

# Freight transport impacts from the economic crisis in Greece



Tatiana P. Moschovou

Department of Transportation Planning and Engineering, National Technical University of Athens, 5 Iroon Polytechniou str., 157 73, Zografou Campus, Greece

## ARTICLE INFO

### Keywords:

Road freight transport  
Economic crisis  
GDP decoupling  
Freight intensity  
Greek freight transport

## ABSTRACT

During the last eight years, Europe, and the world as general, has been experiencing a situation of sudden economic recession resulted in economic and financial crisis. According to the IMF (2009), this is the worst recession of the last decades since economies, countries and global GDP have been seriously affected. A sector of the economy that has significantly been impaired is road freight transport. The scope of this paper is to investigate the effect of this crisis on road freight transport in Greece. The analysis starts by examining global and European data and trends while presenting comparable Greek economic and freight transport data for a series of years starting in 2003. This analysis and mapping of data shows some plausible correlations between economic and freight transport indicators and identified visible patterns. The paper examines the possibility of constructing mathematical relations between tonnes or t-km of road freight and GDP for Greece, which were the only relations showing a statistically significant correlation. The overall conclusion is that the impacts on freight transport are visible but quite pronounced as freight transport volumes and output have been substantially unstable or reduced over these years and this trend is visible when mapping the relevant data as well as in more detailed statistical analysis.

## 1. Background and objectives of the paper

The economic crisis during the last nine years, has affected many European countries with complex and unprecedented socio-economic impacts that are still going on. The problems started in 2008, with the housing bubble in the US and quickly spread to Europe. Greece, as well as other Southern mainly European countries, was among those that were hit the hardest.

In response, the governments of the countries affected – through pressure and imposed policies by their lender Organizations – have undergone an effective “internal depreciation” of their currencies through severe austerity measures and reorganization of their public sectors. The austerity measures have had serious economic impacts such as reduced economic activity, reduction in pensions and wages with a corresponding cut in the spending power of the citizens, increased unemployment rates (e.g. 27% in Greece, somewhat less in Spain), and so on especially in road freight transport.

The scope of the present work is to reveal the level of effect of the economic crisis and the potential structural changes in key characteristics of the freight transport sector in Greece. Further analysis is performed by using and examining available statistics and trends, by comparing the relevant data and by attempting to express the outcome of the above analysis in mathematical relations between economic and transport indicators from time series data in order to detect any significant correlations.

## 2. Review of previous work

When it comes to analyzing the impacts of economic development on transport, several different approaches and methodologies have been used in the past, from simple analyses of available data to highly sophisticated statistical correlation techniques using spatial or time series data.

This topic of the research was particularly prompted by the debate preceding and following the EU's policies for “*decoupling*” in the 2000's that was made official after the publication of the [European Commission \(2001\) White paper \(2001\)](#). “*Decoupling*” has been defined as “*decrease in transport intensity of GDP that will allow the volume of transport to increase at a lower rate than the economy at large*” ([Banister, 2001](#)). Thus the policy of “*decoupling*” involved, tried to disconnect the growth in road freight transport rates from the growth of the economy, in order to decongest the roads, and as a result some interesting researches on the relation between GDP or other economic indicators and freight transport intensity were performed ([SACTRA, 1999](#); [Tapio, 2005](#); [Verny, 2007](#); [McKinnon, 2007](#)).

[Meersman and Van de Voorde \(2003\)](#) were among the authors that studied relations between freight transport and several economic indicators. Their models comprised, besides GDP, other indices including industrial production, and imports/exports as main determinants for freight transport demand. They assert at the end that GDP had a stronger impact on freight transport in the 1990s than it did in

E-mail address: [tmosch@central.ntua.gr](mailto:tmosch@central.ntua.gr).

<http://dx.doi.org/10.1016/j.tranpol.2017.04.001>

Received 5 June 2016; Received in revised form 23 March 2017; Accepted 1 April 2017

Available online 20 April 2017

0967-070X/© 2017 Elsevier Ltd. All rights reserved.

the 1980s, while changes in industrial production became far less influential.

Another interesting work on relations between economic and freight transport indicators, is the work by Garcia et al. (2008). The authors investigated and confirmed a number of correlations between road freight indicators – not expressed in tonne-km but in number of in/out/transit regional HGV (Heavy Goods Vehicles) trips and number of km driven – and economic indicators such as share of employment per sector, GDP per capita, etc, in a selected number of regions in EU countries. An interesting result of the above work was the diminished explanatory value of disaggregating the number of (road freight) trips made into intra-regional and extra-regional, or trips produced or attracted in a certain region, as opposed to the consideration of “total” trips.

In Verny (2007) a relation between freight transport and the distances covered, with economic growth has also been investigated using time series data. Similar econometric analyses were made between transport costs, trade volumes and GDP growth in Feige (2007), using data from a survey that included also investigation of users’ preferences (commercial users, logistics departments of manufacturing and distribution companies).

More recently, Rothengatter (2011) used a dynamic model to simulate various economic as well as transport scenarios for the EU’s 27 member states. This research led to several interesting conclusions the main ones being that it can be expected that the economies will recover, but this recovery process presupposes that economic and transport structures will change. This corresponds to what that author called the “Schumpeter paradigm” (defined as a consistent economic environment for a positive development prospect, based on the assumption of particular technological and behavioural changes), which asserts that the crisis gives the chance for a structural change, never possible in a phase of prosperity, and that such change in the transport sector will eventually make transport operations to become more energy-efficient and environmentally friendly. The paper also showed, through a quantitative simulation that there is a high potential for creating such a structurally changed world, in the freight transport of Europe after a time of crisis, using the “tools” of better bundling, loading, routing, and modal split.

The efforts at creating meaningful relations between freight and economic indicators – especially the GDP – seem to have been mainly successful when considering time-series data. According to Hilferink (2003), “in a cross-section analysis, i.e. between different EU countries, it becomes evident that the correlation between freight transport and GDP is not as close as it is in time series data”. This was confirmed by the analysis of this paper too, when it was attempted to combine data from all four Southern European countries and the results were not reliable or meaningful. Also, with reference to global (international) freight transport data, it is observed that the fluctuations in the global trade (in terms of tonnage) have been far more varied than fluctuations in the growth of GDP. Since freight transport volumes do follow rather closely the global trade volume fluctuations, the relation between freight volumes and GDP has been more difficult to establish.

For Greece, the impacts of the economic crisis on freight transport levels have been studied by Papoutsis et al. (2013) who have investigated the effects to urban road freight, taking as a case study the city of Thessaloniki. A survey with interviews on logistic service providers of the city was performed and a SWOT analysis was formed in order to point out the consequences on their operational and economic activities between the years 2009 and 2012. The analysis also examined the potential opportunities that may have arisen as a result of the crisis but also the threats in the future. A diminishing trend of freight transport activity in the urban area of Thessaloniki was also confirmed, while the factors that contribute to this situation were, the reduced overall trade activity in the city, the very narrow bank borrowing levels and the consequent lack of cash for the freight transport industry, the increases in fuel costs and the overall decrease of the domestic demand.

Another work by Mitsakis et al. (2014) recorded the consequences of the economic crisis on transport sector in Greece by documenting annual traffic flows, vehicle-km, for urban, interurban and public transport as well as tonnes, tonne-km, and containers transported for freight transport (by road, rail, sea, maritime). The research pointed to a number of interesting results the most interesting of which, is that the crisis do not have the same effect in all transport sectors, as maritime and logistics sectors seem to resist the impacts, contrary to road transport (where most of the negative impacts appear).

Finally correlation relations between transport and economic indicators (mainly GDP or GDP/capita) have been used in the past but this type of analysis has not always been feasible or reliable enough.

For this paper, the analysis consisted of the following steps and actions:

- Examining overall European and global data.
- Mapping the economic and freight (or freight related) transport data for several years.
- Analyzing the trends revealed by these graphical representations of the data in order to identify any visible pattern in the relation among these indicators.
- Examining the possibility of constructing some mathematical relations through statistical correlation and regression analyses.

The analysis of this research, finally, benefited from the results of a previous work by Moschovou and Giannopoulos (2012) on freight mode choice in Greece, which resulted in a number of relationships between freight transport indicators.

### 3. Overview of freight transport activities in EU

Road freight transport in the EU-28 member countries is the main freight transport activity (Fig. 1). Based on 2014 data, total goods transport activities in the EU-28 had reached 3524 billion t-km, (not including transport between EU and rest of the world). Road transport accounted for 49% of this total with maritime transport (domestic and intra EU operations) as the second most important mode (31.8%), rail for 11.7%, inland waterways for 4.3%, oil pipelines for 3.2% and air transport just 0.1% (European Commission, 2016).

With the beginning of the crisis in 2008, the debate focused more on the likely length and severity of the impacts on freight transport rather than on whether they exist. The simplest hypothesis was that the economic crisis will only interrupt the development trends, and some years later the trajectories of economic and transport development will bounce back to the old trend lines. The OECD/ITF had estimated then,

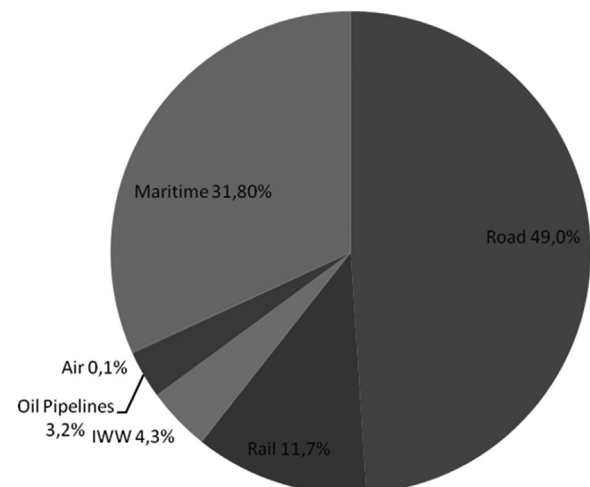


Fig. 1. Share of freight transport in t-km for the EU28 (2014 values). [Source: European Commission (2016)].

Download English Version:

<https://daneshyari.com/en/article/5119170>

Download Persian Version:

<https://daneshyari.com/article/5119170>

[Daneshyari.com](https://daneshyari.com)