effect.

Additionally, the coefficient estimate for capital investment (-0.0742899) suggests a negative influence on export competitiveness, although it fails to attain statistical significance ($t = -1.53$, $p > 0.05$). Despite the absence of statistical significance, the estimated effect warrants attention, as it implies a potential dampening effect of increased capital investment on export performance within the sector.

The coefficient estimate for customs tariffs (0.1147843) indicates a positive association with export competitiveness in the Knitted clothing accessories industry. However, this relationship does not achieve statistical significance ($t = 1.40$, $p > 0.05$), implying that variations in customs tariffs may not exert a substantial impact on export performance within the sector.

VI. CONCLUSION

In conclusion, the estimation results presented in the first part of Chapter 5 shed light on the competitiveness of Moroccan exports and the factors influencing it. Beginning with the descriptive statistics, we observe a moderate level of Relative Comparative Advantage (RCA) across industries, with notable heterogeneity suggesting varying degrees of advantage within sectors. The stability of the exchange rate and consistent global demand indicate a favorable environment for exports, while industry-specific variables exhibit diverse performance and competitiveness levels.

The Fixed Effects (FE) Regression Model and the Random Effects (RE) regression model highlight the significant positive impact of exchange rate and capital investment on RCA, underscoring their pivotal roles in driving export competitiveness.

Indeed, Morocco benefits from a favorable exchange rate because of its strategy of stabilizing the exchange rates. When it comes to the exchange rates volatility in Morocco, through the years, the country succeeded to maintain a low exchange rates volatility, which provoked their stability, and by consequent maintained export competitiveness. A higher exchange volatility leads to uncertainty, reducing exporters' ability to compete in international markets, while while stable exchange rates play a crucial role in maintaining the competitiveness of exports in developing countries (Bahami-Oksooee & Hegerty, 2010; Bahami-Oskooee & Ratha, 2007).

Additionally, increased capital investment allows Moroccan exporters to diversify and strengthen the presence of their exports in the global market. This conclusion was also stated in other papers, as improved domestic investment and foreign direct investment contribute positively to export competitiveness. Increased investment leads to improved production capacity and efficiency, enhancing firms' ability to compete globally(Hsiao & Hsiao, 2006; Moreno-Bird & Lozano, 2008).

However, Global Demand and Custom Tariffs showed an insignificant relationship with the competitiveness of Moroccan exports, which see s to be logical, as the Global demand depends on other factors like the quality and the prices of Moroccan exports. Moreover, the increase of custom tariffs influences negatively the competitiveness of Moroccan exports, as it represents one of the barriers to exportations.

When it comes to the Panel Effects (PE) regression model, it shows that all the dependent variables experienced a positive relationship with the RCA of Moroccan exports, stating a less robust association between the dependent variables and the independent variable.

Overall, the findings suggest that the exchange rates and capital investment play a crucial role in determining export competitiveness in Moroccan industries, while global demand and custom tariffs may have less pronounced effects. The significance of addressing unobserved heterogeneity and cross-sectional dependencies underscores the importance of employing appropriate econometric techniques in empirical analyses. These insights are vital for policymakers and industry stakeholders seeking to enhance Morocco's export competitiveness and foster economic growth and development.

In summary, policymakers and decision makers may address actionable steps to improve the competitiveness of Moroccan exports by, first, encouraging investment within the country, so that Moroccan exports can gain more power into the global market. Additionally, the government may elaborate encouraging strategies to make the exchange rates favorable to the Moroccan exports, such as, implementing favorable monetary strategies. For the custom tariffs and the global demand, they play an insignificant role, because they depend on external factors, such as the measures of free trade agreements and the situation of global markets.

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