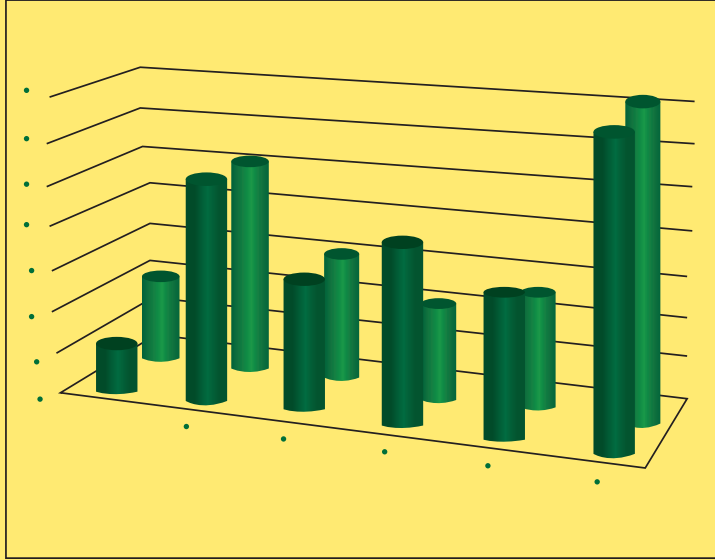


المعهد العربي للتدريب والبحوث الإحصائية



# مجلة العلوم الإحصائية



العدد رقم 24

مجلة علمية محكمة

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  - د - يتم الإشارة الى المصادر العلمية في متن البحث وفي نهايته، مع مراعاة أن لا يتضمن البحث سوى المصادر التي تم الإشارة إليها في المتن ووفق الأصول المعتمدة في ذلك (اسم المؤلف، سنة النشر، عنوان المصدر، دار النشر، البلد).
  - هـ - ترقم الجداول والرسوم التوضيحية وغيرها حسب ورودها في البحث، كما توثق المستعارة منها بالمصادر الأصلية.
  - و- أن لا يزيد عدد صفحات البحث او الدراسة عن (25) صفحة.
- 3 - يتم إشعار الباحث باستلام بحثه خلال مدة لا تتجاوز يومين عمل من تاريخ استلام البحث.
- 4 - تخضع كافة البحوث المرسله الى المجلة للتقييم العلمي الموضوعي ويبلغ الباحث بالتقييم والتعديلات المقترحة إن وجدت خلال مدة لا تتجاوز اسبوعان من تاريخ استلام البحث.
- 5 - لهيئة تحرير المجلة الحق في قبول او رفض البحث ولها الحق في إجراء أي تعديل او إعادة صياغة جزئية للمواد المقدمة للنشر- بما يتماشى والنسق المعتمد في النشر- لديها بعد موافقة الباحث.
- 6 - يصبح البحث المنشور ملكاً للمجلة ولا يجوز إعادة نشره في أماكن أخرى.
- 7 - تعبر المواد المنشورة بالمجلة عن آراء أصحابها، ولا تعكس وجهة نظر المجلة او المعهد العربي للتدريب والبحوث الإحصائية.
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## **The Economic Impact Of Accession to the World Trade Organization: The Case of Arab Countries**

Jamal Qasem Hassan Mahmoud

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# The Economic Impact of Accession to the World Trade Organization : The Case of Arab Countries Jamal Qasem Hassan Mahmoud

## Abstract

The study found that the accession of Arab countries to the WTO, total non-oil exports and foreign direct investment have a positive impact on GDP. The study indicates that the average growth rate of Arab countries increased after joining the WTO compared to the period before joining.

In terms of the structure of foreign trade, the share of mineral fuels accounted for 48.8 percent of total Arab commodity exports in 2022, compared to 65.1 percent in 2005. The study also indicates a high degree of export concentration and a decrease in the number of goods with a comparative advantage. These indicators have led to a decrease in foreign trade competitiveness indicators.

## المستخلص

وجدت الدراسة أن انضمام الدول العربية إلى منظمة التجارة العالمية وإجمالي الصادرات غير النفطية والاستثمار الأجنبي المباشر لها تأثير إيجابي على الناتج المحلي الإجمالي. وتشير الدراسة إلى أن متوسط معدل نمو الدول العربية ارتفع بعد انضمامها إلى منظمة التجارة العالمية مقارنة بالفترة التي سبقت الانضمام. ومن حيث هيكل التجارة الخارجية، شكلت حصة الوقود المعدني 48.8 في المائة من إجمالي الصادرات السلعية العربية في عام 2022، مقارنة بـ 65.1 في المائة في عام 2005. وتشير الدراسة أيضاً إلى درجة عالية من تركيز الصادرات وانخفاض في عدد السلع ذات الميزة النسبية. وقد أدت هذه المؤشرات إلى انخفاض في مؤشرات القدرة التنافسية للتجارة الخارجية.

## 1. Introduction

The World Trade Organization (WTO) was founded in 1995 as result of the Uruguay Round of trade negotiations between GATT members. The organization is based on economic principles that advocate freedom of trade, with its main task being to ensure the smooth and free flow of trade to the greatest extent possible. The Marrakesh Declaration signed in April 1994, in Morocco, approved the establishment of the organization, stating that trade liberalization aims to strengthen the trading system and increase the volume of world trade, investment, employment, and income growth globally.

The organization's headquarters are in Geneva and it is headed by a Secretary-General who is elected through the Ministerial Council of the organization. The organization currently has more than 90 percent of world trade among its members, and decisions are made by consensus,

providing equal opportunities for members to make decisions regardless of their sizes.

The main purpose of the World Trade Organization (WTO) is to assist producers, exporters, and importers of goods and services, remove obstacles to world trade, revise international trade policies of countries, settle trade disputes between them, and ensure that trade flows as smoothly, predictably, and freely as possible. The WTO is the only organization in the world that deals with the rules of world trade between countries.

## **2. Rules for Joining the World Trade Organization**

The process of accession to the World Trade Organization under Article 12 involves the preparation of schedules of commitments related to goods and services. It also requires agreement on the report of the Working Party, decisions and protocol on the conditions of accession<sup>1</sup>.

The procedure for applying for membership in any country involves the following steps:

- Submitting an application to the director of the organization, expressing the state's interest in joining the WTO under Article 12, and circulating it to member states.
- The General Council of the organization reviews the application and establishes a working group to assess the membership application based on terms of reference and compliance with Article 12.
- The organization's secretariat informs the state about the necessary procedures and requirements for accession.
- Technical assistance is provided to interested countries seeking accession.
- Sufficient time is allocated for the preparation phase of accession negotiations before the Working Group meeting allow all parties to adequately prepare their positions.
- The secretariat reviews the memorandum of association for compliance with the attached content and shares its opinion with the state and the working group.
- Members of the Working Group can submit written questions regarding their perspectives on the applicant country's foreign trade structure.
- During the initial Working Group meeting, representatives from the applicant country present the memorandum of accession.

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<sup>1</sup> World Trade Organization, [www.wto.org](http://www.wto.org).

- Following the Working Group's review, negotiations can commence on market access for goods, services, and other relevant topics.

As of July 2016, the number of members in the WTO has reached 164, with 25 countries in the process of joining as observers. Among the Arab countries, 13 have joined the WTO, while 8 are still observers. Please refer to Table 1 for more details.

**Table (1):  
The status of Arab countries in the World Trade Organization**

Members (Year of joining WTO)	Observers
Bahrain (1995)	Algeria
Djibouti (1995)	Comoros
Egypt (1995)	Iraq
Jordan (2001)	Lebanon
Kuwait (1995)	Libya
Mauritania (1995)	Somalia
Morocco (1995)	Sudan
Oman (2000)	Syria
Qatar (1996)	
Saudi Arabia (2005)	
Tunisia (1995)	
United Arab Emirates (1996)	
Yemen (2014)	

Source: WTO

### 3. Economic Development in Arab Countries

The extractive industries sector is considered the most important economic activity in Arab countries, accounting for 30.6 percent in 2022 compared to 39.8 percent in 2005. Statistics indicate that economic activities in Arab countries have increased by about 6.7 percent during 2005-2022, reaching 3420 billion US dollars in 2022 compared to 1137 billion US dollars in 2005.

**Table (2)  
Current GDP and Mining Sector in Arab Countries**

Items	2005	2010	2015	2022
The Share of Mining Sector (%)	39.8	36.1	23.3	30.6
Mining Sector (Millions of US Dollars)	452,461	718,912	579,657	1047,065
GDP (Millions of US Dollars)	1,137,475	1,994,120	2,488,102	3,420,498

Source: UNCTAD

Regarding the government's finance, total government revenues increased by 4.7 percent during 2005-2022, and petroleum

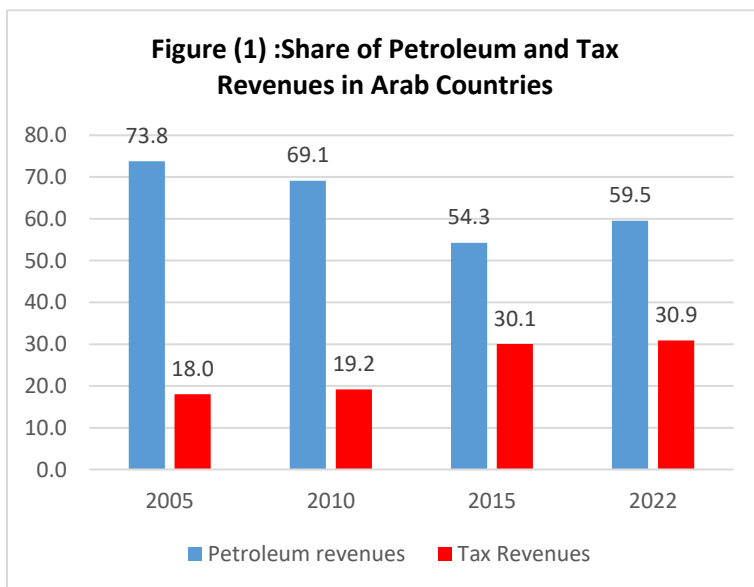
revenues increased by about 3.4 percent during the same period. However, tax revenues increased by about 8.1 percent, and capital revenues shrank by about 0.4 percent, as shown in Table 3.

**Table (3)**  
**Government Finance in Arab Countries**

Revenues	2005	2010	2015	2022
Petroleum revenues	363.6	484.3	353.0	639.7
Tax revenues	88.9	134.5	195.6	331.8
Non-tax revenues	28.0	45.3	46.9	91.6
Capital revenues	12.2	36.4	55.1	11.4
Total revenues	492.7	700.5	650.5	1,074.5
Grants	2.7	10.0	9.4	2.7
Total public revenues and grants	495.4	710.5	659.9	1,077.1

Source: Arab Joint Economic Reports, Arab Monetary Fund

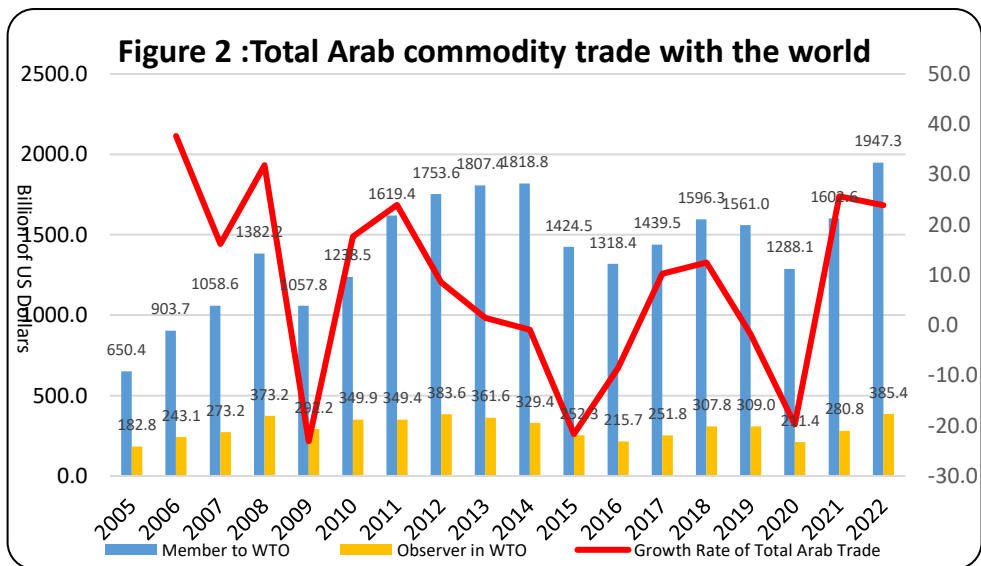
The share of oil revenues decreased from 73 per cent in 2005 to 59 percent in 2022. In contrast, the share of tax revenues of Arab countries increased from 18 percent in 2005 to 30 per cent in 2022, due to the trend of Arab countries to diversify sources of income and not relying on a single source of income, (see Figure 1).



Source: Arab Joint Economic Reports, Arab Monetary Fund

#### 4. Developments and structure of trade in Arab countries

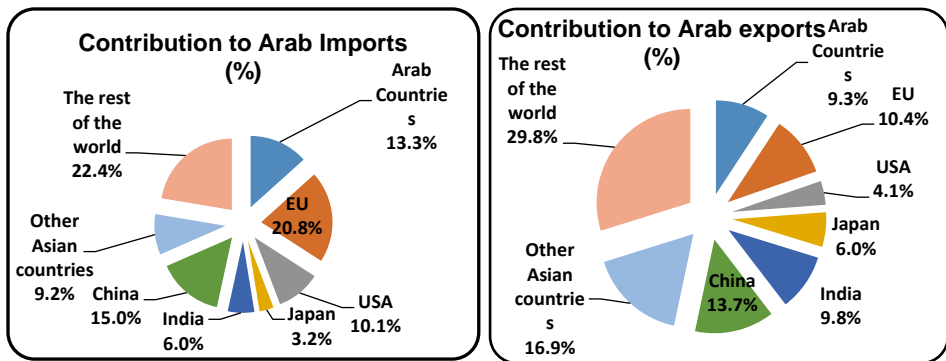
The total trade<sup>2</sup> of Arab countries' commodities to world markets increased by about 6.3 per cent during the period 2005-2022, reaching approximately 2436.3 billion US dollars in 2022, compared to 833.2 billion US dollars in 2005. On the other hand, the total trade of the Arab countries that joined the WTO increased by 6.9 percent during the same period and reached 1947.3 billion US dollars in 2022, compared to 650.4 billion US dollars in 2005. The exports of the Arab countries (as observers) in the WTO increased by 4.5 percent during 2005-2022 and reached 385.4 billion US dollars in 2022.



Source: Arab Joint Economic Reports, Arab Monetary Fund

The Asian countries are the most important trading partners of the Arab countries. The share of total Arab exports to Asian countries is about 46.4 percent of the total Arab commodity exports, while European Union countries account for 10.4 percent. In contrast, intra-Arab exports amounted to about 9.3 percent, and they are considered weak compared to other blocs despite the great Arab trade agreement that was signed between the Arab countries.

<sup>2</sup> Export and Import

**Figure 3: Arab trade trends in 2022**

Source: Arab Joint Economic Reports, Arab Monetary Fund

The total Arab exports to Asian countries were reported at 455.7 billion US dollars in 2022. Mineral fuels are the most important export commodities, accounting for 77.6 percent of the total exports in 2022.

**Table (4): Arab Exports to Asian countries  
(excluding Arab countries)**

Code (HS)	Product label	2005 (%)	2022 (%)
	All products (Millions of US Dollars)	118,849	455,677
'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	72.9	77.6
'71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	4.2	4.4
'31	Fertilisers	1.0	2.5
'39	Plastics and articles thereof	1.3	2.5
'29	Organic chemicals	2.1	2.0
'76	Aluminium and articles thereof	0.9	1.5
'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	0.9	1.4

Source: International Trade Centre (Trade map)

The oil price in world markets has a significant impact on the total commodity exports of Arab countries. The value of commodity exports increases with rising oil prices, and vice versa when the price of oil decreases, (See Table 5).

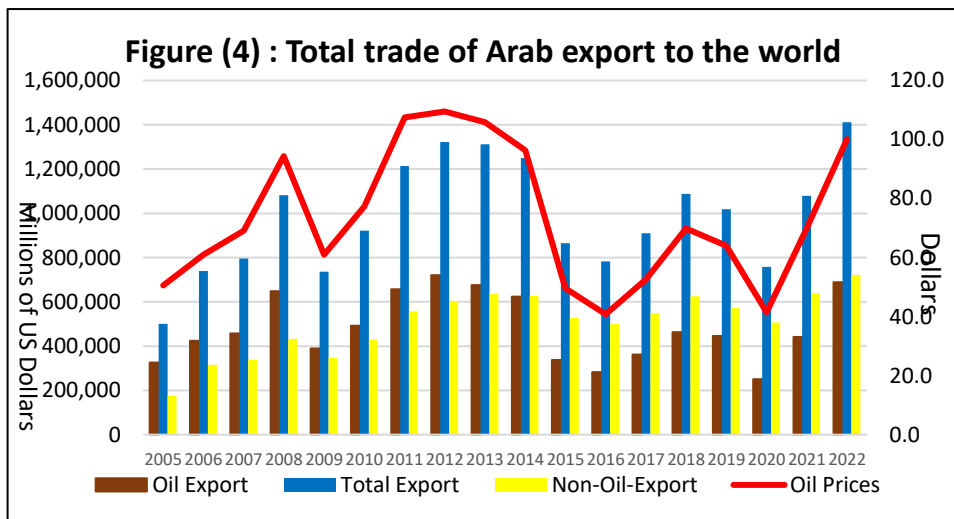
**Table (5)**  
**The correlation between Arab Total Export and Oil Prices**

	<i>Oil Prices</i>	<i>Oil Export</i>	<i>Total Export</i>	<i>Non-Oil-Export</i>
Oil Prices	1			
Oil Export	0.990307	1		
Total Export	0.857223	0.867749	1	
Non-Oil-Exp	0.46466	0.472995	0.848333	1

Source: calculated from UNCTAD data.

Arab commodity exports were significantly affected by the increase in crude oil prices. Statistics show that the share of crude oil exports decreased from 65.1 percent in 2005 to 48.8 percent in 2022. This indicates that Arab countries, especially oil-exporting countries have focused on diversifying their commodity exports.

Source: UNCTAD and OPEC



**5. Analysis of Arab foreign trade performance**

Foreign trade plays a crucial role in bolstering foreign exchange reserves, incentivizing nations to enhance the productivity of their industrial sectors to tap into emerging global markets.

The decline in countries' competitiveness often stems from a heavy reliance on commodity exports. Consequently, nations are proactively shifting towards bolstering their foreign trade by implementing strategies aimed at enhancing production efficiency and elevating the

quality of their commodity goods. Moreover, they are striving to enhance the diversification of their foreign trade to spur domestic demand and gain access to global markets, thereby managing surplus production effectively.

The structure of foreign trade in Arab countries, especially oil exporters, is characterized by the concentration of their exports and low comparative advantage of commodity products, due to their high dependence on mineral fuel exports.

▪ **Trade performance indicators**

The foreign trade Concentration Index (Hirschman Concentration Index (H)) and the Revealed Comparative Advantage Index (RCA) are crucial indicators for assessing a country's competitiveness in trade. The Concentration Index (H) gauges the level of concentration of commodity exports, while the RCA index evaluates the significance of goods for a country in global markets. A commodity is deemed to have a comparative advantage if the value of the index exceeds one. The RCA index is computed using the following equation:

$$RCA = \frac{x_{ij} / X_i}{X_{wj} / X_w}$$

Where  $x_{ij}$  presents the exports of a country (i) of the commodity (j), while ( $x_{wj}$ ) indicates the world exports of the commodity (j), and (X) indicates the total commodity exports. A commodity is said to have a comparative advantage if the value of the index (RCA) is greater than one. The Concentration Index (H) is calculated using the following equation:

$$H = \sqrt{\sum \left(\frac{x_i}{X}\right)^2}$$

Where  $x_i$  presents the country's exports of commodity (i), while (X) presents the total commodity exports. The value of the indicator ranges between 0 and 1. When the indicator approaches 1, it indicates that the country has a concentration in its commodity exports and relies heavily on a specific number of goods in its foreign trade.

The Export Specialization (ES) index is a slightly modified version of the RCA index, where the denominator is typically measured by specific

markets or partners. It offers insights into product specialization in a country's export sector and is calculated as the ratio of a product share in a country's total exports to its share in imports from specific markets or partners rather than its share in global exports, the Export Specialization (ES) is calculated according to the following equation:

$$ES = \frac{x_{ij}/X_i}{m_{wj}/m_w}$$

Where( $x_{ij}$ ) and  $X_i$  are the export values of country  $i$  in product  $j$ , respectively, and ( $m_{wj}$ ) and ( $m_w$ ) are the import values of product  $j$  in market  $k$  and total imports in market  $k$ . The ES is similar to the RCA in that a value of the index less than unity indicates a comparative disadvantage, while a value above unity represents specialization in this market.

#### ▪ Trade performance of Arab Export

In this section, we will calculate the Arab trade competitiveness indicators in various international markets.

### 1. Concentration Index of Arab countries

The concentration Index in Arab countries has gradually declined from 0.725 in 2005 to about 0.659. This decline can be attributed to adoption of strategies and plans by some Arab countries aimed at diversifying commodity exports. As a result, the share of mineral fuel exports in the Gulf Cooperation Council has decreased from 74 percent in 2005 to 64 percent in 2022.

**Table (6)**  
**Concentration Index of Arab Exports**

	2005	2010	2015	2022
Hirschman index	0.7252	0.7878	0.5659	0.6593

Source: Calculated from data of International Trade Centre (Trade map)

### 2. Revealed Comparative Advantages of Arab countries

The comparative advantage of commodities for Arab countries has increased from 6 goods in 2005 to 9 goods in 2022. However, this figure is considered weak due to the high percentage of mineral fuels exported as a part of the total Arab exports.

**Table (7)**  
**Revealed Comparative Advantages Index of Arab Exports**

Product COD	Product	2005	2010	2015	2022
'31	Fertilisers	2.505	5.147	3.134	4.537
'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	5.291	5.407	3.888	3.700
'71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	0.879	0.360	2.278	2.086
'25	Salt; sulphur; earths and stone; plastering materials, lime and cement	1.721	1.978	2.216	2.008
'24	Tobacco and manufactured tobacco substitutes; products, whether or not containing nicotine, ...	0.537	0.235	0.800	1.917
'76	Aluminium and articles thereof	0.615	0.590	1.338	1.540
'28	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...	0.753	0.989	0.981	1.076
'08	Edible fruit and nuts; peel of citrus fruit or melons	0.551	0.938	0.991	1.069
'39	Plastics and articles thereof	0.485	0.843	0.920	1.024
'13	Lac; gums, resins and other vegetable saps and extracts	1.016	1.650	0.795	0.437
'01	Live animals	1.037	1.233	1.224	0.380
'99	Commodities not elsewhere specified	3.251	0.107	5.538	0.023
	The number of goods with a comparative advantage	6	5	7	9

Source: Calculated from data of International Trade Centre (Trade map).

### 3. Export Specialization Index of Arab trade

The Export Specialization index of Arab countries in the Asia-Pacific, Latin American, Caribbean and EU markets shows that Arab countries have a specialization in approximately 7, 9 and 12 goods in terms of market penetration in 2022, respectively, compare to 9, 7, and 18 goods in 2005, respectively. Some of the goods included in this specialization are as follow:

**Table (8)**  
**Specialized goods for export from Arab countries**  
**to international markets 2022**

Asia and China excluding Arab countries	European Union (EU 28)	Latin American Integration Association (LAIA)
Salt; sulphur; earths and stone; plastering materials, lime and cement	Fish and crustaceans, molluscs and other aquatic invertebrates	Fish and crustaceans, molluscs and other aquatic invertebrates
Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	Edible vegetables and certain roots and tubers	Salt; sulphur; earths and stone; plastering materials, lime and cement
Fertilisers	Edible fruit and nuts; peel of citrus fruit or melons	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	Salt; sulphur; earths and stone; plastering materials, lime and cement	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...
Nickel and articles thereof	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	Fertilisers
Aluminium and articles thereof	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, ...	Carpets and other textile floor coverings
	Fertilisers	Glass and glassware
	Articles of apparel and clothing accessories, not knitted or crocheted	Aluminium and articles thereof
	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	
	Aluminium and articles thereof	
	Aircraft, spacecraft, and parts thereof	
Works of art, collectors' pieces and antiques		

Source: Calculated from data of International Trade Centre (Trade map).

#### 4. The Impact of Arab countries' accession to the WTO

##### ▪ The Sample

We conducted panel data analysis to examine the effects of Arab countries' accession to the WTO on their economic growth rates. The data has been collected from UNCTAD and focused on the following Arab countries: Jordan, the United Arab Emirates, Bahrain, Saudi Arabia, Kuwait, Oman, Qatar, Mauritania, Morocco, Egypt, Tunisia, and Yemen.

##### ▪ Data and Variables

The panel data for this study includes variables from UNCTAD for the years 1990 to 2022. The variables are:

1. GDP at current prices (dependent variable), which we use the natural log.
2. Non-oil export, for which we use the natural log.
3. FDI inward, for which we use the natural log.
4. Inflation.
5. Dummy variable (0 for the year before accession to WTO, 1 for the year after accession to the WTO).

The study aims to answer the question of how GATT/WTO accession has impacted the GDP growth rate. Our main set of regressions follows this form:

$$gdp_{i,t} = \alpha_0 + \alpha_1 trade_{i,t} + \alpha_2 inf_{i,t} + \alpha_3 WTO_{i,t} + \alpha_4 FDI_{i,t} + u_{it}$$

Where  $u_{it} = \rho u_{i,t-1} + \eta_{it}$  and  $\eta_{it} \sim N(0, \sigma_\eta^2)$

The GDP for country (i) at year t is represented by the equation:

GDP = trade + inf + WTO + FDI, where trade stands for non-oil exports, inf stands for inflation, WTO is a dummy variable (1 for Joint WTO, 0 for years before accession to the WTO) and FDI stands for foreign direct investment. inward.

We were unable to use the Fixed and Random Effect models due to correlated panels (cross-sectional dependence) and heteroskedasticity. Therefore, we utilized the (XTGLS) to estimate the impact of WTO accession on GDP. XTGLS estimates panel models under various assumptions about the heterogeneity of variances across panels and possible serial correlation.

The variable GDP, non-oil trade and foreign direct investment (FDI) were converted to natural logarithms to account for serial autocorrelation.

### ▪ Growth Rates Before and After Accession WTO

Statistics show that the average growth rate of Arab countries increased after joining the World Trade Organization compared to the period before accession. However, the growth rate in Arab oil-exporting countries is mainly influenced by fluctuations in global oil prices. Data indicates that oil-exporting countries have experienced growth rates in years when oil prices rise, highlighting the impact of oil price fluctuations on growth rates.

**Table (9)**  
**Real growth rate before and after accession WTO in some Arab Countries\***

Country	Before Accession WTO (Average Period)	After Accession WTO (Average Period)	Period 2010-2022
Egypt	3.628	5.107	4.049
Jordan	4.314	6.091	2.514
Morocco	3.676	4.155	3.506
Tunisia	4.806	4.992	3.063
Mauritania	0.941	3.946	3.969
Bahrain	6.996	4.956	3.564
Oman	4.133	4.519	3.331
Qatar	6.77	12.8	5.461
Kuwait	8.436	6.454	4.256
Saudi Arabia	3.818	5.417	3.817
UAE	6.230	5.485	3.881

Source: Calculated from data of World Bank.

(\*) 2010 and 2020 are excluded, due the financial world crises and the COVID-19 epidemic.

### ▪ Econometric Analysis Results of the Generalized Least Squares Model

The table below presents the results of the (xtgls) regressions for the panel data of Arab countries. All coefficients reported are statistically significant and exhibit positive signs, except for inflation, which shows a negative.

This indicates a positive impact influence of countries joining the WTO, as well as the variable of non-oil goods exports and FDI inward on economic growth> however, inflation has a negative effect on economic growth.

**Table (10)**  
**GLS regression of impact on economic growth rate**

xtgls lqdp wto ltrade inf lfdi						
Cross-sectional time-series FGLS regression						
Coefficients: generalized least squares						
Panels : homoscedastic						
Correlation : no autocorrelation						
Estimated covariances	=	1	Number of obs	=	330	
Estimated autocorrelations	=	0	Number of groups	=	13	
Estimated coefficients	=	5	Obs per group: min	=	9	
avg	=	23.82353				
max	=	28				
wald chi2(4)	=	510.18				
Log likelihood	=	-508.6438	Prob > chi2	=	0.000	
lqdp	Coef.	Std. Err.	z	P>z	[95% Conf.Interval]	
wto	.4686403	.0763367	6.14	0.000	.319023	.6182575
ltrade	.5313584	.0341105	15.58	0.000	.4645031	.5982137
inf	-.0010134	.0017307	-0.59	0.558	-.004405	.0023787
lfdi	.132547	.0314745	4.21	0.000	.070858	.1942359
_cons	4.97129	.2672985	18.60	0.000	4.4473	5.495186

Source: STATA output

### Conclusion

This research paper examines the impact of Arab countries' accession to the World Trade Organization (WTO) on economic growth. The study reveals that all coefficients have a positive effect on gross domestic product (GDP) and are statistically significant, except for inflation which shows a negative impact and is not statistically significant.

The accession to the WTO has had a positive influence on economic growth in Arab countries. Moreover, non-oil trade and inward foreign direct investment also contribute positively to economic growth. The following are the results of the estimates:

- The accession of Arab countries to the WTO has a positive impact on economic growth (0.4686 and p-value 0.000).
- Non-oil trade and inward foreign direct investment have a positive effect on economic growth (0.5313 and p-value 0.000, 0.1325 and p-value 0.000), respectively.
- Inflation has a negative impact on economic activity (-0.001 and p-value 0.558).

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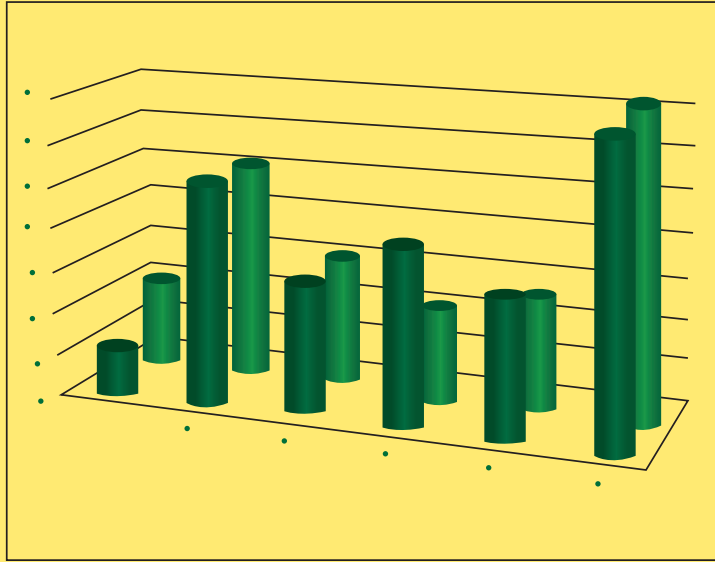
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