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# القدرة التنافسية لصادرات الجبن المصرية فى أسواقها الخارجية

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**المستخلص**

استهدفت الدراسة التعرف على الوضع الراهن للجبن المصرية، بالإضافة إلى القدرة التنافسية للصادرات المصرية من الجبن في أهم الأسواق الاستيرادية لها من خلال تقدير بعض المؤشرات كالنصيب السوقي والسعر النسبي ومحددات الطلب على الجبن المصرية فى الأسواق الخارجية. وقد توصلت النتائج بأن قيمة الصادرات المصرية من الجبن تقدر بنحو 199.171 مليون دولار تمثل حوالي 77.21% من إجمالى قيمة منتجات الألبان المصرية والبالغة نحو 257.9 مليون دولار كمتوسط للفترة (2019-2023). كما تقدر نسبة الإكتفاء الذاتى من الجبن المصرية بنحو 107.8%. كما تشير النتائج بأن الأردن والسعودية وليبيا واليمن ولبنان تعتبر من أهم الدول المستوردة للجبن المصرية إذ تمثل صادرات مصر إليهم من الجبن نحو 17.89%، 15.76%، 14.59% ، 8.64%، 6.81% من إجمالى صادرات مصر والبالغة نحو 40.11 ألف طن كمتوسط للفترة(2019-2023). وبتقدير معامل عدم الاستقرار تبين أن قيمة الصادرات من الجبن الي أهم الاسواق المستوردة لها كانت تتسم بالاستقرار النسبي كمتوسط والتي قدرت بنحو 0.06 خلال فترة الدراسة، يليها سعر تصدير الجبن و الذي يتسم باستقرار نسبي و لكن بدرجة اقل عنه في قيمه الصادرات منه، كما يوجد استقرار نسبي في كمية الجبن المصري و لكن بدرجة اقل من القيمة وسعر تصدير الجبن خلال فترة الدراسة.

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# Competitiveness of Egyptian Cheese Exports in Major International Markets

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ABSTRACT

The study aimed to identify the current status of Egyptian cheese, in addition to the competitiveness of Egyptian cheese exports in the most important import markets by estimating some indicators such as market share, relative price, and the determinants of demand for Egyptian cheese in foreign markets. The results revealed that the value of Egyptian exports of cheese is estimated at 199.171 million dollars, representing about 77.21% of the total value of Egyptian dairy products amounting to about 257.9 million dollars as an average for the period (2019-2023). The self-sufficiency rate of Egyptian cheese is estimated at 107.8%. The results also indicate that Jordan, Saudi Arabia, Libya, Yemen, Yemen and Lebanon are among the most important importers of Egyptian cheese, as Egypt's cheese exports to them represent 17.89%, 15.76%, 14.59%, 8.64% and 6.81% of Egypt's total exports, amounting to about 40.11 thousand tons as an average for the period (2019-2023). By estimating the instability coefficient, it was found that the value of cheese exports to the most important importing markets was relatively stable on average, which was estimated at 0.06 during the study period, followed by the export price of cheese, which is relatively stable, but to a lesser degree than the value of cheese exports, and there is relative stability in the quantity of Egyptian cheese, but to a lesser degree than the value and export price of cheese during the study period.

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## Introduction

Exports are one of the main components of the state's foreign exchange earnings needed to finance economic Evolution programs, reflecting the importance of exports in achieving economic growth. The revitalization of exports is an important tool to address the imbalance in the trade balance, and Egyptian agricultural exports receive great attention from both agricultural producers and decision-makers due to the fact that most agricultural and food products enjoy a comparative advantage and competitiveness in foreign markets. The foreign trade operations of dairy products in Egypt are subject to several control and audit processes, both for imported goods in order to maintain the safety of food products in the Egyptian market and for exported goods to maintain the reputation of Egyptian exports in international markets. White cheese is one of the basic components of the food structure in Egypt, as it is an important source of energy, an important and cheap source of animal protein and a rich source of calcium and some vitamins. There are many cheese production factories in Egypt, whether in the formal or informal sector, so increasing the number of production facilities and diversifying their quality at the level of the republic is one of the elements contributing to increasing the chances of exporting Egyptian white cheese to international markets, especially Arab markets. The average production and consumption of Egyptian cheese is estimated at about 637 and 595 thousand tons respectively, and the average per capita consumption of cheese in Egypt is estimated at about 5. 96 kg / person / year, while the value of Egyptian cheese exports is estimated at about 199 million dollars, representing about 77% of the total Egyptian dairy exports during the period (2019-2023), compared to 124 million dollars for the value of Egyptian imports of cheese for the same period, indicating the economic and nutritional importance of cheese in Egypt.

### Study Problem

Despite the increase in the volume of local production of cheese and the formation of a surplus for consumption, the value of Egyptian exports amounted to about 199 million dollars, which represents only about 0.53% of the total value of global cheese exports during the period (2019-2023), which amounted to about 37.3 billion dollars, despite Egypt enjoying a competitive price advantage, but it suffering from instability of cheese exports due to strong competition in global markets, which affects Egypt's foreign exchange income.

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**Research Objectives**

The research aims to study the current status of Egyptian cheese, as well as the competitiveness of Egyptian cheese exports in the most important import markets by estimating some indicators such as market share and relative price, and the determinants of demand for Egyptian cheese in foreign markets.

**Research Method and Data Sources**

The study depend on the use of descriptive and quantitative analysis, such as averages and relative importance, in addition to general time trend equations, in addition to export performance indicators such as market share and relative price, reasersh data obtained from the Central Agency for Public Mobilization and Statistics, the Ministry of Trade and Industry, and www.trademap.com

**Research findings and discussion:**

**Relative importance of the value of Egyptian exports of dairy products during the period (2019-2023):**

Table (1) shows that the value of Egyptian exports of cheese ranks first with an average estimated value about 199.171 million dollars during the period (2019-2023) with a relative importance representing about 77.21% of the total value of Egyptian dairy products amounting to about 257.9 million dollars, while the value of exports of dairy industry and non-concentrated cream ranks second with an average estimated value about 25.759 million dollars with a relative importance representing about 9.99%. followed by the value of milk and cream exports, which ranked third with an average estimated value about 14.221 million dollars with a relative importance of about 5.51%, while natural honey, butter and milk-derived oils ranked fourth and fifth, respectively, with an average estimated value about 6.862 and 5.252 million dollars with a relative importance of 2.66% and 2.04%, respectively.

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**Table (1) Relative importance of the value of Egyptian exports of dairy products during the period (2019-2023)** (US Dollar thousand)

| Products | 2019 | 2020 | 2021 | 2022 | 2023 | Average | Relative importance |
|---|---|---|---|---|---|---|---|
| Cheese and curd | 250906 | 206524 | 189979 | 180554 | 167893 | 199171 | 77.21 |
| Milk and cream, not concentrated nor containing added sugar or other sweetening matter | 27482 | 23177 | 21207 | 22432 | 34496 | 25759 | 9.99 |
| Butter, incl. dehydrated butter and ghee, and other fats and oils derived from milk; dairy | 1761 | 3832 | 2538 | 5359 | 12771 | 5252 | 2.04 |
| Buttermilk, curdled milk and cream, yogurt, kephir and other fermented or acidified milk | 426 | 535 | 1446 | 6011 | 9784 | 3640 | 1.41 |
| Milk and cream, concentrated or containing added sugar or other sweetening matter | 20040 | 21438 | 13911 | 9134 | 6583 | 14221 | 5.51 |
| Natural honey | 5604 | 7679 | 7444 | 7731 | 5853 | 6862 | 2.66 |
| Birds' eggs, in shell, fresh, preserved or cooked | 173 | 13 | 1054 | 1505 | 5730 | 1695 | 0.66 |
| Birds' eggs, not in shell, and egg yolks, fresh, dried, cooked by steaming or by boiling in . | 1556 | 94 | 156 | 896 | 799 | 700 | 0.27 |
| Whey, whether or not concentrated or containing added sugar or other sweetening matter. | 479 | 678 | 401 | 841 | 620 | 604 | 0.23 |
| Insects, turtles' eggs, birds' nests and other edible products of animal origin, n.e.s. | 0 | 125 | 19 | 55 | 0 | 39.8 | 0.02 |
| Total | 308427 | 264095 | 238155 | 234518 | 244529 | 257945 | 100 |

Source: Compiled and calculated from www.trademap.org

**Development of the production of Egyptian cheese during the period (2009-2023):**

Examining the development of the production of Egyptian cheese, Table 2 shows that the production quantity reached a minimum of 587.36 thousand tons in 2016 and a maximum of 697.53 thousand tons in 2023, with an estimated average of 641.58 thousand tons during the study period.

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By examining the general time trend of cheese production during the study period, equation (1) in Table (3) indicates that the amount of cheese production takes a statistically significant increasing trend estimated at 2.57 thousand tons with an annual increase rate estimated at 0.4% of its annual average during the study period. The value of the coefficient of determination indicates that about 16% of the changes in Egyptian cheese production are due to the time coefficient.

**Table (2) Development of Egyptian cheese production and consumption during the period (2009-2023)** (thousand tons)

| Year | Production | consumption | Surplus |
|---|---|---|---|
| 2009 | 645.25 | 583.54 | 61.71 |
| 2010 | 648.64 | 528.47 | 120.16 |
| 2011 | 643.28 | 518.54 | 124.74 |
| 2012 | 647.81 | 598.03 | 49.78 |
| 2013 | 631.73 | 559.19 | 72.54 |
| 2014 | 630.53 | 548.46 | 82.08 |
| 2015 | 603.86 | 552.5 | 51.36 |
| 2016 | 587.36 | 549.56 | 37.79 |
| 2017 | 630.05 | 589.37 | 40.68 |
| 2018 | 607.2 | 568.2 | 39 |
| 2019 | 645.46 | 613.37 | 32.09 |
| 2020 | 673.89 | 654.36 | 19.54 |
| 2021 | 648.85 | 635.81 | 13.04 |
| 2022 | 682.2 | 668 | 14.2 |
| 2023 | 697.53 | 683.79 | 13.75 |
| Average | 641.58 | 590.08 | 51.5 |

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Food Balance Bulletin, various issues.

**Development of Egyptian cheese consumption during the period (2009-2023):**

The data in Table (2) indicate the development of Egyptian cheese consumption during the study period, where Egypt's consumption of cheese reached a minimum of about 518.54 thousand tons in 2011 and a maximum of about 683.79 thousand tons in 2023, with a general average estimated at 590.08 thousand tons during the study period.

Equation (2) in Table (3) indicates that the amount of Egyptian cheese consumption takes a statistically significant increasing trend estimated at 9.25 thousand tons, with an annual rate of increase of about 1.57%.

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**Development of the Egyptian cheese surplus during the period (2009-2023):**

Table (2) indicates that the amount of surplus of Egyptian cheese decreased during the study period, as the amount of surplus of cheese ranged between a minimum estimated at 13.04 thousand tons in 2021, and a maximum estimated at 124.74 thousand tons in 2011, with a general average estimated at 51.50 thousand tons during the study period.

Equation (3) in Table (3) indicates that the amount of surplus takes a statistically significant decreasing trend estimated at 6.68 thousand tons, with an estimated annual decrease rate of 12.97% on average during the study period, it is due to the increase in consumption rate.

**Table (3) General time trend equations for production, consumption and surplus of Egyptian cheese during the period (2009-2023)** (thousand tons)

| N | Dependent variable | Equation | Rate of change | Average | $R^2$ | F |
|---|---|---|---|---|---|---|
| 1 | Production of Cheese | Y= 620.9 + 2.57X<br>(41.12)- (1.55)** | 0.4 | 641.58 | 0.16 | 2.4 |
| 2 | Consumption of Cheese | Y= 516.09 + 9.25 X<br>(30.14)** (4.9)** | 1.57 | 590.08 | 0.65 | 24.12 |
| 3 | Surplus | Y= 104.90 – 6.68 X<br>(9.62)** (5.56-)** | 12.97 | 51.5 | 0.70 | 30.95 |

Where: Y^: The estimated value of the corresponding variable R2: Coefficient of determination
X : Time (2009-2023) F: Significance of the model as a whole
- The value in parentheses indicates the calculated t value.
(**) indicates the significance of the regression coefficient at the (0.01) level
(*) indicates the significance of the regression coefficient at the (0.05) level (-) non-significant
**Source**: Compiled and calculated from Table (2)

**The current status of Egyptian cheese foreign trade during the period (2009-2023):**

**1- Development of the quantity, export value and export price of Egyptian cheese during the period (2009-2023)**

It is clear from Table (4) that the average quantity of Egyptian cheese exports during the period (2009-2023) is estimated at about 77.9 thousand tons, and the quantity of Egyptian cheese exports ranges between a minimum of about 27.5 thousand tons in 2023 and a maximum of about 179.3 thousand tons in 2011.

Equation (1) in Table (5) indicates that the quantity of Egyptian cheese exports takes a statistically significant decreasing trend estimated at 7.77 thousand tons, with an annual decrease rate of about 9.97%.

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It is clear from Table 4 that the average value of Egyptian cheese exports during the study period is estimated at about 309.4 million dollars, and the value of Egyptian cheese exports ranges between a minimum of about 167.9 million dollars in 2023, and a maximum of about 481.7 million dollars in 2011.

Equation (2) of Table (5) shows that the value of Egyptian cheese exports takes a statistically significant decreasing trend estimated at about 22.47 million dollars, with an annual decrease rate of about 7.26%.

Table (4) shows that the average export price of Egyptian cheese during the study period amounted to about 4378 USD/ton, and the export price of Egyptian cheese ranges between a minimum of about 2687 USD/ton in 2011 and a maximum of about 6105 USD/ton in 2023.

Equation (3) in Table (5) indicates that the export price of Egyptian cheese takes a statistically significant increasing trend with an estimated value of $120.11/ton, with an annual increasing rate of about 2.74%.

**Table (4) Quantity and value of exports, imports and trade balance of Egyptian cheese during the period (2009-2023):**

| Years | Egyption exports | | | Egyption Imports | | | Trade balance |
|---|---|---|---|---|---|---|---|
| | Quantity (thousand (tons | Value (million (dollars | Export price | Quantity (thousand tons) | Value (million dollars) | import price | |
| 2009 | 79.5 | 426.3 | 5362 | 17.75 | 94.56 | 5327 | 331.74 |
| 2010 | 150.9 | 471.7 | 3126 | 30.77 | 87.8 | 2853 | 383.9 |
| 2011 | 179.3 | 481.7 | 2687 | 54.58 | 114.07 | 2090 | 367.63 |
| 2012 | 75.1 | 361.5 | 4814 | 25.3 | 148.91 | 5886 | 212.59 |
| 2013 | 99 | 374.9 | 3787 | 24.46 | 132.33 | 5410 | 242.57 |
| 2014 | 114.5 | 378.9 | 3309 | 32.45 | 166.53 | 5132 | 212.37 |
| 2015 | 80.2 | 339 | 4227 | 28.85 | 149.87 | 5195 | 189.13 |
| 2016 | 66.6 | 268.1 | 4025 | 28.84 | 139.75 | 4846 | 128.35 |
| 2017 | 62.1 | 275.3 | 4433 | 21.43 | 107.64 | 5023 | 167.66 |
| 2018 | 61 | 267.9 | 4392 | 22.03 | 120.71 | 5479 | 147.19 |
| 2019 | 56.3 | 250.9 | 4457 | 24.25 | 122.31 | 5044 | 128.59 |
| 2020 | 44.2 | 206.5 | 4672 | 24.68 | 136.28 | 5522 | 70.22 |
| 2021 | 39 | 190 | 4872 | 26 | 147.99 | 5692 | 42.01 |
| 2022 | 33.4 | 180.6 | 5407 | 19.25 | 118.64 | 6163 | 61.96 |
| 2023 | 27.5 | 167.9 | 6105 | 13.73 | 95.28 | 6940 | 72.62 |
| Average | 77.9 | 309.4 | 4378 | 26.29 | 125.51 | 5107 | 183.89 |

Source: Compiled and calculated from www.trademap.org

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**2- Development of the quantity and value of imports and Egypt's import price of cheese during the period (2009-2023)**

It is clear from Table 4 that the average quantity of Egypt's imports of cheese during the period (2009-2023) is estimated at about 26.29 thousand tons, and the quantity of Egyptian imports of cheese ranged between a minimum of about 13.73 thousand tons in 2023, and a maximum of about 54.58 thousand tons in 2011.

Equation (4) in Table (5) indicates the unsignificance of the change in the quantity of Egypt's imports of cheese during the study period, indicating its relative stability around its arithmetic average of about 26.29 thousand tons. It is clear from Table 4 that the average value of Egypt's cheese imports during the study period amounted to about 125.51 million dollars, and the value of Egypt's cheese imports ranges between a minimum of about 87.8 million dollars in 2010, and a maximum of about 166.53 million dollars in 2014.

Equation (5) in Table 5 indicates the unsignificance of the change in the value of Egypt's cheese imports during the study period, indicating its relative stability around its arithmetic average of about 125.51 million dollars.

As shown in Table 4, Egypt's average import price of cheese during the study period amounted to about 5106 $/ton, and Egypt's import price of cheese ranged between a minimum of about 2090 $/ton in 2011 and a maximum of about 6940 $/ton in 2023. By examining the general time trend of the import price, equation (6) in Table 5 indicates that Egypt's import price of cheese has increased by a statistically significant amount estimated at 168.92$/ton, at an annual increasing rate of about 3.31%.

It is clear from Table 4 that the average value of the Egyptian trade balance of cheese during the study period is estimated at about 183.89 million dollars, and the value of the trade balance of cheese ranges between a minimum of about 42.01 million dollars in 2021, and a maximum of about 383.9 million dollars in 2010.

Equation (7) in Table (5) indicates that the Egyptian trade balance of cheese is decreasing by a statistically significant amount estimated at about 22.99 million dollars, at an annual rate of decrease estimated at 12.45%.

**Table (5) General time trend equations for the quantity, value and price of Egyptian cheese exports during the period (2009-2023)**

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| N | Dependent variable | Equation | Rate of change | Average | $R^2$ | F |
|---|---|---|---|---|---|---|
| 1 | Export quantity (thousand tons) | Y= 139.26 – 7.77X (9.61)** (4.81) - | 9.97 | 77.91 | 0.64 | 23.16 |
| 2 | Export value (thousand dollars) | Y= 489.17 22.47- X (31.67)** (13.23-)** | 7.26 | 309.41 | 0.93 | 174.99 |
| 3 | Egyptian cheese export price ($/ton) | Y= 3417.47 + 120.11 X (8.24)** (2.63)** | 2.74 | 4378.3 | 0.70 | 6.94 |
| 4 | Quantity of imports (thousand tons) | Y= 34.05 – 0.97X (7.36) ** (1.91-)- | -3.69 | 26.29 | 0.22 | 3.64 |
| 5 | Value of imports (thousand Dollars) | Y= 121.36 +0.52 X (9.33)** (0.36)- | 0.41 | 125.51 | 0.01 | 0.13 |
| 6 | Egypt's import price for cheese ($/ton) | Y= 3760.42 + 168.92 X (7.14)** (2.91)** | 3.31 | 5106.76 | 0.39 | 8.44 |
| 7 | Trade balance | Y= 367.81- 22.99 X (16.92)**(-9.62)** | -12.45 | 183.9 | 0.88 | 92.45 |

Where: Y^: The estimated value of the corresponding variable R2: Coefficient of determination
X : Time (2009-2023) F: Significance of the model as a whole
- The value in parentheses indicates the calculated t value.
(**) indicates the significance of the regression coefficient at the (0.01) level
(*) indicates the significance of the regression coefficient at the (0.05) level (-) non-significant
**Source**: Compiled and calculated from Table (4)

## Geographical distribution of Egyptian exports of cheese during the period (2019-2023)

Table (6) shows the relative importance of Egyptian cheese export markets as an average for the period (2019-2023), from which it is clear that the Jordanian market ranks first with a quantity of about 7173 tons representing about 17.89% of the total quantity of Egyptian exports of cheese amounting to about 40.105 thousand tons and an estimated value of about 35.148 million dollars representing about 17. 65% of the value of Egyptian exports of cheese amounting to about 199.171 million dollars, as the export price of Egyptian cheese to Jordan is estimated at about 4900 dollars / ton compared to 4966 dollars / ton as a general

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average for the export price of Egyptian cheese, while the Saudi market comes in second place, whith estimater quantity of 6321 tons with a relative importance estimated at 15.76% worth about 33.381 million dollars with a relative importance estimated at 16.76%. The Libyan, Yemeni, Omani, Lebanese and Emirati markets rank third through seventh with an estimated relative importance of 14.59%, 8.64%, 6.92%, 6.81% and 5.46% in terms of export quantity.

**Table( 6 ) : Geographical distribution of Egyptian cheese exports during the period (2019-2023)** (Quantity : tons, value : thousand dollars, price :dollars /ton)

| Country | Export quantity | % | Export value | % | Export price |
|---|---|---|---|---|---|
| Jordan | 7173 | 17.89 | 35148 | 17.65 | 4900 |
| Saudi Arabia | 6321 | 15.76 | 33381 | 16.76 | 5281 |
| Libya, State of | 5851 | 14.59 | 28610 | 14.36 | 4890 |
| Yemen | 3464 | 8.64 | 16417 | 8.24 | 4739 |
| Oman | 2774 | 6.92 | 12746 | 6.40 | 4594 |
| Lebanon | 2729 | 6.81 | 13768 | 6.91 | 5044 |
| United Arab Emirates | 2189 | 5.46 | 10619 | 5.33 | 4850 |
| Other countries | 16775 | 41.83 | 48482 | 24.34 | 2890 |
| World | 40105 | 100.00 | 199171 | 100.00 | 4966 |

**Source:** Compiled and calculated from www.trademap.org

**Geographical distribution of Egyptian cheese imports during the period (2019-2023)**

Table (7) shows the relative importance of cheese import markets for Egypt during the period (2019-2023), from which it is clear that the Polish market ranks first with a quantity of about 5393 tons worth about 15.915 million dollars, and the import price of Polish cheese is estimated at about 2951 dollars / ton compared to 5750 dollars per ton as a general average price for importing cheese, while the Ireland market comes second with an estimated quantity of 3745 tons worth about 22.739 million dollars. The Netherlands and New Zealand markets rank third and fourth with an estimated relative importance of 14.7% and 13.94% in terms of quantity, respectively.

**Table (7): Geographical distribution of Egypt's imports of cheese as an average for the period (2019-2023)**

| Country | Quantity (tons) | Value (thousand dollars) | Export price ($/ton) |
|---|---|---|---|

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| | | | |
|---|---|---|---|
| Ireland | 3745 | 22739 | 6071 |
| Netherlands | 3176 | 31371 | 9877 |
| Poland | 5393 | 15915 | 2951 |
| Saudi Arabia | 1487 | 7576 | 5095 |
| New Zealand | 3008 | 17364 | 5773 |
| Other | 4772 | 29134 | 6105 |
| world | 21582 | 124099 | 5750 |

**Source:** Compiled and calculated from www.trademap.org

**Indicators of the competitiveness of Egyptian cheese in its most important import markets**

**I: Indicators of market share and price competitive advantage:**

**A- Indicators of market share and price competitiveness in the Jordanian market:**
The Jordanian market comes in first place for the most important importing markets for Egyptian cheese, Tables (8) and (9) show the market share and price competitive advantage of Egyptian cheese with the most important countries exporting cheese to the Jordanian market, from which it turns out that Egypt ranks first in terms of market share, Saudi Arabia, Turkey, Poland, then Belgium. It was also found that Egypt enjoys a competitive price advantage with Saudi Arabia during the study period, and until 2020 with Belgium, and does not enjoy a price advantage with Turkey, Poland and Belgium, especially in recent years, which led to a decline in Egypt's market share during recent years despite the superiority of its share compared to other countries. The Belgian market share also showed an increase in market share during that period, which explains the existence of a non-price advantage due to other factors such as distance, language, bilateral agreements, and others.

**Table 8: Market Share of the Major Cheese Exporting Countries in the Jordanian Market during the Period (2019-2023)**

| | 2019 | 2020 | 2021 | 2022 | 2023 | Average |
|---|---|---|---|---|---|---|
| Egypt | 31.71 | 31.3 | 24.64 | 19.3 | 19.8 | 25.35 |
| Saudi Arabia | 14.52 | 16.85 | 20.77 | 23.21 | 17.63 | 18.6 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Turkey | 8.48 | 8.63 | 4.71 | 8.42 | 8.42 | 7.74 |
| Poland | 7.2 | 8.37 | 7.43 | 7.26 | 7.28 | 7.5 |
| Belgium | 2.64 | 2.59 | 4.64 | 4.06 | 6.43 | 4.06 |

Market share = (Mcwi /XiCi) *100
Where:
mcwi :expresses the amount of the country's exports to the Jordanian market of cheese
Xici :expresses the amount of the country's total imports of cheese
**Source**: Compiled and calculated from www.trademap.org

**Table (9): Price competitive position of Egyptian cheese in the Jordanian market with the main competing countries during the period (2019-2023):-**

| | 2019 | 2020 | 2021 | 2022 | 2023 | Average |
|---|---|---|---|---|---|---|
| Saudi Arabia | 64.75 | 96.78 | 91.84 | 96.28 | 92.46 | 89.58 |
| Turkey | 64.52 | 110.55 | 99.38 | 104.25 | 104.74 | 97.64 |
| Poland | 48.21 | 109.75 | 109.97 | 105.07 | 108.33 | 94.69 |
| Belgium | 78.2 | 98.01 | 120.4 | 124.81 | 132.64 | 112 |

Relative price = (Pe/Pc) * 100.
Where :
Pe is the price of Egypt's export of cheese to the Jordanian market
Pc is the export price of Egypt's competitors to the Jordanian market
**Source:** Compiled and calculated from www.trademap.org

**B- Indicators of market share and price competitiveness in the Saudi market:**

The Saudi market comes in second place for the most important importing markets for Egyptian cheese, Tables (10) and (11) show the market share and price competitive advantage for Egyptian cheese with the most important countries exporting cheese to the Saudi market, where Table (10) shows that Denmark ranks first in terms of market share, Egypt, Turkey, New Zealand, then Bahrain. It also shows that Egypt enjoys a price competitive advantage with Bahrain, Denmark, New Zealand, France and Ireland during the study period. This indicates the possibility of increasing Egyptian exports of cheese to the Saudi market.

**Table 10: Market Share of the Major Cheese Exporting Countries in the Saudi Arabian Market during the period (2019-2023)**

| | 2019 | 2020 | 2021 | 2022 | 2023 | Average |
|---|---|---|---|---|---|---|
| Bahrain | 4.71 | 4.61 | 14.29 | 20.63 | 17.62 | 12.76 |
| Denmark | 31.63 | 27.8 | 22.12 | 19.45 | 20.72 | 24.09 |
| New Zealand | 7.3 | 7.06 | 6.16 | 6.05 | 6.1 | 6.51 |
| France | 3.88 | 3.42 | 2.78 | 2.27 | 2.51 | 2.94 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Ireland | 2.61 | 4.24 | 3.53 | 2.09 | 2.78 | 3.02 |
| Egypt | 12.49 | 14.83 | 13.46 | 12.23 | 12.82 | 13.13 |

**Source:** Compiled and calculated from www.trademap.org

**Table (11): Price competitive position of Egyptian cheese in the Saudi market with the most important competing countries during the period (2019-2023):-**

| | 2019 | 2020 | 2021 | 2022 | 2023 | Average |
|---|---|---|---|---|---|---|
| Bahrain | 32.13 | 31.35 | 46.31 | 50.45 | 44.74 | 42.59 |
| Denmark | 77.96 | 67.29 | 82.82 | 84.45 | 94.47 | 81.36 |
| Zealand New | 55.12 | 50.8 | 55.22 | 48.88 | 54.52 | 52.82 |
| France | 45.59 | 46.01 | 47.87 | 48.1 | 55.36 | 48.95 |
| Ireland | 56.57 | 53.96 | 52.6 | 47.48 | 49.2 | 52.37 |

**Source:** Compiled and calculated from www.trademap.org

## C- Indicators of market share and price competitiveness in the Lebanese market:

The Lebanese market comes in fourth place for the most important markets importing Egyptian cheese after the Yemeni market, but due to the lack of data on the Yemeni market, the Lebanese market was studied, Tables (12) and (13) show the market share and price competitive advantage of Egyptian cheese with the most important countries exporting cheese to the Lebanese market, and from it it was found that Hungary ranks first in terms of market share, Egypt, the United Kingdom France, then Poland. It was also found that Egypt enjoys a price competitive advantage with Hungary, the United Kingdom, France and Poland during the study period, with an increase in Hungary's market share during that period and fluctuations in Egypt's market share. Although Egypt enjoys a price competitive advantage relative to Hungary's exports in the Lebanese market, Hungary had a larger market share in Lebanon, and this may be due to non-price competitive reasons such as proximity or meeting consumer taste and required quality, so Egypt should aim to meet consumer needs and match the quality in the Lebanese market to increase its market share in Lebanon.

**Table 12: Market Share of the Major Cheese Exporting Countries in the Lebanese Market during the Period (2019-2023)**

| **Country** | 2019 | 2020 | 2021 | 2022 | 2023 | Average |
|---|---|---|---|---|---|---|
| Hungary | 15.82 | 18.1 | 19.88 | 17.31 | 19.82 | 17.8 |
| Egypt | 10.39 | 14.09 | 18.51 | 12.95 | 13.53 | 13.26 |
| United Kingdom | 11.07 | 15.64 | 9.57 | 8.44 | 10.22 | 11 |
| France | 7.67 | 5.68 | 6.45 | 5.41 | 7.33 | 6.68 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Poland | 3.37 | 3.72 | 4.93 | 2.91 | 6.38 | 4.12 |
| Belgium | 3.75 | 3.89 | 4.06 | 5.87 | 5.44 | 4.51 |

**Source:** Compiled and calculated from www.trademap.org

**Table (13): Price competitive position of Egyptian cheese in the Lebanese market with the most important competing countries during the period (2019-2023):-**

| **Country** | 2019 | 2020 | 2021 | 2022 | 2023 | Average |
|---|---|---|---|---|---|---|
| Hungary | 57.81 | 60.2 | 65.07 | 83.23 | 86.09 | 70.33 |
| United Kingdom | 79.03 | 83.11 | 79.87 | 101.75 | 85.88 | 88.29 |
| France | 45.11 | 49.1 | 58.65 | 76.3 | 86.02 | 61.19 |
| Belgium | 70.73 | 71.35 | 72.08 | 95.82 | 83.11 | 76.7 |
| Poland | 37.13 | 36.77 | 34.22 | 60.47 | 97.92 | 50.6 |

**Source:** Compiled and calculated from www.trademap.org

## II: Instability coefficient index for Egyptian exports of cheese

by calculating the degree of stability for the quantity, value and export price of Egyptian exports of cheese by estimating the instability coefficients for each of them during the period (2009-2023). Table 14 shows that the quantity of Egyptian exports of cheese is characterized by relative stability during the study period if the stability coefficient is estimated at 0.16 as an average for the period, where the closer the value of the general index of the degree of stability towards zero indicates stability or relative stability, it was more stable during the years (2013, 2018, 2019, 2020, 2021), but the degree of stability was relatively low in the years (2009, 2011, 2012).

The value of Egyptian cheese exports during the study period was relatively stable throughout the study period and was more stable than the quantity of Egypt's exports of cheese to the most important international markets importing it during the same period.

The general indicator of the degree of stability of the export price of Egyptian cheese during the study period shows that it is stable, but it was higher than the quantity of exports and lower than the value of Egyptian exports of cheese, and these results indicate that the Egyptian export price of oranges during the study period is characterized by stability and relative stability.

From the previous presentation, it is clear that the value of cheese exports to the most important importing markets was characterized by relative stability on average, which was estimated at about 0.06 during the study period, followed by the quantity of exports of Egyptian cheese, which is characterized by relative stability, but to a lesser degree than the value of its exports, then the degree of stability in the export price of cheese increases, but it can be said that there is a degree of relative stability in the export price of cheese, but to a lesser degree than both value and quantity, respectively, during the study period.

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**Table No. (14) The evolution of the values of the stability coefficients for the quantities, value and prices of Egyptian cheese during the period (2009-2023).**

| Years | Quantity Export | Export Value | Export price |
|---|---|---|---|
| 2009 | 0.4 | 0.09 | 0.52 |
| 2010 | 0.22 | 0.06 | 0.15 |
| 2011 | 0.54 | 0.14 | 0.29 |
| 2012 | 0.31 | 0.09 | 0.23 |
| 2013 | 0.02 | 0.01 | 0.06 |
| 2014 | 0.23 | 0.07 | 0.2 |
| 2015 | 0.06 | 0.02 | 0.01 |
| 2016 | 0.14 | 0.13 | 0.08 |
| 2017 | 0.12 | 0.04 | 0.01 |
| 2018 | 0.03 | 0.01 | 0.05 |
| 2019 | 0.03 | 0.04 | 0.06 |
| 2020 | 0.06 | 0.06 | 0.04 |
| 2021 | 0.01 | 0.04 | 0.02 |
| 2022 | 0.05 | 0.03 | 0.06 |
| 2023 | 0.13 | 0.1 | 0.17 |
| Average | 0.16 | 0.06 | 0.13 |

* Instability coefficient =/ | Ŷ -Y| Ŷ
III: Market penetration coefficient
**Source:** Compiled and calculated from www.trademap.org

Market penetration coefficient =

$$\frac{\text{the volume of a country's imports of a good from a particular market}}{\text{(total imports + production) of the same commodity- Exports of the same commodity}} * 100$$

The market penetration coefficient shows the ability of the import market to absorb the exports of one country to another country from a specific product, and its value ranges between zero and one, and the closer its value is to one, the more the market is able to absorb more exports of the exporting country's product. By estimating the penetration coefficients of Egypt's cheese exports to the most important import markets during the period (2009 - 2023) as shown in Table 15

**Table (15) : Market penetration coefficients for Egyptian cheese in major import markets during the period (2009-2023)**

| Years | Jordan market penetration coefficients | Saudi market penetration coefficient | Lebanon's market penetration coefficients |
|---|---|---|---|
| 2009 | 0.22 | 0.3 | 0.12 |
| 2010 | 0.22 | 0.26 | 0.1 |

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| | | | |
|---|---|---|---|
| 2011 | 0.33 | 0.23 | 0.1 |
| 2012 | 0.39 | 0.22 | 0.11 |
| 2013 | 0.32 | 0.18 | 0.15 |
| 2014 | 0.31 | 0.15 | 0.14 |
| 2015 | 0.24 | 0.17 | 0.08 |
| 2016 | 0.26 | 0.17 | 0.05 |
| 2017 | 0.21 | 0.16 | 0.06 |
| 2018 | 0.24 | 0.16 | 0.05 |
| 2019 | 0.28 | 0.11 | 0.05 |
| 2020 | 0.36 | 0.12 | 0.07 |
| 2021 | 0.31 | 0.11 | 0.09 |
| 2022 | 0.23 | 0.09 | 0.1 |
| 2023 | 0.24 | 0.1 | 0.1 |
| Avaerage | 0.28 | 0.17 | 0.09 |

**Source:** Compiled and calculated from www.trademap.org

It is clear that Egyptian cheese exports ranked first in the Jordanian market, as the average penetration coefficient of Egyptian cheese for the Jordanian market amounted to about 0. 28, which means that Egypt's exports of cheese to the Jordanian market have the ability to penetrate the Jordanian market, which amounted to about 28% of the total amount of consumption of the Jordanian market for Egyptian cheese, and it also turned out that the penetration coefficient of Egyptian cheese to the Jordanian market fluctuated during the study period between a minimum of about 0.22 in 2010 and 2009 and a maximum of about 0.39 in 2012, and then began to decrease from 2013 to 2023 to reach about 0.24 in 2023. This indicates the low ability of Egyptian cheese exports to penetrate the Jordanian market in the last years of the study, which calls for more efforts with appropriate marketing policies to increase export opportunities for this market.

The Saudi market comes in second place, where the average penetration coefficient of Egyptian cheese for the Saudi market amounted to about 0.17, which means that Egypt's exports of cheese to the Saudi market have the ability to penetrate the Jordanian market and amounted to about 17% of the total amount of consumption of the Saudi market for Egyptian cheese, and it also turned out that the penetration coefficient of Egyptian cheese for the Saudi market fluctuates during the study period between a minimum estimated at about 0.1 in 2023 and a maximum estimated at about 0.26 in 2010. This indicates a decrease in the ability of Egyptian cheese exports to penetrate the Saudi market in the last years of the study, which calls for more efforts and the Evolution of appropriate export policies to increase export opportunities to the Saudi market.

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The Lebanese market comes in third place, where the average penetration coefficient of Egyptian cheese to the Lebanese market amounted to about 0.09, which means that Egyptian cheese exports to the Lebanese market represent a small percentage of about 9% of the total amount of consumption of the Lebanese market for cheese. This indicates that the penetration coefficient of Egyptian cheese to the Lebanese market is small, despite the fact that Egypt enjoys a large market share in Lebanon, which necessitates studying the reasons and finding solutions to them.

**Statistical estimated of determinants of individual demand for Egyptian cheese in the most important market**

**Statistical estimated of determinants of individual demand for Egyptian cheese in the Jordanian market:**

By studying the relationship between the average Jordanian per capita share of Egyptian cheese in kg as a dependent variable and the independent variables which efficting on the dependent variable, equation (1) in table (16) indicates that the average Jordanian per capita share of Egyptian cheese exports is affected by both the average export price of Egyptian cheese to Jordan and the export price of Turkey and the average Jordanian per capita share of national income. Turkey's export price and the average Jordanian per capita national income, where it was found that there is an inverse relationship between the average Jordanian per capita share of Egyptian cheese and the export price of Egyptian cheese to Jordan, as an increase in the export price of Egyptian cheese to Jordan by 1% leads to a decrease in the average Jordanian per capita share of Egyptian cheese by about 2.02%. This indicates that the individual demand for Egyptian cheese in the Jordanian market is elastic, and there is a direct relationship between the average Jordanian per capita share of Egyptian cheese and the price of Turkey's export of cheese to Jordan, as an increase in Turkey's export price of cheese by 1% leads to an increase in the average Jordanian per capita share of Egyptian cheese by 1.42%. It was also found that there is a direct relationship between the average Jordanian per capita share of Egyptian cheese and the average Jordanian per capita national income, where an increase in the average Jordanian per capita national income by 1% leads to an increase in the average Jordanian per capita share of Egyptian cheese by 0.75%. The value of the adjusted coefficient of determination was about 0.97, indicating that the previous variables are responsible for 97% of the changes in the average Jordanian per capita share of Egyptian cheese.

Table (17) shows the elasticity of demand for Egyptian cheese in the Jordanian market, where the price elasticity of demand was estimated at 2.202, indicating that the Jordanian consumer considers Egyptian cheese as a luxury good, so Egyptian efforts should be made

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to increase Egyptian exports of Egyptian cheese to Jordan. The cross elasticity of the Jordanian market is estimated at 1.42, indicating an increase in the degree of competition between Egypt and cheese-exporting countries in the Jordanian market. The income elasticity of cheese in the Jordanian market is estimated at 0.75.

**Table (16): Determinants of individual demand for Egyptian cheese in its most important import markets during the period (2009-2024)**

| n | The state | The equation | $R^2$ | F |
|---|---|---|---|---|
| 1 | Jordan | $LnY_2 = 32.32 - 2.202LX_{1I} + 1.42\ LnX_{2I} + 0.75\ LnX_{3I}$ <br> $(2.85)^{*}\quad (-2.95)^{**}\quad (3.80)^{**}\quad (4.26)^{**}$ | 0.97 | 133 |
| 2 | Saudi Arabia | $LnY_1 = 3.39 - 0.546\ LnX_{4i} + 2.62LnX_{5i} + 0.61\ LnX_{6i}$ <br> $(1.336)^{-}\quad (-7.35)^{**}\quad (2.88)^{*}\quad (6.69)^{**}$ | 0.56 | 19.6 |
| 3 | Lebanon | $LnY_3 = 0.41 - 1.195\ LnX_{7i} + 0.775LnX_{8i} + 0.356\ LnX_{9i}$ <br> $(1.211)^{-}\quad (-4.15)^{**}\quad (3.14)^{**}\quad (5.11)^{**}$ | 0.68 | 121 |

Where :
Y1i = Saudi Arabia's average per capita export of Egyptian cheese to Saudi Arabia in kg
X1i = average export price of Egyptian cheese to Saudi Arabia ($/ton)
X2i = average export price of Danish cheese to Saudi Arabia ($/ton)
X3i = average Saudi per capita national income in dollars
Y2i = average Jordanian per capita export of Egyptian cheese to Jordan in kg
X4i = average export price of Egyptian cheese to Jordan ($/ton)
X5i = Turkey's average export price of cheese to Jordan ($/ton)
X6i = Jordan's average per capita national income in dollars
Y3i = Lebanon's average per capita export price of Egyptian cheese to Lebanon in kg
X7i = Egypt's average export price of cheese to Lebanon ($/ton)
X8i = England's average export price of cheese to Lebanon ($/ton)
X9i = Lebanon's average per capita national income in dollars
I = time period (2009- 2023)
- The value in parentheses indicates the calculated t value.
(**) indicates the significance of the regression coefficient at the (0.01) level
(*) indicates the significance of the regression coefficient at the (0.05) level (-) non-significant
**Source**: Compiled and calculated from www.trademap.org .

**Statistical estimated of determinants of individual demand for Egyptian cheese in the Saudi market:**

By studying the relationship between the average Saudi per capita share of Egyptian cheese in kg as a dependent variable and the independent variables that are believed to affect the dependent variable, equation (1) in table (16) indicates that the average Saudi per capita share of Egyptian cheese exports is affected by both the average export price of Egyptian cheese to Saudi Arabia and the export price of Denmark and the average Saudi per capita national income, where it was found that there is an inverse relationship between the

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average Saudi per capita share of Egyptian cheese and the export price of Egyptian cheese to Saudi Arabia, as an increase in the export price of Egyptian cheese to Saudi Arabia by 1% leads to a decrease in the average Saudi per capita share of Egyptian cheese by about 0.546% during the study period, indicating that the individual demand for Egyptian cheese in the Saudi market is inelastic, and there is an direct relationship between the average Saudi per capita share of Egyptian cheese and New Zealand's export price of cheese to Saudi Arabia, as an increase in New Zealand's export price of cheese by 1% leads to an increase in the average Saudi per capita share of Egyptian cheese by 2.62%. There is also an direct relationship between the average Saudi per capita share of Egyptian cheese and the average Saudi per capita national income, where an increase in the average Saudi per capita national income by 1% leads to an increase in the average Saudi per capita share of Egyptian cheese by 0.61%. The value of the adjusted coefficient of determination is about 0.97, indicating that the previous variables are responsible for 97% of the changes in the average Saudi per capita share of Egyptian cheese.

Table (17) shows that the demand for Egyptian cheese in the Saudi market is inelastic, as the price elasticity of demand is estimated at 0.546, indicating that the Saudi consumer considers Egyptian cheese a necessary commodity. The transit elasticity of the Saudi market is estimated at 2.62, indicating an increase in the degree of competition between Egypt and cheese-exporting countries in the Saudi market. The income elasticity of cheese in the Saudi market is estimated at 0.71

**Statistical estimated of Determinants of individual demand for Egyptian cheese in the Lebanese market:**

By studying the relationship between the average Lebanese per capita share of Egyptian cheese in kg as a dependent variable and the independent variables that are believed to affect the dependent variable, equation (1) in table (16) indicates that the average Lebanese per capita share of Egyptian cheese exports is affected by both the average export price of Egyptian cheese to Lebanon and the price of England and the average national income. England's export price and the average Lebanese per capita share of national income, where it was found that there is an inverse relationship between the average Lebanese per capita share of Egyptian cheese and the export price of Egyptian cheese to Lebanon, as an increase in the export price of Egyptian cheese to Lebanon by 1% leads to a decrease in the average Lebanese per capita share of Egyptian cheese by about 1. 195% during the study period. during the study period, indicating that the individual demand for Egyptian cheese in the Lebanese market is elastic, and there is a direct relationship between the average Lebanese per capita share of Egyptian cheese and England's export price of cheese to Lebanon, as an

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increase in England's export price of cheese by 1% leads to an increase in the average Lebanese per capita share of Egyptian cheese by 0. 775%, and it was also found that there is a direct relationship between the average Lebanese per capita share of Egyptian cheese and the average Lebanese per capita share of national income, where an increase in the average Lebanese per capita share of national income by 1% leads to an increase in the average Lebanese per capita share of Egyptian cheese by 0.356%. The value of the adjusted coefficient of determination amounted to 0.68.

Table (17) shows the elasticity of demand for Egyptian cheese in the Lebanese market, where the price elasticity of demand was estimated at 1.195, indicating that the Lebanese consumer considers Egyptian cheese a luxury good, and therefore Egyptian efforts should be made to increase Egyptian exports of Egyptian cheese to Lebanon. The cross-market elasticity is estimated at 0.775, indicating an increase in the degree of competition between Egypt and cheese-exporting countries in the Lebanese market. The income elasticity of cheese in the Lebanese market is estimated at 0.356.

**Table (17): Estimated price, transit and input elasticities for Egyptian cheese demand models for its most important import markets**

| | N | The state | Price Elssticity of Demand | Cross Easticityof Demand | Income Elasticity of Demand |
|---|---|---|---|---|---|
| | 1 | Jordan | 2.202 | 1.42 | 1.75 |
| | 2 | Saudi Arabia | 0.546 | 2.62 | 0.71 |
| | 3 | Lebanon | 1.195 | 0.775 | 0.356 |

**Source:** Compiled and calculated from www.trademap.org

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