The Relationship Between Logistics Performance And Maritime Exports

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Summary

Logistics performance has been considered a key factor in goods export competitiveness. This paper analyzes how logistics performance has affected Tunisian maritime exports destined European principal partners (France, Italy, Spain, and Malta) over the period 2007–2017. The aim of this study is to analyze the relationship between logistics performance and maritime exports in Tunisia, in order to identify the most important LPI sub-dimension; also, to guide decision-makers in improving the weakest Tunisian logistics performance sub-dimension. The gravity model was used to estimate the impact of the Logistics Performance Index and its components on goods export competitiveness. Findings confirm that only Logistics Performance Index sub-dimension related to the quality of infrastructure (e.g. seaports, railroads, roads, information technology) has a significant positive impact on Tunisian maritime exportation.

Key words:

Logistic Performance; Logistic Performance Index; maritime export; export competitiveness; Tunisia.

1. Introduction

The concept of logistics means operations related to the production and delivery of goods and services. Logistics refers to the whole flow management, which includes freight transportation, sourcing, stock maintenance, warehousing, handling, border clearance, and information system and some other functions. [4] considered logistics as one of the most important pillars of economic activities and affect directly countries' efficiency and growth. [3] indicate that the logistics industry plays an important role in national development. [20] note that services also logistics are a source of diversification of exports of each country. [5] indicated that if a country can obtain a competitive advantage in terms of logistics performance, this will increase its international trade, help to open new markets and encourage business. [8] and [9] revealed that an investment seaports infrastructure and logistics service seems to be even more beneficial to the services sector more especially to foreign trade.

Logistics performance has become a key element to improve goods exports. It is important to analyze the situation of the country's logistics sector in order to better evaluate its impact on economic activities and among which international trade; also, to know which economics activities that need support and to update the regulations of economics activities. However, there is scarce research focusing on the impact of logistics performance on maritime exportation.

Since 2007, the World Bank has developed a logistics performance index (LPI) database as a tool for comparing national logistics performance at the global level. The World Bank database shows that Tunisia's LPI rankings dropped from 41 in 2012 to 105 globally. This dramatic decline reflects the magnitude of the problems facing the logistics sector in Tunisia, especially after the social revolution of 2010. In recent years, the Tunisian' logistics sector has been characterized by fragmentation, a lack of integration among its components, and the Small size of logistics service providers. Also, the maritime fleet seems to be poorly equipped, the vehicle fleet is not sufficiently developed, the air fleet complains about several difficulties caused by the aging and lack of renewal of cargo aircraft. In line with the decline in Tunisia's ranking in the logistic index, the statistics provided in the annual report of Tunisia Office of Merchant Marine and Ports (2017) indicate a decline in maritime exports over the last eight years, in 2018 is decreased by 19.27% compared to 2010. Where the statistics show that the decline in maritime exports coincides with the decline of Tunisian' LPI ranking, this requires to study the relationship between maritime exports and the logistics performance in Tunisia.

This study analyzes the relationship between logistics performance and maritime exports in Tunisia, in order to develop a decision-making tool

to support policymakers to improve Tunisian logistics performance.

The rest of this paper is organized as follows. In the next section, a literature review that focused on the impact of logistical performance on international merchandise trade was presented. Section 3 provides the used methodology for undertaking the impact of logistics performance on Tunisia exporting goods. Data was analyzed in section 4, while section 5 provides results. Finally, section 6 concludes the paper.

2. Literature Review

The interaction between the logistics performance of a country and exportation has been investigated in recent years. [2] confirms that the efficiency of logistics systems is a significant determinant of bilateral trade, the magnitude of the effect may vary according to economic and geographic characteristics. [9] investigated the relationship between countries' merchandise exports and quality logistics performance, seaport infrastructure quality, and liner shipping connectivity among the major maritime nations in the world. The findings confirm that there exists a significant relationship among the merchandise exports and the aforementioned variables. [11] investigated the relationship between logistics performance (the six sub-dimensions of LPI are considered) and exports at a country level (Turkey, Burundi, Zimbabwe, Brazil and Portugal). They concluded that improvement in some of the logistics performance indicators has an important positive impact on the export level of a country. [22] shown for 43 countries that logistics performance has a significant positive impact on export volume. [14] analyses the impacts of logistics performance on seaborne trade. Findings revealed that it is vital to continuously improve logistics performance to increase seaborne trade. [21] examined the relationship between international trade and green logistics. They concluded that the logistics performance index of exporting and importing countries are positively correlated with trade volume. [18] analyses the impacts of logistics performance on the international trade of the European Union and Middle East and North Africa countries. They confirmed that logistics performance could be one of the fundamental determinants for the competition amongst countries. [6] concluded that the overall logistics performance is positively and statistically significantly correlated with exports and imports. [1] estimated the impacts of logistics and transport infrastructure on bilateral exports from 19 Spanish regions to 64 destinations. Their findings show that logistics are important for the analysis of trade flows of goods in terms of number, size and quality of logistics facilities. [17] indicated that promoting of the logistics performance may improve countries' ability to trade competition in international markets. [13] examined some sub-dimensions of the performance logistics (customs procedures, logistics costs and the quality of transport infrastructure) on the trade. They reveal that amelioration in any of the aforementioned sub-dimensions could take to significant growth in a country's trade flows. [19] have studied how the development of logistics performance has affected the European Union exports. Findings show that logistics was more important for exporting nations than importing nations. [7] examined the effects of logistics performance in global bilateral trade among 80 countries. They concluded that logistics performance is statistically significantly related to the volume of bilateral trade. [12] confirmed that trade flows depended on certain infrastructures, customs management, the maturity of the private sector in terms of the supply of services on behalf of ocean carriers, the role of experienced shipping agents and the incorporation of ICTs into logistics chain services. [15] explored the relationship between Australia–China trade and the development of the Australian transport and logistics sector. Their findings indicate that growth in Australia's trade with China causes the development of the Australian logistics sector (especially the transport) but not the other way around. Also, they extended their study to allow the effect of Australia's trade with the US, Japan, the rest of the world and other variables. Australia's trade with its other main trading partners, Japan and the US, also causes the growth in its transport sector witch consider a branch of logistics service. 3. Tunisia's logistics performance and seaborne trade.

3. Methodology

The adopted methodology for analysis the determinants of Tunisia export flows is based on gravity equations. A gravity model as proposed by Heckman will be estimated to identify the determinants of goods export between Tunisia and European partners over the period 2007–2017. The gravity equation will be as follows:

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{oit}\right) + \alpha_6 Ln\left(LPI_{ojt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (1)$$

Where Xij means quantity country i exports to country j. Dij means the distance between countries i and j. GDP means Gross Domestic Product of country. P means Population of country. LPI means Logistic Performance Index for country (Overall score). LSC means Liner Shipping Connectivity. Two dummy variables represent the existing social and geographical similarities between Tunisia and the European main trading partners (Tunisians Resident Abroad (TRA) living in the sample European countries, and border (B)). The subscript t denotes the temporal index. The subscripts i and j denote country index. The exponent's α1; ...; α11 are slope coefficients measured by the rate of change in the endogenous variable when there is a unit change in the value of explanatory variables. The exponent α0 is the intercept coefficient that shows the rate at which export will change independently of stated explanatory variables. Finally, ε is the error term, which shows that other explanatory factors that might affect the magnitude of the export that are not avowed in the model.

The gravity model as presented in Eq.1 included a number of usual factors such as GDP, population, and the distance between the exporting and importing country. We assume a significant positive relationship between ordinary variables (GDP and Population) and export. In accordance with the aims of this research, we include both the exporter and importer LPI and exporter and importer LSC in the gravity model as explanatory variables. The fourth variables have respectively coefficients α5, α6, α7 and α8. A positive sign is expected in the four cases. Finally, a series of dummy variables represents border (B) and Tunisian' immigrants living in European sample countries (TRA). We assume a significant positive relationship between a series of dummy variables and export.

The study also focuses on analyzing the impact of the six sub-dimensions of the LPI on Tunisia maritime export flows. The six sub-dimensions of the LPI were: ability to track and trace consignments; competence and quality of logistics services; efficiency of the customs clearance process; ease of arranging competitively priced shipments; the frequency with which shipments reach the consignee within scheduled or expected time; and quality of trade and transport-related infrastructure.

Regressions similar to Eq.1 have been estimated, including each dimension of the LPI separately. Consequently, six more over equations have been formulated as follows:

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{Ait}\right) + \alpha_6 Ln\left(LPI_{Ajt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (2)$$

Were LPIA means Logistics Performance Index (Ability to track and trace consignments).

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{Cit}\right) + \alpha_6 Ln\left(LPI_{Cjt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (3)$$

Were LPIC means Logistics Performance Index (Competence and quality of logistics services).

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{Eit}\right) + \alpha_6 Ln\left(LPI_{Ejt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (4)$$

Were LPIE means Logistics Performance Index (Efficiency of customs clearance process).

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{Eait}\right) + \alpha_6 Ln\left(LPI_{Eajt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (5)$$

Were LPIEa means Logistics Performance Index (Ease of arranging competitively priced shipments).

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{Fit}\right) + \alpha_6 Ln\left(LPI_{Fjt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (6)$$

Were LPIF means Logistics Performance Index (Frequency with which shipments reach consignee within scheduled or expected time).

$$Ln\left(X_{ijt}\right) \equiv \alpha_0 + \alpha_1 Ln\left(GDP_{it}\right) + \alpha_2 Ln\left(GDP_{jt}\right) + \alpha_3 Ln\left(P_{it}\right) +$$
$$\alpha_4 Ln\left(P_{jt}\right) + \alpha_5 Ln\left(LPI_{Qit}\right) + \alpha_6 Ln\left(LPI_{Qjt}\right) + \alpha_7 Ln\left(LSC_{it}\right) +$$
$$\alpha_8 Ln\left(LSC_{jt}\right) + \alpha_9 Ln\left(D_{ij}\right) + \alpha_{10} Ln\left(B_{ij}\right) + \alpha_{11} Ln\left(TRA_{ijt}\right) + \varepsilon_{ijt} \quad (7)$$

Were LPIQ means Logistics Performance Index (Quality of trade and transport-related infrastructure).

Each LPI' sub-dimension is expected to display a positive sign. The higher values of these sub-dimensions favor Tunisia maritime export. The results of the estimation will able to ascertain the sub-dimensions that have the greatest impact on Tunisia maritime export over the period 2007 to 2017.

4. Data

Tunisia was considered the exporting country. The Tunisian maritime exports to country j were published annually by Tunisia Office of Merchant Marine and Ports. The sample used comprises the main nations importing goods from Tunisia that belong to the EU (Italy, French, Malta, and Spain). The subscript j varied from 1 to 4. Figure 1 presented Tunisian maritime exports flows to the main nations importing goods from Tunisia.

Figure 1: Tunisian maritime exports flows to main nations importing goods from Tunisia
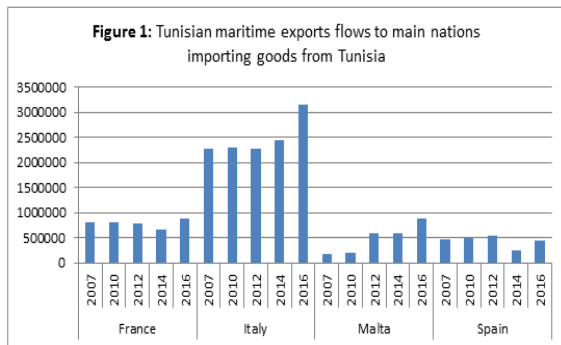
LPI is measured by Logistics Performance Index overall score, which reflects perceptions of a country's logistics based on the efficiency of the customs clearance process, quality of trade- and transport-related. Data was published by the World Bank. Figure 2 presented Tunisia LPI and LPI's European partners.

Figure2. Logistics performance index: Overall (1=low to 5=high)
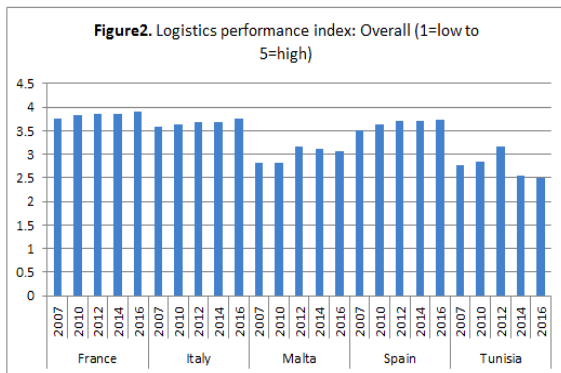
GDP (in dollars) and population data have been obtained from the United Nations database. As regards distance (in kilometers) between Tunisia and the sample of countries represent the straight-line distance between the Tunisian principal export seaport (Seaport of Rades) and the principal import seaport of Tunisian goods in the destination country. Based on Distance Calculator (available at http://www.levoyageur.net), figure 3 shown the distance between seaport of Rades and each destination seaport for the country sample.

Figure 3. Distance (Km) between Tunisia - Rades and the sample countries
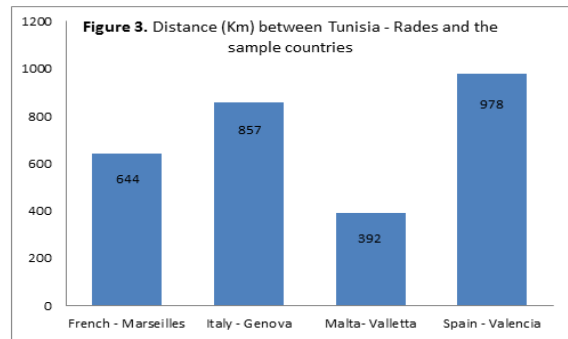
Finally, the series of dummy variables that describe Tunisians resident abroad living in European countries have been obtained from Office of Tunisians Abroad.

Figure 4: Tunisians Resident Abroad
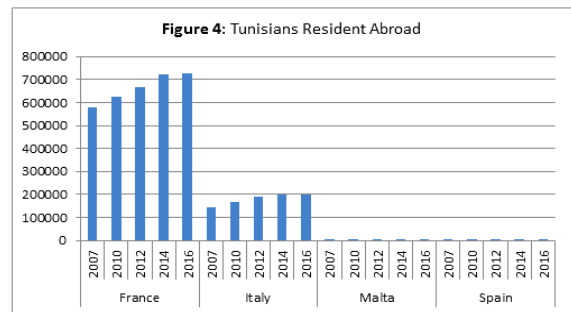
5. Results

Table 1 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI overall score.

Table 1: Estimation results Eq.1 LPI (Overall score)

Variables	Coefficient.	Standard Error
Constant	-21.69	54.75222
$Ln(GDP_{jt})$	0.224711	1.136315
$Ln(GDP_{it})$	-8.08181***	2.930922
$Ln(P_{jt})$	3.893338*	2.062887
$Ln(P_{it})$	15.96231**	7.052203
$Ln(LSC_{jt})$	2.010418***	0.729666

Ln(LSC$_{it}$)	-1.0147	0.617924
Ln(D$_{ij}$)	-14.8505***	5.328997
Ln (LPI$_{Ojt}$)	4.871763**	2.26472
Ln (LPI$_{Oit}$)	-0.68824	0.684676

Table 2 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI ability to track and trace consignments.

Table 2: Estimation results Eq.2, LPI (Ability to track and trace consignments)

Variables	Coefficient.	Standard Error
Constant	-70.995**	33.17217
Ln(GDP$_{jt}$)	-0.26838	0.963162
Ln(GDP$_{it}$)	-9.67953***	3.597121
Ln(P$_{jt}$)	3.239447*	1.820962
Ln(P$_{it}$)	21.11677***	7.289287
Ln(LSC$_{jt}$)	1.637293**	0.667633
Ln(LSC$_{it}$)	-0.52656	0.535089
Ln(D$_{ij}$)	-10.6207**	4.990425
Ln(LPI$_{Ajt}$)	3.134011***	1.046169
Ln(LPI$_{Ait}$)	-0.09377	0.510562
Ln(B)	5.121916***	1.329176
Ln(TRA$_{ijt}$)	-0.90821*	0.47115

***, ** and * denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

Table 3 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI competence and quality of logistics services.

Table 3: Estimation results Eq.3, LPI (Competence and quality of logistics services)

Variables	Coefficient.	Standard Error
Constant	-97.470**	46.47757
Ln(GDP$_{jt}$)	0.00996	1.348671
Ln(GDP$_{it}$)	-11.40***	4.24971
Ln(P$_{jt}$)	5.03727	2.365838
Ln(P$_{it}$)	26.27043***	9.208621
Ln(LSC$_{jt}$)	2.684247***	0.774244
Ln(LSC$_{it}$)	-0.66574	0.640314
Ln(D$_{ij}$)	-18.1103***	6.326225
Ln(LPI$_{Cjt}$)	2.25278	2.310721
Ln(LPI$_{Cit}$)	-0.24509	0.57657
Ln(B)	7.305627***	1.690307
Ln(TRA$_{ijt}$)	-1.60905***	0.607881

***, ** and * denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

Table 4 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI efficiency of the customs clearance process.

Table 4: Estimation results Eq.4, LPI (Efficiency of the customs clearance process)

Variables	Coefficient.	Standard Error
Constant	-59.1876	52.08106
Ln(GDP$_{jt}$)	-0.31337	1.251194
Ln(GDP$_{it}$)	-12.7891***	4.018032

Ln(B)	6.495159***	1.391792
Ln(TRA$_{ijt}$)	-1.34371***	0.50345

(***), (**) and (*) denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

Ln(P$_{jt}$)	4.850797**	2.233643
Ln(P$_{it}$)	25.88624***	7.437204
Ln(LSC$_{jt}$)	2.769015***	0.729693
Ln(LSC$_{it}$)	-0.98824	0.654879
Ln(D$_{ij}$)	-16.23***	5.883963
Ln(LPI$_{Ejt}$)	2.47497	1.716524
Ln(LPI$_{Eit}$)	-0.25299	0.414319
Ln(B)	6.936734***	1.543835
Ln(TRA$_{ijt}$)	-1.4245**	0.560364

***, ** and * denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

Table 5 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI ease of arranging competitively priced shipments.

Table 5: Estimation results Eq.5, LPI (Ease of arranging competitively priced shipments)

Variables	Coefficient.	Standard Error
Constant	-260.477	404.621
Ln(GDP$_{jt}$)	-0.43183	1.343419
Ln(GDP$_{it}$)	-20.9592	22.67467
Ln(P$_{jt}$)	5.491585**	2.410844
Ln(P$_{it}$)	51.00291	58.89247
Ln(LSC$_{jt}$)	2.917789***	0.800641
Ln(LSC$_{it}$)	-0.13642	0.72717
Ln(D$_{ij}$)	-17.7489***	6.27289
Ln(LPI$_{Eajt}$)	-1.84944	1.906918
Ln(LPI$_{Eait}$)	0.973153	3.109742
Ln(B)	7.066001***	1.64796
Ln(TRA$_{ijt}$)	-1.52996**	0.595823

***, ** and * denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

Table 6 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI frequency with which shipments reach the consignee within scheduled or expected time.

Table 6: Estimation results Eq.6, LPI (frequency with which shipments reach the consignee within scheduled or expected time)

Variables	Coefficient.	Standard Error
Constant	-69.901	66.96881
Ln(GDP$_{jt}$)	-0.06815	1.265958
Ln(GDP$_{it}$)	-8.5567	3.839812
Ln(P$_{jt}$)	4.841007**	2.253694
Ln(P$_{it}$)	20.16867**	9.314407
Ln(LSC$_{jt}$)	2.335208***	0.785839
Ln(LSC$_{it}$)	-0.56082	0.78906
Ln(D$_{ij}$)	-16.8406***	5.912335
Ln(LPI$_{Fjt}$)	-0.29832	0.713954
Ln(LPI$_{Fit}$)	1.258785	0.911516
Ln(B)	6.85708***	1.557237
Ln(TRA$_{ijt}$)	-1.48648***	0.563898

***, ** and * denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

Table 7 includes the results over the period 2007-2017 regarding logistics performance, according to the LPI Quality of trade and transport-related infrastructure.

Table 7: Estimation results Eq.7, LPI (Quality of trade and transport-related infrastructure).

Variables	Coefficient.	Standard Error
Constant	-62.7657	41.78265
$Ln(GDP_{jt})$	1.146123	1.28345
$Ln(GDP_{it})$	-13.78968**	4.648465
$Ln(P_{jt})$	3.554213*	2.105159
$Ln(P_{it})$	26.93519**	8.027776
$Ln(LSC_{jt})$	2.187391***	0.6949851
$Ln(LSC_{it})$	-1.325566	0.7739944
$Ln(D_{ij})$	-17.0313***	5.227261
$Ln(LPI_{Qjt})$	5.862066**	2.71248
$Ln(LPI_{Qit})$	1.283952**	1.128291
$Ln(B)$	7.371525***	1.393983
$Ln(TRA_{ijt})$	-1.63977***	0.5040744

***, ** and * denotes that the parameter is statistically significant respectively at 1%, 5% and 10%.

The results presented in tables 1 to 7 reveal that the most important variables are the distance D_{ij} and the liner shipping connectivity of importing nations LSC_{jt}. Tunisia's Gross Domestic Product GDP_i and population P_i are the second important variables impacting Tunisia' maritime exports coinciding with conclusions reached in the literature. Regarding the impact of logistical performance, there is a wide variation in results using the LPI overall and also for each of six sub-dimensions of the LPI. Only LPI overall scores of importing nations LPI_{oit} were significant. Findings display a weak level of significance, both for the LPI and each of six sub-dimensions. The only significant LPI sub-dimensions are the ability to track and trace consignments in the importing countries (LPI_{Ajt}) and the Tunisia' quality of trade and transport-related infrastructure LPI_{Qit}.

6. Conclusions

Logistic performance became is an important variable to take into account when the analyses concern international trade. This article focuses on analyzing the impact of the LPI overall score and LPI sub-dimensions on Tunisia's exporting goods to the main pattern trade of the EU over the period 2007-2017.

The actual level of Tunisian logistics performance is unable to positively affect maritime exports. The findings confirm that only LPI sub-dimension related to the quality of infrastructure, e.g. seaports, railroads, roads, information technology have a significant positive impact on Tunisian maritime exportation. The findings confirm the positive role of Tunisia's quality of trade and transport-related infrastructure to improve exporting goods. However, the five rest LPI sub-dimension are not significant and needs improvement to become factors that positively affect maritime exports.

The Tunisian logistics performance needs to be improved in order to contribute positively to the development and to improve the competitiveness of Tunisian maritime exports. It can be improved through government interventions such as building infrastructure, developing a regulatory regime for transport services, and designing and implementing efficient customs clearance procedures. In addition, the private sector can help develop logistical performance by refurbishing machinery and equipment for handling goods at commercial ports and by training the labor force in the sector.

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