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## PERFORMANCE OF ROAD FREIGHT TRANSPORT ENTERPRISES DURING ECONOMIC RECESSION\*

*This paper aims to evaluate the performance of enterprises, with their main business activities in the field of road freight transport during the years from 2008 to 2012. The issue is solved on the sample of 775 small businesses in Czech Republic. During the mentioned period the number of legal entities active in road freight transport is increasing, the opposite trend is observed as for the volume of goods transported via national road freight transport. Return on assets is used as the indicator for measuring the performance.*

*Keywords: return on assets; freight road transport; economic recession.*

*JEL classification: D92; E39; R40.*

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## ПОКАЗНИКИ РОБОТИ ВАНТАЖНОГО АВТОТРАНСПОРТУ У ПЕРІОД ЕКОНОМІЧНОЇ РЕЦЕСІЇ

*У статті проаналізовано показники роботи підприємств, основним напрямком роботи яких є вантажні автоперевезення, в період з 2008 по 2012 рік. Вибірка дослідження – 775 малих підприємств у Чеській Республіці. Протягом усього періоду дослідження загальна кількість таких підприємств має тенденцію до зростання, однак у той же час обсяг перевезених товарів постійно знижується як для національного автотранспорту, так і для міжнародного. Ключовим показником роботи вантажоперевізників обрано рентабельність активів.*

*Ключові слова: рентабельність активів; вантажні автоперевезення; економічна рецесія.*

*Форм. 1. Рис. 3. Табл. 2. Літ. 10.*

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## ПОКАЗАТЕЛИ РАБОТЫ ГРУЗОВОГО АВТОТРАНСПОРТА В ПЕРИОД ЭКОНОМИЧЕСКОЙ РЕЦЕССИИ

*В статье проанализированы показатели работы предприятий, основным направлением работы которых являются грузовые автоперевозки, в период с 2008 по 2012 год. Выборка исследования – 775 малых предприятий в Чешской Республике. В течение всего периода исследования общее количество таких предприятий имеет тенденцию к возрастанию, однако в то же время объём перевезенных товаров постоянно снижается как для национального автотранспорта, так и для международного. В качестве ключевого показателя работы грузоперевозчиков используется рентабельность активов.*

*Ключевые слова: рентабельность активов; грузовые автоперевозки; экономическая рецессия.*

**Introduction.** Economic, financial and debt crises became a hot topic after 2007. This issue is closely linked to economic cycles and phases. Economic recession as a phases in a economic cycle, in this case, led into a drop of demand globally. This article deals with the development of enterprises with core business classified according to CZ-NACE as freight transport in the period 2008–2012 with a focus on their number, development and performance in Czech Republic.

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**Literature review.** The term "performance" is used in everyday language, regardless professional field. Everyone can interpret the contents of this term and understand what a speaker wants to express. The very semantic nature of the term "performance", however, can often escape during communication. The exact definition of the term is difficult to formulate because of its use in various fields. Very generally speaking, the performance is "characteristic that describes how the examined subject performs a certain action on the basis of similarity with the reference method execution (during) this activity". For the correct interpretation of this characteristic it is essential to compare it with a reference sample in terms of criterion scale (Wagner, 2009).

Kaplan and Norton (2004) see two ways of how to improve the financial performance of a company. The first option is to increase revenues and the other one is to increase productivity.

Suitable indicators for measuring performance of a company can be found in Hult et al. (2008). His study is based on 94 studies published in 1995–2005. Hult et al. (2008) dealt with the performance of internationally active companies. The most commonly used performance indicators for international businesses include the indicator based on sales (i.e., sales volume, revenue growth, the share of exports in sales), whose relative frequency of use is 52%. Another type of indicator is a subjective perception of the overall performance (relative frequency of use is 47%), market share (44%), return on assets (29%), another indicator of profitability is return on assets (26%), productivity (20%) or performance as compared to the closest competitor (20%).

Richard et al. (2009) examined 722 articles published in prestigious journals between 2005 and 2007. Company performance in 69% of the analyzed articles was understood as the dependent variable. Half of the articles used several indicators for performance measurement, for example, the indicators based on accounting data (such as cash flow, profit before tax, net operating profit after tax, revenue, revenue growth, return on assets, equity or invested capital).

Siska and Lizalova (2011) focused their research on finding appropriate indicators of long-term business performance. The problem was analyzed on the data from 4,222 companies within the years 2006 to 2009. The performed cluster analysis clearly defined two groups of indicators, which are the indicators of profitability and growth. This investigation confirmed the above-cited ways to improve financial performance by Kaplan and Norton (2004). Siska and Lizalova (2011) concluded, that for the purpose of long-term evaluation of a company it is suitable to use either the indicators of profitability and growth, based on stable total assets (i.e., return on assets, growth of assets) or use the indicators of profitability and growth, based on sales (i.e., return on sales, sales growth), but it is necessary to cleanse the risk of annual fluctuations.

Profitability indicators are focused on corporate earnings in two aspects, one of the elements are operations that contribute to profit and the second is the relation of profit to total investments and the investments of shareholders (Rich et al., 2011).

Return on assets measure the profit produced by companies with the total capital or total investment of both creditors and owners (Rich et al., 2011).

The indicator of return on assets can be expressed both as the sum of gross profit and interest (the so-called EBIT, profit before interest and tax), or is expressed

through profit after taxation and taxed interest. Inclusion of interest (or taxed interest) to actual profit is, due to the fact that profit is the reward for providing equity interest, reward for providing foreign capital to cover projects or activities (Fotr and Soucek, 2005).

Road freight transport is an important part of any economy and, like all the other sectors it was also affected by the recession. Continuous evolution of road transport is evidenced by many studies conducted on this topic.

The research conducted by Alises, Vassallo & Guzman (2014) was comparing road freight transport between the UK and Spain. The results show that increasing the share of services in GDP has substantially contributed to decreasing road transport demand. Changes in road transport intensity due to improvements in logistic and supply chain management have been more successful in the United Kingdom than in Spain.

The next study in Spain analysed the generalized transport costs in the period between 1980 and 2007. The results showed that trade-weighted transport costs declined by 16.3% from 1980 to 2007, and the main driver behind this fall was the contribution made by infrastructure improvements in the form of time and distance reductions (Zofio et al., 2014).

**Research objectives and methodology.** The aim of this article is to evaluate the performance of enterprises with core business categorized by CZ-NACE as "road freight transport" between 2008 and 2012. The paper also deals with the development of legal entities in the business of road haulage and the development of the volume of goods carried by such entities.

The source data was provided by Czech Statistical Office and the Albertina database.

Companies from the Albertina with core business in road haulage were selected. We used 775 enterprises for further work. All of these businesses are, in accordance with the criteria of the European Commission for SME, which defines small businesses with the number of employees less than 50, the turnover is lower or equal to 10 mln EUR or balance sheet total is less or equal to 10 mln EUR. There was no microenterprise, medium or large enterprise with major operations in road haulage in the database.

Performance of enterprises was monitored on the basis of the indicators of return on assets, i.e. ROA (Fotr et al., 2012):

$$ROA = \frac{\text{profit before interest and taxes}}{\text{total assets}} \times 100. \quad (1)$$

For each subject we calculate the value of return on assets (ROA) and subsequently the median values and interquartile ranges for the total sample.

For deeper analysis of enterprises' performance, the subjects were divided by the number of employees. The entire sample of small companies is further divided into the following groups:

- 10–19 employees (352 subjects);
- 20–29 employees (77 subjects);
- 30–39 employees (39 subjects);
- 40–49 employees (no subject).

For this group of companies we calculate only the median ROA value.

The paper also focuses on the development of the number of enterprises. Both, the total number of enterprises and the number of closed and newly formed entities are analyzed. For these purposes the data from Czech Statistical Office was used.

Furthermore, the paper focuses on the development of goods transport using road freight transport (in thousands of tons) between 2008 and 2012. This is a capture of development of goods volume transported by road freight transport, both national and international in Czech Republic.

**Analysis of the issue.** The total number of subjects with major operations in road freight transport is shown in Figure 1, always until the 31 Dec between 2008 and 2012. Additionally the graph shows the number of entities in a single calendar year during the period from 2008 to 2012, closed and newly opened.

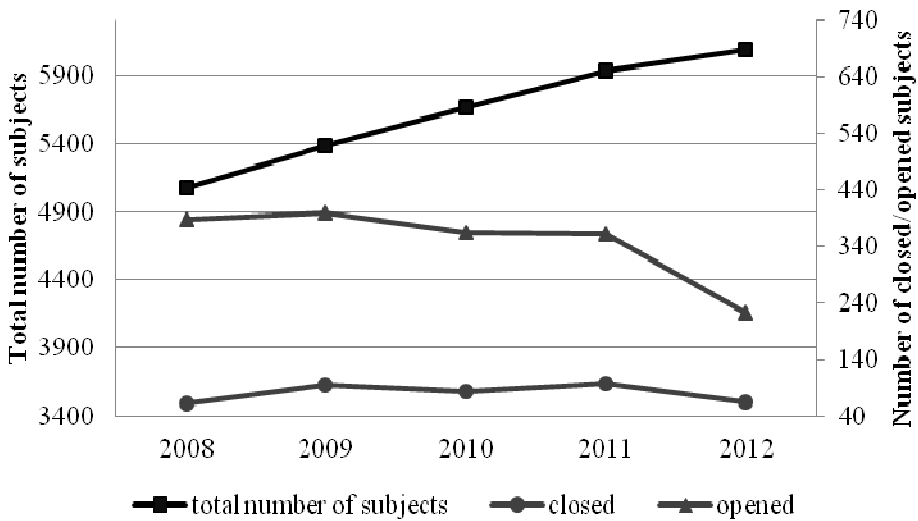


Figure 1. Evolution of the number of legal entities with major operations in road freight transport, 2008–2012, authors' construction by the data from Czech Statistical Office

Until the December 31<sup>st</sup>, 2008, there were 5,074 entities registered in road freight transport business. At the end of 2009, there were 5,381 entities (an increase from the previous year by 307 subjects), in 2010 their number increased (by 283) to 5,664 businesses. Growth in the number of subjects (by 264 companies) is observed also in 2011 to 5,928 companies and up to 31<sup>st</sup> December, 2012 there were 6,087 subjects.

In the given period (2008–2012) the largest number of shut-downs of enterprises can be seen in 2011 (98 subjects), the least of subjects ceased in 2008 (63 subjects) and in 2012 (64 subjects).

The highest number of newly settled companies belongs to 2009 (401 enterprises), while the lowest percentage was in 2012 (223 enterprises).

Figure 2 shows the volume of goods carried using road freight transport in 2008–2012. Transported volume is expressed in thousands of tons, and is related to the transport of domestic and international carriage of goods by road freight. Into the

international carriage of goods are included: import, export, cross-trade and transit through Czech Republic.

National transport of goods reached in the first year of our observation 382,420 ths tons. In 2009 there was the largest decline within the analyzed period (325,052 ths tons). In the following year (2010) again, the volume of goods transported domestically fell by 23,599 ths tons. Annual change in 2011 was -12,872 ths tons, and in the last reporting year, the volume of transported goods using domestic traffic reached 281,398 thousand tons.

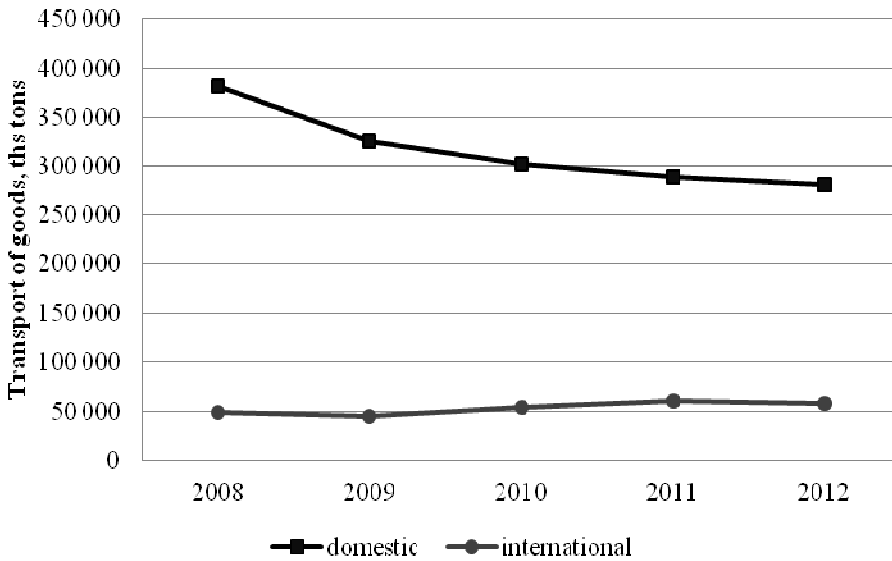


Figure 2. Transport of goods by road freight during 2008–2012, ths tons, authors' construction by the data from Czech Statistical Office

We may see a different trend for the transport of goods by road freight transport comparing international and national transports. The volume of transported goods using international transport in early 2008 was at 49,434 ths tons. There was a decline in the following year with the transport volume reaching 45,062 ths tons. Volumes of international traffic in 2010 were growing (the value of 54,458 ths tons). With the year 2011 came again an increase to 60,697 ths tons of internationally transported goods. Just as the national transport, the international transport in 2012 had a decline to 57,916 ths tons of carried goods.

In Table 1 the return on assets for the years 2008–2012 for the companies involved in road freight transport is displayed. It shows all the analyzed companies (775 subjects) regardless the number of employees. In 2008, the company interquartile reached the range of -4.26% to 10.14% with the median of 3.15%. The decline came with 2009, interquartile range was -6.42% to 8.98% and the median - 2.29%. Improvement again occurred in 2010, when the companies were in the interquartile range -3.24% to 8.84%, median - 3.17%. Another improvement came in 2011, the interquartile range - -0.62% to 11.43%, and the median was 3.91%. The decline occurred again in 2012, the interquartile ranges were -2.65% to 8.69%, the median was at 3.10%.

Table 1. Return on assets for the entire sample, 2008–2012, %, authors'

| Year | Interquartile range |       | Median |
|------|---------------------|-------|--------|
|      | 25                  | 75    |        |
| 2008 | -4.26               | 10.14 | 3.15   |
| 2009 | -6.42               | 8.98  | 2.29   |
| 2010 | -3.24               | 8.84  | 3.17   |
| 2011 | -0.62               | 11.43 | 3.91   |
| 2012 | -2.65               | 8.69  | 3.10   |

There are the median values of return on assets for each year for all the analyzed categories of enterprises (10–19 employees; 20–29 employees; 30–39 employees) and the groups of the analyzed companies are displayed in Figure 3. For businesses in the categories of 10 to 19 employees, 20 to 29 employees and for the entire sample 2009 was the worst year. On the other hand, enterprises with 30–39 employees have the lowest median return on assets in the last analyzed year – 2012.

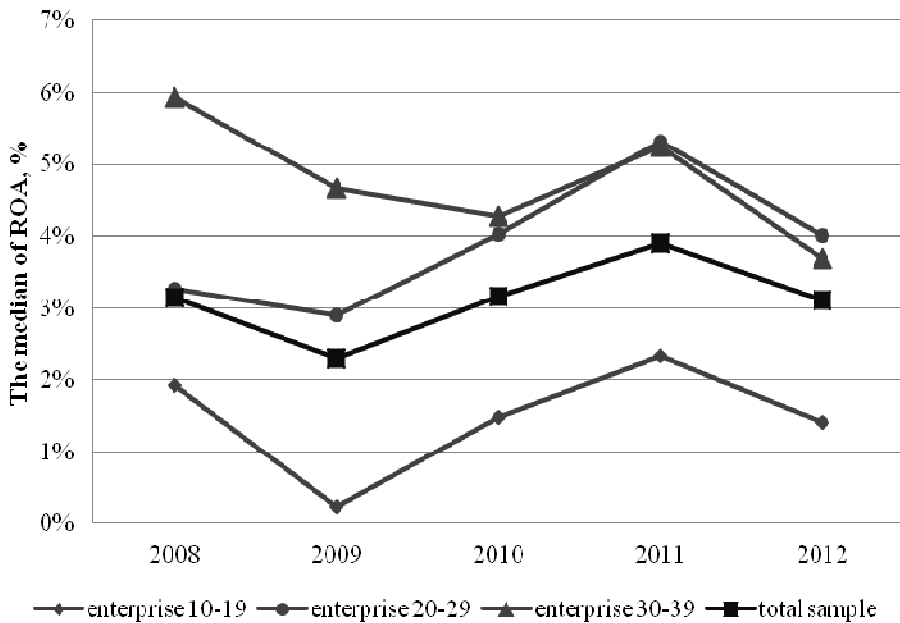


Figure 3. The median of return on assets for the categories of small businesses, 2008–2012, authors' construction by the data from Czech Statistical Office

Supreme median of return on assets was achieved in 10 to 19 and 20 to 29 employees and the entire sample in 2011, while enterprises with 30–39 employees got that in the first analyzed, (2008).

The comparison of enterprises with 20–29 employees and 30–39 employees is interesting. Companies with 20 to 29 employees in 2008 reached dramatically lower median of return on assets than those with 30 to 39 employees. Since 2010 the medians of these categories of enterprises began to level up. But in the last year, the ana-

lyzed enterprises with 20–29 employees reached higher medians than the enterprises with 30–39 employees.

Only enterprises with 20–29 employees had in 2012 higher median than the median value in the default year, 2008. Other groups reached in 2012 lower median than the return on assets in 2008.

**Discussion.** Table 2 shows the development of legal entities with major operations in road freight transport in absolute and relative terms compared to the previous year. There is also a volume of goods transported by national road freight transport (again in absolute and relative terms with respect to the previous year) and finally the last column contains the values of the median return on assets of enterprises (both absolute and relative terms).

*Table 2. Number of subjects, the volume of goods carried a median of return on assets for the years 2008–2014, authors' construction by the data from Czech Statistical Office*

| Year | Number of enterprises |        | Volume of goods carried, ths tons |       | Median ROA |        |
|------|-----------------------|--------|-----------------------------------|-------|------------|--------|
|      | ABS                   | YOY %  | ABS                               | YOY % | ABS        | YOY %  |
| 2008 | 5,074                 | x      | 382,420                           | x     | 3.15       | x      |
| 2009 | 5,381                 | 106.05 | 325,052                           | 85.00 | 2.29       | 72.70  |
| 2010 | 5,664                 | 105.26 | 301,453                           | 92.74 | 3.17       | 138.43 |
| 2011 | 5,928                 | 104.66 | 288,581                           | 95.73 | 3.91       | 123.34 |
| 2012 | 6,087                 | 102.68 | 281,398                           | 97.51 | 3.10       | 79.28  |

Between 2008 and 2012 there is a constant growth in the number of legal entities in road freight transport. This growth, however, has a decreasing trend.

The opposite situation is reflected in the volume of goods transported via national road freight transport. This indicator is decreasing, with year on year decline.

With the median of return on assets the situation is not so clear. In 2009 there was a decrease in the median of return on assets to 72.70% of the 2008 value. Year on year increase was recorded in 2010 and 2011. The decline occurred again in 2012, the value was 79.28% of the previous year.

**Conclusion.** Economic recession as one of the phases in an economic cycle generally causing a decrease in aggregate supply. In today's globalized world, the consequences of the decline due to the interdependence of economies manifest even harder and are more pronounced. The purpose of this paper was to analyze the impact of the recession on road transport.

With the decline in the overall demand in Czech Republic, or in Europe, also decreased the volume of goods transported via national transport throughout the period 2008–2012. As a result of this it could be expected, that the number of legal entities operating in this sector also decreases. This presumption was not confirmed by the conducted analysis.

Interesting is the fact that the median of return on assets for small businesses with the maximum of 29 employees is the lowest in 2009 and the highest in 2011, while the median of return on assets calculated for small companies with 30 or more employees, reaches the highest level in the initial year of the observation (2008) and the lowest in the last reference year, 2010.

Based on the analysis of our sample of companies, it was possible to state that the economic recession had a direct impact on the return on assets for these companies. The largest decline can be observed in 2009. Czech economy was partially recovered thanks to the release of "rescue packages" by Czech government between 2010 and 2011. This situation also positively resonated in profitability or performance of the monitored companies. This trend however did not persist in the following year (2012).

**Directions for further investigation.** This research is an appropriate basis for analyzing further the impact of the economic crisis and the comparison of impacts of economic recession between different sectors and different countries.

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