INDEX OF ECONOMIC FREEDOM AND TRANSPORT DEVELOPMENT IN ROMANIA

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Abstract

Transport is an important component of the economy - as a promoter of local, regional and global
development, by alleviating the disparities between the different regions, by facilitating the mobility of human, material
and immaterial resources through the facilitating and stimulating role, increasing the degree of intercultural
knowledge with positive effects on peace and attenuation of different types of discrimination. Romania, as a member of
the European Union, must implement the transport stimulation and development objectives set by the European
Commission. In this context, we want to identify relations between the degree of economic freedom and the changes
that have taken place in the three main transport sectors - road, rail and air. For this, a series of correlograms will be
created to capture the relationship between the various transport indicators and the Index of Economic Freedom,
developed by Heritage Foundation.

Key Words: freedom; transport; Romania; liberalization; privatization.

Classification JEL: L51, L91, L92, L93

1. Introduction and context of the study

The word "deregulation" is commonly used to refer to a package of reforms involving industry
restructuring, price deregulation and entry into one or more previously regulated segments and
having important implications for performing competitive performances. Indeed, improving the
performance of regulated distribution and transmission networks in England and Wales is
responsible for much of the estimated benefits of deregulation [12]. Deregulation has stimulated an
increased interest in the design and effects of alternative regulatory mechanisms governing the
various regulated sectors, price-access mechanisms in these sectors to support competition using
these efficient platforms [10]. Privatization and deregulation are the transformation policies in
which the government transfers (by way of sale) parts of the transmission system it holds to private
firms without regulating prices, services and the expansion or contraction of these networks (entry
or exit of the sector) [16].

Reddy et al. [13] said, following an analysis of the relationship between property ownership,
concentration and efficiency of Chinese firms between 2005-2012, that partial privatization did not
lead to increased performance or gains in efficiency. The author believes that without the help of
the government, it is difficult for state-owned enterprises to have sustainable long-term
performance.

Other examples in favour of privatization are also provided by Hibbs [9], which provides the
example of state Chilean railways that became government-independent in 1973 and cut from state
subsidies. These, under the leadership of a young and efficient general manager, have grown and go
to the international capital market to build new railway lines. Another example is from UK, where
in 1982 the National Goods Transport Corporation was sold to a consortium of employees and
managers and quickly became an efficient and revolutionary business. Taczanowski [15] also
recalls the successes of railway lines in the Czech Republic, Austria and Poland, demonstrating that
privatization has a positive effect on the quality of rail service and the economic situation of
regional governments. The author believes that undoubtedly the most remarkable effect of the
liberalization of Polish rail transport is the improvement of the quality of services due to the
procurement of large-scale rolling stock.
Crăciun [6] is of the opinion that Constanta port has a development of activities in line with all the transformations in the national and international economic environment due to the change of the organizational model in the early 1990s. The state's exit from the port services market has provided liberty for the development of the private companies, which have increased in two decades from about 12 to about 800.

There are specialists [10] showing that very high levels of government property are associated with an increase in performance and value creation within the privatized society, while the low levels of this property are associated with a decrease in performance and value creation. Nevertheless, the approach in which state-owned and privately-held enterprises generate a conflict of interest due to the fact that the state is both regulator and regulated [14], [5], [7]. Thus, although Bauer [2] did not find any convincing reason for competitive acceleration privatization, he found little evidence that subsequent privatization would jeopardize the vital objectives of public policy. This reduces the inadequacy of the double role of the state as owner and regulatory authority.

Araújo [1] investigates the role played by the deregulation process on investment decisions by firms in the infrastructure sectors. His study covers the 1980-2006 period, characterized by increased liberalization and privatization in OECD countries. Following the inquiry, the author concludes that public ownership and barriers to entry are high in the railway sector, but also that there is a negative relationship between the level of public ownership and the investment at the firm level.

In Europe, the deregulation of the domestic and regional markets of airlines, such as the European Economic Space and the increased number of Open Sky agreements, have led to a move from the managed tariff structure to a market-dominated arrangement [4]. In this latter context, the dominant position and price leadership of former charterers and charter airlines are gradually eroded, among other factors, by the emergence of low-cost carriers.

Notable results in terms of airline liberalization are also found in the example of Turkey which started this process in 1983. The result was the entry of many airlines on the market in a very short period of time, these airlines fueled the tourism sector, which has increased rapidly and amplified the demand for air travel, passenger traffic has enlarged, the share of Turkish air carriers has improved in the international market, and competition between Turkish and foreign air carriers has augmented [8].

Starting with 2004, CFR S.A. may rent part of the non-interoperable railway infrastructure to other legal entities representing public transport and / or freight transport operators, the process is regulated by Government Decision no. 643/2011 modified by the Government Decision no. 177/2014. Thus, the first private railway passenger public transport operators appear, which operate on the non-interoperable railway infrastructure and on the interoperable railway infrastructure operated by CFR S.A.

The EU regulatory framework was reflected in the Romanian legislation in [3]:
- Government Emergency Ordinance no. 12/1998 on the Romanian railway transport and the reorganization of the Romanian National Railway Society, approved with the relevant amendments and completions by the Law no. 89/1999, with later amendments and completions;
- Government Ordinance no. 89 of 28 August 2003 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure;

2. Methodology and results

In order to observe the link between regulation, liberalization and privatization and the transport sector in Romania, a series of indicators specific to the transport sector will be analyzed to highlight possible relationships. As an instrument for measuring the degree of regulation,
liberalization and privatization, an indicator has been sought to accurately reflect these issues and the RLI (Railway Liberalization Index), conducted by IBM at Deutsche Bahn [17]. This, unfortunately, provides data for Romania only for the years 2007 and 2011. At the level of 2011, Romania has an RLI score of 722, which means that our country is on schedule regarding the adoption of railway transport market liberalization measures.

Taking into account the lack of a specific quantification tool for the three desired aspects, the Index of Economic Freedom (IEF) was chosen. It is published by the Heritage Foundation of the United States of America, being a synthetic index that takes into account ten different aspects of the economic environment [19]: business freedom, freedom of trade, tax freedom, freedom from government intervention, monetary liberty, freedom of investment, financial freedom, freedom of property rights, freedom of corruption, freedom of labour. According to the Heritage Foundation, countries are classified as: free (IEF = 100-80), largely free (IEF = 79.9-70), moderately free (IEF = 69.9-60) (IEF = 59.9-50), suppressed (IEF = 49.9-40). The analysis captures the period 1998-2015, this range being chosen because there were data for all the indicators. The data are taken from the sites of the Heritage Foundation Institute and the Romanian National Institute of Statistics (2017) [16] and are presented in Table 1.

The correlations between the indicators analyzed will be determined by applying the Pearson correlation coefficient method. The correlation coefficient measures the degree of linear association between two variables and can vary between -1 and +1. The closer the correlation coefficient is to -1 or +1, the more the linear relationship between the two variables is stronger. The +1 correlation coefficient implies an increase in the linear relationship between the variables in which the two variables grow at the same time. A correlation coefficient of -1 implies a decreasing linear relationship. If the variables are independent, then the correlation coefficient is 0. The correlation coefficient will be calculated for each set of indicators analyzed (between the dependent and the independent variable).

Table 1. Economic Freedom Index and Indicators of Road, Rail and Air Transport Development - Romania

<table>
<thead>
<tr>
<th>Year</th>
<th>IEF</th>
<th>Road transport passengers (mil.)</th>
<th>No. land &amp; pipelines transport companies</th>
<th>Registered aircrafts</th>
<th>No. aerospace companies</th>
<th>Air passengers (mil.)</th>
<th>Rail passengers (mil.)</th>
<th>Wagon capacity in inventory - thousands of seats</th>
<th>Goods transported by rail (thousand tons)</th>
<th>Goods transported by road (thousand tons)</th>
<th>Goods transported by air (thousand tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>54.4</td>
<td>224</td>
<td>9847</td>
<td>34</td>
<td>17</td>
<td>2.0</td>
<td>147</td>
<td>456</td>
<td>76512</td>
<td>313701</td>
<td>15</td>
</tr>
<tr>
<td>1999</td>
<td>50.1</td>
<td>193</td>
<td>9880</td>
<td>38</td>
<td>21</td>
<td>2.1</td>
<td>129</td>
<td>442</td>
<td>62941</td>
<td>278986</td>
<td>15</td>
</tr>
<tr>
<td>2000</td>
<td>52.1</td>
<td>206</td>
<td>9864</td>
<td>28</td>
<td>30</td>
<td>2.4</td>
<td>118</td>
<td>448</td>
<td>71461</td>
<td>262943</td>
<td>16</td>
</tr>
<tr>
<td>2001</td>
<td>50.0</td>
<td>200</td>
<td>12029</td>
<td>29</td>
<td>33</td>
<td>2.5</td>
<td>114</td>
<td>447</td>
<td>72578</td>
<td>268496</td>
<td>16</td>
</tr>
<tr>
<td>2002</td>
<td>48.7</td>
<td>191</td>
<td>13873</td>
<td>32</td>
<td>35</td>
<td>2.6</td>
<td>96</td>
<td>395</td>
<td>70654</td>
<td>267103</td>
<td>17</td>
</tr>
<tr>
<td>2003</td>
<td>50.6</td>
<td>216</td>
<td>16369</td>
<td>34</td>
<td>40</td>
<td>2.9</td>
<td>95</td>
<td>370</td>
<td>71411</td>
<td>275603</td>
<td>16</td>
</tr>
<tr>
<td>2004</td>
<td>50.0</td>
<td>217</td>
<td>19089</td>
<td>33</td>
<td>44</td>
<td>3.4</td>
<td>99</td>
<td>354</td>
<td>72738</td>
<td>294221</td>
<td>20</td>
</tr>
</tbody>
</table>
Thus, it can be observed that there is a direct link between IEF and road transport indicators. IEF determines 73% of the evolution of road transport passengers (see $R^2$ in Figure 1), with a 0.86 Pearson correlation – showing a strong positive association, and in 83% the evolution of road and pipeline transport companies (see $R^2$ in Figure 2), with a 0.91 Pearson correlation – exposing a
A robust positive association.

*Source: processed according to the data in Table 1*

The development of enterprises in terrestrial and pipeline transport is influenced by 83% by IEF dynamics (see $R^2$ in Figure 2), with a Pearson correlation coefficient of 0.91, showing a strong positive association.

![Figure 1 Road transport passengers – IEF correlogram](source)

Concerning air transport indicators, there is a similar link to road transport. The dynamics of the number of air passengers is 93% determined by the evolution of the IEF (see $R^2$ in Error! Reference source not found.), having a 0.97 Pearson correlation.

![Figure 3 Air passengers – IEF correlogram](source)

The dynamics of the number of enterprises in the aviation sector is determined in a proportion of 74% by the evolution of the economic freedom index (see $R^2$ in Figure ). The Pearson correlation is 0.86, denoting a strong positive association between the indicators.
Increasing economic freedom in Romania accounts for 79% of the number of aircraft within air industry (Figure 5), the former having a strong positive influence highlighted by the Pearson correlation coefficient of 0.89.

The link between rail transport and IEF is negative, showing that as the IEF increases, rail sector indicators are decreasing. Thus, passenger evolution is 64% determined by the IEF dynamics, with a Pearson correlation index of -0.8 (see Figure 6).
The evolution of wagon capacity is influenced to a degree of 67% (see Figure 7), with a Pearson correlation index of -0.82 by the dynamics of IEF.

The goods transported by air are influenced to a degree of 81% (see Figure 8), having a 0.9 Person correlation index, showing a strong positive association between the two indicators.
Between the goods transported by rod and the IEF there is a weak reverse relation, Pearson correlation index being -0.47, whereas the degree of determination is 22% (see $R^2$ in Figure 9).

Among the goods transported by rail and the IEF there is a strong reverse association, Pearson correlation index being -0.81, whereas the degree of determination is 65% (see $R^2$ in Figure 10).
3. Conclusions

The direct relationship between the IEF and the road and air transport indicators shows that as the degree of economic freedom in Romania increased, between 1998-2015, this led to the development of the land and air transport. The reverse link between IEF and rail indicators may be explained by the fact that as the economy becomes freer and road and air transport are growing strongly, the market share of the rail sector is diminishing due to competition from the other two means of travel which leads to the migration of passengers from rail to road and air. Nevertheless, IEF has a strong negative association with goods transported by rail and a weak reverse association with goods transported by road. These results can be influenced by the fact that the period under analysis is affected by an economic crisis that disturbs the entire economy.

It can be highlighted that liberalization measures, privatization and deregulation applied at macroeconomic level in Romania have positive effects on the road and air transport, but negatively on the railway. However, we believe that the net benefit is to the advantage of the travellers because they enjoy increasing mobility, flexibility, reducing travel time, but also services of a higher quality by moving to road and air transport, despite the fact that rail transport suffers.

Taking into account that the analysis refers to the period 1998-2015, but also the fact that Romania in the year 2017 has an IEF = 69.7, being included in the group of countries with moderate freedom, there is room for improvement in terms of liberalization, deregulation and privatization, so that our country can obtain a better score, with effects both on the field of transport, but not only.

Bibliography


