The Impact of Investments into the Railway Infrastructure in the European Economics

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Abstract

The article focuses on the influences that a quality railway infrastructure has on the life of a given country. The cluster analysis is employed to prove or refute the hypotheses dealt with in the article. The development of the modernization and use of railway infrastructures in a selection of European countries has been monitored in recent years in order to pinpoint the differences between the E15, E12 states or respectively E13 states in relation to non-EU states. The role of railway transportation is viewed from the point of employment, analysing individual factors and indicators using the cluster analysis. The level of investments into the railway infrastructure in individual states and the influence of the railway infrastructure quality on its use are investigated. The conclusion summarizes recommendations concerning the utilization and modernization of European infrastructure. It takes into account the amount of means invested as compared to the railway tracks utilized in both passenger and freight transport. It investigates the correlation between the railway-network density and its utilization..

*Keywords:*gross-tone kilometre, GDP, investment, railway infrastructure, transport, the European Union, maintenance, the long-term effect.

1. The Introduction

The significance of transportation and transportation investments has always been indisputable for any economy. In 2010, the share of transport, trade and telecommunications in the total GDP amounted to 21%, whereas the share of all European countries including Turkey reached an even higher percentage, i.e. 23% (EUROSTAT, 2014). Investments play a very important role in any economy due to their volatility. An unexpected dropout has an immediate influence on the sector in question that is multiplied into the economy. The negative impact shows even stronger with the whole sector being dependant on only one financial source, i.e. on a subsidy policy implemented by the state (Kadeřábková, Jašová, 2009).

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To meet the needs of the society, transport should fulfil several functions with the dominant function being the transfer of goods and people, which in turn is fundamental for the mobility of workforce. The mobility in the labour market contributes to economic growth. The stimulation function in economy is performed by investments into transport infrastructure that initiate recovery in economy and facilitate labour market flexibility, including social-stabilizing, substituting and complementary functions (Eisler et al., 2011). In any country, transportation as such is a very important branch of its economy that can significantly influence the quality of the life of its citizens. The academic and political circles share a general consensus that public investment into infrastructure plays a fundamental role as the economy's engine (Pereira and Andraz, 2012). According to Vickerman (2008), infrastructure is the ground for economic development. For example, Alfonso (2007) implies that an investment of 100 million in a city railway transit project generates the growth by 263 million in GDP, and numbers in vacancies increase up to 8,000. The direct effect can be seen in branches related to construction, e.g. civil engineering, architecture, design, electronics and metallurgy. An indirect effect is evident in fields like the real estate market, environment preservation, tourism, etc. (Alfonso, 2007). The influence of transport infrastructure seems to be much stronger in the long-term perspective than in short or medium-term ones (Melo, et al., 2013). According to Cervero (2009), the transport infrastructure is important for the successful competitiveness of cities and regions in the global market. Furthermore he adds that from the historical point of view the transport infrastructure was designed primarily to enhance mobility, including labour access and production capacity (Cervero, 2009).

The synergy effects accompanying the development of the railway infrastructure (here meant urban) is pointed to by Huang Chang-fua and Xia Yuan (2011) who understands the development of the railway transport as having a long-term effect that will show positively in other strata of life in cities with a particular focus on "Green GDP", thus supporting the role of the railway in sustainable development (Huang Chang-fua and Xia Yuan, 2011). The technological level of advancement of the infrastructure is one of the main factors leading to the successful incorporation of the East-European railway system into the European railway network (Cerniauskaite, Sakalauskas 2013).

2. Methodology Approach and Methods Used

The cluster analysis was employed to prove or refute the hypotheses dealt with in the article. The data entered into the analyses were adopted from Eurostat, OECD and UIC.

In order to accumulate the data into individual groups, the cluster analysis was used for its task was to find subsets (object clusters) in defined sets of objects so that the clustered objects would resemble each other and on the other hand differ considerably from objects outside the cluster.

Primarily all analyses had been subject to standardization, excluding the comparison of electrified and double-track ways, to make both quantities comparable. The standardization has been carried out in two steps:

1. We calculate the mean value zj of the jth mark and the standard deviation sj of the jth according to the formula: $\bar{z}_j = \frac{1}{n}\sum_1^n z_{ij}$ and $s_j = \sqrt{\frac{1}{n}\sum_1^n (z_{ij} - \bar{z}_j)^2}$ where n is the number of observations of the jth mark.

2. We convert the original values zij to standard values: $x_{ij} = \frac{z_{ij} - \bar{z}_j}{s_j}$. to make both values comparable. We standardize both values, i.e. to ensure that both have a zero mean and the deviation equals one.

Next we need to set the metric space to measure the dissimilarity coefficient of objects d. In our case it is the Euclidean metric. For objects x and y we obtain $d(x,y) = \sqrt{(x_i - y_i)^2 + (x_j - y_j)^2}$.

The objects are distributed into groups using the agglomerative hierarchical clustering in which case the initial partition consists of single-object clusters. The next partition is created by the merging of two chosen clusters according to the previously set linkage criteria, which produces a new cluster and another partition. Thus we reduce the number of clusters by one. The final partition presents one cluster containing all objects.

To determine which two clusters will merge in each step, a method has to be chosen that will drive our decision - the Ward's method. The clustering criterion is the total sum of second powers of the deviation of each object from the centroid they belong to. In each step two clusters merge so that the rise of the deviations sum is minimal.

3. The Role of Transportation in the Economies of European Countries

European countries are typical for their high portion of administrative expenditure. The role of the state in financing the railway infrastructure is obvious, it may rise up to 100%. Nevertheless, the share of investments into the railway system in GDP is relatively small. In the 22 monitored European countries[1] the total amount of investments into the railway infrastructure reached EUR 24.3 billion. The share in the total GDP takes only 0.21% on average. Such a negative indicator stems from the fact that the overview does not include countries with a traditionally high share of investments, like Sweden and Denmark. On the contrary, candidate countries where the subsidies to the railway infrastructure are very low are included (UIC, 2012). Lithuania performed the largest railway investments in relation to GDP, i.e. 0.64% GDP, followed by Spain with 0.55% on second place. The group of four states, Slovakia, Switzerland, Estonia and Great Britain oscillate between the values of 0.34 – 0.31%. Finland, the Czech Republic and Germany move from 0.26% down to 0.21%. In other states the value falls under 0.1%. Despite these relatively low indicators, the transport development sets conditions for the development of other economic areas hand in hand with the social and economic development of a country.

A prognosis of the economic development in a certain country has to incorporate direct as well as indirect influence of the railway system (Lingaitisa and Sinkevičius,

[1]Bulgaria, the Czech Republic, Germany, Estonia, Greece, Spain, France, Croatia, Italy, Latvia, Lithuania, Hungary, Portugal, Romania, Slovenia, Slovakia, Finland, the United Kingdom, Switzerland, FYROM, Serbia, Turkey.

2013). This is one of the reasons why EU administrations are the prevailing investors in the transport infrastructure.

4. Efficient Use of The Railway Network

4.1 Utilization of the railway in relation to the means invested

The utilization of the infrastructure can be effectively assessed by the means invested into the railway infrastructure as shown in the comparison of 1 km of track to the efficiency indicators of tkm, pkm and gtkm per 1 km of track. The following findings clearly state whether the investment is utilized or whether the state is not able to exploit the potential of its modernized railway transport.

States investing most are usually also the most efficient in the monitored indicators. The most balanced development can be tracked in the case of Germany whose intensity of use is roughly the same in both passenger and freight transportation. Switzerland and Great Britain reach the best indicators in passenger transportation; however freight is not transported as much as e.g. in Germany. Concerning freight transportation, Great Britain occupies the lowest position. And Italy copies Britain's outcomes. Baltic states efficiently exploit their geographical position and reach high values in the area of freight transportation.

Table 1. A comparison of financial means spent on 1 km of track to efficiency indicators

country	*Invested Euro per 1 km rt*	*Numberoftkm to 1 km rt*	*Numberofgtkm to 1 km rt*
BosniaHerzegovina	24442	4873	2393762
Bulgaria	11659	8173	2755511
Croatia	22704	9919	2867744
Czech Republic	39912	15628	4787540
Estonia	70707	8838	17066919
Finland	83445	8580	4936911
France	3495	14558	5985298
FYROM	849	4292	1543634
Italy	160751	16720	101027
Latvia	76869	5898	16358713
Lithuania	30228	9055	16408602
Hungary	9941	12719	3496205
Germany	166344	29129	11701653
Portugal	16434	12531	1435016
Romania	10009	7887	3617240
Slovakia	67053	11589	5850717
Slovenia	2152	16556	6704470
Serbia	2119	5251	2209241
Spain	363202	13270	4262245
Switzerland	466348	53609	3155008

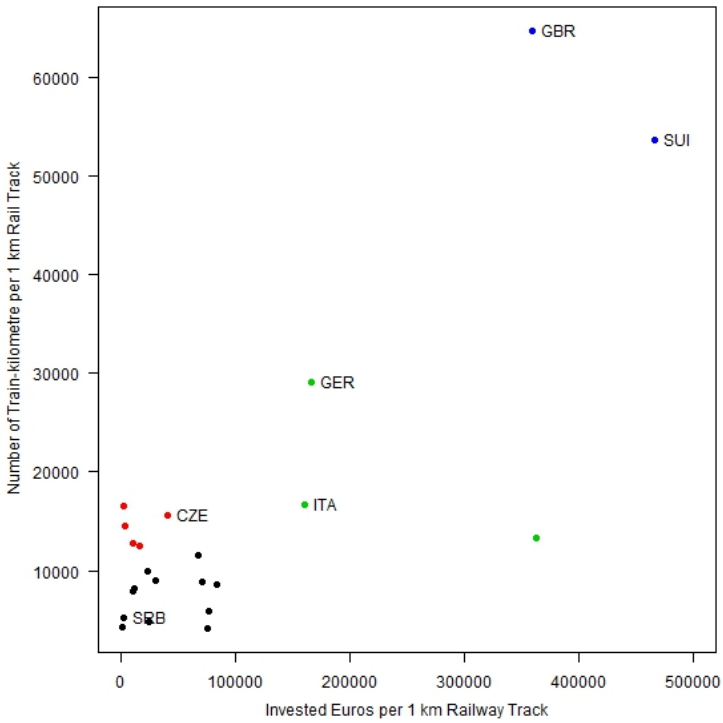
Turkey	75799	4149	2680564
United Kingdom	359103	64725	157545

Created on the basis ofdata from Eurostat, OECD and UIC by the authors

4.1.1 Euro invested into 1 km of track in relation to 1 tkm per 1 km of track

According to this analysis, Great Britain proves to be the most efficient, closely followed by Switzerland. After a considerable gap there is Germany, Italy and surprisingly the Czech Republic.

Graph 1. Euro invested into 1 km of track in relation to 1 tkm per 1 km of track



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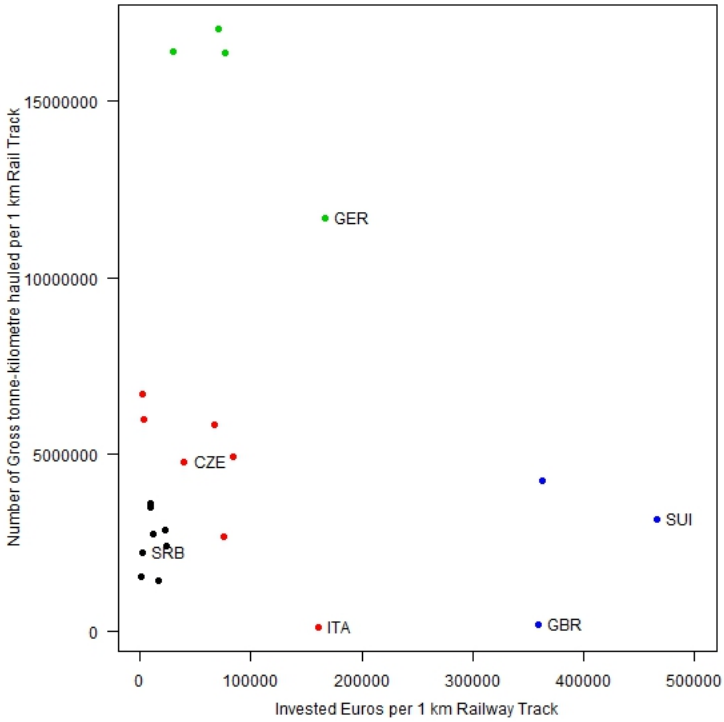
Blue pointed states – a group of states having an optimum relation between the means invested and efficiency indicators. Green pointed states – lower volume of means invested and higher efficiency indicators. Red pointed states – show relatively good utilization of the railway at a still low investment. Black pointed states – have low indicators both of investment and efficiency indicators.

4.1.2 Euro invested into 1 km of track in relation to 1 gtkm per 1 km of track

As a result of this analysis which purely focuses on freight transportation, states that do not utilize railway for freight transportation are logically transferred to the lowest positions. The Baltic states of Estonia, Latvia and Lithuania who make good use of their position in freight transportation, also reach best results although the amount of investment is not equivalent to the level of the railway utilization. “A very important role in the transit chain is played by the sea and railway transport. The interaction of the sea and railway transport can be characterised by common interests in order to attract transit cargoes and to use (maximally) the existing infrastructure capacities and, due to

new investments and marketing, to ensure the functioning of a common multimodal system in the future by attracting new cargoes." (Burkovskis, Palšaitis 2011)

Graph 2. Euro invested into 1 km of track in relation to 1 gtkm per 1 km of track



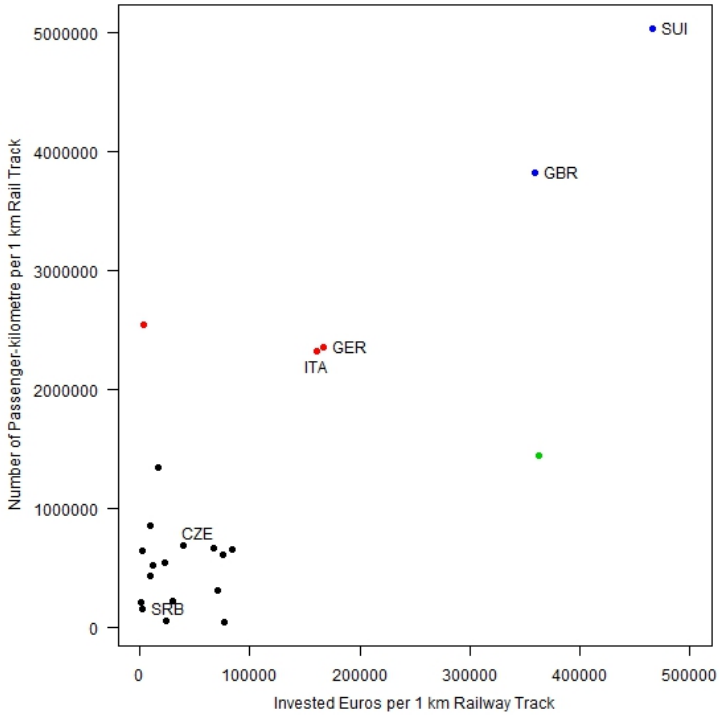
Created on the basis of data from Eurostat, OECD and UIC by the authors

Green pointed states – high volume of transported freight, lower investments. Germany for its optimum volume of the freight transported as compared to the investment. Blue pointed states – Switzerland and Great Britain, regarding the low volume of freight transported and high investments, they show lack of efficiency. Spain ranked best in this group for a higher volume of transported goods. Red pointed states – are typical for their low investment into the railway, although having average indicators in the freight transportation area. Italy, showing considerable investments as opposed to a small share of freight transportation, stands out in the red group. Black pointed states – have very small efficiency indicators and investments entirely insufficient.

4.1.3 Euro invested into 1 km of track in relation to 1 pkm per 1 km of track

Outcomes of passenger transportation copy partially those of the first analysis. The first place ultimately belongs to Switzerland, followed by Great Britain, Germany and Italy. The Czech Republic and Serbia again rank the lowest.

Graph 3. Euro invested into 1 km of track in relation to 1 pkm per 1 km of track



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Blue pointed states – invest massively into their network and have a high number of transported passengers. Green pointed states – Spain is the only representative of the green group that shows considerable investment, despite having an average number of carried passengers. Red pointed states – Italy and Germany operate an optimum number of transported people per 1 km of track in relation to the investment. France defies the group by a high number of transported passengers and low volume of investment. Black pointed – are typical for their low volume of transported people per 1 km of track and low investment, the worst of this group being Turkey who did not succeed in attracting more passengers despite higher investment.

4.2. Efficiency of means spent in relation to values per 1 km of track

If we explore the level of financial means related to individual indicators per 1 km of track, the comparison will disclose a certain level of inefficiency of the means invested. It is necessary to follow all indicators simultaneously because of the different rate of passenger and freight transportation. To assess the efficiency of the invested money, the state of affairs of the infrastructure has to be known in each country.

Greece shows the highest share of means invested in 1 km of track as compared to tkm per 1 km of track, which is 13 times the average. Spain being in the second place exceeds the average 4.5 times. But in fact the international freight transportation in Greece had been close to non-existent for three years and also the ratio of passenger transportation per 1 km is very low. The amount of gtkm has not been reported therefore it cannot be compared to other countries; however, focusing on the tonne-km indicator, we see that the share is very small indeed. Spain has very good results in the passenger transportation area; freight transport is slightly under the average, though. Regarding the poor maintenance of Spanish tracks, the amount of investment is justifiable.

Comparing the states with the highest performance in the tkm and pkm, we realize that they do not take the three best positions, but tend to stand close to the average. Gtkm indicator is partially misleading for Great Britain, Italy and Switzerland who dominate passenger transportation, though lagging behind in freight. On the other hand, states like Germany, Estonia or the Slovak Republic show similar indicators in all monitored values. The CR moves slightly under the average values. Unfortunately, Serbia falls behind considerably due to the minimum investments. As the data show wide variance, cluster analysis was not applied.

Table 2. Efficiency of means spent in relation to values per 1 km of track

country	*Quotientinvested eur to 1 km rail track to numberoftrain km to 1 km rail track*	*Country*	*Quotientinvested eur to 1 km rail track to numberofgtkm to 1 km rail track*	*Country*	*Quotientinvested eur to 1 km rail track to numberofpkm to 1 km rail track*
Greece	80,6578	Great Britain	2,2794	Latvia	1,8147
Spain	27,3693	Italy	1,5912	BosniaHerzegovina	0,4644
Turkey	18,2714	Switzerland	0,1478	Spain	0,2513
Latvia	13,0328	Spain	0,0852	Greece	0,1459
Italy	9,6140	Turkey	0,0283	Lithuania	0,1373
Switzerland	8,6990	Estonia	0,0143	Czech Republic	0,1301
Estonia	8,2408	Germany	0,0142	Turkey	0,1243
Slovakia	5,7857	Finland	0,0139	Estonia	0,1083
Finland	5,7321	Slovakia	0,0115	Slovakia	0,1006
Germany	5,7106	Portugal	0,0115	Great Britain	0,0939
Great Britain	5,5482	BosniaHerzegovina	0,0102	Switzerland	0,0925
BosniaHerzegovina	5,0155	Croatia	0,0047	Germany	0,0705
Czech Republic	4,5158	Latvia	0,0047	Italy	0,0693
Lithuania	3,3383	Bulgaria	0,0042	Croatia	0,0329
Croatia	1,4527	Hungary	0,0028	Finland	0,0328
Bulgaria	1,4264	Romania	0,0028	Romania	0,0234
Portugal	1,3114	Czech Republic	0,0023	Bulgaria	0,0223
Romania	1,2691	France	0,0023	France	0,0168
France	0,8143	Lithuania	0,0018	Serbia	0,0137
Hungary	0,7816	Serbia	0,0010	Portugal	0,0122

Serbia	0,4036	Slovenia	0,0003	Hungary	0,0117
Slovenia	0,1300	FYROM	0,0003	Slovenia	0,0034
FYROM	0,0856	Greece	0,0000	FYROM	0,0016
Average	9,0959	Average	0,1841	Average	0,1641

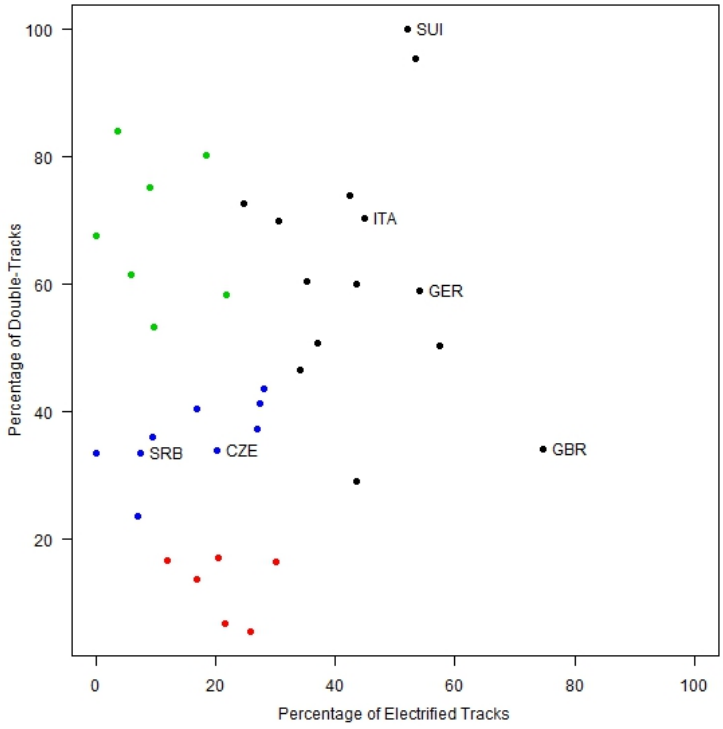
Created on the basis ofdata from Eurostat, OECD and UIC by the authors

5. Level of Modernization in European States

5.1 Electrification and double-tracking of the railways

The state of the infrastructure may as well be considered from the point of the electrified and double-tracked railways. Having considered the monitored indicators, the Swiss railway network has proved to be the best equipped network reaching 100% of electrification and 52% of double-tracks. However, Baltic States show a very poor state of double-tracked and electrified railways. The network belongs to the least dense ones.

Graph 4. Density of the railway network, the ratio of electrified and double-tracked railways in comparison to all railway tracks



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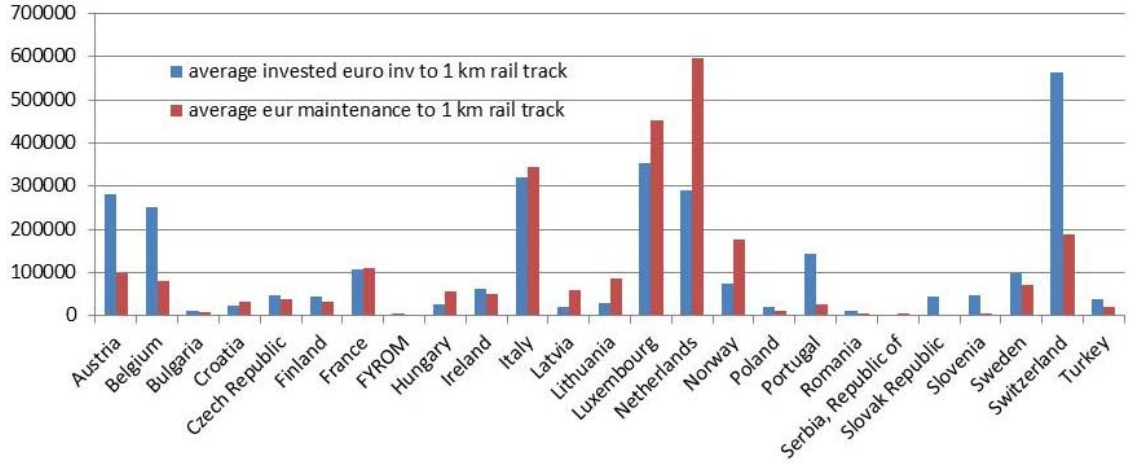
Black pointed states – reach a high level of double-tracked and electrified railways. Green pointed states – prefer double-track railways to electrification. Blue pointed states – the ratio of double-tracked railways and electrification is roughly balanced. Red pointed states – considerably fall behind regarding aspects of modernization.

5.2 Investment versus maintenance

The investment into railways mainly incorporates modernization, not the building of new tracks, which is given by the relatively dense railway network of European railways. Clearly this does not apply to all countries equally. Advanced countries are building high-speed rails that do not copy the old rails exactly, whereas countries with a scarcer railway network concentrate on new tracks. The notion of an investment may be understood in both ways - as the modernization of present railways as well as the construction of new tracks.

Maintenance is a clear concept, which means maintaining the present railways. "Railway transport system is massive and complex, and as such it requires effective maintenance to achieve the business goal of safe, economic and sustainable transportation of passengers and goods." (Famurewa, Asplund, Rantatalo, Parida, Kumar 2014) The way the railways are kept reflects in their quality. Even a dense railway network does not guarantee its thorough exploitation in case of its poor condition. If the average annual amount of financial means used for investment and maintenance during the years 1995-2011 as published by the OECD is taken into account, we realize that the approach to the railway differs considerably. Some countries roughly balance the share of maintenance and investment. Some invest more, some less. The volume of financial means spent is quite crucial as well. The data in the below-presented graph imply the state of the railway network and explain consequently its utilization by passenger or freight transport. For example, the number of pkm per 1 km of track compared to the average amount of the financial means spent makes it clear that a high ratio of passengers is enjoyed by those states that have invested in the network in a long-term perspective.

Graph 5. Average sum in EUR spent on 1 km of track



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5.3 Specifics of the railway infrastructure modernization

Projects aiming at modernizing the railway infrastructure are specific for their high costs, long-term profitability, the necessity of subsidies guaranteed by the state or supranational organizations, and by a lengthy implementation. It is nothing unusual in a country like Germany - which is considered to be one of the leaders in the area of railway modernization - that a project takes longer than 20 years (Sozuera and Spang, 2014). The length of the project itself is a highly risky factor; the ever changing political

establishment does not necessarily accept the outlined investment and may interrupt or abandon the modernization completely, which happened in the Czech Republic in 2010 as described below. The preparatory phase is often four times the length of the implementation phase (Sozuera and Spang, 2014), which may be caused by a time-consuming process of planning, difficulties during the purchasing of land; even though the modernization involves the existing railways, for the purpose of boosting the speed limit it is necessary to level off the railway curves, therefore the track runs through a completely new land (Mitwallyová and Janković, 2013).

Public assigners themselves bring about more difficulties by both misunderstanding the legislation and modifying the authorizing process. Problems in the Czech Republic were not only caused by the temporary transitions in construction priorities, but also by inappropriate legislation governing public contracts, which has generated enormous pressure on the lowest price offers and resulted in extraordinary difficulties with the required quality of the construction. The assigners fear the public tenders to be questioned by the regulatory authorities (Office for the Protection of Competition in the Czech Republic) and consequently the whole process to be slowed down. As a result they do not consider the assessment of economic profitability, as there may always be cast doubt on it. At a moment when there is a lack of construction contracts, companies offer unrealistic prices to employ at least part of their capacity and cover fixed expenses (CEEC Research (2Q/2014)).

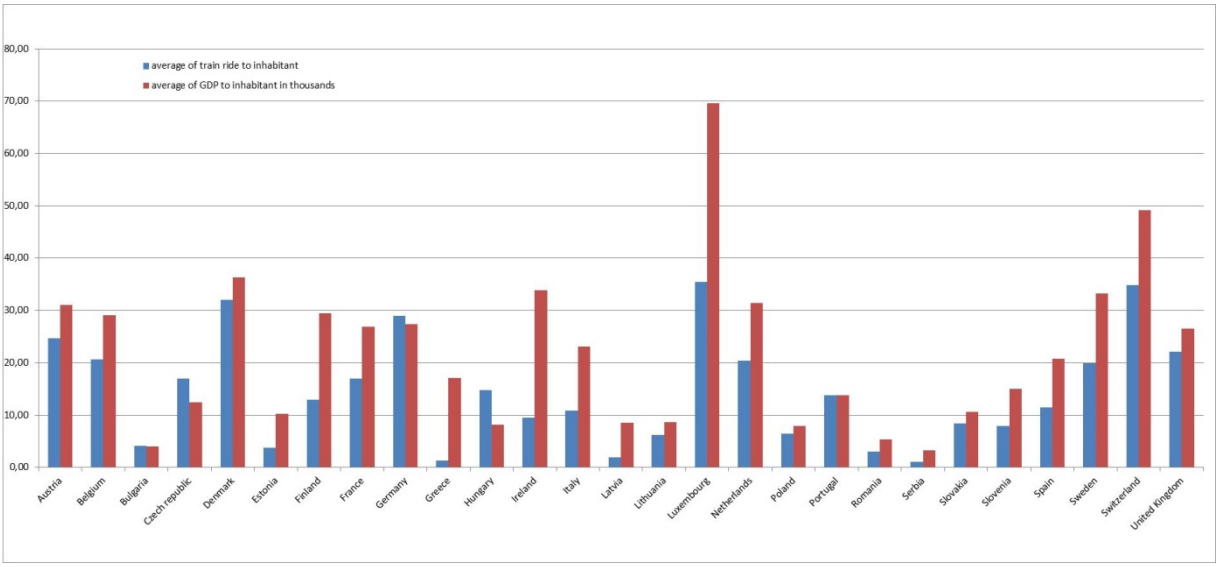
Consequently, extensive supervision during the construction is demanded as the companies naturally tend to use cheaper materials and technologies than those required by the assigner in an attempt to reduce the loss caused by extremely underestimated price. Some countries deal with a very inflexible authorization process. It is remarkable that even a long preparatory phase does not ensure the required final quality. On the contrary, after a drop recorded in the CR in 2010, the quality of project documentation has declined rapidly. Up to 33% of project documentation has been claimed of poor quality, which has generated an increase in real costs by 11% (CEEC Research (1Q/2014)).

6. The Relationship between the Railway Use and the GDP

6.1 The number of rides per citizen to the GDP

May a growing GDP be connected with the growing use of the railway? An attempt was made to answer this question by e.g. a research at the Lithuanian University. It proved that namely in Lithuania the growth in GDP is accompanied with the decline in the number of people transported by the railway (Lingaitis and Sinkevičius, 2013). Examining the numbers for most European countries, there is a clear correlation between the growth of GDP and the more intensive use of the railway for passenger transportation in average numbers over a longer monitored term; see graph 7 which compares the average number of rides per 1 citizen over the period of 2006 to 2013 and the average GDP over the same period.

Graph 7. The average number of rides per 1 citizen over the period of 2006 to 2013 and the average GDP



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6.2 The development of the transported people in numbers

6.2.1 The Czech Republic

If we take into account the trends of railway use for passenger transportation during the last 40 years, we detect huge differences between the post-communist and E15 countries. For example, the trend had hardly changed in the Czech Republic during 1970-1990, the value oscillated around 20 million pkm. After the split of Czechoslovakia, passenger transportation started to decline steeply in both the new states. The drop was obvious shortly after the coup in 1990 when the number of transported persons decreased from 19.3 million pkm to 16.8 pkm in 1992. In the Czech Republic the numbers sank from 8.5 million pkm in 1993 to 6.7 in 2011. The Slovak Republic shows a drop of nearly a half, from 4.5 million pkm in 1993 to 2.4 million pkm in 2011. Both countries have been experiencing a slow increase in the attention of passengers in the few recent years.

6.2.2 Serbia

A similar tendency was shown in Serbia between 1970-1990, which had experienced a gradual rise in transported persons from 3.6 million pkm to 4.4 million pkm. In 1991, there was a steep decline to 2.6 million pkm. However, the largest drop corresponds with the war conflict; in 1999 the number of pkm fell to 0.7 million of pkm. A temporary increase occurred in 2000-2001, however the country was again affected by another drop as low as 0.5 million pkm in 2011. This trend was inflicted by the fatal condition of the railways where the average speed reaches 40 kmph at maximum and the infrastructure is deeply under-maintained. The deterioration of the railway transportation can be exemplified on the following sections of the most important tracks:

Beograd – Šid (-Zagreb), 115km, 1989: travelling time 2 hours, 30 pairs of long-distance trains daily, 2013: travelling time 2,5 hours, 1 pair of long-distance trains daily

Beograd – Niš, 245 km, 1989: travelling time from 3.5 to 4 hours, 14 pairs of long-distance trains daily, 2014: travelling time from 4 to 4.5 hours, 2 pairs of long-distance trains daily

6.2.3 Germany

On the other hand, a gradual increase of transported persons can be observed in Germany. During 1970-1990, FRG shows a slow growth, i.e. from 38 million pkm to 41 million pkm. The union of Germany experienced a steep increase as primarily the citizens of the Eastern block were learning gradually to use the railway. In 1991 Germany had 55.3 million pkm, and in 2011 it was 85.4 million pkm.

6.2.4 Great Britain

Great Britain experienced a gradual growth in the period of 1970-2011, i.e. from 30 million pkm up to 56 million pkm. The biggest increase of the monitored countries was recorded in Switzerland – from 9.3 pkm in 1970 to 19.4 pkm in 2011.

6.3 The Development of Freight Transportation

Regarding freight transportation, the tendency differs from passenger transportation. The advanced countries preserve a steady performance in freight transportation in 1993-2013; although Germany, Great Britain and Austria are exceptions in increasing the volume of transported goods. In the case of Germany it was 64 million tonne-km in 1993 and 110 million tonne-km in 2012, in Great Britain the freight transport grew from 13 million tonne-km to 22 million tonne-km. Other E15 states rather stagnate. In Italy the volume of the transported goods decreased slightly from 22 million tonne-km in 1996 to 20 million tonne-km in 2012.

Countries of the former Eastern block show a significant decline similar to passenger transport. The Czech Republic recorded a fall from 25 million tonne-km in 1993 to 14 million tonne-km in 2013. A similar tendency can be seen in the Slovak Republic where a drop was recorded from 14 million tonne-km in 1993 to 7.5 million tonne-km in 2012. The only available data for Serbia comes from the period of 2004 – 2011, when the volume of the transported goods was constant in fact, i.e. 3.5 tonne-km. According to the information of the Serbian Railways, joint stock company, the volume of goods transported in 2010 dropped as compared to 1985 by about two thirds (Serbian Railways, 2014).

7. Conclusion

Individual European states approach the use and maintenance of the railways in a very different way. Advanced countries like Great Britain, Switzerland and Germany are able to utilize the potential of their railways to their maximum. Their investments of appropriate financial means show in the overall condition of the infrastructure. Some E15 states have started losing their privileged position in the use of the railways. It is especially France whose indicators are decreasing gradually. On the other hand, Spain is relatively successful in the increase of the quality of its infrastructure. It is interesting that the results in the area of the railway infrastructure utilization and development do not entirely comply with the overall economic results. Out of the “PIIGS states”, Italy

and Spain have reached very good results. Greece comes out as the worst of all E15 states, Portugal is not doing particularly well and Ireland shows imbalanced data, too.

Post-communist countries are typical for their huge drop in the railway use for passenger as well as freight transportation with the negative impact on the amount of the finances spent on maintenance and investment. The change occurred with the joining of these states to the EU, whereby the access to the subsidies for railway modernization opened.

It is striking how fast the situation on the railway can turn to the worse, especially with regard to the use of passenger transportation. The tendency that can be seen in the post-communist countries was especially significant after the fall of the Iron Curtain. Even though the travelling comfort in some of these counties was higher at the beginning of the 1990s than it is today, e.g. in Serbia, the decrease in the passenger numbers was massive. What played an important role was the development of the society that saw a sign of prosperity mainly in the use of cars instead of public transport. It is a present-day paradox that the use of the railway in the most advanced E15 countries is a sign of ecology-conscious and timesaving behaviour. Managers prefer the possibility to work on the way, which is entirely impossible while driving. It is important for the railway to succeed in offering sufficient comfort that would outweigh the advantages provided by individual transportation. According to the research by Italian scientists, “a global comfort” consists of three basic constituents: safety, efficiency and quality (Corriere and Di Vicenzo, 2012). It takes a very long time before the comfort has been reached and the opinion of citizens of the public transport has been swayed. What matters is not only the infrastructure condition, but also the service offered by the transportation companies. West European companiesunderwent the restructuring in the 80s of the 20th century. Now it is the East European countries that are restructuring. Hand in hand with the restructuring, the state transportation companies face competition that significantly erodes their once-to-be monopoly. State transportation companies are very often drawn to the bottom by property that they can no more make any use of. On the other hand, they have repair workshop background at their disposal that the new companies cannot acquire. According to recent research, higher productivity will be provided by technical progress, which has a huge importance for the railway development. It is for this reason that the research, development and modern investments are to be supported - so that the environment of deregulation and liberalization in this branch continually enhances the level of investments and technological progress (Sánchez and Villarroya, 2000).

Based on the above-stated findings it can be concluded that a stable political development as well as continuous investments and sufficient maintenance ensure a gradual increase in the persons and goods transported, whereas political instability, deviations in maintenance and stoppage of investments have a negative impact on the utilization of the railway. A return to passenger transportation is a lengthy process that only shows several years later. Nevertheless it is a steady tendency; taken from the ecological and economical point of view, it is a highly positive phenomenon. However, high prices of railway fares have to be balanced by travel comfort in both the carriage equipment as well as in the speed, reliability and connection frequency, not to mention the availability.

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