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The Impact of Logistics Services on the Commodity Trade Structure in United Arab Emirates: An Econometric Study

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Abstract:

This study aims to highlight the impact of the logistics services on the commodity trade structure of the UAE. The logistics services represented by (Competence and quality of logistics services, Quality of Trade and Transport Infrastructure, Efficiency and Quality of Logistics Services, and Overall as well as the efficiency of the customs clearance process). ARDL and ARIMA model were used to predict the future values of this standard series, and the relevant data were collected from the World Bank and the Arab Monetary Fund, respectively for the period (2000-2030), after conducting various tests necessary for the distributed autoregressive.

This study found an inverse relationship between (Competence and quality of logistics services, Quality of Trade and Transport Infrastructure as well as Efficiency and Quality of Logistics Services) with (commodity trade structure) in the short and long term, in contrast to the variable Efficiency of the customs clearance process, which has a directional relationship in the short and long term, to confirm the vital role played by logistics services on the commodity trade pattern of the Emirates.

The study concluded that the of logistics services, reduces the costs and improves the

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competitiveness of the commodity trade sector of the UAE.

Keywords: logistic services, commodity trade structure, ARDL, ARIMA, The United Arab Emirates.

1. Introduction:

The international economic relations features of 21st[twenty-first century] is the increasing specialization of global value chains, (Pomfret, & Sourdin,, (2018), pp. 105–122. P= 106)With the deepening of economic globalization, great changes have occurred in the way the world economy is organized, and the geographical pattern of production and consumption has undergone tremendous changes, and waves of outsourcing have emerged. (Coe, (2014), pp. 224–256.p=225)

The world economy is characterized by the era of globalization, especially the last decade of internationalization of factors of production and expansion of the international division of labor, future expectations, increasing dynamism, and the massive scale of trade liberalization. National economies and their impact on international trade, (nations, (2008), p. 15) With countries promoting commodity trade liberalization with the support of the World Trade Organization and in the context of regional and bilateral trade, international logistics trade liberalization has become a general trend. Liberalization of trade in logistics services is seen as an integral part of strategies to improve exports and achieve economic development. (Jose , (2012), pp. 5–32. p=6)

The global economy was affected by the Covid-19 pandemic, which disrupted maritime transport and supply chains due to port closures and shipping delays. In 2020, the pandemic severely disrupted logistics and global maritime trade,(Unctad, (2022), p. 21)This caused major trade bottlenecks and difficulties in selling products. In addition to the continuing trade tensions between the United States and China, the sharp rise in shipping costs from China, and the impact of supply chains due to the Russian-Ukrainian war.(OCED, (2022), p. 11)

Trade logistics (Trade logistics refers to the management process that includes the entire flow of goods and information between suppliers and companies and between customers and companies on the one hand and the inward flow of goods on the other). (Soloodo, 2023) is critical to the smooth conduct of global trade, especially when it comes to freight, as more than 80% of global merchandise trade is transported by sea,(Unctad, Impact of the covid 19 Pandemic on trade and development,, (2022), p. 20)Ports and logistics systems play a role in the relationship between development and mutual promotion, which has led to a shift in port logistics competition from cost differential competition to service teams'competition.(Liu, (2020), pp. 220–222.p 220)

Based on the above proposition, in the face of this new trend taking place in the global economic arena, the UAE, like the global economies, sought to adapt to it and integrate into it through optimal guidance, as required by current international data for the impact that it embodies in covering the needs of societies and industry in terms of commodities on the one hand, and economic development.

On the other hand,the UAE has become an important inflection point in global logistics, as well as a central location for international supply chains and the global flow of goods. In addition to the physical infrastructure and large multinational corporations, the UAE's logistics space is supported by highly liberal trade regulations designed to facilitate trade, including an interconnected network of free zones, a regional trade gateway, and a commodity trading enterprise on the intra-European trade route. and East Asia. (Ziadah, (2019), pp. 34–37. p.35)

In light of the foregoing, the study problem can be formulated in the following essential question:

What is the impact of logistics services on the commodity trade structure in the United Arab Emirates?

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this study attempts to show the impact of the of logistics services on the commodity trade structure of the UAE, and whether there is a long-term relationship between them and the prediction until the year 2030 in light of global changes.

2. Literature Review:

Previously, the term logistics was used by the French in the 17th century as an inherent part of warfare, a usable framework for military organization. (Rider, (1970), pp. 24–33, p31)In the 1990s, business logistics was a very important topic. Most companies have realized the role of cost through negotiations with carriers and implementation of the systems approach and total cost concepts. This led to the development of electronics and communication technologies, such as the Internet and electronic data interchange, being the main factor in logistics services. The early 21st century was also marked by a slow evolution from logistics to supply chain management, at least as far as academia was concerned. The business world has been much slower to embrace this concept, especially small and medium businesses. However, the technology is already available, and some major companies are taking advantage of the opportunity to collaborate electronically with their channel partners. Online and distance learning in logistics and supply chain management has also grown exponentially in recent years.(Southern, (2011), pp. 53–64. p63)It also interacts with other activities of the company such as marketing, finance, production, management information systems, etc. Its practitioners see logistics as the common thread that weaves and ties together all of the company's traditional functions to meet customer needs. (Allen, (1997), pp. 106–116. p110)

Moreover, logistics is an important activity that passes through the general situation of the national economy and social life, and it is the primary area that the state and companies focus on informatics,(Liu X. , (2020), pp. 283–285. P=283)There is also a growing recognition that logistics - the process of planning, implementing and managing the movement and storage of raw materials, components, finished goods and related knowledge - from the point of origin to the point of consumption - has led to the emergence of new production systems including greater flexibility, greater use of just-in-time procurement and delivery systems. , the increasing geographical scope and complexity of production networks, the relationships between customers and suppliers, the changing nature of commerce, the ever-increasing importance of logistics strategies, the importance of trade capital, the growing power of retailers, and the ever-increasing sophistication of consumer tastes. (Coe, , (2014), pp. 224–256.p=225)Under the development trend of economic globalization, the financial difficulties of the supply chain may cause a serious crisis for the enterprises in the entire supply chain. It is necessary to ease the transformation pressure faced by international business enterprises. (Xie, & Chen, , (2022), pp. 711–724)

Previous studies on logistics are related to the subject of the study. Using data from a large-scale urban freight survey in the Tokyo metropolitan area in 2013, the relationship between logistics location and freight vehicles is analyzed by the distance traveled by utility-related transportation. The results indicate the lack of available space for logistics lands near urban centers has resulted in large gaps in the optimal distances for certain groups of logistics facilities, such as those dealing with everyday goods, these same locations may not benefit other logistics facilities.

This paper systematically analyzes the impact of logistics development level on bilateral trade between 31 provinces in China and 65 countries along the “Belt and Road”, using a gravity model to increase the data for the period 2008-2018. The experimental results show that: (1) The development level of logistics greatly promotes the development of international trade. (2) Compared with partner countries, China's logistics development level has a greater impact on bilateral trade. (3) The influence of logistics development level is reflected in different periods, international levels and different regions, especially the coefficient of logistics development level in the western region is negative, and that in the eastern region is negative. positive. According to the research results, strengthening the construction of domestic and international logistics services is not only conducive to the sustainable

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development of my country's future trade, but also conducive to the coordinated development of my country's eastern, central and western regions.(Ma, , Xiaoshu , & Jiyuan, 2021, p. 2107)

Thisstudy offers that simply concentrating on logistics facilities near city centers or suburbs may not reduce truck traffic. Detailed data on logistics and transportation facilities are essential for developing efficient ways to improve distances for logistics land use. (Sakai, Kawamura, & Hyodo, (2018), pp. 575–591)This study also examines the impact of logistics performance on the survival of exports using a sample of 28 EU exporters and 70 importers during the period 2005-2017. Estimates from a discrete time-logarithmic model with random effects show that improvements in logistics performance in both exporting and importing countries significantly increase export survival in 28 EU countries.(Türkcan & Majune, (2022), pp. 509–535)

Another study based on the status and prospects of Chinese manufacturers' use of overseas logistics services, as well as differences between users and non-users of an industry survey conducted in 2002, the results revealed significant differences between users and non-users of some firms - specific characteristics such as industry type and method. production and account volume. Many manufacturers are using a "hybrid" strategy to mitigate the risks associated with this transition economy by sourcing temps from multiple suppliers. Corporate outsourcing of logistics services in China is on the rise, especially in the areas of logistics information system management and logistics system design. Significant dissatisfaction in the market is due to the price level, on-time delivery performance, and volume of service offerings. (HONG, , CHIN, , & LIU, , (2004), pp. 17–25)

The literature on the Logistics Performance Index (LPI) - Bilateral Trade Relationship indicates that trade improves exponentially with increasing logistics concession. Bilateral trade data for 127 countries for 2016 and weighted average values for their sales performance index for the period 2012-2018 were used. Results indicate that the effect of LPI on trade is lowest among large countries, followed by small and medium countries. Along with analyzing the commercial impact of LPI. (Kumari, (2021), pp. 401–423)

In addition,this paper examines the impact of logistics performance on global bilateral trade. From a supply chain perspective, logistics performance refers to the cost, time and complexity of performing import and export activities. It is concluded that the focus of public and private institutions with direct or indirect impact on logistics performance is to increase the competitiveness of their countries in the global economy. (Hausman, Lee, & Subramanian, (2013), pp. 236-252)

3. Methodology:

The used data in this study consist of(Competence and quality of logistics services, Quality of Trade and Transport Infrastructure, Efficiency and Quality of Logistics Services, and Overall, Efficiency of the customs clearance process) Between 2000 and 2021 from the World Bank database,(bank, 2023) Data on the commodity trade structure of the UAE was also obtained from the statistics of the Arab Monetary Fund,(Arab Monetary Fund , 2023)

Y: Commodity structure of Trade [CST]
X1: Logistics performance index: Competence and quality of logistics services (1 = low to 5 = high): CQLS
X2: Logistics Performance Index: Quality of Trade and Transport Infrastructure (1=low to 5=high): QTTI
X3: Logistics Performance Index: Efficiency and Quality of Logistics Services (1=low to 5=high): EQLS
X4: Logistics Performance Index: Overall (1=low to 5=high): LPO
X5: Logistics Performance Index: Efficiency of the customs clearance process (1=low to 5=high): FCCP

3.1. The descriptive statistical analysis of the study variables

The collected Data of the study was of the period (2000-2021) where a descriptive analysis of those variables was conducted, for the sample size, 22 observations were reached for each of the studied variables, and therefore this component was devoted to reviewing the data related to the studied variables by presenting the descriptive data analysis as follows.

3.1-1- The results of the descriptive analysis estimations of the variables

A number of statistical methods were adopted to present and analyze this data. The results are shown in the following table:

Table (01): Descriptive statistics of the dependent and independent variables of the study

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	CQLS	CST	EQLS	FCCP	LPO	QTTI	SERIES01
Mean	0.186364	197696.9	0.219245	0.200000	0.186364	0.239330	2010.500
Median	0.000000	185936.3	0.000000	0.000000	0.000000	0.050000	2010.500
Maximum	0.900000	359812.0	0.900000	0.900000	0.900000	0.900000	2021.000
Minimum	0.000000	38856.15	0.000000	0.000000	0.000000	0.000000	2000.000
Std. Dev.	0.273413	114210.5	0.309516	0.294001	0.281695	0.300863	6.380646
Skewness	1.243341	0.033868	0.975166	1.135427	1.306678	0.864930	3.75E-17
Kurtosis	3.276072	1.441812	2.340297	2.820960	3.292714	2.294772	1.795031
Jarque-Bera	22.95260	8.919302	15.54300	19.02572	25.35615	12.79580	5.323817
Probability	0.000010	0.011566	0.000422	0.000074	0.000003	0.001665	0.069815
Sum	16.40000	17397326	19.29360	17.60000	16.40000	21.06102	176924.0
Sum Sq. Dev.	6.503636	1.13E+12	8.334625	7.520000	6.903636	7.875136	3542.000
Observations	88	88	88	88	88	88	88

Source: Prepared by researchers based on the outputs of Eviews 12

The arithmetic mean of the CST index during the study period was 197696.9. It had the highest value recorded at 359812.0and the lowest value was estimated at 38856.15.It notes slight differences in the index values, and the standard deviation value of Std.Dev is somewhat high, and this indicates a lack of homogeneity of the variables, and it is noted that the variables do not follow a normal distribution, as the significance value (probability) was greater than 0.05 for JarqueBera

3.1-2- Causality between variables Study

To find out the direction of causality between the study variables, we will use the Granger test, and the test results are summarized in the following table:

Table (02): Results of the causality test between the study variables

Pairwise Granger Causality Tests
Date: 05/20/23 Time: 10:27
Sample: 2000Q1 2021Q4
Lags: 2

NullHypothesis:	Obs	F-Statistic	Prob.
CST does not Granger Cause CQLS	86	0.38003	0.6851
CQLS does not Granger Cause CST		0.00554	0.9945
EQLS does not Granger Cause CQLS	86	0.37140	0.6909
CQLS does not Granger Cause EQLS		0.23621	0.7902
FCCP does not Granger Cause CQLS	86	0.36173	0.6976
CQLS does not Granger Cause FCCP		0.37273	0.6900
LPO does not Granger Cause CQLS	86	0.22456	0.7994
CQLS does not Granger Cause LPO		0.31802	0.7285
QTTI does not Granger Cause CQLS	86	0.07363	0.9291
CQLS does not Granger Cause QTTI		1.22042	0.3005
SERIES01 does not Granger Cause CQLS	86	0.45389	0.6368
CQLS does not Granger Cause SERIES01		0.00202	0.9980
EQLS does not Granger Cause CST	86	0.26958	0.7644
CST does not Granger Cause EQLS		0.06859	0.9338
FCCP does not Granger Cause CST	86	0.01719	0.9830
CST does not Granger Cause FCCP		0.01342	0.9867
LPO does not Granger Cause CST	86	0.25271	0.7773
CST does not Granger Cause LPO		0.05543	0.9461

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QTTI does not Granger Cause CST	86	0.15498	0.0067
CST does not Granger Cause QTTI		0.66058	0.0093
FCCP does not Granger Cause EQLS	86	0.25555	0.7751
EQLS does not Granger Cause FCCP		0.39972	0.6718
LPO does not Granger Cause EQLS	86	0.11604	0.8906
EQLS does not Granger Cause LPO		0.33796	0.7142
QTTI does not Granger Cause EQLS	86	0.08326	0.9202
EQLS does not Granger Cause QTTI		1.34289	0.2668
LPO does not Granger Cause FCCP	86	0.21944	0.8034
FCCP does not Granger Cause LPO		0.30287	0.7395
QTTI does not Granger Cause FCCP	86	0.09856	0.9063
FCCP does not Granger Cause QTTI		1.22073	0.3004
QTTI does not Granger Cause LPO	86	0.07672	0.0062
LPO does not Granger Cause QTTI		1.05188	0.0040

Source: Prepared by researchers based on the outputs of EViews 12

3.1.3 We note from the above table the following:

- ✓ The CST variable does not cause the CQLS variable at a significant level of 5%.
- ✓ The EQLS variable does not cause the FCCP variable at a significant level of 5%.
- ✓ The LPO variable does not cause the CQLS variable at a significant level of 5%.
- ✓ The LPO variable does not cause the CST variable at a significant level of 5%.
- ✓ The QTTI variable does not cause the CST variable at a significant level of 5%.
- ✓ The FCCP variable does not cause the CST variable at a significant level of 5%.
- ✓ The CST variable causes the EQLS variable at the 5% level of significance.
- ✓ The QTTI variable causes the LPO variable at a 5% level of significance.

3.2. First: study the impact of logistic services on the commodity structure of trade in the UAE By adopting the ARDL model methodology

3.2.1 Analysis of the study of the stability of time series

To study the stability of the time series of the variables, we have used two tests, each of the expanded Dickie Fuller test (ADF) and Philip Peron PP, with the addition of a logarithm for better stability of the model. The stability results are as follows:

Table (03): Results of both ADF and PP unit root tests

UNIT ROOT TEST TABLE (PP)

At Level

		CST	CQLS	EQLS	FCCP	LPO	QTTI
With Constant	t-Statistic	-1.4897	-4.5080	-4.4820	-4.5003	-4.5684	-4.4316
	Prob.	***0.5342***	***0.0004***	***0.0004***	***0.0004***	***0.0003***	***0.0005***
		n0	***	***	***	***	***
With Constant & Trend	t-Statistic	-3.0389	-4.5875	-4.4868	-4.5056	-4.5456	-4.6263
	Prob.	***0.1279***	***0.0020***	***0.0028***	***0.0026***	***0.0023***	***0.0018***

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		n0	***	***	***	***	***
Without Constant & Trend	t-Statistic	0.0280	-3.8437	-3.9258	-3.8299	-3.7877	-3.4582
	Prob.	***0.6890***	***0.0002***	***0.0001***	***0.0002***	***0.0002***	***0.0007***
		n0	***	***	***	***	***
			At First Difference				
		d(CST)	d(CQLS)	d(EQLS)	d(FCCP)	d(LPO)	d(QTTI)
With Constant	t-Statistic	-9.2490	-9.1738	-9.1810	-9.1726	-9.1687	-9.1670
	Prob.	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
		***	***	***	***	***	***
With Constant & Trend	t-Statistic	-9.1938	-9.1232	-9.1398	-9.1206	-9.1140	-9.1142
	Prob.	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
		***	***	***	***	***	***
Without Constant & Trend	t-Statistic	-9.2195	-9.2195	-9.2195	-9.2195	-9.2195	-9.2195
	Prob.	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
		***	***	***	***	***	***

UNIT ROOT TEST TABLE (ADF)

	At Level						
		CST	CQLS	EQLS	FCCP	LPO	QTTI
With Constant	t-Statistic	-1.4789	-1.7566	-3.1520	-2.4288	-2.6022	-2.4244
	Prob.	***0.5396***	***0.3992***	***0.0266***	***0.1371***	***0.0966***	***0.1382***
		n0	n0	**	n0	*	n0
With Constant & Trend	t-Statistic	-2.8792	-2.2545	-3.2416	-2.4705	-2.5557	-3.0426
	Prob.	***0.1743***	***0.4532***	***0.0836***	***0.3417***	***0.3015***	***0.1272***
		n0	n0	*	n0	n0	n0
Without Constant & Trend	t-Statistic	0.0280	-1.0589	-1.0932	-1.7231	-1.7618	-1.4687
	Prob.	***0.6890***	***0.2594***	***0.2465***	***0.0804***	***0.0742***	***0.1318***
		n0	n0	n0	*	*	n0
			At First Difference				
		d(CST)	d(CQLS)	d(EQLS)	d(FCCP)	d(LPO)	d(QTTI)
With Constant	t-Statistic	-9.2490	-7.4423	-11.2570	-12.8138	-11.7731	-11.6194
	Prob.	***0.0000***	***0.0000***	***0.0001***	***0.0001***	***0.0001***	***0.0001***
		***	***	***	***	***	***
With Constant & Trend	t-Statistic	-9.1938	-7.4641	-11.1439	-12.7207	-11.7083	-11.5968
	Prob.	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
		***	***	***	***	***	***
Without Constant & Trend	t-Statistic	-9.2195	-7.4979	-11.3269	-12.8903	-11.8467	-11.6929
	Prob.	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***	***0.0000***
		***	***	***	***	***	***

Notes: (*)Significant at 10%; (**)Significant at 5%; (***) Significant at 1%. and (no) Not Significant
*MacKinnon (1996) one-sided p-values.

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We use unit root tests for the time series of the variables used in the model. The results of using ADF's (and Philippe Peron's) PP tests are shown in Table 03, where it is seen that some series

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are stable at their CST level, and others are only stable when contrast is performed on them in the first place. We are faced with the choice of applying the automatic distributed regression model, Time Lapse ARDL, what distinguishes this test is that it does not require the studied variables to be integrated to the same degree. Since "Pesaran" believes that the bounds test according to the ARDL methodology can be applied without taking into account the characteristics of the time series, whether these variables are stable in their levels (0) (I) or stable in the first degree. Variations (I1), or a combination of the two. The only condition for applying this test is that these variables are not stable for squared differences.

3.2.2 Relationship Modeling

After analyzing the index of the variables used in the standard study, and determining the degree of integration of the time series, all of which settled at the first difference, the results of estimating the co-integration model will be presented according to the ARDL methodology, as the model is estimated as follows:

$$CST_t = f(CQLS_t + EQLS_t + FCCP_t + LPO_{\ t} + QTTI_t)$$

3.2.3 Co-integration test using the limit d model: (ARDL Bonds test)

Determining the optimal degree of delay: to determine the length of the distributed slowing periods, we use the Akaiki criterion (AIC) by taking the degree of delay that corresponds to the lowest value of this criterion, and the results are shown inSee the Appendix No. 1; Figure No. (01).

Table (04) : Results of determining the optimal degree of time delay

Optimal delay times (p,q_1,q_2,q_3,q_4,q_5)	Delay periods used		Sample
AIC	q_1	p_1	
(1.0.0.0.1.1)	0	1	Sample

Source: Prepared by researchers based on the outputs of Eviews 12

Where we notice that according to Akaiki's criterion, the best model is (1.0.0.0.1.1) ARDL, that is, both dependent variables and independent variables at degrees of delay

3.2.4 Limits test for co-integration: ARDL Bonds test

The statistic test is Fisher's statistic, and the decision is as follows if the value of the F statistic is less than the minimum critical values, then we accept the null hypothesis that there is no co-integration relationship, but if the F statistic is greater than the upper limit of the critical values, then we reject the null hypothesis and accept the hypothesis The alternative is the existence of a co-integration relationship, but if the value of the F statistic is confined between the upper and lower limit of the critical values, we cannot decide whether or not there is a co-integration relationship.

Table (05): ARDL Bounds test for co-integration

F-Bounds Test				
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.679196	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Prepared by researchers based on the outputs of Eviews 12

It is noted through the test results that the calculated value of Fisher's F statistic = 5.679196 lies outside the upper limits I1 and the lower limits I0 in all levels of significance 10%, 5%, 2.5%%,

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and 1%. It makes us reject the null hypothesis which states that there is no long-run equilibrium relationship, and we accept the alternative hypothesis which states that there is a co-integration between the variables of the study, which means that there is a long-run equilibrium relationship between the variables. The results are shown in Appendix 2; Table No. (05).

4. Model estimation according to the ARDL methodology

Table (06).: ARDL estimation results

DependentVariable: CST
Method: ARDL
Date: 05/20/23 Time: 10:11
Sample (adjusted): 2000Q2 2021Q4
Includedobservations: 87 afteradjustments
Maximum dependentlags: 2 (Automaticselection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): CQLS EQLS FCCP LPO QTTI
Fixedregressors: C
Number of modelsevaluated: 486
SelectedModel: ARDL(1, 0, 0, 0, 1, 1)
Note: final equation sample is larger than the selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CST(-1)	0.939624	0.037779	24.87169	0.0000
CQLS	-5668.855	20730.51	-0.273455	0.7852
EQLS	-14269.81	20693.69	-0.689573	0.4925
FCCP	21092.49	22964.20	0.918494	0.3612
LPO	92446.60	31670.83	2.918982	0.0046
LPO(-1)	-92901.86	27628.18	-3.362577	0.0012
QTTI	-91466.27	29645.54	-3.085330	0.0028
QTTI(-1)	85415.38	26289.00	3.249092	0.0017
C	16819.72	9726.283	1.729306	0.0077

R-squared	0.917516	Meandependent var	199396.2
Adjusted R-squared	0.909056	S.D. dependent var	113748.2
S.E. of regression	34302.99	Akaike info criterion	23.82155
Sumsquaredresid	9.18E+10	Schwarz criterion	24.07664
Log-likelihood	-1027.237	Hannan-Quinn criterion.	23.92427
F-statistic	108.4545	Durbin-Watson stat	1.985378
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Source: Prepared by researchers based on the outputs of Eviews 12

Through these results, we notice that the coefficient of determination is equal to 91%, meaning that the independent variables are explained by changes that occur at the level around the structure of trade goods in the United Arab Emirates by 91%, and the rest is due to other factors, including standard error, which indicates that the model has a strong explanatory ability, in addition to that the value calculated for the Fisher test equal to 108 is greater than the values tabular, that is, the model as a whole has significant significance.

4.1 The results of the evaluation form

After confirming the existence of a long-term equilibrium relationship between variables in proportion to the model that we included in this study, the results of co-integration are estimated as follows, and the short-term relationship and the long-term relationship form are estimated:

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Through the results presented in the ARDL estimation table in the short term, which appears in the upper part of the table, while the lower part shows the estimation of the long-term relationship through the estimated model, an interpretation will be provided for it in the long and short terms as follows:

Table (07) :ARDL Long Run Form and Bounds Test

ARDL Long Run Form and Bounds Test
DependentVariable: D(CST)
SelectedModel: ARDL(1, 0, 0, 0, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 05/20/23 Time: 11:44
Sample: 2000Q1 2021Q4
Includedobservations: 87

ConditionalError Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16.81972	9726.283	1.729306	0.0077
CST(-1)*	-0.060376	0.037779	-1.598151	0.0000
CQLS**	-56.68855	20730.51	-0.273455	0.0852
EQLS**	-14.26981	20693.69	-0.689573	0.0425
FCCP**	21.09249	22964.20	0.918494	0.0412
LPO(-1)	-45.52612	25014.71	-0.018200	0.0855
QTTI(-1)	-60.50889	24199.06	-0.250046	0.0032
D(LPO)	92.44660	31670.83	2.918982	0.0046
D(QTTI)	-91.46627	29645.54	-3.085330	0.0028

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CQLS	-9.389205	332861.4	-0.282076	0.0786
EQLS	-2.363478	360336.7	-0.655908	0.0138
FCCP	34.93505	385328.2	0.906631	0.0674
LPO	-75.40396	415971.4	-0.018127	0.0856
QTTI	-10.02196	380242.2	-0.263568	0.0928
C	278581.4	91226.63	3.053729	0.0031

EC = CST - (-93892.0532*CQLS -236347.7972*EQLS + 349350.5433*FCCP
-7540.3962*LPO -100219.6130*QTTI + 278581.4279)

Source: Prepared by researchers based on the outputs of Eviews 12

We note from the table above that the value of γ was negative (-0.060376) and significant with a value estimated at (0.0000), which is less than 0.05. This indicates that the long-term model corrects the errors of the short-term model in a period of approximately less than ans.

3.2 The results of long-term estimation Analyze:

It is clear from the bottom of the table that:

- The CQLS variable has negatively affected the dependent variable CST in the long run and is highly significant at 7.86% (0.0786), which is less than 10%, where an increase of 1% leads to a decrease in CST by 9.38%.

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- The EQLS variable has negatively affected the dependent variable CST in the long term and is highly significant at 1.38% (0.0138), which is less than 5%, as an increase of 1% leads to a decrease in CST by 2.36%.
- The FCCP variable had a positive effect on the dependent variable CST in the long term and is highly significant at 6.74% (0.0674), which is less than 10%, where an increase of 1% leads to an increase in CST by 34.93%.
- The LPO variable has negatively affected the dependent variable CST in the long run and is highly significant at 8.56% (0.0856), which is less than 10%, where an increase of 1% leads to a decrease in CST by 75.40%.
- The QTTI variable has negatively affected the dependent variable CST in the long term and is highly significant at 7.08% (0.0708), which is less than 10%, as an increase of 1% leads to a decrease in CST by 10.02%.

4.3 The results of the short-term estimation Analyze:

The following is evident from the upper part of the table:

- The CQLS variable has negatively affected the dependent variable CST in the short term and has an acceptable significance at 8.52% (0.0852), which is less than 10%, as an increase of 1% leads to a decrease in CST by 56.68%.
- The EQLS variable has negatively affected the dependent variable CST in the short term and is highly significant at 4.25% (0.0425), which is less than 5%, where an increase of 1% leads to a decrease in CST by 14.26%.
- The FCCP variable had a positive effect on the dependent variable CST in the short term and has a very acceptable significance at 4.12% (0.0412), which is less than 5%, where an increase of 1% leads to an increase in CST by 21.09%.
- The LPO variable has negatively affected the dependent variable CST in the short term and is highly significant at 8.55% (0.0855), which is less than 10%, where an increase of 1% leads to a decrease in CST by 45.52%.
- The QTTI variable has negatively affected the dependent variable CST in the short term and is highly significant at 0.32% (0.003250), which is less than 5%, as an increase of 1% leads to a decrease in CST by 60.50%.

4.4 ARDL-UECM Unconstrained Error Correction Model Estimation

Table (08): ARDL Error Correction Regression

ARDL Error Correction Regression
DependentVariable: D(CST)
SelectedModel: ARDL(1, 0, 0, 0, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 05/20/23 Time: 12:25
Sample: 2000Q1 2021Q4
Includedobservations: 87

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LPO)	92446.60	24814.29	3.725539	0.0004
D(QTTI)	-91466.27	23851.74	-3.834784	0.0003
CointEq(-1)*	-0.060376	0.026683	-2.262762	0.0264

R-squared	0.978899	Meandependent var	3401.066
Adjusted R-squared	0.159349	S.D. dependent var	36052.20
S.E. of regression	33055.18	Akaike info criterion	23.68362
Sumsquaredresid	9.18E+10	Schwarz criterion	23.76865
Log-likelihood	-1027.237	Hannan-Quinn criter.	23.71786
Durbin-Watson stat	1.985378		

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* p-value incompatible with t-Bounds distribution.

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	0.679196	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Prepared by researchers based on the outputs of Eviews 12

Through the results of estimating the unconstrained error correction model shown in Table (08)the error correction parameter CointEq(-1)= -0.060376 shows a negative and significant sign, which indicates the validity and accuracy of the equilibrium relationship in the long run and that the correction mechanism The error is present in the model, meaning that 6.03% of the short-term errors can be corrected in one unit of time, one year, to return to the long-term equilibrium.

4.5 Statistical evaluation of the model:

A. Heteroskedasticity Test: Breusch-Pagan-Godfrey

Residual autocorrelation test: To detect the autocorrelation of residuals we rely on a test -Breusch-Godfrey LM test, the results of which are shown in Table (09)

Table (09): Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.855160	Prob. F(8,78)	0.0793
Obs*R-squared	13.90752	Prob. Chi-Square(8)	0.0842
Scaledexplained SS	89.34761	Prob. Chi-Square(8)	0.0000

Source: Prepared by researchers based on the outputs of Eviews 12

We note that the value of Fisher's statistic F-statistic = 1.855 at the level of significance P.value = 0.0793 which is greater than the level of significance 5%, and accordingly the null hypothesis is accepted that the model is devoid of the residual autocorrelation problem.

B. Heteroskedasticity Test: ARCH

Inconsistency test of error variance: Using the autoregressive test conditional on the stability of variance - (ARCH) where the null hypothesis states that the residual variance is constant and the alternative hypothesis states that the residual variance is different, the obtained results were as shown in Table (10)

Table (10): ARCH instability of variance test results

HeteroskedasticityTest: ARCH			
F-statistic	0.256578	Prob. F(1,84)	0.6138
Obs*R-squared	0.261887	Prob. Chi-Square(1)	0.6088

Source: Prepared by researchers based on the outputs of Eviews 12

Where it is noted that the value of Fisher's F statistic = 0.256 (at the level of significance) P.value = 0.6138 which is greater than the level of significance 5%, and therefore the null hypothesis is accepted with the stability of the remaining variance.

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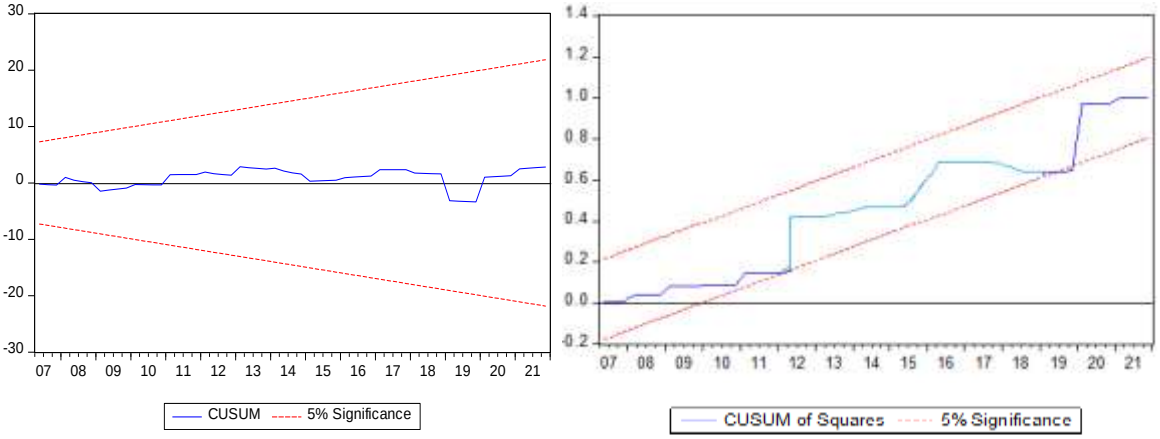
4.6 Structural stability test for model parameters

To ensure that the data used is free from any structural change, Peearan conducted two tests in which the structural stability of the models' coefficients are tested in the short and long term, where the first test represents the cumulative group selection of mutual remainder (CUSUM), and the second test is the cumulative group test of squares of mutual remainder (CUSUM) of squares, where the structural stability of the coefficients estimated for the ARDL model is achieved if the graph of CUSUM is of squares and the CUSUM tests fall within the critical limits at the 5% significance level, therefore the null hypothesis is rejected: the parameters are unstable and we accept the alternative hypothesis of their stability during the study period

Figure (02): The recurring cumulative group test for both residuals and squares of residuals concerning the model



Source: Prepared by researchers based on the outputs of Eviews 12

It is noted from the figure above that the graph of both tests is located between the two lines of the critical limits at the level of significance of 5%, which indicates that there is good stability and harmony in the model, that is, there is the stability between the results of the long term and the results of the short term. The same applies to the CUSUM of the Squared group, it can be said that there is harmony and stability between the long-term results and the short-term results of the estimated model.

5. Study CST forecasting and knowledge of expectations

Before starting the prediction work by adopting the Box-Jenkins method for forecasting, we have to study the stability of the time series. Based on the stability of the series in the first level or difference, the ARIMA model is made. We will explain the application of that in the following:

5.1. Stability tests

Using the Eviews 12 program, we obtained the following results in Table (11), which summarizes the results of each of the limits (stability) ADF and PP tests:

Table N (11): The results of stability tests for the CST variable

UNIT ROOT TEST TABLE (PP)

	At Level	
		CST
With Constant	t-Statistic	-1.4897
	Prob.	***0.5342***
		n0
With Constant & Trend	t-Statistic	-3.0389
	Prob.	***0.1279***
		n0
Without	t-Statistic	0.0280

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Constant & Trend		
	Prob.	***0.6890***
		n0
	At First Difference	
		d(CST)
With Constant	t-Statistic	-9.2490
	Prob.	***0.0000***
		***
With Constant & Trend	t-Statistic	-9.1938
	Prob.	***0.0000***
		***
Without Constant & Trend	t-Statistic	-9.2195
	Prob.	***0.0000***
		***

UNIT ROOT TEST TABLE (ADF)

	At Level	
		CST
With Constant	t-Statistic	-1.4789
	Prob.	***0.5396***
		n0
WithConstant& Trend	t-Statistic	-2.8792
	Prob.	***0.1743***
		n0
Without Constant & Trend	t-Statistic	0.0280
	Prob.	***0.6890***
		n0
	At First Difference	
		d(CST)
With Constant	t-Statistic	-9.2490
	Prob.	***0.0000***
		***
With Constant & Trend	t-Statistic	-9.1938
	Prob.	***0.0000***
		***
Without Constant & Trend	t-Statistic	-9.2195
	Prob.	***0.0000***
		***

Notes: (*)Significant at 10%; (**)Significant at 5%; (***) Significant at 1%. and (no) Not Significant
*MacKinnon (1996) one-sided p-values.

This Result is The Out-Put of the Program Has Developed By:
Dr. ImadeddinAlMosabbeh
College of Business and Economics
QassimUniversity-KSA

The results of the above table show that the significance values of the t-test lose their importance at the level of significance when the first difference occurs, that is, t.cal is greater than the

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tab at the first difference, significant at 5%, and from it we reject H_0 (having the unit root), which means that the series stable. The first difference.

5.2 Model recognition stage

At this stage, the most appropriate model is determined, after obtaining a stable series in the first difference, as shown in Table No. (12), and determining the ranks (p, d, q) in ARIMA models so that it can be estimated, where it is possible to compare and Know the appropriate model initially, that is, an initial determination of the values (p, d, q) through the autocorrelation and partial functions, and after consideration, after conducting the descriptive analysis of the series, the first difference series was chosen to make predictions.

Automatic ARIMA Forecasting
Selected dependent variable: DLOG(CSTF, 2)
Date: 05/20/23 Time: 13:29
Sample: 2000Q1 2021Q4
Includedobservations: 83
ForecastLength: 0

Number of estimated ARMA models: 25
Number of non-converged estimations: 0
Selected ARMA model: (4,3)(0,0)
AIC value: -14.9518087108

Source: Prepared by researchers based on the outputs of Eviews 12

Table N(12): Criteria of comparison between the proposed models

Model SelectionCriteria Table
DependentVariable: DLOG(CSTF, 2)
Date: 05/20/23 Time: 13:29
Sample: 2000Q1 2021Q4
Includedobservations: 83

Model	LogL	AIC*	BIC	HQ
(4,3)(0,0)	629.500061	-14.951809	-14.689525	-14.846438
(3,4)(0,0)	628.788871	-14.934672	-14.672388	-14.829301
(4,2)(0,0)	614.544144	-14.615522	-14.382380	-14.521858
(4,1)(0,0)	599.789137	-14.284076	-14.080077	-14.202120
(3,2)(0,0)	599.759257	-14.283356	-14.079357	-14.201400
(2,4)(0,0)	599.870589	-14.261942	-14.028801	-14.168279
(4,0)(0,0)	594.793432	-14.187794	-14.012938	-14.117546
(3,3)(0,0)	573.291896	-13.621491	-13.388350	-13.527828
(3,1)(0,0)	570.130644	-13.593509	-13.418654	-13.523262
(2,3)(0,0)	571.030494	-13.591096	-13.387098	-13.509141
(2,2)(0,0)	568.653310	-13.557911	-13.383055	-13.487664
(4,4)(0,0)	572.088976	-13.544313	-13.252886	-13.427234
(3,0)(0,0)	561.819678	-13.417342	-13.271628	-13.358802
(1,3)(0,0)	541.734681	-12.909269	-12.734413	-12.839022
(1,2)(0,0)	539.882236	-12.888729	-12.743015	-12.830189
(0,4)(0,0)	531.692915	-12.667299	-12.492443	-12.597052
(2,0)(0,0)	527.995005	-12.626386	-12.509815	-12.579554
(1,4)(0,0)	530.120562	-12.605315	-12.401316	-12.523360
(1,1)(0,0)	506.880074	-12.117592	-12.001022	-12.070761
(1,0)(0,0)	500.184390	-11.980347	-11.892919	-11.945223
(2,1)(0,0)	501.386610	-11.961123	-11.815410	-11.902584
(0,3)(0,0)	499.093798	-11.905875	-11.760161	-11.847335
(0,2)(0,0)	494.634219	-11.822511	-11.705941	-11.775680
(0,1)(0,0)	458.760600	-10.982183	-10.894755	-10.947059
(0,0)(0,0)	442.946969	-10.625228	-10.566943	-10.601812

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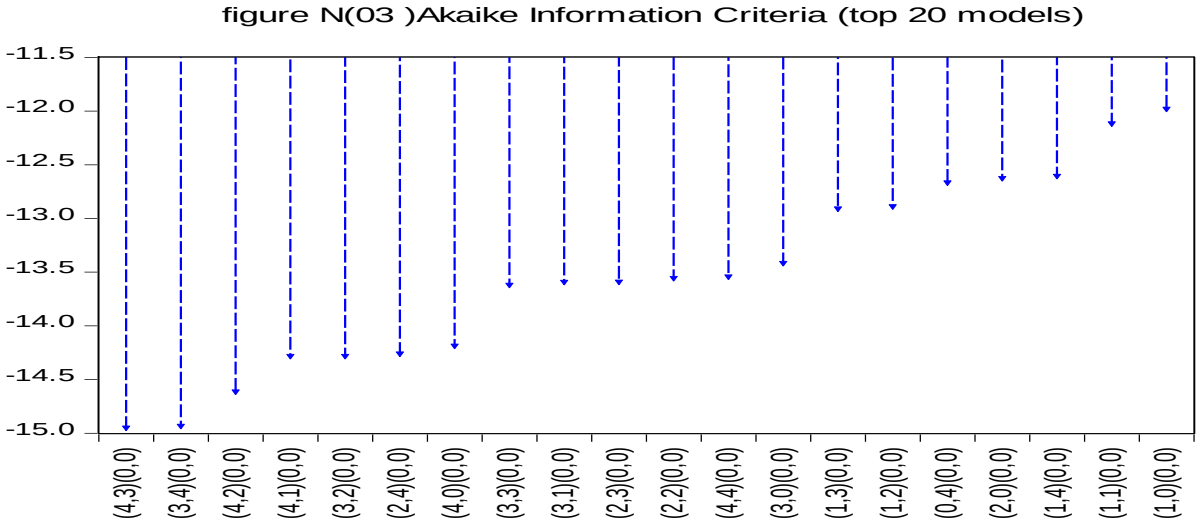
Source: Prepared by researchers based on the outputs of Eviews 12

Through the above table, it is clear that the best model according to these two criteria is ARIMA (4.3.1), which is the optimal model that expresses CST change.

5.3 The following figure also shows the appropriate model:



Source: Prepared by researchers based on the outputs of Eviews 12

5.4 The stage of estimating the proposed model

After selecting the most appropriate model by determining the value of p, d, q, we will estimate its parameters, and its results are shown in the following table:

Table N (13): ARIMA (4.3.1) best model estimation results

DependentVariable: DLOG(CSTF,2)
Method: ARMA Maximum Likelihood (BFGS)
Date: 05/20/23 Time: 13:29
Sample: 2001Q2 2021Q4
Included observations: 83
Failure to improve objective (non-zero gradients) after 212 iterations
Coefficient covariance computed using the outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007357	0.071977	-0.102220	0.0089
AR(1)	1.992166	0.004879	408.3114	0.0000
AR(2)	-0.006619	0.000936	-7.070476	0.0000
AR(3)	-1.967954	0.010021	-196.3912	0.0000
AR(4)	0.982407	0.004248	231.2472	0.0000
MA(1)	-1.000146	83.59557	-0.011964	0.9905
MA(2)	0.000184	0.035565	0.005168	0.9959
MA(3)	-3.82E-05	0.095636	-0.000400	0.9997
SIGMASQ	6.55E-08	9.50E-07	0.068951	0.9452

R-squared	0.951658	Meandependent var	-0.000724
Adjusted R-squared	0.946432	S.D. dependent var	0.001171
S.E. of regression	0.000271	Akaike info criterion	-13.30202
Sumsquaredresid	5.44E-06	Schwarz criterion	-13.03974
Log-likelihood	561.0339	Hannan-Quinn criter.	-13.19665
F-statistic	182.0953	Durbin-Watson stat	2.865837
Prob(F-statistic)	0.000000		

Inverted AR Roots	1.00	.99+.05i	.99-.05i	-.99
Inverted MA Roots	1.00	.00	.00	

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Source: Prepared by researchers based on the outputs of Eviews 12

Based on the above results, the estimated model can be formulated as follows:

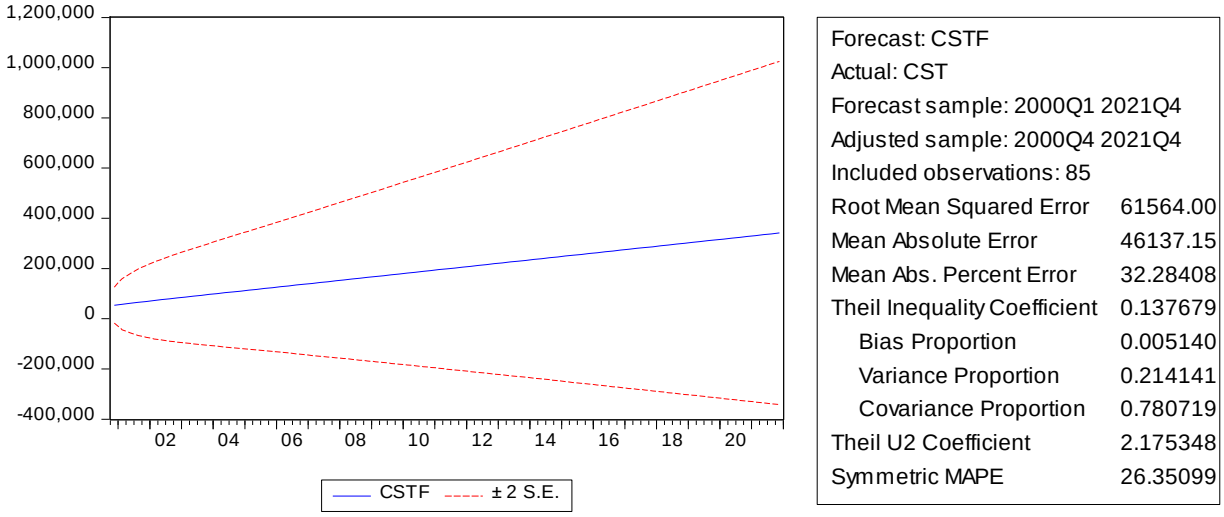
$$T_t = 0.007357 + 1.992166 * T_{t-1} - 0.006619 * T_{t-2} - 1.967954 * T_{t-3} + 0.982407 * T_{t-4} - 1.000146 * T_{t-1} + 0.000184 * T_{t-2} - 3.82E - 05 * T_{t-3} + \varepsilon_t$$

5.5 The stage of diagnosing the model

At this stage, the model is tested to see its suitability to represent the data of the studied phenomenon and to use it to obtain future predictions. To achieve the above, we perform the following tests:

- ✓ **Comparison between the original and estimated series**

Figure (04): Comparison between the original and estimated series

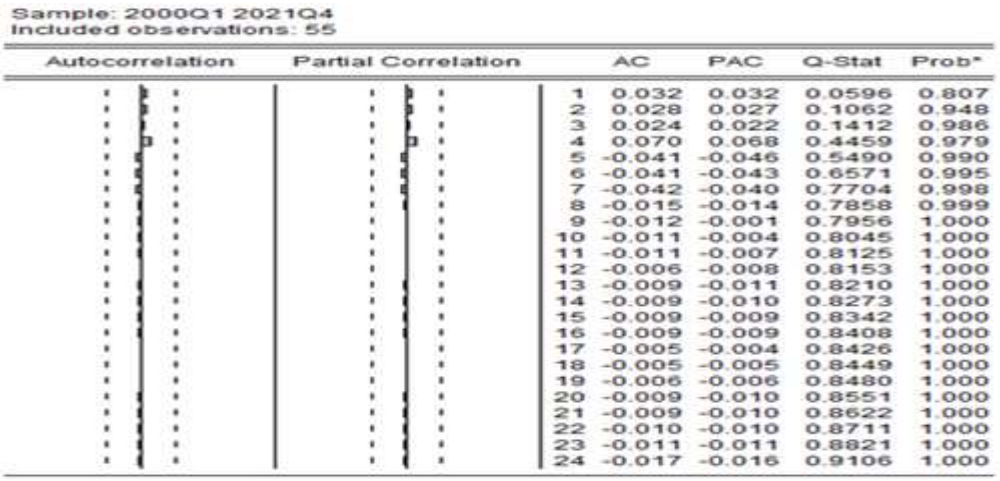


Source: Prepared by researchers based on the outputs of Eviews 12

Through the above figure, we notice that there is a semi-match between the curves of the original series, the actual series, the estimated series, the Fitted series, and the series with the estimated remainder of the model, as it fluctuates randomly around the axis of the separators.

5.6 Testing the stability of the residual series

Figure (05): Autocorrelation function and partial residual series



	AC	PAC	Q-Stat	Prob*
1	0.032	0.032	0.0596	0.807
2	0.028	0.027	0.1062	0.948
3	0.024	0.022	0.1412	0.986
4	0.070	0.068	0.4459	0.979
5	-0.041	-0.046	0.5490	0.990
6	-0.041	-0.043	0.6571	0.995
7	-0.042	-0.040	0.7704	0.998
8	-0.015	-0.014	0.7858	0.999
9	-0.012	-0.001	0.7956	1.000
10	-0.011	-0.004	0.8045	1.000
11	-0.011	-0.007	0.8125	1.000
12	-0.006	-0.008	0.8153	1.000
13	-0.009	-0.011	0.8210	1.000
14	-0.009	-0.010	0.8273	1.000
15	-0.009	-0.009	0.8342	1.000
16	-0.009	-0.009	0.8408	1.000
17	-0.005	-0.004	0.8426	1.000
18	-0.005	-0.005	0.8449	1.000
19	-0.006	-0.006	0.8480	1.000
20	-0.009	-0.010	0.8551	1.000
21	-0.009	-0.010	0.8622	1.000
22	-0.010	-0.010	0.8711	1.000
23	-0.011	-0.011	0.8821	1.000
24	-0.017	-0.016	0.9106	1.000

Source: Prepared by researchers based on the outputs of Eviews 12

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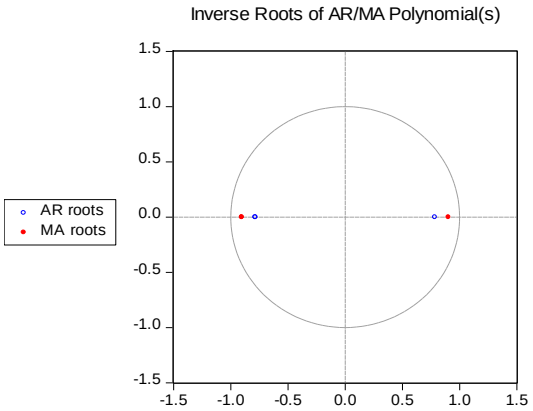
Through the above figure, we notice that the autocorrelation coefficients are all within the range of confidence, in addition to that the Ljung-box Q-Stat = 0.9106 is less than the tabular value where the significance is greater than 0.05, and from it, we accept the null hypothesis that states that there are no coefficients of the autocorrelation function, and from it the series residuals are stable.

• The characteristic polynomial root of the study model

Figure (06): The characteristic ofthepolynomial root study model



Source: Prepared by researchers based on the outputs of Eviews 12

Through the above figure, we notice that the characteristic root of the polynomial of the model is located inside the monolithic circle, which indicates the stability of the model process.

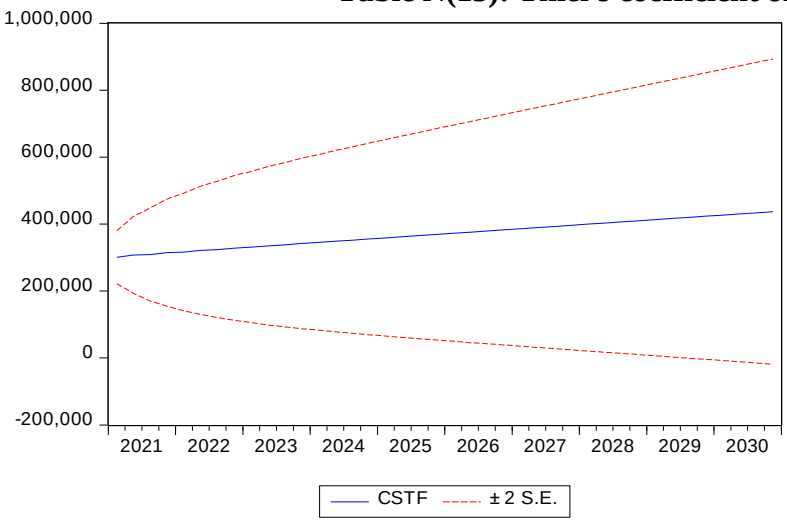
6. Forecasting stage:

The last illusion stage is the Box-Jenkins stage, and we perform it after verifying the validity of the model. This can be done by direct substitution in the optimal model estimated for the value of time t, or by using the EViews12 program that enables us to predict the values and give them directly.

• A Small inequality criterion

For reference, this criterion states that the prediction is good when the calculated statistic is equal to zero, U = 0, and the process is a failure when it is equal to U = 1.

Table N(13): Thiel's coefficient of inequalitytest



Forecast: CSTF	
Actual: CST	
Forecast sample: 2021Q1 2030Q4	
Included observations: 40	
Root Mean Squared Error	38109.62
Mean Absolute Error	37785.60
Mean Abs. Percent Error	10.92850
Theil Inequality Coefficient	0.058293
Bias Proportion	0.983068
Variance Proportion	NA
Covariance Proportion	NA
Theil U2 Coefficient	NA
Symmetric MAPE	11.57237

Source: Prepared by researchers based on the outputs of Eviews 12

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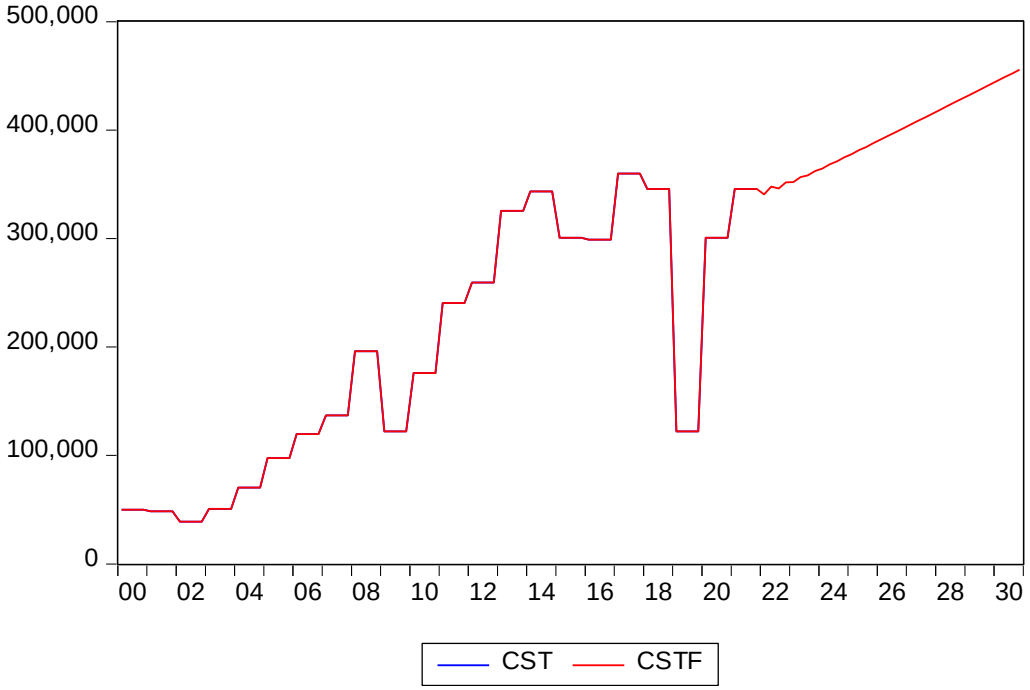
Through the above table, we notice that the Thiel value of inequality 0.058293 is less than the correct one and is closer to zero than to one. It can be said that the model has a good ability to predict reality, and then confirm the validity of its use in forecasting CST.
The following figure gives predictive values of CST 2000 to 2030, which is the target period for foresight work on the subject of the study.

Figure (07): CST forecasts from 2000 to 2030



6.1 predictionresults

Last updated: 05/20/23 - 13:56
Modified: 2022Q1 2030Q4 =>
smpl 2022q1 2030q4forecast(e, g) cstfsmpl 2000q1 2030q4

2021Q1	345753
2021Q2	345753
2021Q3	345753
2021Q4	345753
2022Q1	340784.3870988036
2022Q2	347827.2574831476
2022Q3	346060.2010880926
2022Q4	351708.1893422782
2023Q1	351917.5486717227
2023Q2	356704.434843037
2023Q3	358133.894179636
2023Q4	362389.1965123638
2024Q1	364571.8597468096
2024Q2	368498.9996199786
2024Q3	371146.6379453225
2024Q4	374871.1934055602
2025Q1	377805.87463625
2025Q2	381405.3687338388
2025Q3	384517.2500578717
2025Q4	388039.5400695128
2026Q1	391260.8122633286

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2026Q2	394735.4419044061
2026Q3	398024.2443244544
2026Q4	401469.4518061427
2027Q1	404799.9426364217
2027Q2	408226.9869470543
2027Q3	411583.2132686019
2027Q4	414999.0449153904
2028Q1	418371.1585184909
2028Q2	421780.0682555481
2028Q3	425161.9895484459
2028Q4	428566.6261854625
2029Q1	431954.6020559695
2029Q2	435356.6007816775
2029Q3	438748.3143223985
2029Q4	442148.6845872688
2030Q1	445542.7055025966
2030Q2	448942.0704703246
2030Q3	452337.515796387
2030Q4	455736.2601643924

Source: Prepared by researchers based on the outputs of Eviews 12

6.2 Discussion

The forecasts obtained by predicting based on the ARIMA model, which confirms the stability of the predictions of the commodity structure of trade during the period from 2022 to 2030, and therefore it can be said that it is to increase the volume of the commodity structure of trade depending on the change in the performance of logistical services through the results of the estimations of the model ARDL, it is possible to decrease in (Competence and quality of logistics services, Quality of Trade and Transport Infrastructure , Efficiency and Quality of Logistics Services , Overall), which affects the commodity structure of trade with an inverse relationship, and it can be said that Overall is one of the strongest indicators affecting the commodity structure of trade among the variables of the study, where a decrease in (Logistics Performance Index: Overall) by 1% leads to an increase in At a rate of 75.4%, and also the index (Efficiency of the customs clearance process) has a direct relationship that causes an increase in it by 1%, which leads to an increase in the commodity structure of trade by 34.93%.,This confirms its compatibility with the economic theory, the facilities and incentives offered, and the huge investments in the infrastructure and logistics of the Emirates.

7. Conclusion:

In the context of the agreement of all the special studies on the impact of logistics services on the pattern of trade in goods in Arab countries, this can be of great importance, since logistics services play a vital role in facilitating the movement of goods and ensuring their efficient transit through supply chains. The study includes a quantitative and qualitative analysis of the available data. Through this study, it is possible to identify the factors that affect the structure of commercial products and guide the policies and procedures needed to enhance commercial activity and international trade in the United Arab Emirates. To achieve the objectives of this study, the methodological test of the ARDL and ARIMA model. were used to study the impact of logistics services on the structure of trade products in the United Arab Emirates during the period 2000-2030, and the results of the time series analysis proved to test its stability over time, based on the expanded Dickie Fuller (ADF) test and the Philippe Peyron (PP) test. The inverse relationship between the independent variables and the dependent variable was concluded in the long and short term, unlike the only variable which has a long and short-term Directional relationship and is the Efficiency of the customs clearance process variable.

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From an economic point of view, logistics plays a vital role in influencing the structure of trade in goods in the UAE. Here are some important economic effects:

As for the ARIMA model for the dependent variable Commodity structure of Trade, we notice that there is a quasi-concordance between the curves of the original series, the real series, the estimated series, the adjusted series, and the series with the rest of the estimated model, as it fluctuates randomly around the axis. From an economic point of view, logistics plays a vital role in influencing the pattern of trade in goods in the UAE. Here are some important economic effects: Promote international trade: Logistics in the United Arab Emirates offers state-of-the-art infrastructure and strong institutions to facilitate the movement of goods and services across borders. These services help to increase the volume of international trade and improve business contacts with international companies.

Improve the local logistics sector: Logistics services stimulate the development of the local logistics sector in the UAE, leading to the creation of new employment opportunities and the stimulation of economic activity. This includes the establishment of warehouses and distribution centers and the development of transport infrastructure and information systems. Improve supply chain efficiency: logistics services help improve the efficiency of supply chains and distribution in the UAE. The movement of goods and materials is efficiently organized and coordinated, resulting in reduced costs and improved delivery times, which enhances the country's economic competitiveness.

Research proposals:

Analysis of the impact of logistics infrastructure: The logistics infrastructure available in the UAE, including ports, airports, and transport networks, can be studied and its impact on the pattern of trade in goods can be analyzed by Finding out how to improve infrastructure to boost trade and reduce costs.

Information and Communication Technology Impact Assessment: The impact of using advanced technologies and logistics information systems on the structure of commodity exchanges can be studied. It is possible to analyze how to improve supply chain management and reduce costs and shorten delivery times through the application of modern technology.

Examination of the impact of logistics costs: An analysis can be made costs of logistics services in the UAE and their impact on the structure of traded goods can be estimated. It is possible to explore how to improve the efficiency of logistics operations to reduce costs and improve the competitiveness of commercial goods.

Government policy impact assessment: the impact of government policies and actions on logistics services and the structure of trade in goods in the UAE can be studied. It is possible to analyze how to strengthen cooperation between the public and private sectors to improve infrastructure and develop logistics services.

Study the impact of sustainable development: The impact of logistics on sustainable development and the preservation of the environment can be explored and how the principles of green logistics and sustainable transportation technologies can be applied to the UAE's trade goods structure can be analyzed.

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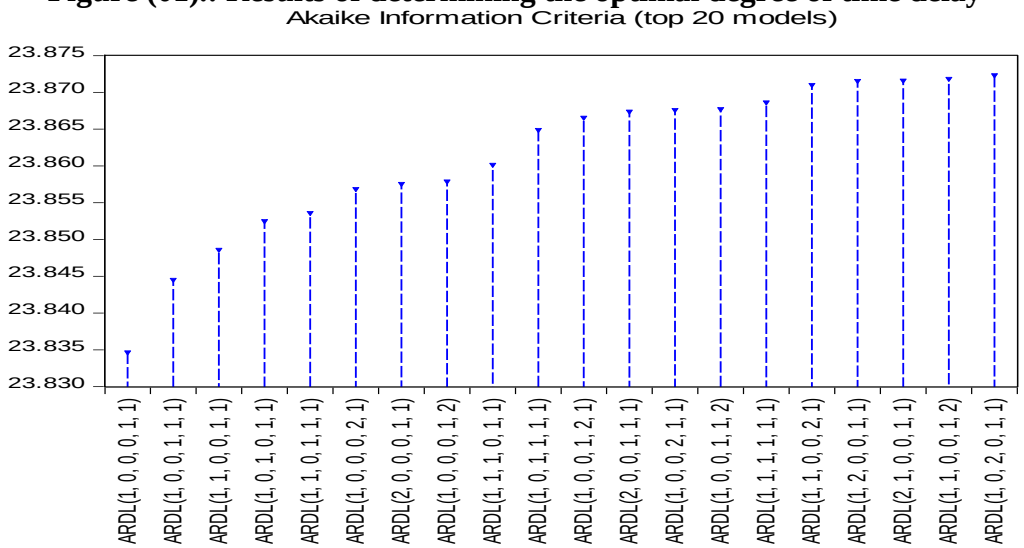
Appendix No. 1

Figure (01).: Results of determining the optimal degree of time delay



Appendix No. 2

Table (04):ARDL Bounds test for co-integration

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.679196	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
			FiniteSample: n=80	
ActualSample Size	87			
		10%	2.303	3.154
		5%	2.55	3.606
		1%	3.351	4.587

Source: Prepared by researchers based on the outputs of Eviews 12

8. References:

Allen, W. B. ((1997)). The Logistics Revolution and Transportation. *The Annals of the American Academy of Political and Social Science,, 553*, 106–116. p110. Récupéré sur http://www.jstor.org/stable/1048727

Arab Monetary Fund . (2023, 05 01). *(2023), The Arab Economic Database, available at*. Récupéré sur https://www.amf.org.ae/en/statistics

bank, W. (2023, 05 01). *Logistics performance index*. Récupéré sur https://data.worldbank.org/indicator/LP.LPI.TRAC.XQ?locations=AE

Coe, , N. ((2014)). Missing links: Logistics, governance and upgrading in a shifting global economy. *Review of International Political Economy,, 21*(1), 224–256.p=225. Récupéré sur http://www.jstor.org/stable/24673070

Coe, N. M. ((2014)). Missing links: Logistics, governance and upgrading in a shifting global economy. *Review of International Political Economy,, 21*((1),), 224–256.p=225,. Récupéré sur http://www.jstor.org/stable/24673070

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DOI: 10.47750/cibg.2023.29.03.031

Hausman, W. H., Lee, H. L., & Subramanian, U. ((2013)). The impact of logistics performance on trade. *Production and Operations Management,, 22*(2), 236-252. Récupéré sur https://doi.org/10.1111/j.1937-5956.2011.01312.x

HONG, , J., CHIN, , A., & LIU, , B. ((2004)). Logistics Outsourcing by Manufacturers in China: A Survey of the Industry. *Transportation Journal,, 43*(1), 17–25. Récupéré sur http://www.jstor.org/stable/20713556

Jose , T. ((2012)). The Challenge of Globalization for the Logistics Industry: Evidence from Indonesia. *Transportation Journal,, 51*(1), 5–32. p=6. Récupéré sur https://doi.org/10.5325/transportationj.51.1.0005

Kumari, ,. M. ((2021)). Trade and logistics performance: does country size matter?. *Marit Econ Logist, 23*, 401–423. Récupéré sur https://doi.org/10.1057/s41278-021-00188-5

Liu, M. ((2020)). Research on Port Infrastructure, Port Efficiency and Urban Trade Development. *Journal of Coastal Research*, 220–222.p 220. Récupéré sur https://www.jstor.org/stable/48640439

Liu, X. ((2020)). Research on Logistics Service Innovation of International Major Ports under Marine Economic Strategy. *Journal of Coastal Research,*, 283–285. P=283. Récupéré sur https://www.jstor.org/stable/48640460

Ma, , W., Xiaoshu , C., & Jiyuan, L. (2021). Impact of Logistics Development Level on International Trade in China: A Provincial Analysis. *Sustainability,, 13*(4), 2107. Récupéré sur http://dx.doi.org/10.3390/su13042107

nations, u. ((2008)). globalization for development: the international trade perspective. p 15. Consulté le 05 26, 2023, sur https://unctad.org/system/files/official-document/ditc20071_en.pdf

OCED. ((2022)). International trade during the COVID-19 pandemic: Big shifts and uncertainty,. 11. Consulté le 05 26, 2023, sur available at https://read.oecd-ilibrary.org/view/?ref=1129_1129345-casormobh7&title=International-trade-during-the-COVID-19-pandemic

Pomfret, , R., & Sourdin,, P. ((2018)). Global Value Chains. *In J. Drake-Brockman & P. Messerlin (Eds.), Potential Benefits of an Australia-EU Free Trade Agreement: Key Issues and OptionsUniversity of Adelaide Press.*, (pp. 105–122). P= 106. Récupéré sur http://www.jstor.org

Rider, G. W. ((1970)). EVOLUTION OF THE CONCEPT OF LOGISTICS. *Naval War College Review,, 23*(4), 24–33, p31. Récupéré sur http://www.jstor.org/stable/44641172

Sakai, T., Kawamura, ,. K., & Hyodo, ,. T. ((2018)). The relationship between commodity types, spatial characteristics, and distance optimality of logistics facilities. *Journal of Transport and Land Use,, 11*(1), 575–591. Récupéré sur https://www.jstor.org/stable/26622419

Soloodo. (2023, 06 05). , *Available at* , . Récupéré sur https://www.saloodo.com/logistics-dictionary/trade-logistics/

Southern, R. N. ((2011)). Historical Perspective of the Logistics and Supply Chain Management Discipline. *Transportation Journal,, 50*(1), 53–64. p63. Récupéré sur https://doi.org/10.5325/transportationj.50.1.0053 ,

Türkcan, K., & Majune, S. ((2022)). Logistics infrastructure and export survival in European Union countries. *Empirica, 49*, 509–535. Récupéré sur https://doi.org/10.1007/s10663-021-09527-4 ,

Unctad. ((2022)). Impact of the covid 19 Pandemic on trade and development,. p 21,. Consulté le 05 26, 2023, sur https://unctad.org/system/files/official-document/osg2022d1_en.pdf

Unctad. ((2022)). *Impact of the covid 19 Pandemic on trade and development,*. Consulté le 05 26, 2023, sur https://unctad.org/system/files/official-document/osg2022d1_en.pdf

Xie, , J., & Chen, , C. ((2022)). Supply chain and logistics optimization management for international trading enterprises using IoT-based economic logistics model. *Oper Manag Res, 15*, 711–724. Récupéré sur https://doi.org/10.1007/s12063-022-00254-y

Ziadah, R. ((2019)). The UAE and the Infrastructure of Intervention. *Middle East Report, , 290*, 34–37. p.35. Récupéré sur http://www.jstor.org/stable/45406227