Trade policy's effects on Algerian export promotion from 2000 to 2023 (standard study using panel models).

Effets de la politique commerciale sur la promotion des exportations algériennes de 2000 à 2023(étude standard utilisant des modèles en panel).

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Abstract: *The aim of this research is to examine the effects of the Algerian government's trade policy instruments and their contribution to export promotion. This study examines the impact concerning several significant variables, including the rate of trade liberalization and the overall trade volume, within the framework of trade policy that is predicated on the principles of protectionism and free trade,It should be noted that the external trade sector has been affected by external economic and financial crises, in addition to the health crisis.*

Keywords*:Trade policy instruments, Model exports, trade Balance.*

Jel Classification Codes: *D51,F13.*

Résumé: *Cette étude a pour objectif d'analyser l'impact des instruments de politique commerciale du gouvernement algérien et leur contribution à la promotion des exportations. Cette étude examine l'impact de certaines variables importantes, comme le taux d'ouverture commerciale et le taux de commerce, et dans le contexte de la politique commerciale, qui est fondée sur le régime de protection et de liberté du commerce,Il convient de noter que le secteur du commerce extérieur a été touché par des crises économiques et financières externes, en plus de la crise sanitaire.*

Mots clés: *Instruments de politique commerciale, Exportations modèles, Balance commerciale.*

Jel Classification Codes: *D51,F13.*

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1. INTRODUCTION

Most Arab countries have adopted a set of policies to improve the levels of foreign trade similar to Algeria , so we find that these two countries have adopted many policies and reforms aimed at improving the level of internal and external trade, as both Algeria have developed trade registration systems and updated laws and rules pertaining to international commerce, with the intention of putting changes and policies into effect. that contribute to encouraging economic diversification and development of the industrial sector and keenness to transition towards a knowledge-based economy on one hand, while boosting exports on the other, with the goal of enhancing the competitiveness of local products exports. Algeria have also issued an anti-dumping law to protect the local product and have taken many compensatory and preventive measures facing local exports to maintain the competitiveness of their exports.

Algeria has pursued a trade policy,and openness to the outside world. Trade changes and reforms have occurred in the direction of the whole The important role that trade policy plays in reviving the trade sector in general and the foreign trade sector in particular is the reason behind the liberalization of the foreign trade sector Considering this, the following question arises:

What part do trade policy instruments play in boosting Algerian exports between 2000 and 2023?

The paper was divided into three themes:

✓ Assessing the current state of Algeria's foreign trade policy.

✓ Developments in the commodity composition of Algerian exports during the period(2000-2023).

✓ A standard study of the role of trade policy in the promotion of Algerian exports during the period 2000-2023

✓ Analysis of Algeria's export model variable

✓ Choosing a suitable model for Algeria's exports

✓ Final Estimate of Algeria's Exports Model

1.Assessing the current state of Algeria's foreign trade policy.

The economic state of Algeria state has been difficult since 1990 due to The result of a combination of various internal factors, particularly the

decline in structural distortions that reflected negatively on the collection of financial revenues from hard currency, especially in addition to the occurrence of global economic developments. International financial and monetary institutions intervened and imposed their decisive logic through economic reform programs (mekkid & menasseri, 2020, p. 836). One of the reform program's pillars, the liberalization of international trade, compelled the Algerian government at the time to abide by the rules set forth by international organizations.This was done in two gradual and total stages. In return, the government adopted a trade policy aimed at activating trade protectionist policy tools in order to protect the national product and combat all forms of dumping.

1.2. represented in the drop in global oil prices, which had a major effect on the Algerian economy between 2000 and 2023.

Its basis is the analysis of how indicators of the expansion of global trade have changed over time, including a number of important economic indicators in this domain (bougroura & tahtouh, 2022, p. 450). The degree of trade openness and the export-to-import ratio to BIP can be used to measure these factors. As it explains the movement of imported and exported commodity flows over a specific time period, the trade balance can also be regarded as an essential indicator used in international trade analysis. The evolution of Algeria's foreign trade metrics relative to GDP from 2000 to 2021 is displayed in the table below.

Table N°1: Represents the development of Algerian foreign trade indicators during the period (2000-2023)

Unit: $ USD Billion.

Indicators / Years	Exports (X)	Imports (M)	Gross domestic product (GDP)	E xportation Index (X/GDP)	Imports Index (M/BIP)	Trade openness rate (X-M)
2000	21.65	9.35	54.79	0.40	0.17	12.3
2001	19.14	9.94	54.74	0.35	0.18	9.2
2002	18.83	1.2	56.76	0.33	0.02	17.63
2003	24.65	13.54	67.86	0.36	0.20	11.11
2004	32.07	18.3	85.33	0.38	0.21	13.77
2005	46.00	20.35	54.79	0.84	0.37	25.65
2006	54.61	21.45	54.74	1.00	0.39	33.16
2007	60.16	27.63	56.76	1.06	0.49	32.53
2008	79.29	39.47	67.86	1.17	0.58	39.82
2009	45.19	39.25	85.33	0.53	0.46	5.94
2010	57.05	40.99	161.21	0.35	0.25	16.06
2011	73.43	47.21	200.01	0.37	0.24	26.22
2012	71.86	50.36	209.06	0.34	0.24	21.5
2013	65.99	54.9	209.76	0.31	0.26	11.09
2014	60.38	58.61	213.81	0.28	0.40	-25.23
2015	34.79	51.8	165.98	0.21	0.31	-17.01
2016	29.99	47.09	160.03	0.19	0.29	-17.1
2017	35.19	46.05	170.1	0.21	0.27	-10.86
2018	43.07	49.51	174.91	0.25	0.28	-6.44
2019	35.82	41.93	171.77	0.21	0.24	-6.11
2020	22.48	34.66	145.01	0.16	0.24	-12.18
2021	39.03	37.25	163.04	0.24	0.23	1.78
2022	50.21	35.96	225.63	0.22	0.16	14.25
2023	41.30	31.89	244.95	0.17	0.13	9.41

The Source: Prepared by the researcher, based on data obtained from:

- (Trade statistics for international, 2000-2023).

-(Customs, 2021, p. 07).

The above table shows the following:

- **Export Capacity Index:** This indicator is also known as the Export Dependence Index, and it is considered one of the rate of dependence on foreign trade. The latter represents a ratio of the value of exports to GDP. In the case of Algeria, the export capacity index has traditionally evolved and

grown during the five-year periods. It recorded a percentage of (36.42%) during the period (2000-2004), rising from (2005-2009) to (43.00%), falling during the period (2010-2015) and recording a percentage of (33.07%). This rate fell again to (20.23%) during the period (2015-2020). This is to indicate that this rate recorded an average of (43.27%) during the period(2000-2023) due to the collapse of oil prices in world markets since 2014 on the one hand, and the mechanisms imposed by OPEC for oil-producing countries on the other hand. This is considering that Algeria's total exports are primarily fuel because this indicator depends on the export capacity of the oil sector, which is determined by international oil prices and by volume of exports.

- Import index: The import index is one of the rate of dependence on foreign trade similar to the export capacity index. This index is also called the import dependence index. The latter represents a percentage of the value of imports to GDP. In the case of Algeria, the import index has traditionally been stable at (20%). It recorded a percentage of (19.76%) during the period (2000-2004), rising slightly during the period (2005-2009) to (22.33%), rising again during the period (2010-2015) and achieving a percentage of (25.36%),raising this rate to (27.45%). %)during the period (2015-2020), and in general, the rate of imports recorded an average rate of (29.09%) during the period(2000-2021).

1.3.Developments in the Algerian trade balance and coverage rate during the period (2000-2023).

The trade balance is an important economic indicator, and it is one of the inputs to the GDP of countries. Its value lies in the analysis of its components and not in its absolute value. The balance of the trade balance is expressed in the sum of the difference between the total exports and imports of countries, and the Algerian state, like these countries, has known its trade balance developments during the period (2000-2023),a clear discrepancy between the deficit and surplus according to foreign trade activity, as shown in the table below:

Table N°2:Represents the development of the Algerian trade balance and the coverage rate of importsDuring the period(2000-2023).

Unit:$ USA Billion.

Indicators / Years	Exports x	Imports M	Balance of trade (X-M)	Coverage rate (X/M)%
2000	21.65	9.35	12.3	231.55
2001	19.14	9.94	9.2	192.56
2002	18.83	1.2	17.63	1569.17
2003	24.65	13.54	11.11	182.05
2004	32.07	18.3	13.77	175.25
2005	46	20.35	25.65	226.04
2006	54.61	21.45	33.16	254.59
2007	60.16	27.63	32.53	217.73
2008	79.29	39.47	39.82	200.89
2009	45.19	39.25	5.94	115.13
2010	57.05	40.99	16.06	139.18
2011	73.43	47.21	26.22	155.54
2012	71.86	50.36	21.5	142.69
2013	65.99	54.9	11.09	120.20
2014	60.38	58.61	1.77	103.02
2015	34.79	51.8	-17.01	67.16
2016	29.99	47.09	-17.1	63.69
2017	35.19	46.05	-10.86	76.42
2018	43.07	49.51	-6.44	86.99
2019	35.82	41.93	-6.11	85.43
2020	22.48	34.66	-12.18	64.86
2021	39.03	37.25	1.78	104.78
2022	50.21	35.96	14.25	139.63
2023*	41.3	31.89	9.41	129.51

The Source: Prepared by the researcher, based on data obtained from: (Trade statistics for international, 2000-2023).

Through the above table, we note the following:

- Through its trade balance, Algeria achieved an increasing trade surplus from 2000 to 2008, that is, during The periods (2000-2004) and(2005-2009), until for 2009, the trade balance saw a catastrophic decrease, as it recorded a balance estimated at (5.94) billion dollars. This downturn was triggered by the global financial crisis that struck Western countries in early

2008. Among its effects The drop in oil prices and demand on global markets had an impact on Algeria The trade balance during the period (2010-2014) improved after the shock of 2009,as it recorded a surplus throughout the period except for 2014.This improvement is due to the fuel price recovery, which led to a rise in the state's official exchange rate reserves.The Algerian trade balance declined in 2014, although it was always in surplus, recording a decrease of about(16%) compared to 2013. This decline in the trade surplus is explained by a 4% 2014 had a 5% drop in exports and a 5% increase in imports over the previous year.2013.
The trade balance during the period (2015-2020) recorded a negative balance throughout the period, recording a continuous deficit and estimated its deficit at an average amount of (5.93-) billion dollars during the same period. The table also indicates an increase in value of Algeria's total imports so that it recorded its highest value in 2014 at a value of 58.6 billion US dollars, which increased by about 4 billion US dollars compared to 2015. We note that the percentage of Algeria's dealings with the European Union's share exceeds 5%, due to European products capturing the largest portion of the Algerian market, highlighting the Algerian economy's reliance on the European Union. According to preliminary.

- indicators for 2020, the value of imports decreased by (18%), equivalent to (4.34 billion dollars), down from 44 billion recorded in 2019, attributed to the decline in oil prices in global markets. This was the result of a contraction in demand resulting from the economic closure measures.

From what we have discussed, it can be said that during the period (2000-2023), the trade balance remained volatile as a result of the shocks that the Algerian economy was exposed to due to exchange rate fluctuations on the one hand, in addition to oil price fluctuations, which makes trade policies especially unable to maintain the stability of the trade balance situation, which is still affected and subject to changes in the international economic situation despite the surplus achieved by the trade balance.

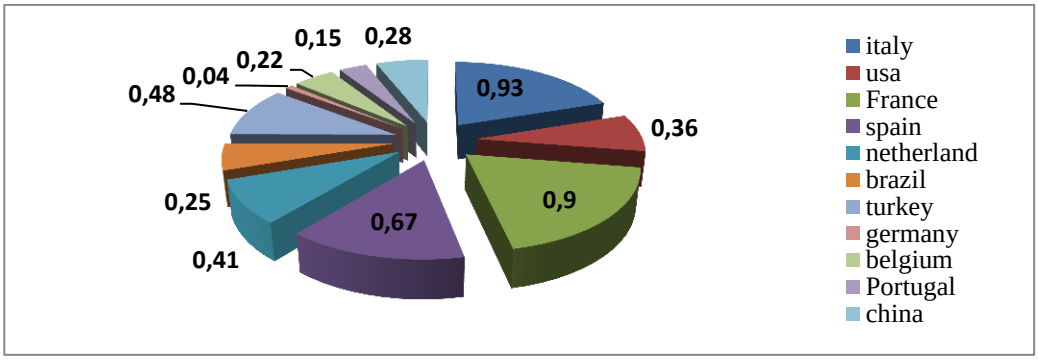
2.Developments in the commodity composition of Algerian exports during the period(2000-2023).

It represents that Algerian exports outside the fuel sector, which consist of semi-finished materials with an average value of $21.9 billion

during the period (2000-2023),foodstuffs, non-food consumer goods, industrial equipment, as well as raw materials worth about $30 billion. This is due to, inter alia, the lack of respect for global safety and health standards in locally produced materials, the lack of a prepared transport network that accelerates the delivery of goods to ports and airports, and the absence of authority over these products. The evolution of Algerian exports' ommodity mix from 2000 to 2023 is shown in the following table:

Fig N°1:Distribution developments represent Algerian exports to the most important customers for the period (2000-2023).

Unit: US $ Billion



The Source: Prepared by the researcher, based on data obtained from: (Trade statistics for international, 2000-2023).

the percentage of Algeria's exports to the European Union countries stabilized again and with Algeria's entry into the Euro-Mediterranean Partnership Agreement in order to encourage its non-oil exports to European nations,The Algerian government took action during the third term (2010–2014) after realizing the imbalance in the balance in favor of European countries in order to promote non-hydrocarbon exports in light of fluctuating oil prices and achieved an estimated amount of about $14 billion during periods two and three. Notwithstanding the recent drop in the value of exports to EU member states, in 2016 they recorded a decline of 33.28% compared to 2015 , and then witnessed a slight increase in 2017 by about $3.07billion, as they always rank first in terms of value compared to the total volume of Algerian exports.

It is noteworthy that the European countries are considered one of the most important trading partners of Algeria, where exports towards these

countries represent (56.76%) in the year 2020 compared to 2019, that is, they recorded a decrease of an average amount of $23 billion during the recent period (2005-2020) due to the health crisis that ravaged the entire world. In second place, we find the countries of the North and Latin America but less frequently than the nations along the Mediterranean Sea's northern coast. with the exception of 2007, the second-largest portion of Algerian exports.where we discovered that its export worth is nearly equivalent to that of the EU nations that surpassed it in 2008,where these countries had the largest share of Algerian exports by about 23.96billion dollars, and then the countries of Latin America come as the third largest trading partner imported from Algeria with values ranging from $1 billion to a maximum of $3.2 billion, which was recorded in 2011, and at the top of these countries are Brazil and Argentina, and finally other countries come, but the contribution of Algeria's exports to these countries is very weak, which is represented in the Maghreb countries, which Algerian exports do not exceed 3% during every year of the research period, During the whole study period from 2000 to 2023, Algerian exports to Arab countries, with the exception of the Maghreb and African countries, did not surpass around 1%, despite their shared borders and close vicinity.

3. A typical analysis of how trade policy influenced Algerian export promotion from 2000 to 2023 .

The reality of foreign trade is the image of the foreign trade policy adopted by any country, and then much attention has been given to the role played by foreign trade, as it is the means through which economies can accelerate their economic development. Recently, most of the world's countries have tended to apply the policy of openness and trade liberalization. The successful experiences of developed countries such as East Asian countries have also given credibility to the belief that there is a strong and positive relationship between trade exchanges and the economic performance of countries. In light of this, priority has been given to reforms that include reducing trade barriers and opening domestic markets to foreign competition. Over the past three decades, the pace of developing countries' trend towards liberalization of foreign trade has increased.

Algeria, like some developing countries, seeks to keep pace with the evolving trend of globalization and adaptation to ensure their national interests. Therefore, in the late 1990s, the two countries implemented a number of economic reforms, especially the adoption of trade policies that ensure that they strengthen their option to integrate into the global economy,and the extent to which they face the difficulties and obstacles that hinder Algeria's foreign trade sector continuously through the situational changes of the global economy, relying on the comparative standard study between Algeria's foreign trade policy and its contribution to the expansion of the whole volume of international trade with its exports with their most significant trading partners between 2000 and 2023 in order to promote its exports.

3.1. Calculation of the typical export model to Algeria:

3.1.1 Research variables:

The following table provides a summary of the factors that are taken into consideration when creating the standard model of exports for each of Algeria:

Table N°4: represents the variables of the export model for each of Algeria

N°	Variant designation	Label the variable in foreign language	Coding	Type Variable	Input Supply
01	Exports	Exportation	EXPO	affiliated	global
02	Gross domestic	Le Produit Ientérieur B rut	PIB	Independent	global
03	Avg. respective	BIP du pays concerné	PIBPC	Independent	global
04	Terms of trade	Taux de change International	TCI	Independent	global
05	The terms of	Le Taux de change	TCIPC	Independent	global
06	Trade openness	Taux d 'ouverture	TOCO	Independent	global
07	The rate of trade	Le Taux d 'ouverture	TOCOPC	Independent	global
08	Exchange prices	Taux de change	TCH	Independent	global
09	GDP per capita	BIP par habitant	PIBH	Independent	global
10	GDP per capita	BIP par habitant du pays	PIBHPC	Independent	global
11	Trade agreements	Accords commerciaux	ACO	phantom	global

The Source: Prepared by the researcher.

3.1.2.Identify the most important customers of Algeria

Before we introduce the mathematical formula for the export model for Algeria and, it is necessary to identify the most important customers of

Algeria according to the World Bank, which fall within the framework of bilateral trade agreements between countries , as trade agreements the unable to regulate these products. The following table shows how Algerian exports' commodity mix changed over time, as determined by the following table:

Table N°5 : represents the most important trading partners of Algeria.

No.	Countries	Country Code
01	Italy	ITA
02	SPAIN	ESP
03	Germany	GER
04	United States of America	USA
05	Turkey	TUR
06	Belgium	BEL
07	France	FRA
08	Brazil	BRA
09	Netherlands	NLD
10	Portugal	Port
11	China	CHN

Source: The researcher's compilation of World Bank data.

3.1.3.Defining the model's formulation:

After identifying the variables that were used in the study and Algeria's top clients as identified by the World Bank, we can apply the following formula to present the mathematical formula for the international export model:

$$EXPO = C_0 + C_1PIB + C_2BIPPC + C_3TCI + C_4TCIPC + C_5OCO + C_6OCOPC + C_7TCH + C_8PIBH + C_9PIRHPC \ldots\ldots\ldots\ldots\ldots\ldots (01)$$

3 3.1.4 A statistical evaluation of the variables being studied:

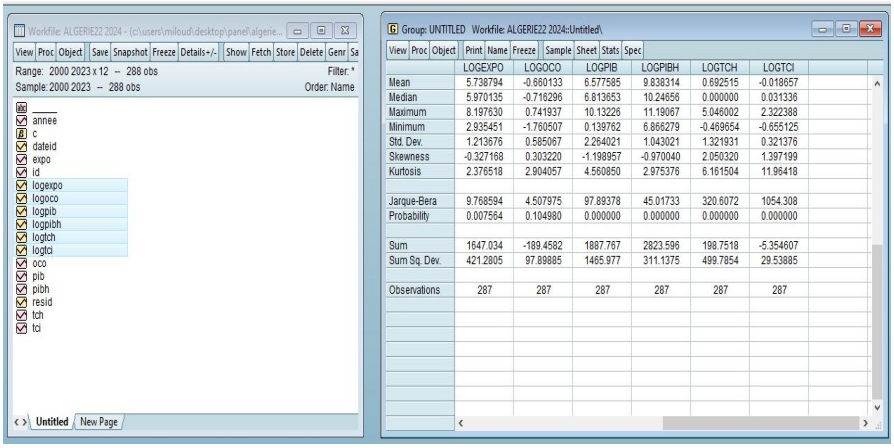
An examination of the variables under investigation using statistics: Algeria is included in the group of nations that reflect the two countries' most important trading partners from 2000 to 2023 based on a descriptive analysis of the study's independent factors and the dependent variable for a

sample of trade exchange. In order to facilitate well-informed decision-making, this aids in elucidating the traits of each research variable and exploring the relationships among them,a methodical forward-looking analysis of the kind of connection between the independent and dependent variables.

4 . Evaluation of the export model variable for Algeria.

Several statistical methods have been used. and their goal is to offer and examine these research variables for Algeria's export model. In economic or social standard studies, the arithmetic mean is regarded as the most important measure of trend since it facilitates the computation of numerous Along with the coefficient of variation, other metrics like variance and standard deviation will be used. The standard deviation for each of the research variables will be computed to see how much they deviate from the arithmetic mean, and the lowest and greatest values will be determined to determine the data distribution for each other. (Kafayifi, 2021-2022, p. 124).

Table N°6: shows the study variables' descriptive statistics for the Algerian export model (LEXP0).



	LOGEXPO	LOGOCO	LOGPIB	LOGPIBH	LOGTCH	LOGTCI
Mean	5.738794	-0.660133	6.577585	9.838314	0.692515	-0.018657
Median	5.970135	-0.716296	6.813653	10.24656	0.000000	0.031336
Maximum	8.197630	0.741937	10.13226	11.19067	5.046002	2.322388
Minimum	2.935451	-1.760507	0.139762	6.866279	-0.469654	-0.655125
Std. Dev.	1.213676	0.585067	2.264021	1.043021	1.321931	0.321376
Skewness	-0.327168	0.303220	-1.198957	-0.970040	2.050320	1.397199
Kurtosis	2.376518	2.904057	4.560850	2.975376	6.161504	11.96418
Jarque-Bera	9.768594	4.507975	97.89378	45.01733	320.6072	1054.308
Probability	0.007564	0.104980	0.000000	0.000000	0.000000	0.000000
Sum	1647.034	-189.4582	1887.767	2823.596	198.7518	-5.354607
Sum Sq. Dev.	421.2805	97.89885	1465.977	311.1375	499.7854	29.53885
Observations	287	287	287	287	287	287

The Source: It was prepared by the researchers using the "Eviews.12" program.

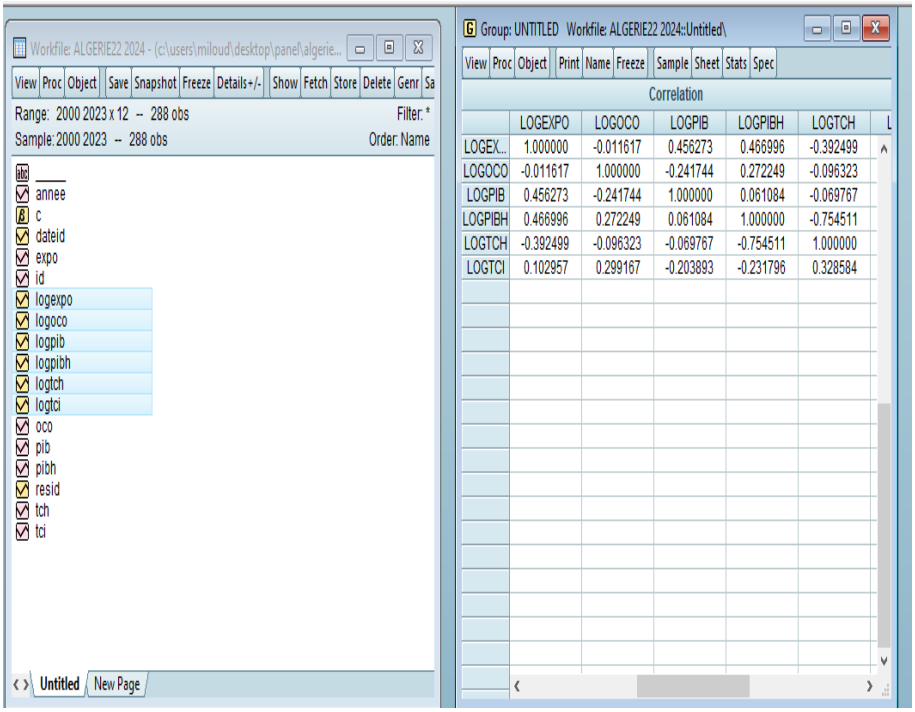
4.1. Examination of the connection between the dependent variable (LEXP0) and the independent elements of the Algerian export model

By examining the binary correlation matrix between the explanatory variables, one can determine the type of correlation relationship between

them. The goal is to guarantee that the linear duplication issue is not present in the model under study, which is that there is a strong correlation between two or more independent indicators,This needs to be discussed in terms of correlation coefficients, which are always pertinent to each independent variable's regression with the other explanatory factors.

Table (07) below displays the results of the binary correlation values matrix between the Algerian export model (LEXP0) study indicators:

Table N°7: **displays the binary correlation matrix between the study indicators (LEXP0) of the Algerian export model.**



The Source: It was prepared by the researchers using the "Eviews.12" application.

5.Choosing a suitable model for Algeria's exports:

Prior to analyzing the stability of the time series of the variables of the Algerian export models, we estimate three models: the aggregate regression model, the fixed effects model, and the random effects model. We apply the logarithm to the time series of the variables in the exports to Algeria model to remove outliers, or the effects of the variance change, and use them to determine which model is optimal for both Algerian exports. The two tables below display the results:

Table N°8: The outcomes of the three scenarios of carrot exports from Algeria

Variables	Synthesis OLS		Static Model Fixced		Random model Randan	
	t-Statistic	Coefficients	t-Statistic	Coefficients	t-Statistic	Coefficients
c_0	(-9.745815)	-10.21782	(-3.985099)	-5.227536	(-5.790461)	-7.058599
LOCO	(-6.710313)	-0.866086	(0.797715)	0.284510	(-1.595097)	-0.463501
LPIB	(-7.369612)	-0.220544	(4.137086)	0.746226	(1.074233)	0.109027
LPIBH	(11.33832)	1.127342	(0.841850)	0.167904	(4.867921)	0.679788
LTCH	(14.77005)	1.153366	(-2.183850)	-0.432953	(1.741618)	0.255898
LTCI	(-3.150646)	-0.828337	(-0.300392)	-0.086042	(0.475924)	0.130845
R-squared	0.528688		0.817634		0.152646	
R-squared	0.519554		0.805821		0.136224	
PROB	000000		000000		000000	
DW	0.468178		1.078405		0.203646	

The Source: The researchers used the "Eviews.12" tool to prepare it.

5.1. Choosing (Choosing) Between Results:

After estimating the three models of panel data, the second step is to choose between these models, as Fisher's statistics were relied The Houseman test is then used to select between the fixed effect model and the random effect model after deciding between the aggregate model (OLS) and the fixed effects model (Fixced).

5.1.1.The Fischer test to select Algeria's export model's fixed impact model or aggregate model Fischer test to choose between the aggregate model : Often, it is usually confirmed that there are such effects other than watching, that is, there are actually distinctions between the "countries" or sectors during the research periods. Panel data analysis is employed in this study to estimate the fixed effects model and clustering model. The fixed effects model seeks to understand the behavior of each group of cross-sectional data independently, but the clustered model ignores the impact of the time dimension, making it one of the most straightforward models of panel data.

Table N°9:Represents the results of a choice between The aggregate model and the fixed impact model.

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects.	Statistic	d.f	PROB
Cross-section F	35.577667	(247)	0.0000
Cross-section Chi-square	250.66936 7	11	0.0000

The Source:Prepared by the researcher using Eviews.12 program.

As can be seen from the above table, the nihilistic hypothesis is rejected at the 5% level of significance. This leads us to conclude that the aggregate model is not appropriate for Algeria's exports and that the fixed effects model is the more appropriate model to investigate.

5.1.2.To choose between the random and fixed effect models, Algeria's export model uses the Haussmann test:

The outcomes of this test, which is used to choose between the two random fixed effects models for Algeria's export models, are shown in the following tables:

Table N°10: demonstrates the results of choosing the random model instead of the fixed effect model.

SUMMARY	CHI Statistic	Chi-Sq. d.f.	PROB
Cross-section random	40.201582	5	0.0000

The Source: It was prepared by the researchers using the "Eviews.12" application.

Following the completion of all tests, the fixed effects model is found to be the most appropriate model for Algeria's exports. Based on Table No. (10), we reject the nihilistic hypothesis at the 5% significant level and conclude that the fixed effects model is the more appropriate model for the

research out of the two models and that the random effects model is not the best model for Algeria's exports. We then move on to a model estimate of Algeria's exports, and the table below compiles the findings from the "Eviews.12" program:

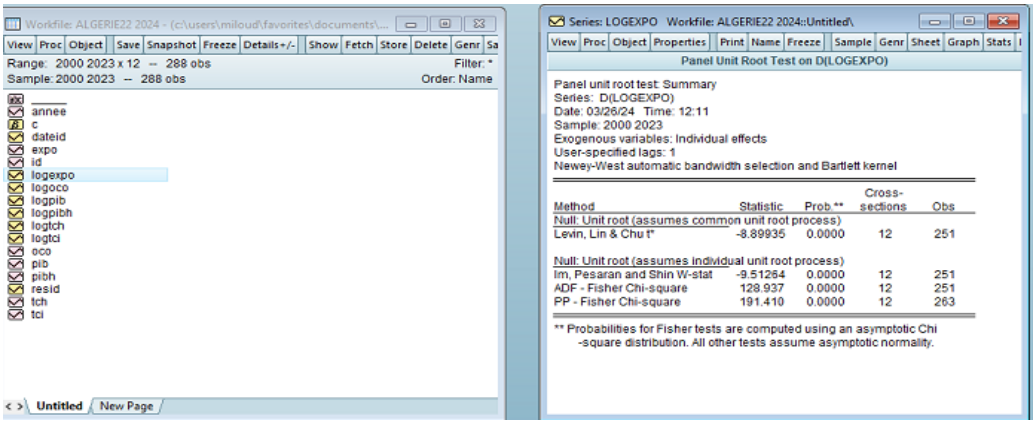
Table N°11 : displays the findings of an export model estimate for Algeria.

Variables	Coefficients	t-Statistic	PROB
c_0	-5.227536	(-3.985099)	0.0001
LOCO	0.284510	(0.797715)	0.0000
LPIB	0.746226	(4.137086)	0.0007
LPIBH	0.167904	(0.841850)	0.0299
LTCH	-0.432953	(-2.183850)	0.00
LTCI	-0.086042	(-0.300392)	0.0001
R-squared	0.817634		
Prob(F-Statistic)	000000		

The Source: The researchers used the "Eviews.12" tool to prepare it.

5.1.3. Perform unit root tests on the Algeria xport model's "lexpo" series: Using information about the available data and the "Eviews" program "Eviews.12," Regarding the variables of the Algerian export model, we conduct unit root tests on the "lexpo" series We get the following table:

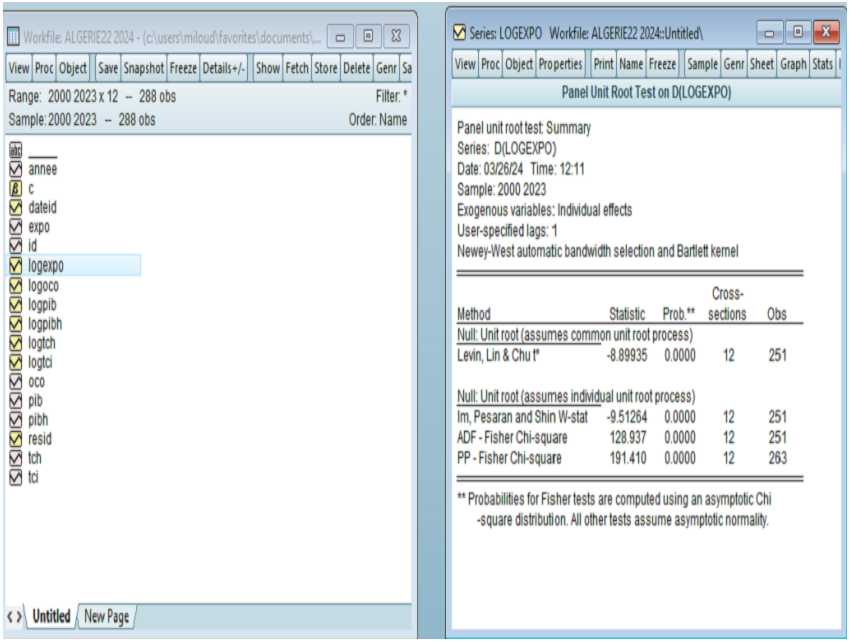
Table N°12: reflects the results of unit root testing on the "lexpo" series of the Algerian export model.



The Source: The researchers used the "Eviews.12" tool to prepare it.

From Table No(14), we note that all the probability values of the "Levin and Lin and Chu" "," Im, Pesaran et Shin "", and the developed Dickie Fuller test,"ADF-Fisher Chi-Square" "are respectively 0.1685,0.1168,0.1906, whichare all greater than (5%), except for the" PP-Fisher Chi-Square "test,which had a value of 0.0006 less than (5%), we accept the null hypothesis, that is, the" LEXP01 "series is unstable and with the rule of taking most of the results, the" LEXP0 "series is not stable at the level Since the **"LEXP0" series** of Algeria's export model is unstable ,we must generate a series of first-class differences and repeat the tests according to the results obtained in the following table:

Table N°13: displays the results of the unit root tests on the series "LEXP01" with the first-class differences of the model Algeria exports



The Source: It was prepared by the researchers using the "Eviews.12" application.

From Table (15), we note that all probability values for the "Levin and Lin and Chu", "Im, Pesaran et Shin", "Dickie, Fuller, Fisher,KeySquare" "ADF-Fisher-Chi-square" and "PP-Fisher-Chi-square" tests are respectively: (0.0000,0.0000,0.0000,0.0000), Every one of them is below

5%. We agree with the alternative hypothesis, which states that the Algerian export model's "LEXP0" series is integrated grade 1 and stable with the first differences.

5.2. Conduct unit root tests for the remaining variables of the two export models Algeria

With the same previous steps and based on the "Eviews.12" program and using the

available data about the data available to us regarding the variables typical of Algeria exports, we conduct unit root tests for the remaining variables. We obtain the following results:

5.2.1. Conducting unit root tests for the remaining variables of the export model Algeria

Table N°14:represents the results of the unit root tests of the remaining variables of the export model Algeria.

Variables	First Level:				First difference			
	LLC)	IPS	ADF	Stable	LLC	IPS	ADF	Stable
Loco	-0.32504 (0.3726)	-1.07682 (0.1408)	35.3616 (0.0632)	Unstable	-7.72893 (0.0000)	-8.70728 (0.0000)	117.121 (0.0000)	Stable
	-2.38232 (0.0086)	2.19338 (0.0141)	45.0782 (0.0057)	Unstable	-6.79597 (0.0000)	-7.12235 (0.0000)	91.8948 (0.0000)	Stable
	-1.87377 (0.03505)	- -	26.7185 (0.3177)	Unstable	-13.2225 (0.0000)	- -	180.905 (0.0000)	Stable
Lbip	-4.85033 (0.0000)	-4.19369 (0.0000)	62.5439 (0.0000)	Stable	-5.16295 (0.0000)	-5.505058 (0.0000)	75.0240 (0.0000)	Stable
	-3.05674 (0.0011)	-0.21572 (0.4146)	23.0076 (0.5194)	Unstable	-5.20224 (0.0000)	-6.11414 (0.0000)	79.4960 (0.0000)	Stable
	5.74658 (1.0000)	- -	1.62760 (1.0000)	Unstable	-6.21461 (0.0000)	- -	98.2763 (0.0000)	Stable
Lpiph	-6.31416 (0.0000)	-4.52219 (0.0000)	66.8130 (0.0000)	Stable	-4.94538 (0.0000)	-4.99422 (0.0000)	66.9208 (0.0000)	Stable

	3.18887 (0.0007)	-0.07802 (0.4689)	23.5300 (0.4887)	Unstable	-4.94039 (0.0000)	-5.64257 (0.0000)	73.3858 (0.0000)	Stable
	5.37218 (1.0000)	- -	2.22244 (1.0000)	Unstable	-8.25551 (0.0000)	- -	98.6650 (0.0000)	Stable
Ltch	4.04487 (1.0000)	4.19128 (1.0000)	1.30512 (0.9955)	Unstable	-1.57827 (0.0573)	-2.21234 (0.0135)	17.4158 (0.0261)	Stable
	1.33844 (0.9096)	1.93809 (0.9737)	1.62634 (0.9904)	Unstable	-3.76911 (0.0001)	-4.04615 (0.0000)	30.5865 (0.0002)	Stable
	0.71952 (0.7641)	- -	3.70253 (0.8829)	Unstable	-4.17782 (0.0000)	- -	28.1864 (0.0004)	Stable
Ltci	0.78867 (0.7848)	-1.41842 (0.0780)	32.4416 (0.1164)	Unstable	-1.92733 (0.0270)	-6.81021 (0.0000)	91.0500 (0.0000)	Stable
	2.65001 (0.9960)	-0.34350 (0.3656)	25.0056 (0.4055)	Unstable	1.21688 (0.1118)	-4.64683 (0.0000)	63.4900 (0.0000)	Stable
	-1.57521 (0.0576)	- -	27.1479 (0.2976)	Unstable	-11.4632 (0.0000)	- -	154.057 (0.0000)	Stable

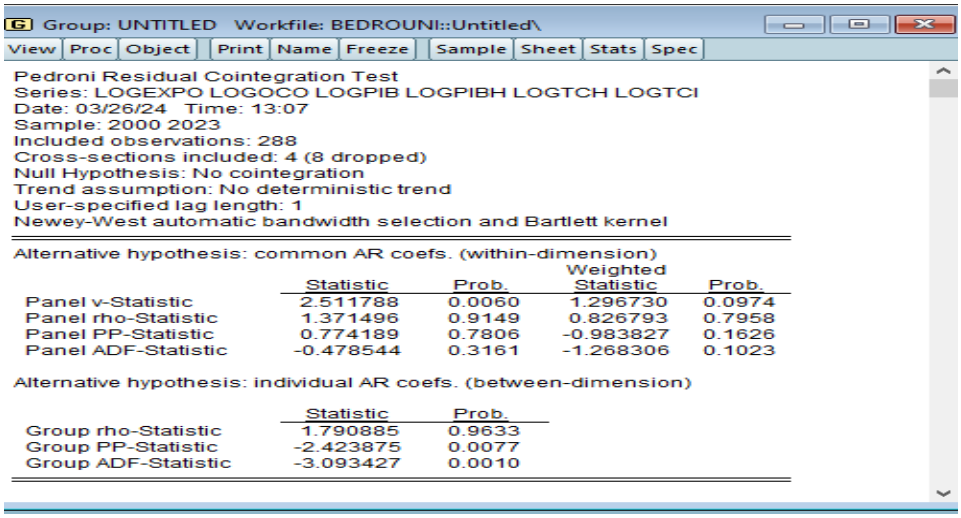
The Source: The researchers used the "Eviews.12" tool to prepare it.

5.3. Joint Integration Testing:

Co-integration means that the variables in the long run converge provided that the long chains have the property of stability or static. If they are unstable, their estimation leads to a false regression. The existence of a equilibrium relationship between long chains for long terms is tested by co-integration tests. The simultaneous integration relationships of Pidrouno, Kao, andFisher are known by testing the unit root hypothesis for the remainder of the integration (Benali, 2021, p. 21).

Considering that the study variables "Lexpo, Loco, LPIB, LPIBH, LTCH, LTCI" for the two models of Algerian exports are all stable at their first differences, that is, at the same level, and therefore we can conduct the joint integration ofPidrouno "Kao" taking into account that the dependent variable is Algerian exports "LEXP0" and the rest of the variables are independent variables, and using a program using the "Eviews" program, we reached the following results:

Table N°15:Represents the results of the joint integration tests of the longitudinal chains of the Algerian export model



Group: UNTITLED Workfile: BEDROUNI::Untitled\

View | Proc | Object | Print | Name | Freeze | Sample | Sheet | Stats | Spec

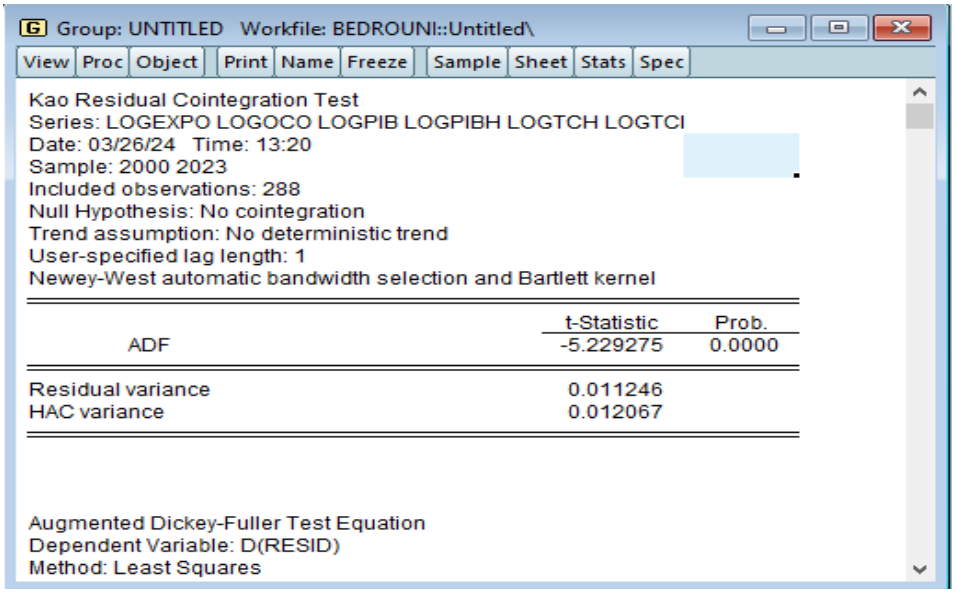
Pedroni Residual Cointegration Test
Series: LOGEXPO LOGOCO LOGPIB LOGPIBH LOGTCH LOGTCI
Date: 03/26/24 Time: 13:07
Sample: 2000 2023
Included observations: 288
Cross-sections included: 4 (8 dropped)
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
User-specified lag length: 1
Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	2.511788	0.0060	1.296730	0.0974
Panel rho-Statistic	1.371496	0.9149	0.826793	0.7958
Panel PP-Statistic	0.774189	0.7806	-0.983827	0.1626
Panel ADF-Statistic	-0.478544	0.3161	-1.268306	0.1023

Alternative hypothesis: individual AR coefs. (between-dimension)

	Statistic	Prob.
Group rho-Statistic	1.790885	0.9633
Group PP-Statistic	-2.423875	0.0077
Group ADF-Statistic	-3.093427	0.0010



Group: UNTITLED Workfile: BEDROUNI::Untitled\

View | Proc | Object | Print | Name | Freeze | Sample | Sheet | Stats | Spec

Kao Residual Cointegration Test
Series: LOGEXPO LOGOCO LOGPIB LOGPIBH LOGTCH LOGTCI
Date: 03/26/24 Time: 13:20
Sample: 2000 2023
Included observations: 288
Null Hypothesis: No cointegration
Trend assumption: No deterministic trend
User-specified lag length: 1
Newey-West automatic bandwidth selection and Bartlett kernel

	t-Statistic	Prob.
ADF	-5.229275	0.0000
Residual variance	0.011246	
HAC variance	0.012067	

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESID)
Method: Least Squares

The Source: The researchers used the "Eviews.12" tool to prepare it.

Using Table No. (04-13), which shows the outcomes of the joint integration test for Algeria's two export models and the conclusions, we note that the majority of partial tests exceeded the probability of P(value) for each test 5% ,we reject the zero hypothesis and thus the existence of joint integration and we can estimate the long-term relationship.

6. Final Estimate of Algeria's Exports Model:

Through the results obtained in the past, it is possible to estimate the two models of exports of each of Algeria, taking into account also the problem of non-significance of the exchange rate parameter that is not significant. The model can be estimated Algeria's exports according to the following table:

Table N°16: represents the findings of the Algerian export model's final long-term relationship estimation utilizing the "FMOLS" approach.

Variables	Coefficient	t-Statistic	PROB
Loco	-0.095974	-1.883824	0.0498
LPIB	0.709577	42.98788	0.0000
LPIBH	0.245863	64.28061	0.0000
LTCI	0.059201	5.592910	0.0000
Fixed individual effects of states on Algerian Exports	Italy	8.002040	
	Spain	1.151792	
	Germany	-2.554480	
	U S A	-3.008109	
	Turkey	-0.894096	
	Belgium	-1.482831	
	China	-4.987129	
	France	0.498458	
	Brazil	-0.546980	
	Netherlands	-1.513501	
	Portugal	0.442551	
R-squared	0.811401		
R-squared	0.799414		

The Source: The researcher used the "Eviews" tool to prepare it.

6.3.An economic evaluation of Algeria's export strategy:

Following the final assessment of the Algerian export model's equation for its most significant trade partners, or "customers," the following relationship was discovered over the study period (2000–2021):

$$EXPO1_{\text{الجزائر}} = PIB^{0.709577} + PIBH^{0.245863} + TCI^{0.059201} - OCO^{0.095974} \dots\dots\dots.$$

The findings of calculating the individual effects of countries on Algeria's exports during the period (2000–2023) indicate that there is an influence of this attraction of Algerian exports on the dependent variable, even though the constant impact varies in value from one country to another. We can see that the countries that are helping to Algeria's export growth are Italy, France, Spain, Turkey, and Brazil, while the countries that are contributing to Algeria's export decline are Germany, China, the United States of America, the Netherlands, Portugal, and Belgium. These results are in line with the actual trade exchanges with these trading partners as Algeria's clients, based on data provided by the General Directorate of Algerian Customs.

6.Conclusion:

The results of the two countries' previously computed models, Algeria, and their economic comparison led to the following deductions:

- ✓ The volume coefficients "PIB" for each of Algeria's most important trading partners are positive, indicating the positive role in stimulating and activating the two countries' foreign trade sector. This is because the income levels The amount of demand for any nation's exports is determined by the number of importing nations. The amount of the country's national income affects consumer purchases of goods and services, and the demand for this nation's exports is the last to rise. The state's prospects and potential increase in tandem with its revenue. This is because the amount of imports from these exporting countries will keep increasing as long as the importing countries show signs of economic comfort.
- ✓ We discovered that Algeria's PIBH transactions for the most important trading partners were positive since the PIBH measures the purchasing power and standard of living of the two nations' citizens. This clarifies

why it plays a beneficial function in triggering the trade policy instruments that the government employs to promote Algeria's international trade. Growing purchasing power increases consumer demand, which in turn drives more imports to meet the rising need, especially for non-government-made items.

✓ The economic crisis of 2014, which was marked by the drop in oil prices on global markets, Algeria's failure to deal with the problems of Both the volatility of oil prices and the lack of export diversification outside of the hydrocarbon sector have an effect on Algeria's export volume.This suggests that the 2014 economic crisis and the overall amount of Algerian exports to its most significant trading partners are positively correlated. Algeria's imports were significantly more negatively affected by the 2014 crisis than its exports because the majority of imports are funded by oil export revenue;

✓ Like other nations throughout the world, Algeria's economy was impacted by the Corona pandemic (Covid 19), especially in 2020. But the nation's distinct position as a rentier economy was further influenced by the drop in the oil price. Because of the limitations imposed on the world oil market by the health crisis and the steps taken by countries to restrict travel and implement closure measures intended to curb the disease's spread, the consequences of the coronavirus are more noticeable in the international trade sector. As a result, Algeria's petroleum exports decreased by 7.5% in 2023.

✓ The essential components that are frequently acknowledged in the development of the introduction, such as the study problem, study hypotheses, study objectives, topic significance, study technique, and prior research, must be included.

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