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Analysis of the Relationship between the Energy Achieved for Iraqi Ports and Economic Factors Affecting them 1998–2012 (Ports of Umm Qasr and Khor Al-Zubair Case Study)

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Abstract: ***Marine ports are considered a link between Iraq and the world.It is the center of the loop in the integrated transport chain. The effects of the ports are reflected on the economic, social, cultural, and constructional aspects of the country. Ports are one of the fundamentals of economic development because they contribute to the achievement of substantial financial resources in foreign currency, work to improvement the balance of payment, and help to support and confirm the economic and political independence of the state. The marine ports in Iraq are considered an important outlet for Iraqi commerce (exports and imports). In addition to the increase in the competitiveness of exports, this encourages Iraq to add some national industries to reduce unemployment in the country. The study showed that the energy of ports is limited and cannot meet future needs from exports and imports of the countries. Moreover, the transit trade through its territory is limited. Therefore, this study recommends the development of Iraqi ports and the increase of energy of them to suit the major countries of the world and the Arab countries.***

Keywords: Ports, Iraqi Ports, Economic Factors

1. Introduction

The methodology of the study was based on a documentary approach and a econometric approach. The documentary approach includes the review of the organisational regulations and decisions that organise the work of Iraqi ports and a survey of the official data and statistics, including related books and articles that have been published. The econometric approach focused on the study of the factors affecting the energy achieved to ports of Umm Qasr and Khor Al-Zubair , uses the style of Stepwis regression (Stepwis Reg.) via the SPSS program.

Research Hypothesis

"The energy achieved for the port is affected by the amount of the load exported and imported to and from the port"

Research problem

Embodied the research problem in the weakness of the harmonization between structural of Iraqi exports and imports and energy of the ports of Umm Qasr and Khor Al-Zubair, as well as that the berths allocated to industrial exports in the ports did not exploit the capacity of pavement in them because of the suspension of industrial exports in addition to that of Khor al-Zubayr port is not ready for imports.

Objective of this Research

The research aims to analyze and determine the most important factors affecting the energy achieved for two ports of Umm Qasr and Khor Al-Zubaere.Useing standard economic analysis methodology to analyze the time series data for the period 1998-2012 Using the style of (Stepwis Reg.) and in ordinary least squares method, and through the SPSS program.

2. Ports, Concept, Activity

1-Concept of Ports

The historical origin of the concept of the port goes back to Latin term (porta) it mean the entrance or gate (gateway), and it is a window that overlooking countries the outside world. And it is defined as the geographical area that provides all modes of services to ships and in a coordinated manner (d. Saadi Ali Ghalib, 1985, p. 137). The port is the place where it is transmitted of it and to him travelers the departed across ships (http://www.iraqgreen.net/index.php).

The term *port*is defined by the United Nations Conference on Trade and Development (UNCTAD) as the site for the exchange of goods using maritime transport, which helps to provide business development opportunities through the development of free ports and free markets (Al-Rashed, 2006, p. 56)

It was also know the area where there were safe stance for ships,and the presence of the devices and equipment to transport goods and passengers between the vessel and the beach or between ships. (Clark, Dollar,and Micco, 2004, p. 418). Others define it as a nodalar point between land and water that would provide a safe and efficient movement between the two different modes of transport(Constantine D.Memos 2006 p8)

Thus, the port is a coastal area located on the coasts or shores of seas and oceans or rivers or lakes,It is a link between land and water consisting of port or more, where unloading operations and loading of ships for goods or passengers and help to provide trade development

opportunities, and the ports contain on jacks, and the sidewalks, and stores to ships.

According to the modern concepts we can define the port it as a reserved berth naturally or artificially from the sea waves, equipped with the latest technologies provided by the information and communications revolution with unloading and loading equipment of goods such as cranes (which is managed by workers Shipping and unloading) and forklifts using for ship loading, managed by the private sector or government agencies Often.

There are canneries or othe processing facilities near the ports.As there are some channels in the ports that allow ships to move inland and access to different means of transport such as trains and trucks to allow passengers and goods to exit faster than the port.

2- Ports Activities (Report by the UNCTAD Secretariat, pp. 36–38)

A port activity is a series of integrated transport and distribution activities of which there are two types. The first type includes the distribution of materials (transport activities) consisting of handling,storage packing and packaging, , and distribution treating. The second type is regarding the distribution of information and communication activi which consists of the activities of storage, processing and transformation of information , when using the value chain as a basis for categorizing activities them be divided into basic activities and supported activities.

The core activities of the port or so-called core services are a set of connected activities that begin with the arrival of cargoes, and then handled and then storage .As for The activities are supported and called value added services it is a activities focused on providing public and private support for key activities,this is explained in (table 1).

Table 1: Basic activities and supportive activities.

Type of Activities	Main Varieties	Components
Basic Activities	Marine Terminal	Access andProtection
		Pilot Age
		Towage
		Vessel Traffic Management
		Fire Protection Services
	Terminal Services	Vessel Lie-up Services
		Container Handling and Transfer
		Traditional Cargo Handling
		Bagging and Packaging
		Dry andLiquid Bulk Cargo Handling
		Cargo Storage
	Repair Services	Dragging and Maintaining
		Chants and Basins
		Lift Equipment Repairs
		Dry Dock Ship Repairs
		Container Repairs
	Estate Management Services	
	Information Managemen Services	
Supported Activities	Value Added Facilities	Stand service,Customer service, maintenance of tankers, services
	(VAF)	repair and maintenance of containers, cleaning services,hire tankers , information and communications, security and prevention services, restaurants and hotels.
	Value Added Logistic (VAL)	Integrated supply services include (quality control, re-loading, assembly, inspection, repair, re-use)
		General supply services including (loading / unloading, compression / dismantling, truck storage, storage tanks, general storage operations, storage operations according to specific circumstances, distribution centers, empty containers)

Source: Ahmed Ali Ahmed Al-Rashed, 'The model formulation of simulation on the computer and use it to improve the performance of unloading operations at the ports of Iraq, study the situation in the port of Umm Qasr', doctoral dissertation, faculty of management and economics/university of Basra, 2006, p. 67.

The main activities of the ports have been classified by the international organisation (OSTRAN) And specialized in the organization of infrastructure for World public transportr as it relates to the infrastr of infrastructure of the port, as shown in Table 2.

Table 2: Classification of the main activities of ports by international organization (OSTRAN)

Classification of activities asthey relate to the basic infrastructure of ports	
Basic Services	Basic Infrastructure
Acts of clouds	Space of the oceans navigational
Guidance	Spaces surrounding for pavement
Mooring	Sidewalks
Secure sufficient space between the ship and the other on the pavements	The ground spaces for sidewalks dedicated to manoeuvring
Drainage (pavement use fee)	Ground spaces for the piers
Charging and discharging and swap of the ship's stores	Ground spaces for the piers, which commends them the cranes fixed and layered maritime and belts
The weight	Weight devices
Attached Services • Fuels supply • The electrical energy supply • The cleaning	Port stores dedicated to hazardous materials

Source: Ahmed Ali Ahmed Al-Rashed, 'The model formulation of simulation on the computer and use it to improve the performance of unloading operations at the ports of Iraq, study the situation in the port of Umm Qasr', doctoral dissertation, faculty of management and economics/university of Basra, 2006, p. 68.

3. Historical Development of Iraqi ports

Iraq considered since ancien,It an important and prominent naval outlet in commercial activityt compared to the coasts of the arab countries wich overlooking the Arabian Gulf. The marine port of Iraq has increased prominence in the

abbasid era. it was Iraq was a major port for trade and transit between the east and west across the area of the fertile crescent (Metwally, 1977, p. 493). Basra was known as an important commercial center and became a focal point for the ottoman during the reign of medhat pasha (1869–1872), who worked on the establishment of an ottoman fleet, and extend the shipping line between basra and the ottoman capital (al-Moussawi, 1981, p. 76).

After the end of the first world war in 1919, the port of Basra has been converted from military port for british forces to a commercial port under Iraqi control. It has been developed sidewalks required and bringing complete equipment to operate it; has also led to the establishment of porches and stores.

After the discovery of oil in the gulf countries, there has been a a significant shift in business activity for the region, The oil became a new product not to be entrusted in the Arab Gulf trade, which required establishment of a special type of the export ports as well as the development and expansion of existing ports. Iraq was one of the countries that sought to establish three major new commercial ports, in addition to the many ports and sidewalks with limited use.

Iraqi ports since being subject to the control of Iraqi their has been numerous varied legal status , In 1922, it was under the supervision of the ministry of finance, which was renamed the directorate of public ports. In 1939, the task of supervising them turned to the ministry of transport and works. In 1956, it transferred to the interests of the Iraqi ports and became independent under Law No. 40, while remaining within the responsibility of the ministry of transport and works. . In 1976, under Law No. 7, the ports became dubbed the general corporation of Iraqi ports. In 1987, the ports have became a facility, while in 1997, the general company of Iraqi ports was established according to company Law No. 22 and is still under the same name now (general company for ports of Iraq (Annual Report 2009–2010, p.1).

4. Services Provided by Iraqi Ports

Obvious , that Iraq's historic precedence in the establishment of a marine port on the coast of the Arabian Gulf has continued to expand and keep abreast of developments until the end of the 1970s of the last century. Preoccupation of Iraq with wars since the early 1980s has hampered the process of evolution of those ports to living in a state of hibernation that has lasted for more than three decades , which has suffered damage and neglect and remnants of those wars. While that era has seen increasing globalization concepts in the world and the intensification of International commercial , and the development of integrated production systems adopted the supply chain (Logistics) which require compatibility between the parties to that chain ,It was considered transport the heart of the logistics system. It was the emergence of a revolution information and communication , the conversion system and the multimodal transport system an important role in linking the rings to that system. This development embodies a leap in the quality and quantity of the means of marine transport and ports. The emergence of the competitive global environment came with new features, which are required for by international bodies and which was established for this purpose. New generations of ports have emerged reached the fifth generation . while Iraq ports had been continuing to decline until they became incapable to perform port functions as ports of the first generation, and the functions were limited to the following (General Company for Ports of Iraq, 2010, p. 2):

1) Acts of loading and unloading for various exports and imports from and to the country.
2) Mooring and take-off operations for ships arriving at and departing from Iraqi ports.
3) Denotation for marine ships in Iraqi territorial waters.
4) Drilling and clearing and furnishing shipping lanes and deepened it and lighted it.
5) Implementation of projects for development of ports or primary and secondary activityservices.
6) Acts of operating, maintenance, and repair of domestic and foreign ships.
7) Provision of services needed by ships and offshore units.
8) Rescue and salvage in territorial waters.
9) Communication and housing services and other public services.
10) Automatic maintenance for equipment, machinery, vehicles,waternets,and electricity.
11) Training and rehabilitation of the company staff to the terms of reference and marine professions of unloading, and shipping.

5. Iraqi Ports (system transfers of goods from the sea to land)

Iraq has eight ports, including five commercial ports, two ports for oil, and one port for services.

a) Commercial Ports

1) 1 – Al Maqal Port

Located on the Shatt al-Arab in Basra, established in 1919, it was the first port established in Iraq. discontinued it working in since 1980 because of the war, it is now working with a limited capacity of approximately 1.5 million tons per year. Its commercial status is very poor, and the number of qualifying sidewalks is 11.It has six berths with a capacity of 250 thousand tons per year, and the overall capacity of between 2.5 and 3 million tons per year,ships with submersible (8.84) m can pass through this port.(Saber, 2014, p. 5). Table 3 shows the sidewalks and absorptive capacity for Al Maqal Port.

Table 3: Sidewalks and absorptive capacity for Al Maqal port.

Sidewalk	Purpose	Absorptive Capacity (thousand tons)
1	General load	250
2	Building materials	250
3	General load	250
4	General load	250
5	General load	250
6	General load	250
7	General load	250
8	General load	250

9	General load	250
10	General load	250
11	General load	250
12	General load	250
13	General load	250
14	Cars and building materials	250

Source: Jaafar Abdul Amir Aziz, 'Requirements for Competitive ability of Iraq Ports', master thesis, University of Kufa, 2011, p. 72.

2) Abu Flous Port

Is a small port with limited capabilities on the Shatt al-Arab, 20 km south of the province of Basra It is a commercial port was founded in 1974, because of the suffering of the Iraqi ports of crisis accumulateds. There are three berths of steel its design capacity is 750,000 tons per year, and the plan of the public company for Iraqi ports does not intend to raise port capacity and increase the number of sidewalks but is remain the same . (Saber, 2014, p. 5).

Table 4: Sidewalks and absorptive capacity for Abu Flous Port.

Sidewalk	Purpose	Absorptive capacity (thousand tons)
1	General load	250
2	General load	250
3	General load	250

Source: Jaafar Abdul Amir Aziz, 'Requirements for Competitive ability of Iraq Ports', master thesis, University of Kufa, 2011, p. 72.

3) Khor Al-Zubair Port

This port is located 60 km west of the city of Basra, and 150 km from the end of the northern Arabian Gulf, and it runs along the western shore of the channel Khor Al-Zubair.This port is an industrial port . It was established in 1970 to serve the 'industrial complex' projects (iron, steel, aluminium, fertilisers, and petrochemicals),and due of the circumstances of the war in 1980 delayed to the end in 1989. The port includes two sidewalks for a specialised laboratory for iron and steel, and two sidewalks for the import and export of iron ore, sponge iron, and a the total number of piers total of 12 sidewalk , as illustrated in the Table 5.

Table 5: Sidewalks and absorptive capacity for Khor Al-Zubair Port.

Sidewalk	Purpose	Absorptive Capacity (thousand tons)
1	General load	100
2	General load	250
3	General load	250
4	General load	250
5	Fertilisers and phosphates	350
6	Fertilisers and phosphates	350
7	Fertilisers and phosphates	350
8	Petrochemical industries	250
9	Petrochemical industries	250
10	Import of scrap iron	250
11	Export of iron	4,500

Source: Jaafar Abdul Amir Aziz, 'Requirements for Competitive ability of Iraq Ports', master thesis, University of Kufa, 2011, p. 72.

The plan of the General Company for Ports of Iraq aims to increase the number of sidewalks to 25 sidewalks and raise the port capacity from 6.4 million tons per year in 2012 to 10.65 million tons per year in 2017 (Ministry of Transport, 2012, p.12).

4) Umm Qasr Por

Located in the province of Basra in the Umm Qasr area, it is one of the important Iraqi ports because it is located north of the Arabian Gulf and off 75 km from the western entrance of Basra city. The Umm Qasr port was established in 1960,and in 1965 it was completed,it contains and three sidewalks, one of these sidewalks has been developed for export of sulphur from the mashreq fields, In 1970, it established wharf special to container. Then ten commercial berths were set up at Umm Qasr River, and currently, the number of port berths stands at 22 berth with a capacity of 7.5 million tons per year. General company for ports of Iraq is working to increase the number of sidewalks to 41 berth and raising the energy to 14 million tons per year (Ministry of transport, 2012, p. 12).

Due to the expansion of foreign trade movement and overcrowding of the at Al Maqal port on the Shatt al-arab,and the area is also close to the Arabian Gulf , this helped to receive ships for large diver .

Table 6: Sidewalks and absorptive capacity for Umm Qasr Port.

Sidewalk	Purpose	Absorptive Capacity (thousand tons)
1	General load	250
2	General load	250
3	Sulphur export	1,500
4	Containers	1,500
5	General load	500
6	General load	250
7	General load	250
8	General load	250
9	General load	250
10	grain	2000
11	Vegetable oils	500
12	General load	250
13	General load	250
14	General load	250
15	General load	250
16	General load	250
17	General load	250
18	General load	250
19	General load	250
20	Containers	500
21	RO-RO	-
A8	General cargo	250

Source: Jaafar Abdul Amir Aziz, 'Requirements for Competitive ability of Iraq Ports', master thesis, University of Kufa, 2011, p. 69.

b) Evolution of Iraq's trade through the ports of Umm Qasr and Khor Al-Zubair

1) Commercial activity of the port of Umm Qasr

The volume of gross tonnage through the port of Umm Qasr fluctuates markedly during the period of study. Table 7 shows that the lowest amount was in 2003 at 2,071 thousand tons, and the highest amount of tonnage overall was in 2012 at 9,573 thousand tons, recording a compound annual

growth rate of 6.1% during the period from 1998 to 2012, as shown in Table 8.

Table 7: Energy achieved and overall load of the ports of Umm Qasr and Khor Al-Zubair (1998–2012)

Years	Umm Qasr Port (thousand tons)		Al-Zubair Port (thousand tons)		Overall Payload to Iraqi Ports (thousand tons)	Percentage of contribution (%)	
	Energy Achieved	Overall Payload	Energy Achieved	Overall Payload		Umm Qasr Port	Al-Zubair Port
1998	3,934	3,913	163	163	4,076	96.5	3.9
2002	6,046	6,083	1,804	1,804	7,887	77.1	22.9
2003	20,735	2,071	130	130	2,268	91.3	5.7
2004	2,195	2,185	1,277	1,591	4,539	48.1	35.1
2007	6,018	5,986	4,191	4,162	10,883	55	38.2
2008	7,449	7,418	3,906	3,876	11,854	62.6	32.7
2009	7,614	7,614	3,114	3,113	11,325	67.2	27.5
2012	9,345	9,573	4,512	4,189	14,809	64.6	28.3

Source: Reports of the Ministry of Transport and Communications for sporadic years.

This is attributable to the conversion of import of goods from alternative ports during the economic blockade to the port of Umm Qasr as well as expansion energy of this port, resulting from the removal of the differences that were impeding the Ships movement and entry the port of Umm Qasr.Which led to the operation of some docks that were unused that Which reflected positively on the work of the port, which has become capable of reception the largest number of ships. In terms of rate contributions for the total payload of the port of Umm Qasr from the total payload of the Iraqi ports, we find that these percentages were unsteady as well. The lowest percentage contribution was in 2004, amounting to 48.1%, and the highest contribution amountedto96% in 1998 (see Table 7).

2) Commercial activity of Khor Al-Zubair Port

Note from Table 7 that the total payload through the port of Khor Al-Zubair demonstrated an increasing trend from 1998 through 2003, the lowest amount of load amounted to 130 thousand tons. Then, it rose, reaching 4,189 thousand tons in 2012. Thus, achieving a compound annual growth rate of 16.3% during the period studied (see Table 8).

Table 8: Compound annual growth rates for energy achieved and overall payload of the port of Umm Qasr and Khor Al-Zubair (1998–2012)

Years	Compound Annual Growth Rates			
	Umm Qasr Port		Khor Al-Zubair Port	
	Energy Achieved	Overall Payload	Energy Achieved	Overall Payload
1998–2002	14.7	14.3	68.2	68.2
2003–2007	-12.2	-12	58.7	58.7
2008–2012	5.9	-3.2	1.4	-1.5
1998–2012	4.2	6.1	17.6	16.3

Source:Of the work of researchers and it was calculated the compound annual growth rate according to the following equation :$Y= A\ e^{rt}$.....(1)

And when converted to the linear formula become:LnY = LnA + rt.....(2)

where (Y)The intended variable an account it annual groweth rat, (A)Limit the fixed, (r) the compound annual growth rate, (t) the number of years 1, 2, 3 ... . (From A.G.Chiang,*Fundamental of Mathematical Economics*, USA, Mc Graw-Hill Book Company,1974,p. 291.)

With regard to the contribution ratios of total payload to the port of Khor Al-Zubair For the total load of Iraqi ports ,we note from Table 7, twig that these contribution rates became unsteady, and the highest percentage contribution of an overall load was 38.2% in 2007, while the lowest percentage contribution was 3.9% in 1998.

3) Movement of ships in the port of Umm Qas

We note the increasing number of vessels entering the port of Umm Qasr has been increasing since 1998, The number of their was 295 of the total ships adult (1,396) by contribution 21.1%. So got to1,048 ships of the total vessels entering the ports of Iraq in 2004, with a contribution 43.8% (see table 9). While the number of vessels dropped to 876 vessels in 2007, due to the rehabilitation of maritime commercial port in Iraq and make it fit to receive the ships as in the Al-Maqal and Abu Flus Port. Table 9 shows that the number of ships entering the port of Umm Qasr in 2012 was 827 ship out of the their number 2,076 total ships contribution 39.8%. That the decrease in the number of vessels coming to this port, which are mostly ships for the transport of general cargo and grain does not indicate the low load in Umm Qasrport in evidence, of increasing the total load (see Table 7).

Table 9: Number of vessels entering the port of Umm Qasr and the port of Khor al-Zubayr and the percentage of contribution

Years	Number of Vessels		Total Vessels entering Iraqi ports	Percentage of contribution %	
	Umm Qasr Port	Khor Al-Zubair Port		Umm Qasr Port	Khor Al-Zubair Port
1998	295	1,101	1,396	21.1	78.9
2002	512	4,258	5,879	8.7	72.4
2003	614	44	1,878	32.7	203
2004	1,048	1,015	2,390	43.8	42.7
2007	876	1,056	4,797	18.3	22
2008	888	1,005	4,062	21.9	24.7
2009	1,140	867	4,365	26.1	19.9
2012	827	522	2,076	39.8	25.1

Source: Reports of the Ministry of Transport and Communications for sporadicyears.

4) Movement of ships in the port of Khor Al-Zubair

The number of ships coming into the port of Khor Al-Zubair was volatile during the period studied . In 2003, the number decreased to 44 ships while it was having reached 1,101.

in1998, the percentage of contribution decreased from 78.9% to 2.3% compared vessels in 1998 and 2003, respectively, as shown in table 9. From the same table we note the high number of ships entering the port, it was 1,056 ships in 2007, compared to 2004 where the number of vessels was 1015 vessels. The ships entering the port of Khor Al-Zubair recorded a decline since 2008 reaching 522 ships in 2012contribution 25.1%; (see table 9).

That the rehabilitation of Iraq's other commercial ports attracted some vessels to it, which led to a decrease in the share of Khor Al-Zubair port in terms of the number of incoming vessels, as well as the trend of maritime trade to use transport by container which affected the movement of ships entering the port.

The total of vessels entering the port of Khor Al-Zubair it was great during the years 1998, 2002, 2007, and 2008 compared to the port of Umm Qasr, as shown in table 9,this is due to the frequency of the small ships, which are called the small boats with low load, which range tonnage it between 500 and 1,000 tons. Meanwhile, we find the port of Umm Qasr, during the same years, had number of vessels less , but its cargo was bigger compared to the port of Khor Al-Zubair, The ship's load ranges from between 5,000 and 7,000 tons.

We must showhere that the performance level of the ports is not measured by the number of ships entering the port, but in quantities of tons that are handled in the port

6. Formulation and Estimation the Standard Model

1) Formulation of the standard model

Multiple regression was used to study the correlation between the energy achieved for the ports and the economic factors affecting it,to solve this model has been relying on the ordinary least squares method (0LS) which is the best from economic and statistical standard. A program(SPSS) was used for analysis and study purposes, so the relationship was taken as follows:

$$Y = B_0 + B_1X_1 + B_2X_2 + D_1 + D_2 + e_i$$

***Y*:**Energy achieved
X_1: Export load
X_2: Import load
D_1:A placebo variable to include the effect of the embargo on Iraq, where takes the value one during the blockade period 1998–2003, and zero otherwise.
D_2: Placebo variable that represents the economic opening-up policy and takes the value one over the period 2008–2012 and the value of zero for the rest of the years.
e_i: Random variable

2) Results of model estimation

Using a (Stepwis Reg.) method through the program (SPSS) which and is based on the principle of adding or dropping some of the variables to gradually reach the combination of explanatory variables The most effective and the impact of according, to the results. was reached to the following two models

First model:
where the regression equation was in the form:
$\text{Ln}Y_1 = -0.102 - 0.72\text{Ln}X_1 + 0.392\text{Ln}X_2 - 0.064D_1$
T–3.19 –11.77 13.12 –9.89
$R_2 = 0.95 R_{-2} = 0.94 f = 97.89$ $D.W = 2.12$

The estimate and testing results confirm to above equation to the harmony of values and signals estimated landmarks with the logic of the economic theory. It is clear from the equation estimated the independent variables explain 95% of the changes in energy achieved for the port of Umm Qasr (Y_1) and the remaining 5% represent the effect of other variables not included in the equation. It has passed the variables (X1),(X2),(D1) test (t) at the level of significance 1% and 5%.

It confirmed the value of (f) the calculated to the significant of the total equation at the , significant level 1% and 5% as stresses the value of (D.W) the absence from the problem of the serial link between random errors of the equation .

And that the estimated flexibility of energy achieved (Y_1) for the exported load (X_1) which amounted to (0.72) reflects the degree of the first response to the change in the second, the increase in (X_1) the rate of100% leads to a shortage of (Y_1) by 72%, while we find that the flexibility to (Y_1) for the imported load (X_2) which amounted to (0.39) Indicate that the increase of imported load (X_2) the rate of 100% works on increasing (Y_1) the rate of (39%) This confirms the strength of the energy response to the port of Umm Qasr (Y_1) to change in the imported campaign (X_2) for this port.

The result is logical for the port of Umm Qasr as the this port in all its facilities and maritime services for it are intended and ready for imports. Moreover, many of the international maritime lines are refrain to load Iraqi exports and because non-oil commodity exports constitute only a very small percentage compared to the size and quantity of tons of the ship. As well as stop the export berths of sulfur in the port of Umm Qasr long time.In addition to most of Iraq's non-oil exports are seasonal.

The negative sign refers to the imaginary variable (D_1) and it significance through the test (t), as mentioned earlier, came from the negative effect of the economic blockade on the energy achieved to the port of Umm Qasr.

Second model:
$\text{Ln}Y_2 = -1.106 - 0.338\text{Ln}X_1 + 0.909\text{Ln}X_2 - 0.901D_1$
t–2.54–6.56 27.43 –3.77
$R_2 = 0.99$ $R_{-2} = 0.98$ $f = 527.138$ $D.W = 1.576$

The results of the above equation indicate the significance of the estimated parameters signals and it agreement with economic theory. It the equation estimated The independent variables explain 98% of the changes in energy achieved for the port of Khor Al Zubair(Y_2) the test (t) confirms significant of the estimated parameters at the level of significance 1% and 5%,as wll as test (f) indicates the strength of the relationship between the independent variables and the dependent variable in the equation. On the other hand, test (D.W) refers lack of the problem of self-

correlation between random variables in the equation at the level of 1%.

The fixed limit value of this equation indicates to the portion allocated as compensation for the depreciationor consumption **of** energy realised in the form of machinery and equipmentand other assets.

It is clear from the equation also the of energy realised response accruing at the port of Khor Al-Zubair (Y_2) of the change in export load (X_1) with the stability of other factors was –0.338. The increase in the latter by 100% leads to a deficiency in the first by (33.8%), while we find that the estimated flexibility of energy realised to the port of Khor Al-Zubair(Y_2) for the imported load (X_2)was (0.91) which reflects the degree of response (Y_2) of the change in (X_2) with the stability of other factors.While the increase in the second by 100% working to the first increase by 91%, which is a high response rate.

This is a logical consequence as export load (X_1) for the port of Khor Al-Zubair is negative and reflects an inverse relationship between exports and the energy of the port. This is because this port is intended for export meet products of three industrial parks,ther are a petrochemical plant, iron and steel plant, and phosphate fertiliser plant. These factories stopped working for more than twenty years except the phosphate fertiliser plant, which meets a substantial proportion of domestic demand. As for the import load variable (X_2)It was a positive and also logical,this is because the port has three iron berths for the import of general goods and to meet the need of imports from these materials.

7. Conclusions and Recommendations

7.1 Conclusions

1) It is clear the estimated model of the port of Umm Qasr the imported load (X_2) signal was positive In the sense that the increase of imported load (X_2) by 100% leads to increased of energy realised by(39.2%). This confirms the energy response to the port of Umm Qasr(Y_1) For change in imported load (X_2) For this port.While the load signal exported (X_1) was negative. Because this port is intended for imports more than it exports.
2) The study showed export load (X_1) from the port of Khor Al-Zubair is negative and reflects an inverse relationship between load exporting and the of energy realised of the port. This is because this port is intended for export meet products of three industrial parks,ther are a petrochemical plant, iron and steel plant, and phosphate fertiliser plant. These factories has stopped working for more than twenty years. While import load variable (X_2) it was a positive, this outcome reflects the positive relationship between the exported load and the of energy realised of the port (Y_2), where this port has three iron berths for the import of general goods ,they are sufficient to meet the import requirement of these materials
3) The expansion the port berths Iraq is not a target for absorbing exports, but goal their to absorb imports,that's why it was and we found that the import load variable signal (X_2) was positive in both models
4) We found that the current potential of Iraqi ports is limited and cannot effectively meet the future needs of the country's exports and imports as well as and transit trade through its territory.
5) The study found the port of Umm Qasr is the main sea port for Iraq ,and that the development its development is an important part of the overall economic development requirements of the country .

7.2 Recommendations

1) The study recommends the development of Iraqi ports and raising its absorptive capacityis to match the major ports of the world and the Arab countries.
2) There is a need to expand the pavements of the two ports (Umm Qasr and Khor Al Zubayr) in anticipation of the expected increase in marine imports and exports for the country.
3) We recommend building backup energies In order to avoid rising costs of delay penalties paid to ships which may wait in waiting areas at sea because of the lack of spare capacity in the port berths, and this is confirmed by the modern theory of costs.
4) The increase of capacity and efficiency of Iraqi ports and to exploit the available unused capacities of the existing ports and moving to the stage main ports stage rather than secondary ones so as to achieve economicy independence of the country in the field of import and export of goods through ports in general and the port of Umm Qasr in particular, and reduce dependence on the ports of neighboring countries
5) We recommend the introduction of modern technologies and electronics in the field of management and operation of Iraqi ports and keep pace with civilized development to catch up with developed countries ports.

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