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**“The European Rail transport sector after Liberalization:
The Italian case.”**

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Introduction

Last years were characterized by important changes in the European Railway sector on both technical and regulatory sides. Nowadays trains easily travel at 300 km/h speed on the high-velocity European infrastructure and the sector became particularly regulated.

The choice for this topic was born by the analysis of how technology changed one of the oldest means of transport, the train.

Starting from the observation of radical changes in the Italian Country, it was decided to develop this work, trying to deeply examine the whole rail sector. On the European side the analysis was conducted by showing the most effective trends that dominated this sector. However, the second half of this work focused on the Italian rail market, with important insights about the market composition and results from last years.

The attention was also oriented to the new player that entered the market and contributed to revitalise the whole sector, *Italo - Nuovo Trasporto Viaggiatori*.

The first chapter of this thesis is European oriented, it starts with an overview on passenger transport statistics, paving the way to the description of the European Railway Market. Following a brief deepening on the history of the rail infrastructure in Europe is presented, together with a passage about commuter-people in the middle of Continent. The chapter continues with a paragraph describing the centrality of sustainability in the market, due to the continuous technological development toward alternative energy powered engines.

Then, the work focuses on the most developed section of rail market, the high-speed lines. Insights about infrastructure spread are presented and it is also provided the “European Railway Performance Index” analysis. To deeper understand the European rail scenario a market analysis is conducted thanks to the Five Forces framework. Furthermore, two of most interesting drivers of the market are presented, safety and quality of service. It is a crucial point because those drivers have been hardly stressed by the introduction of competition in the sector. This is the beginning of “Liberalization Process” discussion in this thesis, with a focus on Natural Monopoly market definition that often characterize rail sectors among Europe.

The second chapter is developed to treat the liberalization in the market on a regulatory point of view. Since the central importance of the regulatory framework, and the

revolution that is influencing it, the second part exposes the regulatory packages proposed since 2001. The four “Railway Packages” are analysed and directives composing them are cited to explain changes brought.

The third chapter of this work is geographically oriented to the Italian rail market.

After a brief introduction about the definition of liberalization the structure of “Italian Railway Market” is presented. The focus is oriented to the national rail transport and a description of two main players is provided, “Italo - NTV” and “Ferrovie dello Stato”.

Paying attention to the high-speed market segment the passage retraces steps to the entrance of Italo in the market, deeply analysing positive effects that the company is creating in the whole rail transport system. Following last market news, the second half of the chapter will deal with the acquisition operation in which Italo - NTV was acquired by the investment fund Global Infrastructure Partners.

An important insight is furnished by the Managing Director in charge at Italo - NTV *Giambattista la Rocca*, explaining details of the operation and forecasting company’s future strategy.

1. The international Railway scenario

During the first chapter of this work it will be conducted an analysis on principal trends and characteristics from rail transport system in the European Union. The aim of the chapter is to provide a description about mobility of passenger throughout boundaries of EU, focusing on the European Railway Sector.

With a view to providing a complete study of the railway sector functioning, in the second part of this chapter an examination of the liberalization process in railway sector will be drawn up.

The liberalization process is a crucial point in the unification path operated in European Union to allow people moving freely in the European territory.

1.1. Passenger transport statistics

This part of the work will analyse most recent developments for passenger transport statistics within the European Union, among a period of ten years. The paragraph will furnish a general overview to open the way for the focus on Railway sector.

Since 2004 with the also called “Free Movement Directive” 2004/38/EC it was defined the right of free movement for citizens in the European Economic Area. The act in 2004 consolidated older regulations and directives with the aim to simplify movement process of individuals within the boundaries of the Union. About territorial constraint, member states of the European Union and European Free Trade Association (EFTA) are the object of the agreement. It is needed to notice the different position of Switzerland; the Country is not bound by the Directive, but it entered into a Bilateral Agreement. Under a practical view the Bilateral Agreement allows the Switzerland to be considered as part of the Directive on free movement in EU.

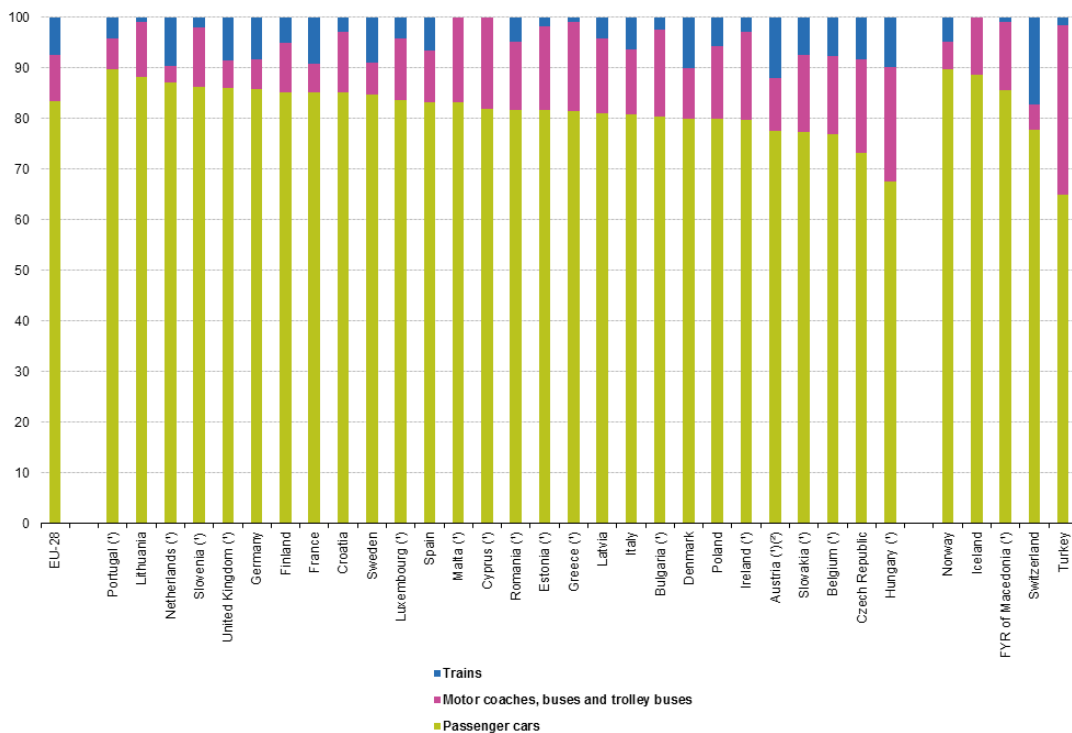
During the analysis of information about passenger transport statistics we will take in consideration different transport modes as Road, Rail, Maritime and Air transport.

Every kind of transport mean has its peculiarities. In a common view anyone would choose air transport for long distance, while the use of cars could be preferred for short distances and for major mobility and flexibility.

Although the two last-cited characteristics would usually lead people to use cars as means of transport, they are responsible of increasing of congestion and pollution in many urban areas within European Union.

In the graph below, it is shown the modal split of inland passenger transport.

It represents shares for transport mean chosen by passenger including cars, trains and motor coaches or buses. Data used for this analysis is collected from the last updated research by EUROSTAT during the period from 2004-2014. Next update of the analysis released during the summer (July 2018) mainly replicates these results.



Note: excluding powered two-wheelers. Cyprus, Malta and Iceland: railways not applicable.
 (*) Includes estimates or provisional data.
 (**) The railway in Liechtenstein is owned and operated by the Austrian ÖBB and included in their statistics.
 Source: Eurostat (online data code: tran_hv_psmo)

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Modal split of inland passenger transport

¹ Modal split of inland passenger transport. EUROSTAT. 2014

The majority of choices for cars is reflected in the 83,4% of inland passengers transport in 2014. The gap from other is relevant: buses and trolley buses are used to cover 9,1% of all traffic, while trains just 7,6%.

Although it is important to point out a steadily increase of transport by train from 6,7% at the beginning of the analysed period to reach 7,6% approaching the end.

On the other hand, the report shows an overall decreased use of buses and motor coaches around 1% among the period.

Between 2004 and 2014 the transport of passengers increased at a rate of 5%, at a lower level than constant price gross domestic product GDP in the European Area. For sake of clarity it should be specified that the indicator only refers to inland transport of passengers and that a significant percentage of international passenger travel is accounted as maritime and air transport. As already stated we can observe a higher rate of change of constant price GDP than change of inland passenger transport in the main part of European countries. However, this is not a general trend, it is possible to observe the opposite situation in 11-member States with an increase in passenger transport higher than the change of constant price GDP.

Thus, train transport is the one facing a positive growth trend over recent years. It is expected to keep an increasing trend thanks to investments by countries in this sector. This work will have Rail transport sector as main subject because of its key-role in the development of transport throughout the Europe.

Rail sector mainly relies on its infrastructural system. The fact can be easily observed by analysing transport data from different countries characterised by different economies.

For example, train accounted as 10% of all kilometres covered by passengers in countries like Switzerland and Austria in 2014. It is also possible to observe same percentages in Denmark while different ones in Greece, Turkey, Estonia and Lithuania. In those territories the amount of train travelled kilometres over the total is below 2%. It is possible to assume several reasons to justify those relevant different shares, such as inadequate infrastructural system, lack in transport investment by the government, issues in morphological situation of the Country. However, it is important to notice a non-existing rail transport system in some European countries as Iceland, Cyprus and Malta.

During the second chapter of this work we will analyse transport sector in Europe under a regulatory point of view.

Europe, as a regulated Union, is proceeding to align its member States rules about passenger's movements across internal boundaries. During the period taken in consideration this process was in its crucial phase because Countries were adapting rules to the new legislation settlement. Indeed, data show a gap between international and national distances travelled. In 2015 (considered latest data available) it is possible to count 392 billion passenger-kilometres on national railways, representing an amount reliably more relevant than 23 billion crossing boundaries.

Strictly referring to dimensions, two of the biggest countries in the European Union account for more than 42% of passenger-kilometres covered. Indeed, France and Germany together are the countries with the most developed rail sector in the Europe for kilometres travelled. Other than that, the other important aspect is the count of international mileage. The two European powers together reach 72% of international rail traffic creation.

However, to better understand the actual degree of development in the European rail sector, it would be interesting to analyse one additional figure: average kilometres travelled per inhabitant. It is a very important analysis because it leads us to understand and to compare the relative importance of the sector between countries. Referring to this it is very interesting to examine two sides of this aspect:

- International mileage
- National mileage

Regarding the in-borders rail traffic, data show several countries to count more than 1000 kilometres covered per inhabitant as France, Germany, Austria, Denmark and Sweden. The most impressive data is related to Switzerland. Indeed, the Country in its record-year (2015), has been able to cover more than the double of previous countries' distance at a level equal to 2193 passenger-kilometres per inhabitant.

Moreover, we have to consider one other group of countries, the ones with lowest distance covered per inhabitant, on the opposite side of rankings. In this group just one Country has an average mileage above 100 passenger kilometres per inhabitant (Greece with 116km). Last ranking positions belong to Lithuania, Yugoslav Republic of Macedonia and Turkey with respectively 85, 85 and 61 passenger kilometres.

In terms of international traffic, levels are quite lower. In general, we have seen as the level of crossing countries boundaries traffic is significantly lower than national traffic. Different railway systems and infrastructure are going to be harmonized to create a unique train transport network.

Regulators usually consider *interoperability*² as path to formalise the ease ability to travel abroad. The concept will be treated in Chapter 2 under a regulatory point of view.

1.1.1. Luxembourgish Commuters

Luxembourg takes the leading position in the off-borders travel by train. In the Grand-Duchy people cover 204 passenger kilometres on average. Following we can find France and Switzerland with 169 and 116 passenger-kilometres traffic.

It is curious as one of the smallest Country in Europe as Luxembourg would take leadership in this ranking. As we previously stated, in this case we are using normalized data to compare countries, considering traffic in relation to inhabitants. In this respect the position of Luxembourg as one of less populous Country in Europe would not affect this valuation. The reason behind the enormous train traffic comparing to its dimensions is the strategical position for Luxembourgish Grand-Duchy. Perfectly in the middle of Occidental Europe, Luxembourg shares borders with Belgium to the north, France on the left side and Germany to the east.

A Eurostat study shows as cross-border workforce is essential to the Luxembourgish economy. It represents the 43% of total employment in Luxembourg with its 170000 everyday cross-borders commuters.

The Grand-Duchy's Capital, Luxembourg City, has a population of around 115000 inhabitants. Considering that most of commuters increase workforce of the capital, it means that the city is able to more than double its work capacity every day.

² Through the adoption of Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of 19 March 2001 on the interoperability of the trans-European conventional rail system, the EU began a process designed to ensure that trains can transit smoothly and safely from one Member State rail network to another

It hosts offices of the European Court of Justice and of the European Investment Bank. Luxembourg is leader in the private Banking sector and the Country with the largest number of Investment Funds.

Thanks to its dynamic environment, Luxembourg city is very attractive for people living in cities near the borders, therefore workers commute every day thanks to several advantages offered by Luxembourg for their career as: work-life balance, salary level, international career, etc.

Moreover, in cases like this it is needed to perfectly control the efficiency of transport system, cities as Luxembourg are over populated during a working-day and infrastructures are built to welcome thousands of workers only during the week.

Managing rush-hours is the other important aspect, people usually get and leave the city at the same hours. It usually creates traffic jams and increase pollution and congestion from the city to the borders. The Luxembourgish government is increasing investments in transport infrastructure to let the system be completely efficient and to be ready for the continued development of the Country.

Luxembourg is expected to continue growing, according to last Eurostat researches. It is very probable for Luxembourg to keep the first position in this ranking according to some estimates. Luxembourg is forecasted to reach over 1 million inhabitants by 2060. It will change functioning of commuters and transport traffic in general because of the more congested environment.

1.2. The European Railway Sector

1.2.1. Brief History of the European Railway Sector

This work is treating European Rail Sector as a unique entity, trying to outline its most important features and industry's mechanisms. The rail industry is something coming to far from the beginning of the unification process in Europe. It easily leads us to understand its fragmented origins.

The introduction of this kind of transport was a real revolution for the European continent. During its initial spread it changed the way of moving for people and freight making travels easier and faster.

- For sake of simplicity and to stay close to the general aim of this production the whole passage, as the others in the document, will continue analysing the passenger side of transport. The work was built with the target to give a general idea about the European situation of this transport sector to finish analysing a real case study. Everything treated in the first two chapter is functional to the understanding of the environment in which the case take place. -

The first Country invaded by this transport invention was the Great Britain. After the spread in the island, railroads approached to several countries to the continental Europe in different way and at different time. We can easily summarise the origins of railroads mentioning the two most relevant reasons for the train transport invention

- Technological advances
- War

The first steam engine powered trains had to be optimized to be suitable for rail transportation. At this point thanks to James Watt³ development of the wheel's rotatory movement, the spread of trains was influenced by the French Revolution and Napoleonic Wars. Trains constituted the main alternative to transportation by horses. The pioneering position of Great Britain was confirmed by the construction of the first public railway in 1825 that led Britain to collect 9000 kilometres of railways.

³ James Watt was a Scottish mechanical Engineer who improved existing stem engines with his "Watt steam engine" starting from 1781. His studies and creations hardy brought changes to the Industrial revolution in both his Great Britain and the rest of the World.

Train transport system quickly reached the continental Europe in Germany, Belgium, Switzerland. In some of these countries this incredible invention was not well accepted, at the beginning citizens did not completely agree on the countries' picturesque landscapes to be marred by the construction of railroads.

Once its spread took place in Europe and railroad started enhancing performance of countries' economies a lot of riots were reduced and rail infrastructures started to increase volume and dimensions. The popular discontent was, in part, justified by the high investment needed to build the correct infrastructure of railroads. Raw materials started playing a crucial role in this way, problems arising from lack in raw material could complicate constructing operations.

France, for instance, lacked in coal and iron resources, it negatively impacted on rail development shown by comparing its 35 million tons production to the 200 million tons production in Great Britain. The lack was only one of the reasons that slowed spread of railroads in France, the Country already had a high developed system of water-transport thanks to its navigable waterways. Hence those reasons combined let the government spending years to take decisions related to rail transport.

The progressive expansion of railways in Great Britain influenced the birth of this sector also in Germany, the British experience represented the locomotive for German railroads with 5000 kilometres constructed in 1849.

The situation in Russia was slightly different at the beginning. The influence of European incumbent in the sector was not relevant and Russian noblemen were opposed to the construction of railroads. After the first experiment building a short railway to connect St. Petersburg with Tsarskoe Selo it did not take too long for Russia to catch up with its European neighbours. Starting from 1840s Russian system surpassed length of France in 1876, Britain in 1886 and Germany in 1900.

Railroads continued to expand throughout the Europe and by the early 1900s all of European countries had railway lines, the system formed a grid able to connect Europe in a way it had never been connected before.

1.2.2. Alternative engines in Europe

Steam powered trains were surpassed by other kind of propulsion ways.

During the last 50 years in Europe and North America it has been possible to notice enormous advances about efficiency of trains. Despite this, the increasing of energy costs is forcing engineers and constructors to find alternative power sources as solar energy, lithium batteries hydrogen propulsion and natural gas.

It is easy to think that national energy suppliers are interested in this change. Most of them are going to experience new kind of services to provide their clients with. Alternative energies already represent core business for the future of providers.

Initial investments to provide trains with an alternative source of energy are consistent. Nevertheless, that sort of measures would let national and private transport companies to save relevant amount of money covering the same distances as those covered by traditional energy.

Furthermore, on the environmental side, alternative energy has the possibility positively impact. Not related to economic aspects those upgrades would drastically reduce the pollution caused by trains, contributing to align businesses to the ever more stringent rules about sustainability.

Eni⁴, leader in the Oli & Gas sector through its *EniDay* project is trying to cast light on the energy sector. Partnering with experts in journalism, infographic and big data, *EniDay* treats energy in a new capacity of creativity and storytelling.

Relying on the article “Renewables ready for rail”⁵ this work will proceed highlighting the relevant passages that influenced changes in engine throughout rail sector.

On the economic side the high velocity train that connects London, Paris and Brussels, reaching 300km/hour, would let *Network Rail*⁶ to save 30 million pounds and 895’000 tons of carbon.⁷

Starting from 1950 in the disposal period of steam locomotives, diesel powered engines have been dominating the rail sector. It was a real disruptive innovation also

⁴ Eni covering a leading position in Oli and Gas sector is active in 71 countries. Its market capitalization is 64 US billion in March 2018. Eni is ranked by Forbes in top 500 worldwide companies for market capitalization and in top 150 for revenues by Fortune 500.

⁵ “Renewables ready for rail”, *EniDay*

⁶ *Network Rail*, owner and infrastructure management company of most of the Rail Network in England

⁷ Data analysed following the estimation provided by WSPGroup

in term of savings. Freight transport by train was estimated to be from 2 to 5 times cheaper than transport on roads (wheel transport).

Nowadays trains are powered by two kinds of locomotives:

- diesel engines: these locomotives are powered by traditional diesel engines similar to the ones used for cars and camions. Usually these locomotives are use as “*switcher*” in storage infrastructures and harbours.

- electric-diesel engines: a kind of hybrid locomotives used by the combination of the two different power generators. Starting from 70s hybrid locomotives constitute the first choice for rail sector.

Although the hybrid one is a cleaner and more efficient choice than the old steam engine, more and more environment constraints force companies to make trains more ecological.

Companies like *GE*⁸ and *ABB*⁹ are introducing several innovations to make trains quieter and more efficient. For instance, the last locomotive “*Evolution*” produced by *GE Transportation* reduced emission by 70% than the one from 2005.

Solar energy is becoming always more present in the industry. Starting from 2009 the rail industry manifested its interest in developing system to exploit solar energy and using it for transport. It is proved by the “*BlackFriars*”¹⁰ example, the train station in England uses more than 900’000 kWh of electricity thanks to the production of 4’400 solar panels installed. This data assumes more relevancy if we consider as 1’800’000 kWh the annual requirement of the station, it means that it can self-finance more than the half of its need.

With the continuous development of new technologies, this industry is becoming more and more attractive to companies.

After some economic analysis about performances and market structure this chapter will deal with the liberalization process that is characterising the industry from the beginning of the new millennium.

⁸ General Electric, American multinational company operating in Tecnology and Services sector

⁹ ABB, leading company in electrification processes for industries

¹⁰ BlackFriars Station, train station in London sited on the south-east corner of the city. Renovation works started in October 2011 and the station was completed and opened to passengers in the January 2014.

1.2.3. High Velocity Train

The first high-speed infrastructure for train transport was built between 1980s and 1990s with the aim of shortening travel times and improving efficiency of journeys.

The high-speed rail construction has always been associated to “Innovation” and “Technological Development” concepts.

The professor *Andrea Guiricin*¹¹, throughout his dossiers about rail industry, precisely points on various examples of the high velocity rail spread all over the world.

The first Country developing a high velocity system was Japan in 1964. Japanese line connecting Tokyo to Shin Osaka reached its maximum speed of 270 km/h.

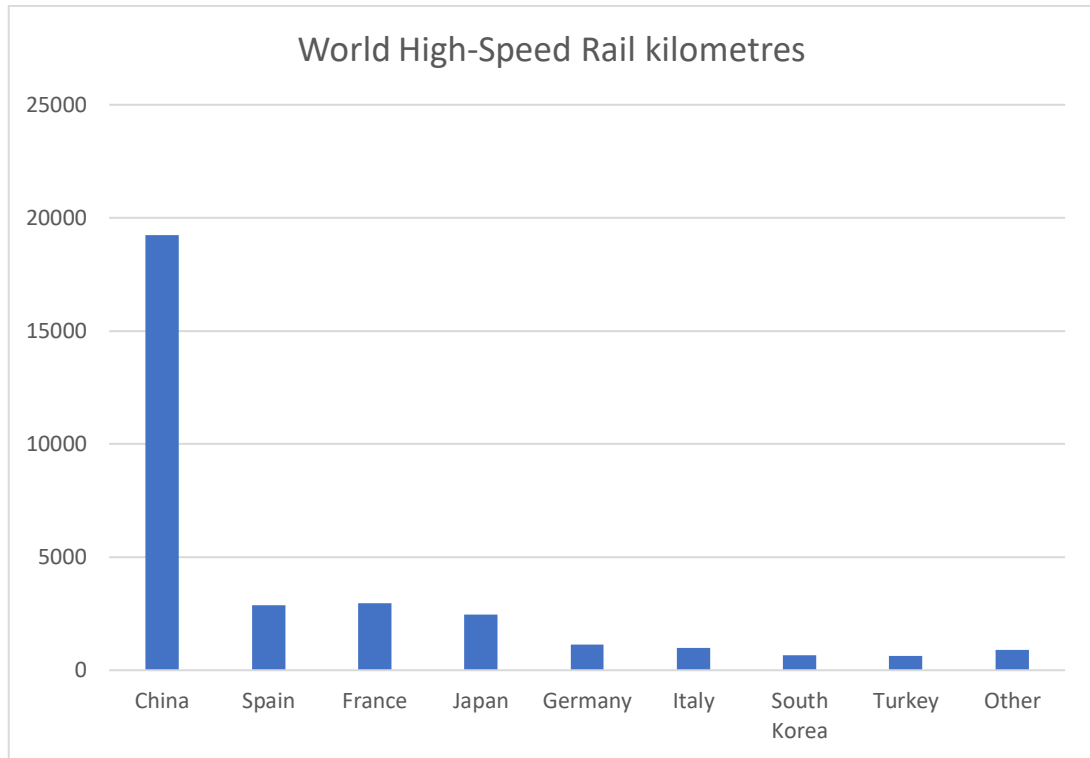
The technology arrived in Europe thanks to the French construction of “LGV Paris - Sud Est” in 80s. In Italy the high-speed system took place with the “Direttissima”, the rail link connected Rome to Florence in 1 hour and 30 minutes. The construction operations were finalized in 1992.

However, it is important to make some technical distinctions to understand better how this technology is going to change the industry. Two type of high velocity infrastructure exist. The “first category velocity” is the one with speed higher than 250 km/h. The “second category” includes trains whom speed reach at maximum 250 km/h.

In a worldwide landscape China is the Country with the most developed high-speed rail system, its line covers 19’241 km.

In Europe Spain can be considered as the first Country for the presence of “first category” infrastructure, followed by France, having a slightly shorter high-velocity rail system than the Iberian Country. Everything can be summarised by the graph below. It shows lengths of “first category high-speed rails” all over the world.

¹¹ *Andrea Guiricin*, CEO of *TRA Consulting*. The company provides consulting services about Education, Aviation, Public transport, Railway, Tourism and Telecommunication. About Railway branch it provides the top management with analysis on regulation of liberalization and studies on effect of competition.



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High-speed lines in the World

Currently Italy hosts 981 kilometres of “First category high-speed” line once the construction of Milano-Brescia link was completed. Thanks to this score, the Italian sector holds the 6th position worldwide for length of its infrastructure. The importance of this data is confirmed by the fact that the Italian high-speed market is currently equipped by only the most advanced technology. Indeed, its infrastructure can support a velocity of trains comprised 250 km/h and 300 km/h.

Some countries as South Korea and Turkey take last positions. Netherland, UK and Switzerland are not present in the graph. It is because at the time of this analysis, their high-speed infrastructure counted lines for less than 150 kilometres.

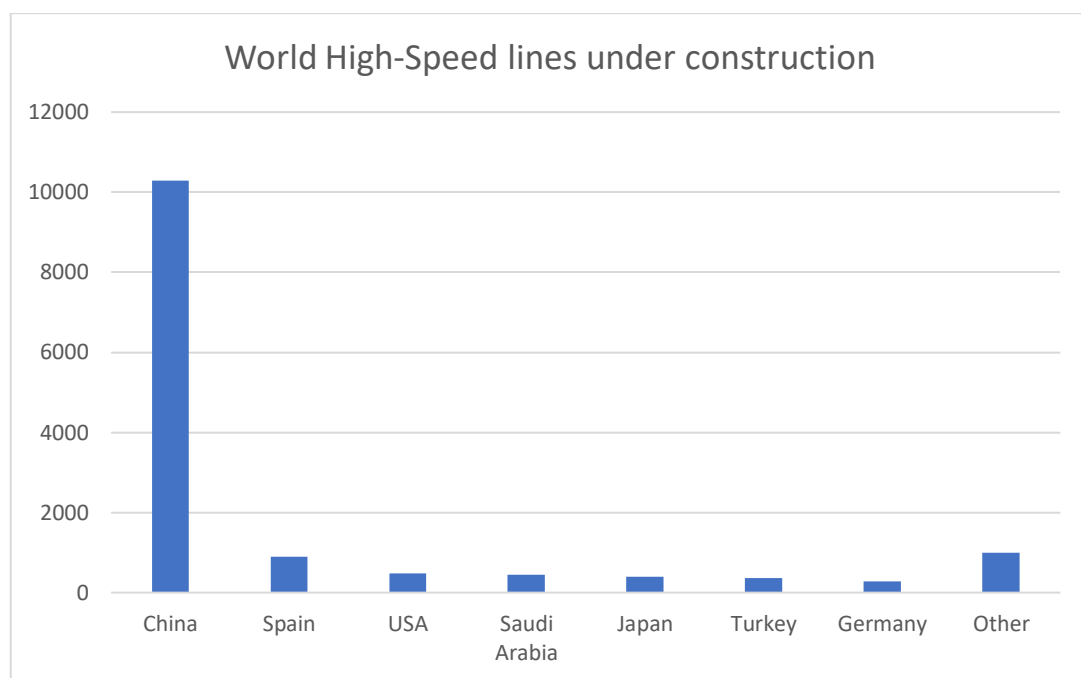
In 2016, Switzerland completed “San Gottardo” tunnel, the line strongly improved and facilitated the connection between Italy and Switzerland. It is one of the most effective thoroughfares for link with foreign countries.

¹² High-speed lined in the World. UIC - High Speed lines in the world. 2017

This way is part of the agreement that involves the use of rail to open national boundaries and to create a unique transport system in Europe. Through the development of connection to the north of the Country, Italy can be easily connected to Switzerland and theoretically to Germany.

It was already mentioned about the central role that rail sector plays in the world of transport. The most interesting aspect is that it is going to be more and more technology driven. Its development follows innovations introduced in this industry.

It would be important to forecast next steps of growth of the rail sector through the analysis of the graph below: the histogram represents number of kilometres of “First category high speed” rail under construction in the World.



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World high-speed lines under construction

From the graph it is possible to notice as China to be the first ranked Country for lines under construction with more than 10'000 kilometres. The current leading position

¹³ World high-speed lines under construction. UIC - High Speed lines in the world. 2017

powers are also respected in Europe, Spain gets the first place with 904 kilometres of rail that are going to be completed by 2022.

Overseas this kind of infrastructure is not yet widespread. Currently North America's territory is equipped of only "Second category high-speed" rail, the velocity on these lines can reach at maximum 240 km/h. United States of America are going to complete 483 kilometres of *first category* HS rail to connect Fresno and Bakersfield by 2022.

This lack in rail infrastructure could be partially justified by the incredible air transport efficiency in USA. Domestic flights in North America are the most used means of transport for medium-long distance because of their moderate tariffs and high grade of efficiency.

Japan is adapting its transport rail system thanks to the construction of 402 kilometres of high-speed lines.

Italy has currently 67 kilometres of "First category high-speed" rail under construction. It is relevant to compare rate of development between Spanish and Italy rail infrastructure after decision of opening the market to competition through the liberalization process. The method of comparison in use is the demand for high-speed train lines in the period between 2011 and 2016.

Data show an increase of demand in Italy equal to 80% in relation to the expand trend in Spain for a percentage of 59%. This statistics casts light on the strong growth of rail sector in Italy, even though it is possible to register a considerable quantity of kilometres under construction in Spain. In particular during the abovementioned period, Spain records a 24% growth of its lines.

Throughout the analysed range of years, the recorded growth rate of infrastructure in Italy was equal to 6%, thanks to the completion of the "Treviglio-Brescia" line, the new infrastructure was completed by the end of 2016 and did not have significant effect on traffic statistics until the end of 2017.

This fact emphasizes the increase of 80% in demand, it means that the demand growth was caught thanks to the only pre-existing rail infrastructure.

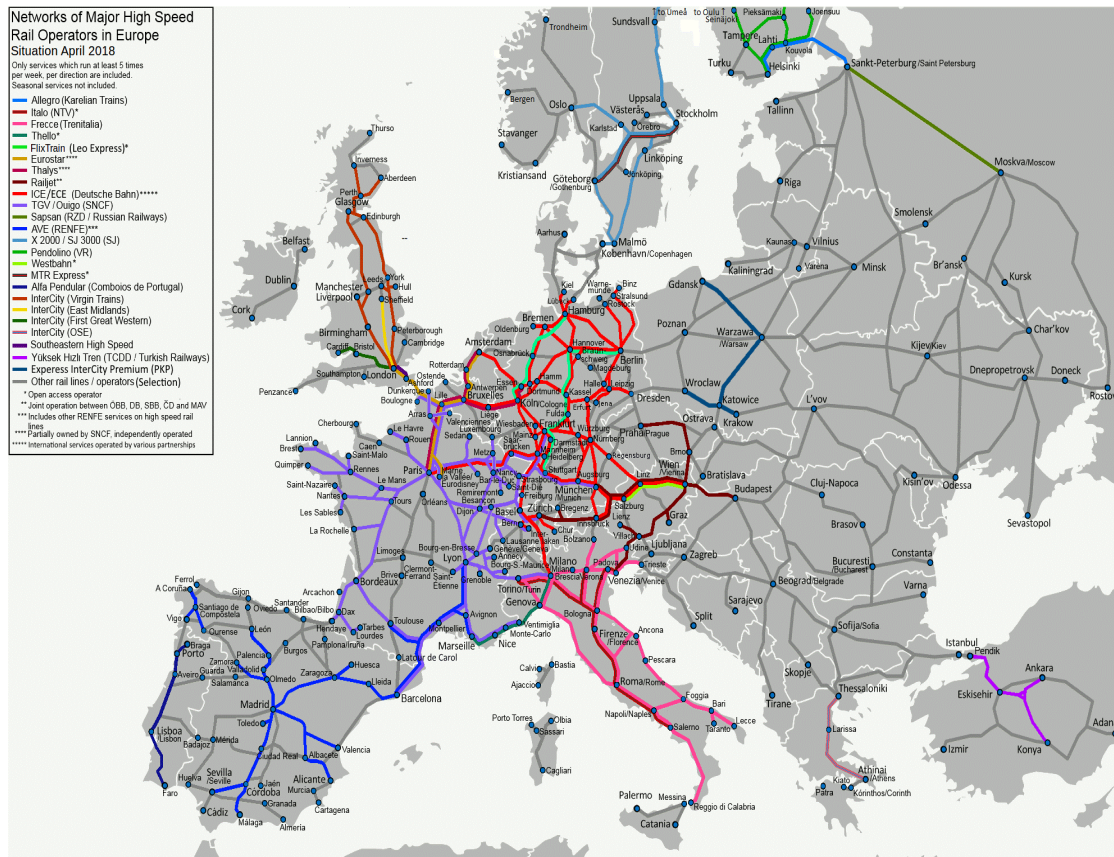
To get the results of this analysis it is right to notice China as the Country with the highest number of passengers and kilometres of lines. This is an impressive information because its infrastructure started to be operating just 10 years ago.

Italy is the first Country having completely opened this sector to competition, followed by South Korea 4 years later. Japan was the first Country to have private rail operators, but Italy is the only to have a complete private company in the market.

The reason of its supremacy on Spain is exactly the decision of liberalization not yet adopted in Spain.

Europe is expected to become more connected in the future. In this way countries are heavily investing in connections as bridges, tunnels and other infrastructure development projects

The map below shows the European rail connections with a specific legend to identify principal companies operating in the high-speed transport sector.



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Networks of major High-Speed rail operators in Europe

¹⁴ Network of major high-speed operators in Europe. April 2018

1.3. European Railway Performance Index

To the general aim of analysing performance for the European Railway sector, this paragraph will use the Railway Performance Index, it is periodically computed by Boston Consulting Group¹⁵ to have an overview about results of this sector.

Boston Consulting Group presented its report in April 2017¹⁶ showing performances and future potential growth of rail industry.

The performance of this sector directly depends on investments and quality of services provided. The challenge of keeping a high performances level was completely met by the European railway system despite the era of Austerity.

In this view, Italy unveiled a 10-years investment project for an amount of 100 billion, deciding to allocate €73 billion to the reinforcement and development of infrastructure. Even Great Britain, in 2014, announced its restructuring plan with a 5-year effort for £38 billion. Belgium was the first Country to formalise an investment plan with a 12-year agreement to invest €25 billion.

Boston Consulting Group presented the report to furnish the 2017 RPI Index¹⁷. Two versions of the index were already published in 2012 and 2015 and it was possible to notice generally same performance tiers for countries in examination.

The RPI report can be considered as one of the most comprehensive benchmarking for the European Railway sector's operations. It is because of the taking in consideration three critical components of railway performance:

- intensity of use,
- quality of service,
- safety.

The comprehensiveness of this study gives the opportunity to correctly isolate factors able to drive high performances of the sector.

Thus, it is possible to formulate a general preliminary observation after the presentation of the report. Generally, RPI shows a higher difficulty for large systems to maintain same level of performances than for small systems. The nature of those

¹⁵ Boston Consulting Group (BCG), an American multinational consulting company, is considered one of the most important companies in the consulting sector. It is one of the Big-Three consulting firm.

¹⁶ The 2017 European Railway Performance Index - Boston Consulting Group - 18th April 2017

¹⁷ RPI INDEX: European Railway Performance Index

system could itself represent a reason for the difference in results. Trying to maintain fixed level of performance in a large environment could be challenging. A slight drop in performance could affect the whole system and could represent a strong decrease in the overall performance level.

About “Safety” and “Quality of service” we can consider them as the most influent on changes in performances. From statistical analysis it was observed as these two factors are drivers of performances both on negative and positive trends. In particular, punctuality is the most influence factor in quality of use, it is really able to change the overall performance of this sector. For instance, considering a Country that is experiencing an overall decrease in its transport performance it would correspond in a decrease of safety rating. While on the positive side an increase in performance reflects its effect on an increase in quality of service rating.

As we already mentioned the 2017 study confirmed previous results. It was again found a positive correlation between the overall performance of rail sector and level of public cost.

In this specific case we define as public cost the sum of investments and public subsidies in the sector. The positive correlation between public efforts and performances in the sector seems to strengthen over time, the more the investments from the public government, the higher the performances of the sector. The value derived from public engagement is strictly related to the amount of public subsidies allocated to infrastructure managers.

Relying to the importance of public engagement for future performances, the overall results could represent a warning signal for policy makers.

In cases of countries that are facing decreasing trends in performance, current level of public costs could not be any more sufficient to maintain high the level of performance. Effects of performance decline take several years to become visible. At this time, it is needed for companies to make investments acting to reverse incipient declines to ensure that railway customers do not experience their impact.

This could seem to be in contrast with what stated before about examples of countries’ performance in relation to the presence of private companies operating in the market. Indeed, only weak correlations between performance and degree of liberalization was observed. From previous example of the chapter we did not mention directly this

correlation and we also noticed as competition favoured the development of rail services in many countries.

From an initial superficial overview these two kinds of interpretation could be considered as a complete opposite position. From a personal point of view, it would be a superficial analysis in the sense that it would not take in consideration “type” and “mode” of those investments.

In this way most of European rail infrastructure are managed by public companies, those are responsible for the correct functioning of the line having several duties to fulfil. Management companies are responsible of the construction of lines and maintaining the efficiency of the infrastructure. They have to control train traffic and signalling systems.

Investments made by those companies are capable of renovation of infrastructure, increase in quality and safety of signalling systems, building and improving efficiency of stations. It is reasonable to consider these investments as direct operations on infrastructure, on its safety and on improvement of the quality of service.

Private companies operating in the market are not in the majority of cases the owner of the infrastructure for the concept of vertical diversification that we will analyse later. They usually pay utilization fees to public management companies to use and implement their business on infrastructure.

On this side it could be right to suppose private investments as investments on the business itself, marketing campaigns, improvement of service on trains. Companies investments do not hardly influence the RPI report. These kinds of efforts partially affect safety rating.

What just stated is the personal interpretation of the author to try to justify the possible coexistence of public investment driven performances:

- increasing in performance thanks to liberalization and improvement of competition. It is related to the mode of investments, to its kind of changes brought to the industry and to its impact either on profitability or on performances index. In the preliminary analysis the three drivers taken in consideration for performance measurement are used for both freight and passenger transportation. Intensity of Use, Quality of service and Safety were

chosen by authors of the analysis for their comprehensiveness and easiness of understanding. It must be noticed as the simplicity of the index results in the presence of three methodological biases observable in the study;

- difference in more reliable information available for passenger traffic than freight make passenger performances overweighed. Price and punctuality, for example, are almost completely unobservable for freight market. It directly means that sometimes an RPI for a Country may not reflect high quality in freight transport;
- the already analysed theme of high-speed lines can impact RPI. In this case large countries could be favoured about quality of service because of the higher presence of high-speed rail infrastructure¹⁸. One of the reasons could be the higher probability to find high speed lines in countries with longer distances to travel;
- the third bias is related to the non-adjusted fares on the basis of purchasing power parity. That is significant because consumer of countries with low purchasing power are favoured than those living in a Country with high purchasing power. The RPI is computed by the average of the score obtained by the Country on each factor analysed. Some sub-factors are voted and each of them is weighted to the general aim of considering the three factors as 1/3 of the total RPI.

¹⁸ In this case high-speed lines are considered the high-end product of the sector. Those with the highest technological development in the market.

1.3.1. Results Analysis

Analysing the results three groups of countries emerged by the difference of score received.

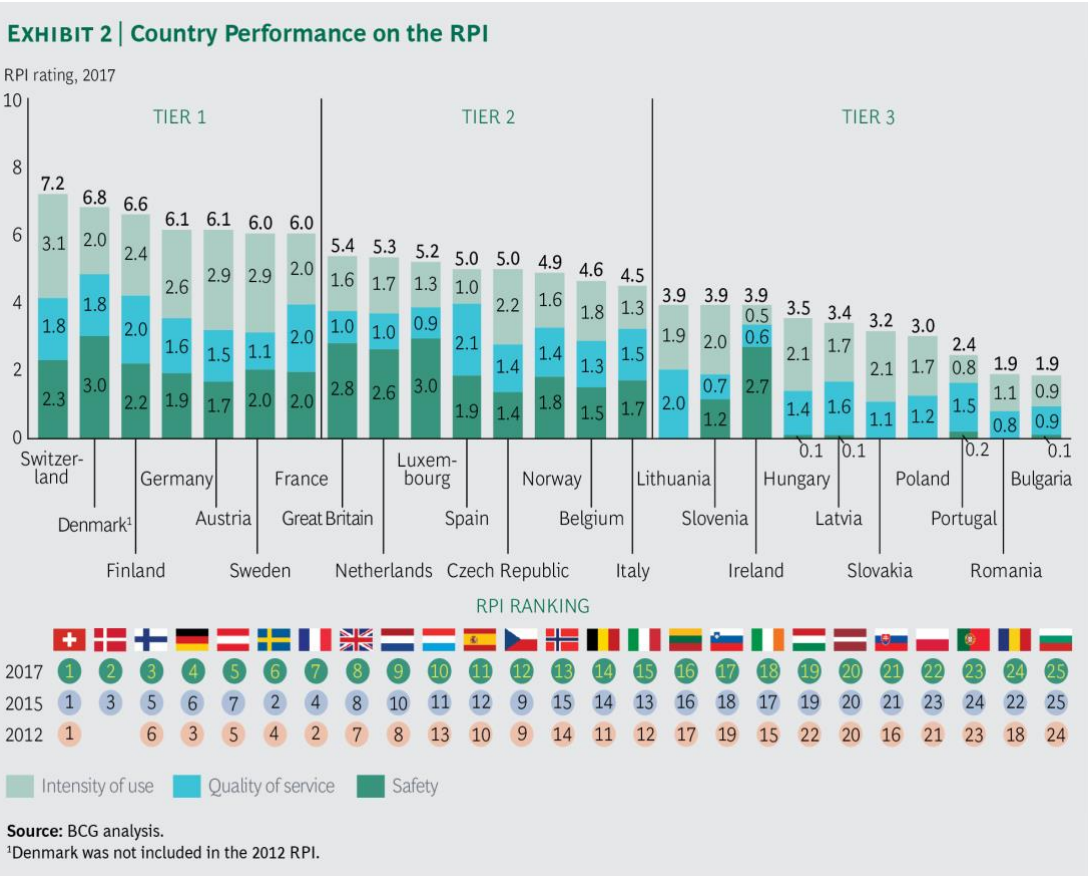
On the table below are presented the summarised results of RPI ranking and those are generally consisted with results of 2015 and 2012 studies.

Tier 1 is yet composed by Switzerland, Denmark¹⁹, Finland, Germany, Austria, Sweden and France (in this order) with an increase in performance of Finland and a slight decrease of Sweden and France that lost some grounds.

It is impressive to notice as the Austria return in Tier 1 was leaded by a great improvement in punctuality and intensity of use. This specific result casts light on the suitability of those factors chosen to conduct the analysis and on the important impact of punctuality in positive trends.

In Tier 1 countries have railways that are performing well in at least 2 out of 3 dimensions.

¹⁹ Denmark was not present in the 2012 RPI study



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Country performances on the RPI 2017

Tier 2 is composed by countries with a high-performing rail system overall. If we consider the whole result for RPI it could lead us to ignore some sub-results. In some cases, the highest rank in safety correspond to low level of intensity of use or quality of service, even though it is not recognizable from the overall score.

Great Britain is an important example to describe this bias. With a “RPI” equal to 5,4 the Country received an excellent score in safety. But after a deeper check the scores show that its intensity of use is only good and freight utilization is even lower. Quality of service is also a weak factor for the Country, because of its high fares and relatively low punctuality of regional trains it gets poor score.

²⁰ Country performance on Railway Performance Index (RPI) 2017. Boston Consulting Group. April 2017

Tier 2 includes two special examples of different discordant score in RPI. We already mentioned Spain and Italy as two of best countries in Europe because of high development infrastructure in high speed lines. We also treated in this chapter the low grade of liberalization in Spain as reason for Italy's current better performances.

In this scenario these two countries are recognized as very good ratings for quality of service and safety also thanks its degree of development but with a low rating for intensity of use especially for freight.

Spain has an overall RPI of 5,0, its high-speed lines positively impacted in quality of service and rating for safety, but this infrastructure has a low score in intensity of use.

The same goes for Italy, its 4,5 in RPI is reached by good performance in quality of service and safety but intensity of use for freight drives down the overall score.

Keeping eyes in this Tier we can also observe a case in which the intensity of use improves the overall score. Therefore, Czech Republic obtains an overall RPI of 5,0 thanks to its well-developed system of freight transportation.

Tier 3 is the group in which majority of countries have poor performance in all three dimensions. As already stated, statistics confirm the fact that safety records have decisive impact in the negative performance of a Country. Safety scores, indeed, are so low in Tier 3 countries, it is a common element in all cases of this group with the exception of Ireland.

In this case the score of 3,9 is characterized by a record in safety near to the highest in the index but pulled down by poor ratings in intensity of use and quality of service.

1.3.2. Changing trend of results between 2012 and 2017

It was already declared as the performance trend seems to confirm results obtained in 2012. But it was also observed the existence of some signs able to predict a slight performance decline. In particular it was possible to notice a reduction of performances for countries with large systems.²¹

²¹ Boston Consulting Group in its report considers large systems those with an infrastructure longer than 15'000 kilometres.

France, Italy, Spain, Great Britain and Germany are facing this negative trend in contrast with the smallest system that are going through an expansionary period such as Luxembourg, Netherlands and Scandinavian countries.

The same nature of their system constitutes the reason for the decrease in performance. Large systems could represent a disadvantage. Complexity in maintaining and operating them could constitute a negative factor. A large system includes several subsystems that constitute different variables difficult to control. The large environment in which they operate can considerably vary in respect to different characteristics as pollution, congestion and change in technology.

These differences must be faced by company governance who has to take decisions about financial allocations and regulators constraints. The complexity we already exposed can show difficulties in capturing scale effects in larger systems.

1.3.3. Central role of “Safety” and “Quality of service” scores

Safety and quality of service are the two most influent variables for the RPI ranking. Indeed, they have a greater impact on variation in performance than intensity of use. Only few changes in intensity of use were highlighted with just a slight impact on performances.

The effect on the overall index for a variation in safety is very decisive.

This factor improves its stability in Europe from 2010 to 2014. Accidents decreased by 7% and fatalities decreased by 19%.

However, trends for countries as Germany, France, Spain, Belgium and Italy is slightly decreasing in RPI rating. It is also driven by underperformances in safety. In those countries indeed, number of accidents faced an increase during the period of analysis: 18% in Belgium, 14% in France, 13% in Spain, 12% in Germany and 9% in Italy.

On the quality of service side, we already mentioned how Austria was able to get back to the Tier 1 thanks to an overperformance in punctuality.

Some other countries as Switzerland, Norway, Netherlands and Finland improved their rating for quality of service being able to win some steps in the ranking.

1.3.4. Positive relation between public costs and performance improvement

Starting from the analysis of results for the first two RPI studies, current results give us the possibility to confirm the positive correlation between countries' public investments and rail performance.

Later in this chapter the discussion will highlight crucial passages of the liberalization process in Europe, as an introduction for discussion in the next two chapters. This paragraph is now explaining more deeply the engagement of public side of countries in the sector and its effect on performance. From the analysis this year RPI ratings we will be able to formalize data to explain the correlation.

During previous discussions we already clarified reasons for the controversial view with the engagement of public sector on a side and the opening of the sector to new private players on the other.

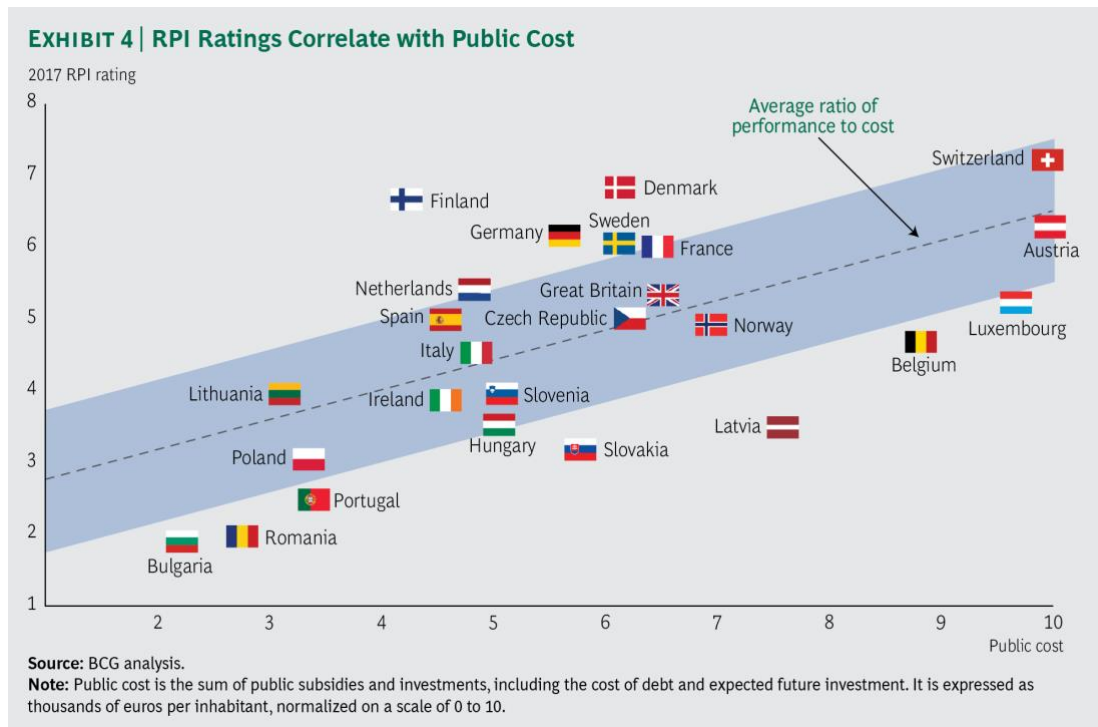
Public subsidies are those recurring government contributions to support operations of passengers and freight transportation. Subsidies are used to sustain maintenance operations expenditures. Public investments are one-time government investment in infrastructure construction projects.

The aim of this part of analysis is to assign a score to identify the amount of public capital invested per inhabitant. Public investments are project-based expenditures, to give the score, the study was created utilizing the average amount of annual investment over the six-years period taken in consideration (from 2009 to 2014).

To create more reliable data, the amount of public investments was adjusted to include the cost of servicing debt and the amount of future investments. The final amount was converted in a *per capita* figure and it was normalized on a scale of 0 to 10.

The results are presented in the table below. The x-axes represents the level of public cost per inhabitant, while on y-axes it is the 2017 RPI rating per Country.

It confirms, as in 2012 and 2015, the positive correlation between public cost and railway sector's performance measured by the RPI. It also reveals some interesting differences in the grade in which countries receive money and transform them in performance.



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RPI ratings correlate with Public Cost

The dotted line in the middle of the graph is positively oriented to show the positive correlation between the two variables on the axes.

The blue-area is the allowance area, it indicates levels of performance that should correspond to specific amounts of public investments. It also includes areas in which performances slightly differs from the dotted-line with values above or below of it.

The graph shows as some countries' performance react in the opposite way to public investments in the sector: Denmark, France, Germany, Netherlands; Sweden, Switzerland and Finland they capture relatively high value for their money. This characteristic is indicated by their position above the central dotted-line. In this area public investments increase from left to right in the x axes, the optimal position for a Country would be on the left-up quadrant. This position would correspond to a low level of money received as public financing and a high level of performances obtained.

²² RPI ratings correlate to public costs, The 2017 European Railway Performance Index - Boston Consulting Group - April 2017

On the opposite situation we can observe countries that relatively underperform to the average ration of performance to public cost. It is the case of Luxembourg, Slovakia, Latvia, Romania, Bulgaria. They get relatively low value as performance for money received.

Once analysed results we can conclude affirming the existence of positive correlation between public cost and performance. It was also possible to notice as this correlation holds over time from 2012 to 2017.

To conclude it is needed to clarify that in the last analysis on correlation countries belonging to Tier 3 were not included. It was because their profile about public-funding and governance efficiency are too different and not comparable to the ones from Tier 1 and 2.

1.4. European Railway market analysis

This paragraph will deal with the analysis of the Railway market relying on the last complete data available on 2015. This paragraph of the work will provide an economical overview about the situation of the rail sector in Europe.

The next information is based on the “Railroads in Europe”²³ market analysis published in January 2015 by MarketLine.

The date of publication is not recently up to date, but it represents the latest analysis for this sector, it also provides forecasted data to 2019.

By the contrast to previous discussions, the following evaluation also comprises data on rail freight transportation.

Hence, on the geographic point of view, Europe consists of Western Europe and Eastern Europe.

In 2014 the European railroads system faced a steady increase, in this period the growth in UK and Germany outweighed weakness in Russia and France.

From the study, the sector was forecasted to continue growing at positive healthy rate through the starting period to 2019. Analysing the total value created by the sector,

²³ “Railroads in Europe”, January 2015, MarketLine.

railroads generated total revenues for \$149.9 billion in 2014. Furthermore, its represented compound annual growth rate (CAGR)²⁴ reached a level of 3,9% from 2010 to 2014.

As we mentioned Germany and United Kingdom, as two of the most important countries leading the growth of this sector, it is possible to notice CAGRs of 4,4% and 8,2% over the same period. It assisted those countries to obtain the respective values of \$28,4 and \$18,2 billions in 2014.

Besides differences in the characteristics of the business and the nature of transportation, freight and passenger differ by their share on the total transport traffic. Passengers transport's value represented the majority of the total creating value for \$90 billions. It represented the 60,1% of the sector overall value, being the most lucrative part in 2014. On the other hand, rail freight transportation contributed to represent 39,9% of the sector, generating revenues of \$59,9 billions.

The sector was expected to face a growth of its performance at a CAGR equal to 4,6% from 2014 to 2019. At the end of 2019 railway sector would create value through revenues of 188 billion.

²⁴ Compound annual growth rate (CAGR), the ratio measures the mean annual growth rate over a specified period of time. $CAGR = \left(\left(\frac{Ending\ Value}{Beginning\ Value} \right)^{\frac{1}{\#of\ years}} \right) - 1$

1.4.1. Five Forces analysis

The Porter's analysis of "Five Forces"²⁵ will study those forces driving the competition in the European railroads sector in 2014²⁶. In this scenario passengers and freight customers will be considered as "buyers", while the suppliers of fuel, electricity and rolling stock as "suppliers".

Buyer power

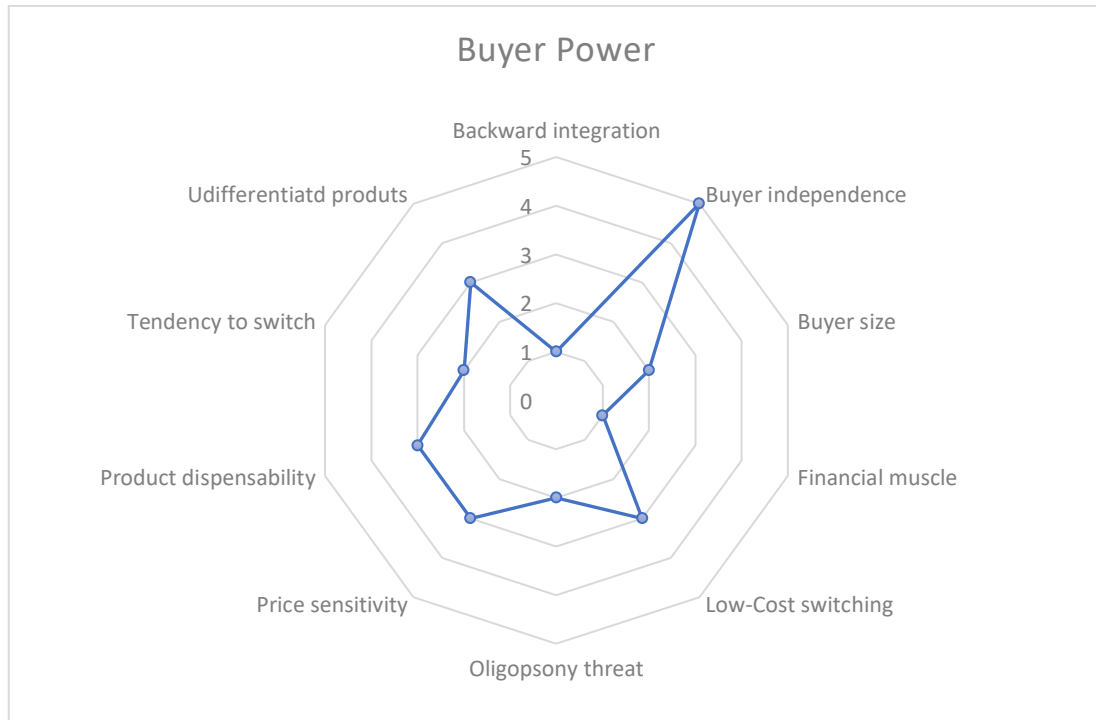
It is possible to identify a large number of customers both on freight and passengers' market.

Moreover, due to the constraints on the network capacity, number of operators able to serve on specific routes is precisely defined. This can be considered as a sort of limitation to the service differentiation in a free market.

Switching cost can be considered high in most of cases. Some routes could be served by a unique company, reducing possibilities of choice for customers. This can be considered a reason for the high level of switching costs, in particular for those customers who wish to travel on that kind of route.

²⁵ The "Five Forces" analysis is a model named after Michael E. Porter. This model analyses five competitive forces in an industry. It also contributes to identify industry's weakness and strengths. The five forces analysed are: competition in the industry, threat of new entrance in the industry, bargaining power of suppliers, bargaining power of customers, threat of substitutes.

²⁶ "Railroads in Europe", January 2015, MarketLine.



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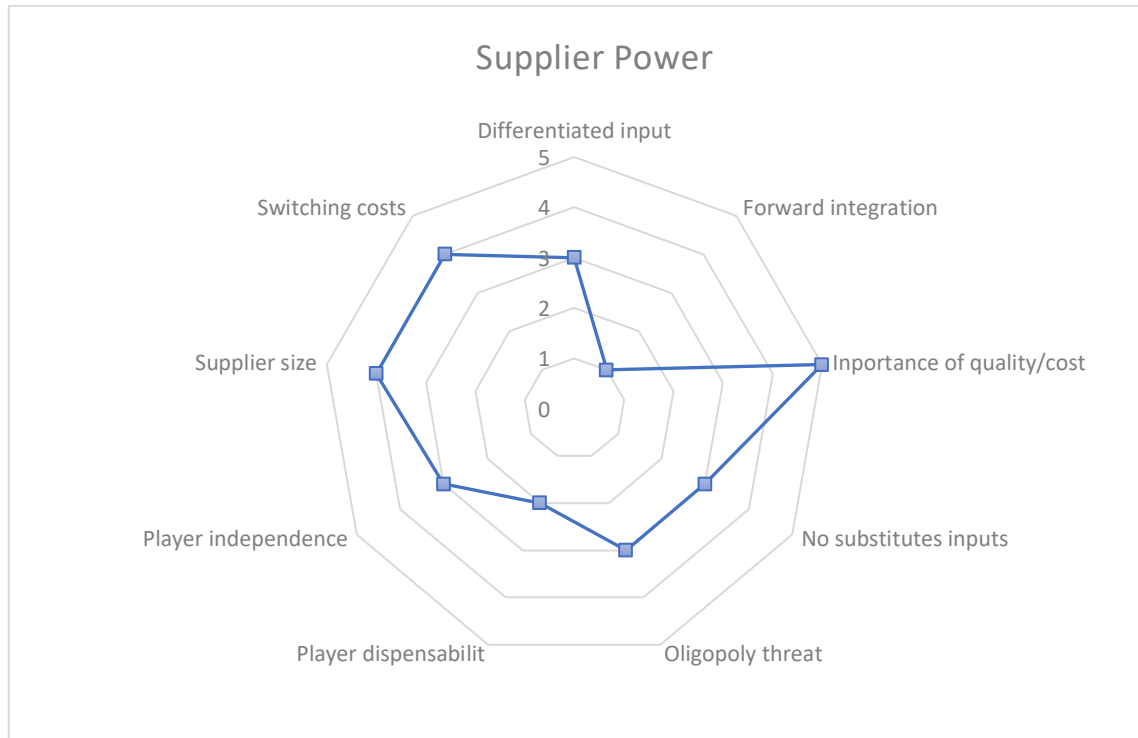
Drivers of Buyer power in railroads sector in 2014

Supplier Power

The input of the market is represented by the supplier power. The figure comprises sources as diesel fuel, energy, railway engineering products, rolling stocks. Inputs are often provided by a small number of suppliers in this market, it leads to a strengthen of supplier power, it is empathized by the presence of few substitutes.

We can definitely consider supplier power moderate, indeed on the other side few suppliers can sell products and raw materials to only few buyer companies because of the concentration of the market. The last described effect is able to balance the level of supplier power.

²⁷ Drivers of buyer power in railroads sector in 2014, “Railroads in Europe”, January 2015, MarketLine



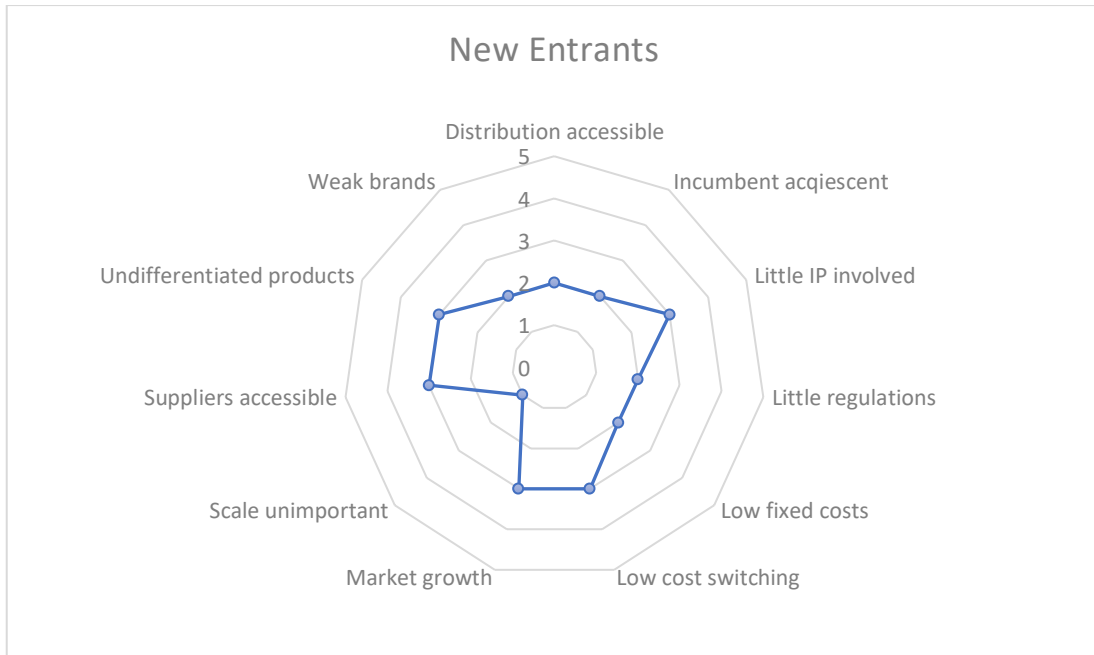
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Drivers of Supplier power in railroads sector, 2014

New Entrants

The discussion about new entrants' threat is customized per Country being strictly related to the geographical position. The liberalization process in the European Union's market opened this business to new entrants besides the national monopolies. Threat of newcomers in this case is higher than countries in which the actual composition of this sector is yet represented only by the national power as incumbent. The discussion on new entrants can easily be enlarged to the entry barriers theme. The most influence barrier is represented by the capital constraints needed to join the market, a company that is going to operate in railway market must be able to run its service providing trains unless it can re-utilise resources coming from its existing operations.

²⁸ Drivers of supplier power in railroads sector in 2014, "Railroads in Europe", January 2015, MarketLine



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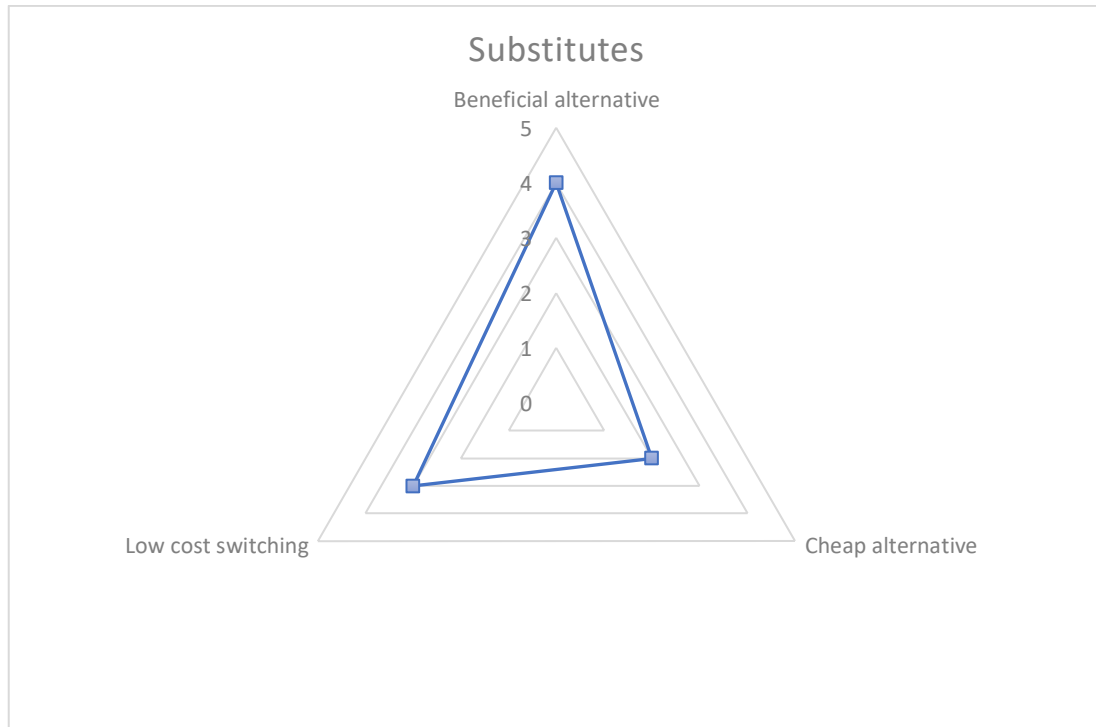
Factors influencing the likelihood of new entrants in railroads sector, 2014

Threat of substitutes

The offer of substitutes in the passenger rail transportation sector is wide. Examples as cars, alternative public transports, bus or tram, domestic flight constitute the poll of substitutes. The crucial point is the possibility to assess the trade-off cost-benefits to evaluate the best alternative to rail transport.

Characteristics of substitutes are really different both on way of transport and services offered. Most of the choices also depend on the market offer in certain zone of countries, on the present infrastructure system and on the total distance to be covered for the travel.

²⁹ Factors influencing the likelihood of new entrance in railroads sector in 2014, “Railroads in Europe”, January 2015, MarketLine



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Factors influencing the threat of substitutes in European railroads sector, 2014

Degree of rivalry

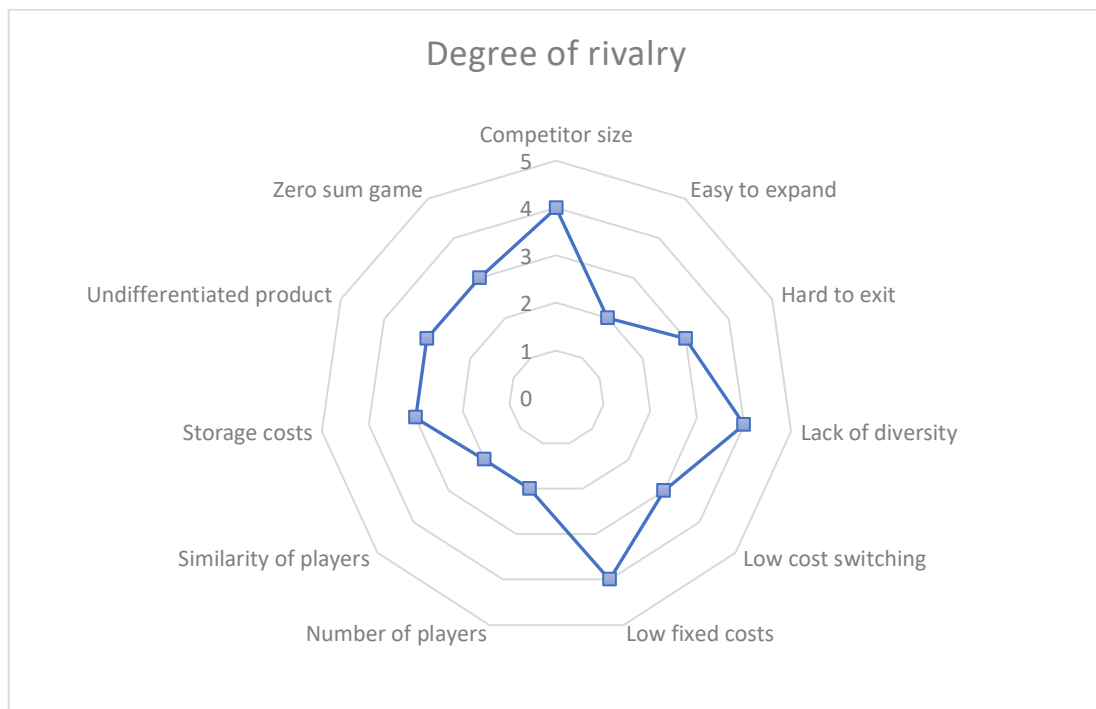
The historical nature of nationalization for railroads influenced degree of rivalry in the sector and gave the idea of a natural monopoly. On the same track, companies will tend to dominate, due to the fact that having several parallel tracks on the same route is uneconomical.

After the unbundling of trains and infrastructure to introduce competition in Europe in some countries, as France and Belgium, this process is proceeding slowly keeping the situation with the dominance of the incumbent rail operator.

One other form of competition was adopted in United Kingdom. This is a franchise system to put in place a full competition where companies compete to win franchise contracts.

³⁰ Factors influencing the threat of substitutes in European railroads sector in 2014, “Railroads in Europe”, January 2015, MarketLine

Liberalization favoured the entrance of new player in the sector over last years, in this scenario rivalry was intensified by substantial entry and exist costs such as the pressure of fixed costs. As an overall judgement, the level of rivalry can be considered as moderate. The new phenomenon that is going to take place in Europe is the cross-border competition. In this way Europe is trying to create a single space of competition in which companies from all over the countries in Europe can compete to serve different tracks and connecting countries.



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Drivers of degree of rivalry in the railroads sector in Europe, 2014

³¹ Drivers of degree of rivalry in the railroads sector in Europe in 2014, "Railroads in Europe", January 2015, MarketLine

1.5. Liberalization Process

During previous paragraphs of this work we have been proceeding analysing various aspects of the European railway sector.

A brief history of the sector development was proposed, followed by description of the top-development product, the high-speed line and its evolution that now represents the core business for companies operating in this market. Following, performances of this sector will be described, starting from a statistical point of view. Furthermore, the Railway Performance Index will be used to provide an economic analysis.

The last part used the Porter analysis to better understand the importance of this sector in the European transport landscape.

This paragraph will deal with the presentation of the liberalization process actuated by the European Union through its legislation system.

The ongoing procedure will be analysed in the chapter 2 under the legislation point of view, with the presentation of regulatory packages prepared by authorities during the reform of railway sector. The new settlement that Europe is presenting is going to be adopted through a series of regulator agreements established to ensure the good utilisation of European rail infrastructure. Several technical directives have already been proposed to the implementation of the *interoperability* concept. The abovementioned figure plays a crucial role in the final target to the creation of a Single European Transport Area.

In this respect, the liberalization process is part of a wider aim of common transport policy harmonisation to safeguard both competition and the freedom to provide services. The harmonisation process involves several kinds of rules, such as technical, administrative and safety ones.

The concept of *interoperability* is designed to ensure trains to transit smoothly and safely from one Member State's rail network to another.

The long-term goal should be implemented through the completion of a European high-speed rail network in all member States. The result can be reached through the adoption of Directives about both trans-national high-speed and conventional rail network interoperability. The full opening-up directives to national and international passengers transport services were adopted in January 2010.

The liberalization process was started in 2001 when the European Union issued directive to create the Single European market for Rail. The process continued stage by stage by the emanation of several legislation packages (will be discussed in Chapter 2), in particular one of the most important guidelines, the Third Package, was introduced and implemented respectively on 2007 and 2010.

The structural separation and the wider opening of the market to the competition by the EU is paving the way to new entrance operators. Since its initial spread and for a period of time rail transport was considered the most technologically developed mean of transport. The sector was typically organised as a natural monopoly with the existence of a single operator. This structure was usually dominated by a public entity, it has been serving the market as a monopolist and separation was not applied. In this scenario during the last years of second millennium, national operators increased their power in the market while competition was absent and often discouraged.

Because of some endogenous and exogenous factors, performance in the sector started to sharply decline in a worldwide outline. The decreasing trend during 1970s - 1980s was partially attributed to the spread of transport modes in general. During those years the rise of low-cost carriers strongly influenced gaining market shares of air companies in transport sectors.

On the passenger side air transport was also supported by the shift from railways to roads with the incredible development of automobile market. However, lack in flexibility and adaptability to economic changes of the market and managerial inefficiencies also related to its public oriented structure, led down performance for rail transport. From 1970 to 1994³² market share of passenger rail transport was losing more than 30% by an initial value above 10% to get a final share of 6,9% in 1994. It corresponded to an increase in private car transport utilization which reached the level of 84,4% at the end of studied period.

The renovation process started in 1990s, the final aim of the rail revolution was to let this sector being one of the most profitable in the transport landscape. The introduction of competition constituted an important characteristic to develop. It really worth as a disruptive transformation in the structure of the market, starting from a monopoly-

³² CEMTS (1996): Market shares of Rail transport, analysis on selected years 1970-1994

based organization to the liberalization. It was needed, as one of first steps, to make a public and social service such as rail transport, competitive and efficient.

1.5.1. Natural Monopoly in Rail sector

As already mentioned, Rail sector, has been characterized by the existence of a single public company operator for long time until the beginning of “liberalization” process.

Many sectors as telecommunications, energy and transport in general, the Rail market have always been organised following rules of a “Natural Monopoly”. This kind of economic settlement lasted until the progressive arrangement of European Single Market at the end of 80s.

The principal concept at the base of Natural Monopoly is the existence of high fixed costs of building the infrastructure network. As well as those, operators face also high cost of buying trains. This heavy structure of initial investments historically deterred companies to enter the market constituting an important example of entry barrier.

In this scenario, the presence of a single company in the market would be justified by the possibility to exploit large economies of scale and the opportunity of costs to be spread across a larger number of units produced.

Rail industry, as natural monopolies industries presents a flat marginal cost curve. In this case producing one more unit of product represents a very low cost for the company in the market.

Initial investment to build infrastructure is considered a *sunk cost*. This kind of expenditure cannot be recovered by the company upon decision of exiting the market. Rail operations are carried by multi-products firms; indeed, operators serve the sector on passenger and freight sides. We can consider infrastructure as the same for both kind of businesses, but kind of transport differs. However, the possibility to exploit the same initial investment to sustain two different business would favour the unique role of the operator company.

From the natural Monopoly market form it is possible to list two major inefficiencies, now we will proceed with an explanation of possible influences on this sector.

The first type of inefficiency is the one that would allow companies operating the rail sector to avoid cutting costs and be efficient. From its monopolistic position, the unique firm in the market is conscious of the fact that customers have no alternatives. Rising cost on the production side can be reflected in an increase of prices for products. Rail operators in this way can be not completely efficient, as before said an increase in costs for serving customers who use train as method of transport can be balanced by increasing price to consumers.

It is possible to link both of these two examples of inefficiency to the decline of the sector before the liberalization process.

The sharp decrease in share of consumers using trains in 80s could be explained by high discrepancies in prices of transports. With the spread of car utilization, even because of its better flexibility, an increase in prices for train transport would have influenced people to prefer transport on roads than the one on rail.

The implication about the other form of inefficiency is very similar to the first one.

In this case the discussion shifts to the quality of good produced or, better in this case, of the service provided. Natural monopoly does not encourage the development of new technologies and adoption of them, technology could represent a way to make business more efficient, to completely change rules in the market. Incumbents are scared by opportunities to change the environment in which they have the absolute control, technology would represent a method of weakening their position of monopolists.

As before, a decrease in quality of service offered would have driven down performance of railways.

High speed connections by train is considered the high-end product of this market, its spread started during the years of the market opening to competition. Evidences on its successful development will be analysed in the next chapter.

1.5.2. Vertical separation

The rail reform started in 1990s with the general aim of improving performance of this sector. The common view before the beginning of this sector change was an inefficient situation caused by the state-management of rail as a consequence of poor incentives and low budget constraints.

The concept of rail revolution was strictly correlated to the vertical separation process. As we already mentioned the liberalization process is going to be analysed in this chapter under an economic point of view, leaving the directives' analysis to Chapter 2. However, vertical separation is an important concept to analyse because of its function of changing equilibriums in the market, modifying its organisation.

Performance and vertical separation play a central role in the decision of opening the market to new entrants. Policy maker and railway authorities have been debating on pros and cons of opening the rail sector to competition. Vertical separation has a crucial importance because it is the method to justify the entrance of new operators in the market. Since the diversification model's implementation, independent operators' companies were allowed to provide train transport services on the pre-existing rail infrastructure. Under the previous market organisation, the vertical integrated nature of the sector was considered as the cause of inefficiency leading to low performance level.

From its definition vertical separation constitutes in a separation of infrastructure management and companies operating in the market for transport services.

The reform started in Britain in 1994 when the private "*Railtrack*" company was established in charge to provide transport services and manage infrastructure.

An accident occurred some years later disrupting most of the system at *Hatfield* and privatization process was very criticized. Because of this fact and some criticisms on company's management decisions in 2002 the State took the decision to re-buy the company and re-create the state-owned operator for rail sector. This passage was the end of this first period of liberalization.

However, those problems did not completely interrupted privatization's run, the reform was extended to the rest of Europe with the framework provided by the European Union through several legislative Directives.

Different studies were conducted to analyse the contribution of vertical separation on performance improvement. Continuing to consider vertical separation as the main tool to open the doors of the rail sector to competition, the results of those studies show contradictory trends.

The positive correlation between the introduction of private companies in the rail sector and the increase of performance does not always hold. As we already discussed in this work, empirical studies are not enough to justify correlations with performances, several variables on a subjective side of each Country show possibilities to diverge from expected results. Those dissimilar conditions constraining rail sectors of each Country can impact on levels of costs and benefits of vertical diversification. Peculiarities of countries can modify degree of competition from other transport means, impacting on general results of those studies.

As shown differences can occur on the internal side of the sector in discussion but it can be impacted also from external pressures.

The impact on performance will be deeply analysed during the Third Chapter, in will also be presented an overview on the Italian rail sector, considering the involvement of liberalization on results.

2. European Legislation on Liberalization process

2.1. Single European railway area and introduction to Liberalization

The creation of an integrated European Market for rail transport passes through the opening up national freight and passengers' lines to cross-borders competition. It is considered one of the main steps to the achievement of the final goal.

The interoperability³³ is one of the major aspects concerning the creation of the single rail area. We already talked about this concept in the first chapter of this work. Furthermore, interoperability is a longstanding concept that was settled by the directives 96/48/CE³⁴ and 2001/16/CE³⁵ respectively emanated on 23th July 1996 and 19th March 2001.

During this second chapter we will look back over the stages that led us to the nowadays organisation of the European Railway sector, taking in consideration the legislation behind them.

The road to a more competitive sector is going to be helped by a greater technical harmonisation of the European Rail sector. This is in the direction to breaking down barriers along with better connection throughout European markets.

Boosting competition has always been the main part of the liberalization process to create a more efficient and customer responsive rail sector. As we already mentioned in the first chapter, EU rail legislation has strongly encouraged it over the years. With competition and market opening directed actions, European regulators guided the change with the first major law dating back to 1991.

Early legislations were based on the settlement of vertical separation. The distinction consisted in the existence of an infrastructure manager who run the network and a company that uses it to transport passengers and goods. The important aspect of this separation is the fact that two different organisational entities must be created to run the business.

³³ Definition of "Interoperability": it is a model to ensure trains to transit smoothly and safely from one Member State's rail network to another.

³⁴ 96/48/CE. Council of the European Union. 23/07/1996.

³⁵ 2001/16/CE. Parliament and Council of the European Union. 19/03/2001.

In the direction of ensuring a fair access to the market and competition in it, functions as “train paths”³⁶ for the allocation capacity and licencing and charging must be separated by the operation of transport services being performed in a neutral design. Moreover, regarding the idea of providing fair access and to ensure competition, the theme of public funds was also analysed. It was stated to be guaranteed that public intervention may not be used to finance transport operations. Precisely public funds for infrastructure and compensations cannot interfere with the transport business to avoid distortions of competition.

The opening rail markets among the Europe did not only encouraged greater degrees of competition within national transport sectors, but it also gave rail operators the opportunity to run their business crossing the borders of Country in the continent.

In this scenario we have to make a distinction about dates of liberalization for both passengers and freight markets.

Rail freight liberalization was completely obtained in 2007. Thanks to this legislative important decision, any licensed European company was able to serve the market through its transport services. Licenses we talked about were necessary to ensure the right requirements of safety. On the rail freight transport market, liberalization process helped the sector to compete with other transport modes for freights because it was the opportunity to let the market develop.

On the passenger transport side, the market can be considered as completely “liberalised” since the 1st January 2010. Even in this case any licensed and certified rail firm has the right to operate in this market and to offer transport services to passengers. The domestic sector for rail has not yet been opened to European competition. In this case it means that operators in domestic transport services, at the moment, do not face the competition by other European players. The point is part of the Fourth Railway package, we will analyse it and the other packages of laws during next paragraphs of this chapter.

³⁶ Definition of “Train Paths”: paths for the allocation capacity, companies need them to be able to operate trains on the network

The efficiency and competition of the European rail market are two peculiarities at the base to the reduction of emissions and modal shift. The situation was outlined by “2011 Transport White Paper”³⁷

2.1.1. 2011 White Paper for transports

In 2011 the European Commission adopted a document called “White Paper” to create a roadmap in order to build a competitive transport system.

Towards a resource efficient and competitive transport organisation the Rail sector was reformed to create a Single European Transport Area.

In the document a pool of 40 concrete initiatives were proposed to be reached in the following 10 years. In this way, it was forecasted to reduce the European transport sector’s dependence in imported oil. Moreover, on the environmental care side the target comprised a cut of carbon emissions in transport by 60% by 2050.

The roadmap sets 10 goals to be achieved by 2050 in Europe about the transport organisations sector. It is the starting point of a wider journey to the efficiency and sustainability in the market.

Goal are grouped into 3 categories, the first one provides guidelines to address problems of pollution, enhancing the use of sustainable propulsion method. The second one relies on the target of optimising performances also considering changes to improve the use of energy efficiency methods. The third one makes provisions for the use of information systems incentives to increasing efficiency in transport.

- The following list literally relies on targets provided by the European Commission -

Developing and deploying new and sustainable fuels and propulsion systems

1. “Halve the use of ‘conventionally-fuelled’ cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO₂-free city logistics in major urban centres by 2030”

³⁷ 2011 Transport White Paper: a roadmap by the European Commission to the creation of a Single European Transport Area.

2. “Low-carbon sustainable fuels in aviation to reach 40% by 2050; also by 2050 reduce EU CO2 emissions from maritime bunker fuels by 40% (if feasible 50%).”

Optimizing the performance of multimodal logistic chains, including by making greater use of more energy-efficient modes

3. “30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors. To meet this goal will also require appropriate infrastructure to be developed.”
4. “By 2050, complete a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in all Member States. By 2050 the majority of medium-distance passenger transport should go by rail.”
5. “A fully functional and EU-wide multimodal TEN-T ‘core network’ by 2030, with a high quality and capacity network by 2050 and a corresponding set of information services.”
6. “By 2050, connect all core network airports to the rail network, preferably high-speed; ensure that all core seaports are sufficiently connected to the rail freight and, where possible, inland waterway system.”

Increasing the efficiency of transport and of infrastructure use with information systems and market-based incentives

7. “Deployment of the modernized air traffic management infrastructure (SESAR12) in Europe by 2020 and completion of the European Common

Aviation Area. Deployment of equivalent land and waterborne transport management systems (ERTMS13, ITS14, SSN and LRIT15, RIS16). Deployment of the European Global Navigation Satellite System (Galileo).”

8. By 2020, establish the framework for a European multimodal transport information, management and payment system.
9. By 2050, move close to zero fatalities in road transport. In line with this goal, the EU aims at halving road casualties by 2020. Make sure that the EU is a world leader in safety and security of transport in all modes of transport.
10. Move towards full application of “user pays” and “polluter pays” principles and private sector engagement to eliminate distortions, including harmful subsidies, generate revenues and ensure financing for future transport investments

2.2. First Railway Package (2001)

In 1998 existing legislation structure on European rail transport was presumed to be updated. In that situation, on July 1998, three new legislative proposals were decided to be presented. Those proposals constituted the *First Railway Package* and the European Council called them the “Rail Infrastructure Package”.

This set of rules was adopted on 26th February 2001, it used a non-discriminatory basis to allow rail operators to free access the trans-European network. This is the first of several versions implemented to facilitate the enjoyment of this sector.

On the Europe rail freight’s side, the Commission met needs of improving train paths³⁸ to improve quality of transport in the sector. The strategy pointed out the possibility to reduce delays and to establish a tariff organisation able to reflect relevant costs.

³⁸ Train path: the concept refers to the capacity of a rail infrastructure needed to move a train between two places in a given period of time.

After its implementation the European Commission conducted an assessment of the implementation of the First Railway Package, the report *COM(2006)189*.³⁹

At the moment of publication this report showed positive results about the introduction of the railway Package. Thus, implementation of provisions was still ongoing, and effects were visible and encouraging.

The First railway package was composed by three main Directives:

- ***Directive 2001/12/EC of 26 February 2001***: amending Council Directive 91/440/EEC on the development of the Community's railways.

It gave the opportunity to define the separation between operators and infrastructure managers and was implemented as the first regulatory act of the revolution in railway sector. The directive also states new rules in terms of safety related to the argument of licensed railway undertakings.

The act also gives it contribute to the process of promoting efficiency in the sector allowing infrastructure manager to have an independent status by the State, feeling free to manage its internal affairs. In the direction of a wider reform of the European transport sector the Directive in 2001 states as follows “*It is necessary to implement a number of measures in order better to monitor the development of railway sector and the evolution of the market, assess the effect of the measures adopted and analyse the impact of measures envisaged by the Commission.*”⁴⁰

- ***Directive 2001/13/EC of 26 February 2001***: amending Council Directive 95/18/CE on the licensing of railway undertakings.

It refers to freight transport operators. Precisely the Directive defines the scheme of a common licensing settlement in order to ensure that “*all railway undertakings meet at any time certain requirements in relation to good repute,*

³⁹ (COM(2006)189): Report of the conducted by the Commission to the European Parliament, the Council, the European Economic and social committee of the Regions on the implementation of the First Railway package.

⁴⁰ 2001/12/EC. Parliament and Council of the European Union. 26/02/2001

financial fitness and professional competence in order to protect customers and third parties and offer services observing a high standard of safety".⁴¹

- **Directive 2001/14/EC of 26 February 2001:** "on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification".

The Directive was established to define criteria addressing problems of safety, capacity allocation and infrastructure charging capacity.

On the capacity allocation side, it was stated as "An appropriate capacity-allocation scheme for rail infrastructure coupled with competitive operators will result in a better balance of transport between modes"⁴². It also finds positive correlation between capacity management and final users of the infrastructure: "all railway undertakings meet at any time certain requirements in relation to good repute, financial fitness and professional competence in order to protect customers and third parties and offer services observing a high standard of safety"⁴³.

Effects highlighted by the report published in 2006 register a stabilization of the railway position towards other transport modes and a significant increase in safety standards for the whole infrastructure systems. In 2006 it was also confirmed as positive performance in rail transport can be observed in countries that opened relatively early the freight market to competition and a relative offset of losses in employment.

The correlation between competition and performance still covers a central role in the debate. In 2007 a communication of the European Commission published an additional Communication on the railway situation. After the adoption of the First Railway Package between 2000 and 2005, member States that decided to open the sector to competition and those having non-incumbent operators with highest market shares, achieved better results in freight traffic than countries with incumbent still leading the market.

⁴¹ 2001/13/EC. Parliament and Council of the European Union. 26/02/2001

⁴² 2001/14/EC. Parliament and Council of the European Union. 26/02/2001

⁴³ 2001/14/EC. Parliament and Council of the European Union. 26/02/2001

2.3. Second Railway Package (2004)

The “Second Railway Package” is a new pool of legislative measures proposed by the European Commission on 23th January 2002 and published in 2004. It is the second stage to the liberalization process started in 1991 for passengers and freight rail transport. This set of rules is composed by 4 different directives emanated by the European legislator.

The general aim of this package was to revitalise the whole rail transport structure through the creation of an integrated European Railway Area. Thus Interoperability, improvement of safety and opening the rail market to competition, are crucial concepts analysed in this set of rules.

Those rules in 2004 have accelerated the liberalization process for the rail freight market. From 1st January 2007 the freight side of the transport market on rail can be considered as fully opened to competition.

However, on the institutional side those rules contributed to accelerate the creation of the “European Railway Agency” that is in charge of providing technical support for interoperability and safety. The final aim to the creation of an institutional authority was to gradually align regulations and objectives under a technical matrix.

This set of rules is composed by:

- *Directive 2004/49/EC of 29 April 2004* amended the Council Directive 95/18/CE on the licensing themes and 2001/14/CE on the allocation of railway infrastructure capacity. Since the previous rules have been amended the new regulation presented a new approach to the safety theme in the European railway scenario. The Directive’s final aim consisted in the harmonisation of the European safety decisions and requirements to create a general standard of rules about safety. Furthermore, it was reorganised the safety certifications’ procedures for undertakings to run their business.

The text reports as introduction to the safety argument “In order to pursue efforts to establish a single market for rail transport services, initiated by Council Directive 91/440/EEC of 29 July 1991 on the development of the Community's rail ways it is necessary to establish a common regulatory

framework for railway safety”⁴⁴. It continues addressing duties on safety to each operator and enhancing the creation of a standardised set of control rules “All those operating the railway system, infrastructure managers and railway undertakings, should bear the full responsibility for the safety of the system, each for their own part. Whenever it is appropriate, they should cooperate in implementing risk control measures”⁴⁵.

- ***Directive 2004/50/EC of 29 April 2004***⁴⁶ amended the Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system. The Directive first retraces the stages which took in place actions directed to the admission of the interoperability concept since 1999 till 2001 with the First Railway Package. Then it updates technical specification for interoperability (TSIs) to harmonise those requirements, especially for high-speed transport.
- ***Directive 2004/51/EC of 29 April 2004***⁴⁷ amended the Council Directive 91/440/EEC on the development of the Community's railways.
- ***Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004***⁴⁸ establishing a European Railway Agency.

2.4. Third Railway Package (2007)

Following the steps of the revitalising process for railway sector, the European Commission adopted its “Third Railway Package” on 3th March 2004. The previous package partially focused the attention on the freight market, opening the market to

⁴⁴ 2004/49/EC. Parliament and Council of the European Union. 29/04/2004

⁴⁵ 2004/49/EC. Parliament and Council of the European Union. 29/04/2004

⁴⁶ 2004/50/EC. Parliament and Council of the European Union. 29/04/2004

⁴⁷ 2004/51/EC. Parliament and Council of the European Union. 29/04/2004

⁴⁸ 881/2004. Parliament and Council of the European Union. 29/04/2004

competition. Instead, this set of rules casts light on international passenger rail transport. When it was emanated, the “Third Railway Package” was considered as the one completing the European regulatory framework. The package developed new proposals to regulate passengers’ rights and also certification of train crews.

The open access rights for international rail passenger were introduced in October 2007, from that date operators were able to pick up passengers at any station and set down them in any other, also in the same Member State.

Continuing on the passengers’ rights side, this package of rules contributed to harmonise them. Since the past, long-distances travellers had a wider range of right to enjoy, as services at the stations, non-discriminatory conducts for people with reduced-mobility. With the introduction of those rules, the same kind of right have to be guaranteed also to short-distances passengers, creating the same “*right-service*” to every kind of passenger all over the Europe.

The Third Package also contributed to the introduction of a license regulation for train drivers. In the direction of creating a more regulated and integrated rail market in Europe one of the main passages to cover was about driver licenses. It was through the creation of a unique European driver license that every driver should have to continue driving trains in the European Network. It was a way to standardise all those requirements to obtain the license by drivers. The process would contribute to increase levels of quality of the service and safety during train traffic. Some of those criteria as practical training of driving skills, age, mental and physical health, educational level are basic requirements taken in consideration to attribute drivers’ licenses.

The Third Railway Package is composed by:

- ***Directive 2007/58/EC of the European Parliament and of the Council of 23 October 2007*** amended Council Directive 91/440/EEC on the development of the Community’s railways and Directive 2001/14/EC on the allocation of railway infrastructure capacity. It concerns on the concept of opening the market of international passengers’ service to the competition by 2010 to renovate an improve performance of this sector. It is in part shown by this introductory passage of the Directive: “The market for international high-speed services, on the other hand, has seen a sharp increase in traffic and will continue

its vigorous development with the doubling and interconnection of the trans-European high-speed network by 2010. Nevertheless, there is strong competitive pressure from low-cost airlines in both cases. It is therefore essential to stimulate new initiatives by promoting competition between railway undertakings.”⁴⁹.

- ***Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007⁵⁰*** on the harmonising process of certifications for train drivers and the creation of a European licenses network for drivers.
- ***Regulation (EC) No 1370/2007 of 23 October 2007⁵¹*** on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70.
- ***Regulation (EC) No 1371/2007 of 23 October 2007⁵²*** on rail passengers’ rights and obligations. As it was already exposed the Regulation is going to align rights for passengers getting over those differences about distances and kind of transport.
- ***Regulation (EC) No 1372/2007 of 23 October 2007⁵³*** amended Council Regulation (EC) No 577/98 on the organisation of a labour force sample survey in the Community.

⁴⁹ 2007/58/EC. Parliament and Council of the European Union. 23/10/2007.

⁵⁰ 2007/59/EC. Parliament and Council of the European Union. 23/10/2007.

⁵¹ 1370/2007. Parliament and Council of the European Union. 23/10/2007.

⁵² 1371/2007. Parliament and Council of the European Union. 23/10/2007.

⁵³ 1372/2007. Parliament and Council of the European Union. 23/10/2007

2.5. Fourth Railway Package (2016)

The “Fourth Railway Package” is the last set of regulation designed by the European commission to complete the rail sector revolution. The aim is to renovate the European Rail network and market to face the competition of different modes of transport and provide better services to customers.

To get this ambitious goal the European Union considers as a strategic action the removal of all the barriers to the creation of a “*Single European Rail Area*”. Through the reinforcing actions to the presence of competition in the market the European Union wants to reach the target of enhancing interoperability, safety and reliability of European Rail Network. It must be allowed also implementing market structural and technical reforms started in 2001 with the “First Railway Package”.

Nowadays the European rail network is still fragmented with different procedures applied in several Member States, under a technical and safety point of view. On the international side for example, transnational rail changes must face different signalling systems and different authorisations by states’ authorities. The example is useful to understand the current scenario in the market, it can be considered a critical reason for new rail operators to entering the market.

The creation of a “Single European Rail Area” contributes to removing existing barriers also providing a higher degree and innovation in the market, to make the rail sector more competitive. Everything is built in the direction of improving quality and easiness of connection between Member States and neighbouring countries.

The progressive enhancement of performances also thanks to the implementation of railway sector reform contribute to meet targets outlined in Commission’s 2011 Transport White Paper. As it was already analysed in the paragraph dedicated to the White Paper, the document sets as objectives the reduction of emissions and an increase of rail transport. When it was published the Fourth Railway Package was composed by 6 legislative texts which constitute 2 pillars: the market pillar and the technical pillar.

As already mentioned the market pillar was published to continue the process of market opening started with the first legislative package establishing the general right for railway undertakings to operate in the passenger transport market over the Europe. Furthermore, it pointed out more the necessity of improving the impartiality in railway

sector both on market access side and about public service contracts. The centrality of passenger figures was again stressed together with their interests. Following this idea, the European Commission's position was in favour of the competition introduction in the market. It was considered as the way to direct efforts to passenger's interests. Competition in the market would drive operators to be aware of customers' interests improving quality of services provided and being more cost-effectiveness. This market dynamic was already discussed in the First Chapter of this work, it was presented in the market analysis through the utilisation of Porter Diagram in the paragraph dedicated to "threat of new entrants".

On the technical pillar side, it was designed to reduce technical costs for undertakings also improving technology across Europe. In details, the aim of technical changes is directed to:

- Changes about safety regulation would allow undertakings to reduce costs in multiple applications. The European Railway Agency will be in charge of issuing safety certification and market certifications valid in the entire European network to avoid wastes in due to separate requests in different Member States;
- The creation of "One stop Shop" that will simplify and create a single stream of application procedures for all countries in Europe;
- The certification of an interoperability to work throughout the European Rail Traffic Management System (ERTMS);
- Diminishing of a transparency risk due to the remaining national rules still holding in several Member States, always in line of non-discriminatory behaviours.

The Fourth Package even comprised attention to domestic passengers' market. It was set to open the domestic market for passenger transport to competition by December

2019, allowing new companies to enter those markets and compete. The competition would also create opportunities for undertakings to provide services through the use of new trains or offering new transport routes. Tendering opportunities were also allowed to adjudicate public service rail contracts, and the concept was enlarged to the mandatory nature of tendering for public service in EU.

The rail industry faces an increasing in workforce demand with the increasing of its dimensions and technology. “The Fourth Railway Package” also gives solutions to this aspect of the industry. In this market the use of high skilled workers is common and thanks to the change introduced by the new legislation settlement, public service contracts for workers are protected in the transitory phase to new contractors.

The technical Pillar is composed by:

- **Regulation (EU) 2016/796⁵⁴** on the European Union Agency for Railways and repealing Regulation (EC) n° 881/2004
- **Directive (EU) 2016/797⁵⁵** on the interoperability of the rail system within the European Union (Recast of Directive 2008/57/EC)
- **Directive (EU) 2016/798⁵⁶** on railway safety, recast of Directive 2004/49/EC

On the market side:

- **Regulation (EU) 2016/2338⁵⁷** amending Regulation (EU) 1370/2007, which deals with the award of public service contracts for domestic passenger transport services by rail ('PSO Regulation')

⁵⁴ 2016/796. Parliament and Council of the European Union. 11/05/2016.

⁵⁵ 2016/797. Parliament and Council of the European Union. 11/05/2016.

⁵⁶ 2016/798. Parliament and Council of the European Union. 11/05/2016.

⁵⁷ 2016/2338. Parliament and Council of the European Union. 14/12/2016.

- ***Directive 2016/2370/EU***⁵⁸ amending Directive 2012/34/EU, dealing with the opening of the market of domestic passenger transport services by rail and the governance of the railway infrastructure
- ***Regulation (EU) 2016/2337***⁵⁹ repealing Regulation (EEC) 1192/69 on the normalisation of the accounts of railway undertakings

⁵⁸ 2016/2370. Parliament and Council of the European Union. 14/12/2016.

⁵⁹ 2016/2337. Parliament and Council of the European Union. 14/12/2016.

3. The Italian Case

The third chapter of this work will deal with a focus on the current situation of the Italian Railway Market. The chapter will analyse the composition of this market, the changes adopted by the liberalization process and the analysis of the latest acquisition operation that saw Italo - Nuovo Trasporto Viaggiatori S.p.A. as protagonist.

The following part will begin with a brief definition of Liberalization, central theme of the whole work, it will be described to introduce the discussion to the Italian landscape.

The paper will continue with the presentation of the current Italian rail market structure, briefly describing major players and by introducing to main features of the sector.

Following, the chapter will pay attention to the liberalization process that involved the Italian high-speed lines, favouring the entrance of the new market player, Italo- Nuovo Trasporto Viaggiatori S.p.A.

3.1. Liberalization

From the definition, the *Liberalization* is “a bundle of politic operations implemented to abolish restrictions to internal production, movement of capitals, international and internal trade (...). Those are usually adopted to eliminate any regulations able to obstruct the market access and the free competition. As an effect of the technological progress or of markets evolution, some regulations, can be considered as an obstacle to the development of the economic activity.”⁶⁰

As already discussed, new entrants and consumers get benefits from the liberalization process, both of them are not well politically represented. In Italy the liberalization period was enhanced by requests from the European Union concerning barriers to good trade.

Consequently, the process was enlarged to public and private services. Approaching the end of 80s, difficulties about management of public industries or with a consistent

⁶⁰ Liberalization definition. Treccani.

public influence (as a result of the Nationalization period), conducted thoughts to the decision of privatising several big companies.

Nevertheless its effort in the direction of a progressive reduction to the presence of public entities, Italy is still considered as a Country with high regulated sectors, even if it implemented operations to eliminate barriers to entrepreneurship by 90s.

A fall in productivity between 2000 and 2005 drove down the GDP rate. The productivity problem was addressed to the weak capability of innovating.

Liberalization was considered as an opportunity to reverse this trend, trying to reach again productivity levels in 90s.

The economic theory suggests as liberalization can increase levels of efficiency. Market reforms are able to better allocate production factors discouraging monopolistic profits.

The liberalization process introduced competitive mechanisms through the opening of market boundaries. It lets efficient companies to join the market, pushing out other not-efficient firms. The introduction of incentives to the efficient allocation of production factors also contributed to the increase of productivity.

If this reform is accompanied to the privatisation procedures of public companies the result in productivity will be more and more consistent. The overmentioned theory was presented in a paper about Privatizations⁶¹, it was studied that competition can also mitigate information asymmetries, reducing the possibility of bad evaluate managers' performance. Performance and "effort" from managers take a central importance in this discussion, indeed competition leads firms to decrease operating costs because of a higher risk of default, for this reason managers get higher incentives to operate to the company's interest.⁶²

However, *Aghion and Griffith*⁶³ presented a paper in which the theme of investments was analysed. Level of total investments is augmented by the entrance of new companies, this effect can more than compensate eventual underinvestment by the incumbent.

⁶¹ Megginson and Netter. *From State to Market: A Survey of Empirical Studies on Privatization*. 2001.

⁶² Nickell et al. *Unemployment and Labor Market Rigidities: Europe versus North America*. 1997.

⁶³ Philippe Aghion, Nicholas Bloom, Richard Blundell, Rachel Griffith, Peter Howitt. *Competition and Innovation: An Inverted U Relationship*. 2002.

As a further effect to the liberalization, the redistribution process must be discussed. The diminishing trend of markets shares for the incumbent would lead to a resizing and restructuring process of workforce. But with a medium-long horizon, if the competition reaches a stable level in the market, the negative employment rate will be compensated by the entrance of new companies in the market. *Blanchard and Giavazzi* in 2003⁶⁴ present the overmentioned reason to justify a potential reduction of job opportunities.

Furthermore, they provide a social explanation to the short-term social loss. They sustain that loss would be sustained by the increase of purchasing power thanks to the initial reduction of prices.

3.2. Italian Railway Market

Throughout this chapter we directed our attention on the liberalization process in the Italian rail market. The following paragraphs will analyse consequences due to the introduction of competition in this transport market.

Italy was the first Country to introduce a completely private owned company as player in this segment. It faced a challenge competition against the incumbent state-owned company.

In this part of the work we are going to briefly describe these two entities operating in the Italian scenario. For the sake of clarity, the description will focus on the medium-long distance portion of the market, where these two players compete, the market segment fully opened to competition.

3.2.1. Ferrovie dello Stato S.P.A.

Ferrovie dello stato S.p.A. is the holding company of the FS Group, the Italian railway transport Group. It is currently one of the largest industrial company in Italy

⁶⁴ Olivier Blanchard, Francesco Giavazzi. *Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets*. 2003.

and it is completely state-owned by the Italian Minister of Economic and Finance since 1992.

The holding owns shares in financial subsidiaries in 4 segments of the sector supply chain: transport, infrastructure, real-estate services and other services.

FS Group is the leader player in transport market on rail, with its 88% share in passenger transports on rail. It currently counts 82000 employees, 10000 trains per day and around 750 million rail transport passengers.

3.2.1.1. Trenitalia

Trenitalia is the company of the group responsible for the rail transport in Italy and one of the leading railway operators in Europe. The company moves around 600 million passengers per year. It is present in abroad markets as *c2c* in United Kingdom and *Thello* in France.

Trenitalia organizes its passenger business in two segments:

- Medium-long distance passengers
- Regional passengers

The first segment allowed the company to collect revenues for € 2.506 millions in 2017. The segment includes High-Speed services and International traffic. The change in revenues from 2016 to 2017 is equal to +9,9%.

Regional rail traffic delivers revenues to the company for € 2.774 million in 2017 with a change of +0,8% from the previous year.

Trenitalia operates in high-speed rail transport market since the launch of “*Frecce*” network at the end of 2008. Thanks to this project and to the new infrastructure settlement, the company contributed to start the shift of demand from air transport to rail on routes served by high-speed trains.

Because of the high degree of technology needed to operate in the high-speed transport, Trenitalia is furnished of the most developed trains to let people move with best levels of safety and technology on board. The company’s fleet is composed by four kind of trains:

Frecciarossa train is its flagship product, it reaches 350km/h to connects Italian main cities. Currently this train is utilised by Trenitalia to operate 189 daily connections on the major routes of the Country. The service is provided through the use of ETR 500 and ETR 1000 trains that are able to transport 574 passengers due to its length of 11 wagons.

Frecciarossa 1000 is the fastest service that company can provide, through the use of ETR 1000 trainset reaching speeds of 400km/h and the same capacity of the ETR 500.

Frecciargento, is the train used by the company to transport its passenger at a speed of 250km/h. This kind of train is now implemented in 48 daily connections. ETR 600 and ETR 485 have a total capacity of 432 and 489 seats.

Frecciabianca is the last train in the Trenitalia's fleet and travels on traditional lines out of high-speed infrastructure. This train operates on 42 connections per day and two versions are available. The ETR 460 allows to more up to 479 passengers.

ETR 470 guarantees 475 seats and mainly connects Rome to cities in the south of Italy.

3.2.2. Italo - Nuovo Trasporto Viaggiatori

Italo - Nuovo Trasporto Viaggiatori is the first fully-private company operator on the high-speed rail transport in Italy. Italo is currently considered as the first transport company in the world using the new train Alstom AGV, the one detaining 360 km/h speed record.

Italo's adventure started in 2006 when co-founders *Luca Cordero Di Montezemolo*, *Diego Della Valle*, *Gianni Punzo*, and *Giuseppe Sciarrone* decided to create the company with a portfolio almost completely Italian hold. Founders decided to exploit the change of European directives just introduced about the theme of competition in rail market and constituted the company with around € 1 billion private capital. The start-up period lasted 6 years to get the company ready to operate in the market.

The first trip started from Naples on the 28th April 2012 at 07.00 a.m. and now it counts around 1000 employees and over 700 operating staff people.

After a ramp-up period from 2012 to 2014 the company changed its business and in 2015 Mr. *Cattaneo* was appointed as new CEO of the company.

During the 2016 and 2017 the company grew-up in financial and operational terms by the acquisition of several trains completing the fleet. In June 2017 Italo issued a bond for €550 millions to foreign institutional investors and the company welcomed “*Peninsula Capital*” as new shareholder (13% of shares). Between June and December 2017, the company first restructured €160 millions of debt and after the subscription of a new capital increase restructured again € 740 million debt.

Italo continued increasing the quality and quantity of services provided, in 2018 it is providing 88 daily services from previous 56 daily in 2017.

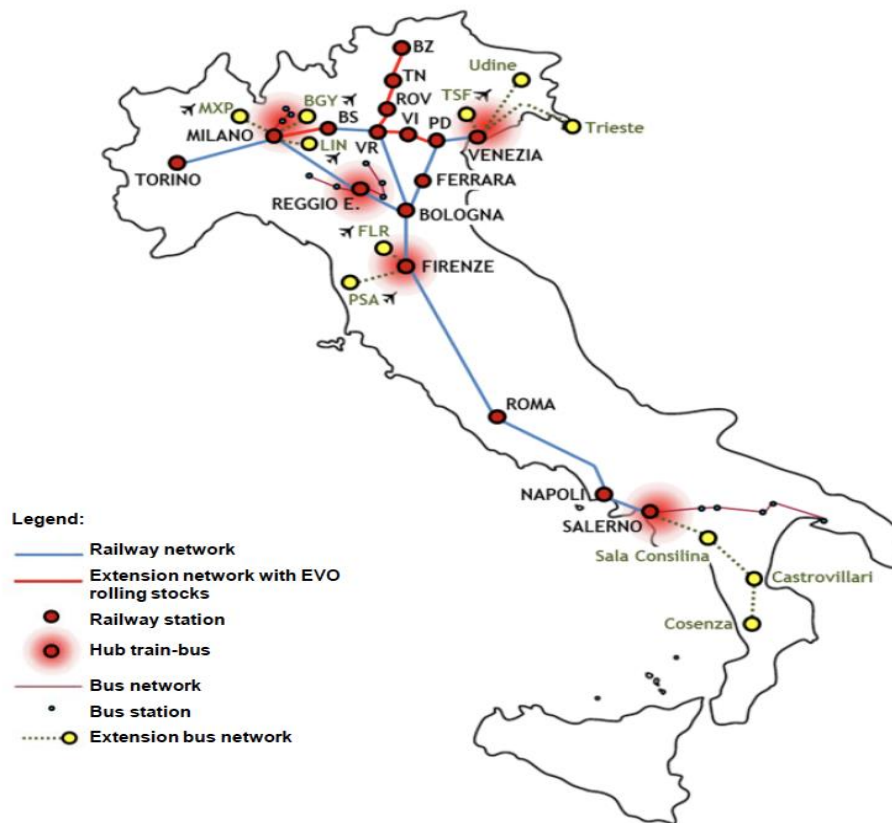
In line with the company view Italo was able to increase market share from 9% in 2012 to reach the current level at approximately 35% in 2017 in its competing area.

As results of the company’s new business orientation, financials data are highly encouraging the management. With an increase of 24,8% revenues collected are equal to €454,9 millions in 2017

About margins the company recorded an EBITDA value of €155,7 millions with an increase of 64% from € 95 millions in 2016.

However, the company is continuing with the increase of passenger served, in 2016 it provided transport services for 11.1 million people and 12,8 millions in 2017. In 2018 it is forecasted that the company will move 14 million in a year. Thanks to the increase of revenues, net income value grew from € 32,7 millions to € 33,8 in 2018.

Information on the company’s fleet will be provided in the next paragraph, together with the analysis of benefits gained by the market after the introduction of competition. The map below shows the current coverage of Italo daily services with indication about other services provided by the company to serve customers on Italian infrastructure.



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Map of services provided by Italo on the Italian network

3.3. The entrance of “Italo - NTV Nuovo Trasporto Viaggiatori” and the effect for the market.

Once the Italian railway market structure was presented in the previous paragraph, we will proceed by analysing the effect of the liberalization process in the high-speed segment. This part of the work is based on analysis conducted to verify the effective increase of performance thanks to the opening of the market.

⁶⁵ Map of services provided by Italo on the Italian network. Institutional Presentation. June 2018

For the sake of clarity, it is needed to specify as the information on which the paragraph is based are not perfectly up to date. In the reference list dates are reported for each of the contents used as source, in this case market data are from 2016, no further market researches were published after that date.

During the first chapter of the work the European rail scenario was analysed, tracking steps that led the liberalization to the old continent. In this part the attention will be oriented to the Italian situation, especially to the changes that liberalization made to the high-speed sector by the entrance of Italo - Nuovo Trasporto Viaggiatori S.p.A. whose we will analyse an acquisition operation by GIP (Global Infrastructure Partners) investment fund.

Italy is considered as the unique Country in the world in which a fully private player competes with a state-owned company on the high-speed rail network.

The new player started its carrier in the rail market on 28th April 2012 with its first run. In this situation it started directly competing with the state-owned incumbent *Trenitalia*. As it could be predicted, at that moment the competition delivered a lot of benefits to consumers that used train transportation every day, being able to choose between two operators for the same high-speed service. It also forced *Trenitalia* to adapt its standard because of facing the competition with a private player with the result of developing one of the most advanced high-speed infrastructures in Europe.

In the second chapter we have studied as the liberalization process started in 1991 its long process that is not yet completely actuated. After different directives presented by the European Council the European Union allowed European Member States to open the market to competition. Thanks to this in 2003 Italy issued a decree to implement those directives and open its rail market.

NTV was incorporated in 2006 and in 2008 bought its fleet of 25 *AGV Alstom high-speed trains*. During an initial period of testing, NTV got its AGV certified and could start running its trains on March 2012. The first period of activity was characterised by difficult events that strongly influenced its performance. During those years the Italian gross domestic product dropped by 4% contributing to create negative effects to the NTV' forecasted financials.

Throughout the work it was discussed about the verticalization theme, the need of an authority to regulate the market was satisfied in January 2012 when the Transport

Regulation Authority was set up. However, NTV on its start-up phase and while its fleet was still being delivered, could serve more than 2,05 million passengers and creating revenues for € 83 millions. After first years' difficulties NTV started its continuous growth with 9,1 million passengers served in 2015. On the financial side the result was well encouraging its operations, in 2015 NTV's revenues were equal to € 308 millions. For the first time the company was able to get a positive EBITDA at € 58m.

Those great results were reached thanks to an important turnaround in the business model. The decision was to implement an aggressive pricing policy to initially increase NTV's market share. The strategy led the company to obtain the 26% of the Italian high-speed train transport demand with a percentage of load factor that equalled to 71,5%.

From its entrance in 2012 *Italo* has continuously been updating its fleet buying trains to provide a more precise and high-quality service to customers. In this way, the company is currently using two different kind of trains, the "*Alstom AGV*" and the "*Alstom Italo EVO*". At the beginning of its career in the rail market NTV bought around 25 AGV Alstom trains, a high-performance train, that is able to travel at a speed of 300 km/h. During the years, the company as we said, decided to increase the number of its trains. On the 1st October 2015 the management placed an order to progressively buy 22 *Italo EVO* trains again powered by Alstom. This kind of train is slightly shorter than the first type, but it is able to travel to the speed of 250 km/h and it can deliver 10 more passengers.

Currently the company owns 37 trains in its fleet: 25 AGV Alstom and 22 *Italo EVO*. Following late news, the company signed an agreement with the Alstom manufacturer by the value of € 300m to buy 5 more *Italo EVO* trains. Those will increase the total number of trains available to reach the quantity of 42 and the agreement will also include a 30-years maintenance period. Decisions about the fleet positively impacted on the quality of service provided by the company. For instance, in 2015 NTV was able to reinforce its presence on the most used Italian route, the "*Roma-Milano*" high speed line. In this case the company stepped up its services from 48 to 56 trains per day, the fact also allowed the company to cover the city of Verona, inserting it in its high-speed linking line.

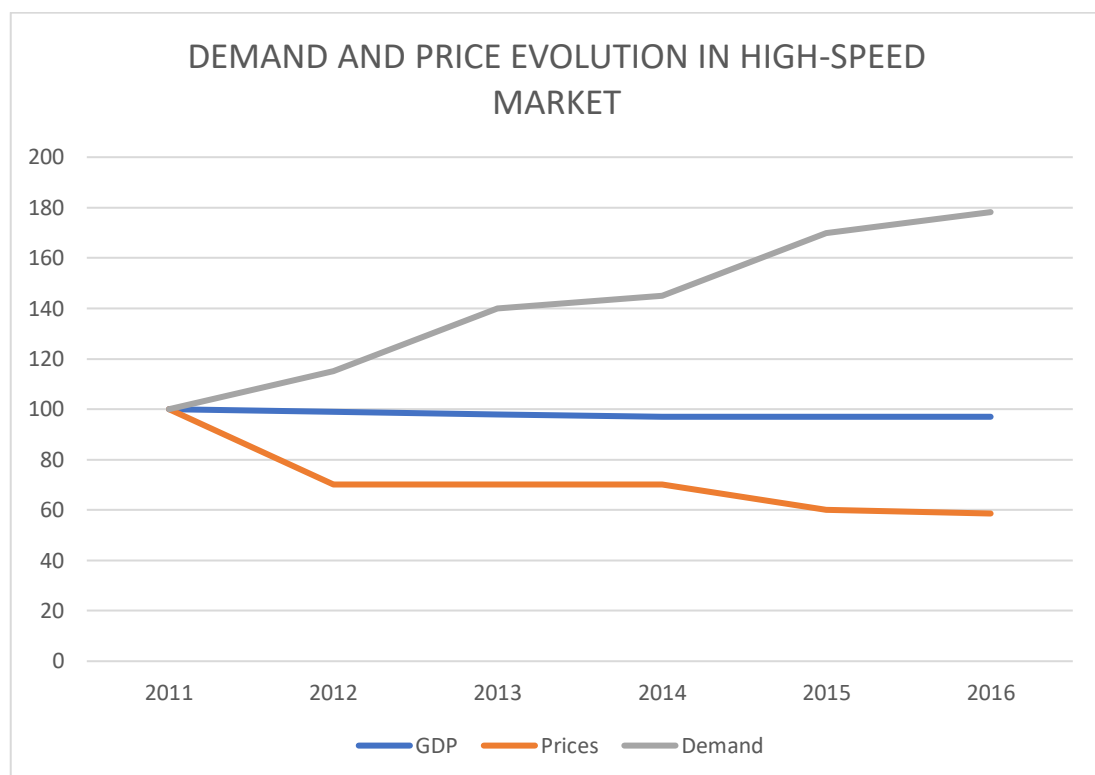
Even under a financial understanding the 2015 can be considered a year with changes, a recapitalisation operation changed the equilibrium between shareholders. The French side of the company saw its power being hardly reduced to 1,4% of shares. *Cattaneo*, the current CEO, increased his equity share. The holding MDP, representing Mr. *Luca Cordero di Montezemolo*, Mr. *Diego Della Valle* and Mr. *Gianni Punzo*, holds 36,8% of shares. The banking presence in the company remains important with Intesa San Paolo that holds 24,5%.

As we briefly announced in this paragraph, the decision of joining the market by Italo delivered benefits for customers on both a quality side and cost reduction.

In the analysed period, from 2011 to 2016 the average price of a high-speed train route felt a steady decrease by over than 41%.

The graph below shows the evolution of prices and demand in comparison to the evolution of the Italian GDP. During the period in which Italo entered the market the GDP value has dropped by around 3%. This negative factor created financial distresses to the company.

Nevertheless, introduction of competition changed the trend in the market, reduced ticket prices and increased the quality of service provided by the market players.



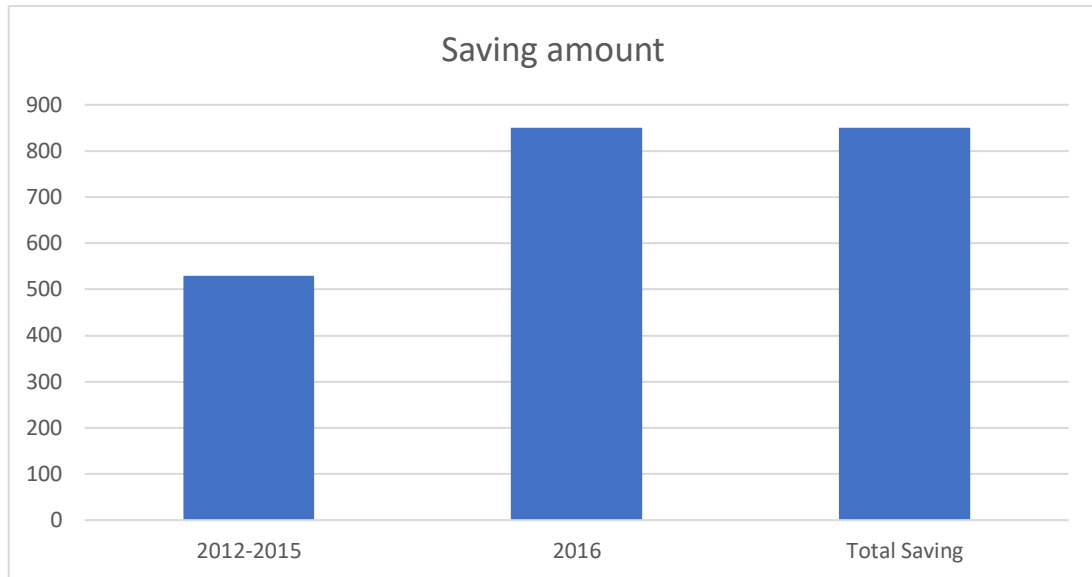
Comparison of the evolution for high-speed ticket prices, Italian GDP and demand for high-speed transportation.

During the same period in analysis (2011-2016) it was estimated as the increase of travellers reached a value of 78%. This trend assumes more relevance if we continue to insert it in the Italian landscape, that is facing a recession period characterized by a decreasing GDP rate and financial distresses.

To quickly open the discussion comparing the market to another transportation service that we will deepen in next paragraph, an expansion of demand like this was never registered in transportation market. During the 90s it was not even recorded after the liberalization of air transport market.

Starting from the consideration of the fall in prices after Italo started providing transport services we can analyse the money saving effect after the introduction of competition. In the following graph it is presented the amount of money saved in the period between 2012 and 2016. The comparison relies on the average ticket price available during the analysed period and the ticket price before the competition by the incumbent.

⁶⁶*Comparison of the evolution for high-speed ticket prices, Italian GDP and demand for high-speed transportation.* Benefits from competition in rail market. Andrea Giuricin - TRA CONSULTING. 2017



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Saving amount by the competition introduction in the market

The graph takes in consideration data for the period from 2012 to 2016. As it is easy to observe the total amount of money saved is equal to more than € 800 million thanks to Italo's entrance in the market.

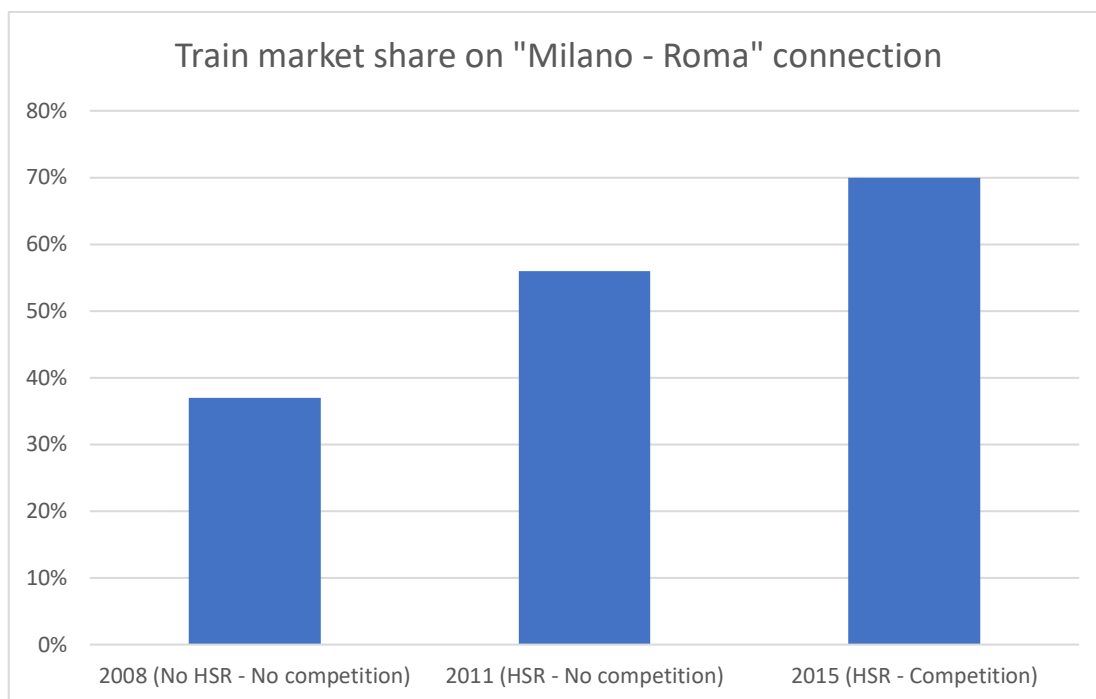
The saved amount has been increased because of two factors:

- Italo's ticket prices continuously diminished over the time since its entry;
- Number of passengers served by Italo steady increased.

The higher quality of service offered by train and its convenience shifted travellers' preferences to the use of train, and it is recognised as the most ecological transport mean.

To deeper understand this change in preferences it is useful to compare utilisation shares for train before and after the competition introduction. The route considered is the already cited one that connects Rome to Milan. Three scenarios are taken in consideration and explained by the graph below.

⁶⁷ *Saving amount by the competition introduction in the market.* Benefits from competition in rail market. Andrea Giuricin - TRA CONSULTING. 2017



68

Train market share on “Milano - Roma” connection

The first scenario is the year 2008: at that moment the infrastructure for high-speed lines was not completed and not working. Furthermore, competition was not allowed in rail transport market.

The second one is the 2011, high-speed lines are now active, but competition is still not available. In 2015, the year for last scenario that the graph shows, high speed lines represent a significant part of the market and competition is allowed.

In 2015 competition between Trenitalia and Italo NTV is consolidated.

As it is possible to understand by the graph, the market share of train increased by years. In 2008 the train share was 37%. The use of air transportation was preferred, as the time needed to travel that distance by train was far longer than by flight.

In 2011 the situation changed and more than one out two people preferred using train to reach Milan by Rome or vice versa. It is because the high-speed infrastructure installation allowed people to significantly cut travel time.

⁶⁸ *Train market share on “Milano - Roma” connection.* Benefits from competition in rail market. Andrea Giuricin - TRA CONSULTING. 2017

In the last scenario the choice of taking a flight to travel that distance was “remote”. With the introduction of competition and the increase of quality and price reduction as consequences the market share of train for the route reached 70%. The increase was driven by private investments to make the infrastructure more efficient and being ready to sustain a higher level of traffic.

The entrance of NTV create several benefits that positively impacted on the whole market. On the incumbent side, for example, between 2012 and 2016, thanks to access fees paid by NTV, “*Rete Ferroviaria Italiana*” (*RFI*) was able to collect revenues for more than € 400 millions.

3.3.1. Comparing Train-Flight transport on Italian high-speed lines

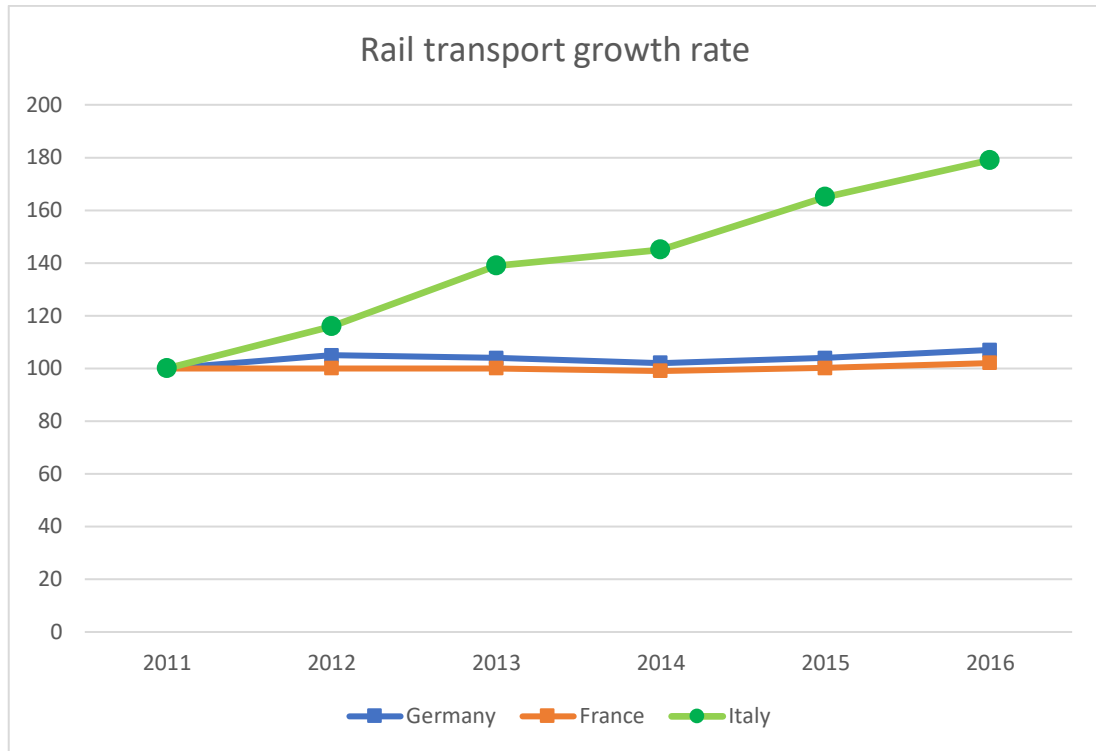
We already mentioned routes as the one that connects Milan to Rome to explain data and features of the Italian rail market.

This particular example could be also used to compare two alternative means of transport, plane and train, comparing their market shares and peculiarities. Indeed, the train transport with its high-speed lines produced a strong competition between air and rail transport particularly for routes with a distance inferior to 700 kilometres.

In Italy first effect of this competition appeared since the “Torino-Napoli” route was completed in 2009. The effects were amplified once NTV entered the market in 2012 because of a larger transport offer.

Italian numbers are incredible, the competition allowed the market to consistently grow, we can observe an 80% increase in number of passengers per kilometre against stagnant growth rate in French and German markets. This consequence is attributable to both a not developed infrastructure before this expansion and to the significant increase of transports quality after the high-speed introduction.

Data presented in the following graph explicitly show the trend just announced.



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Comparing rail market growth rate in Italy, Germany and France

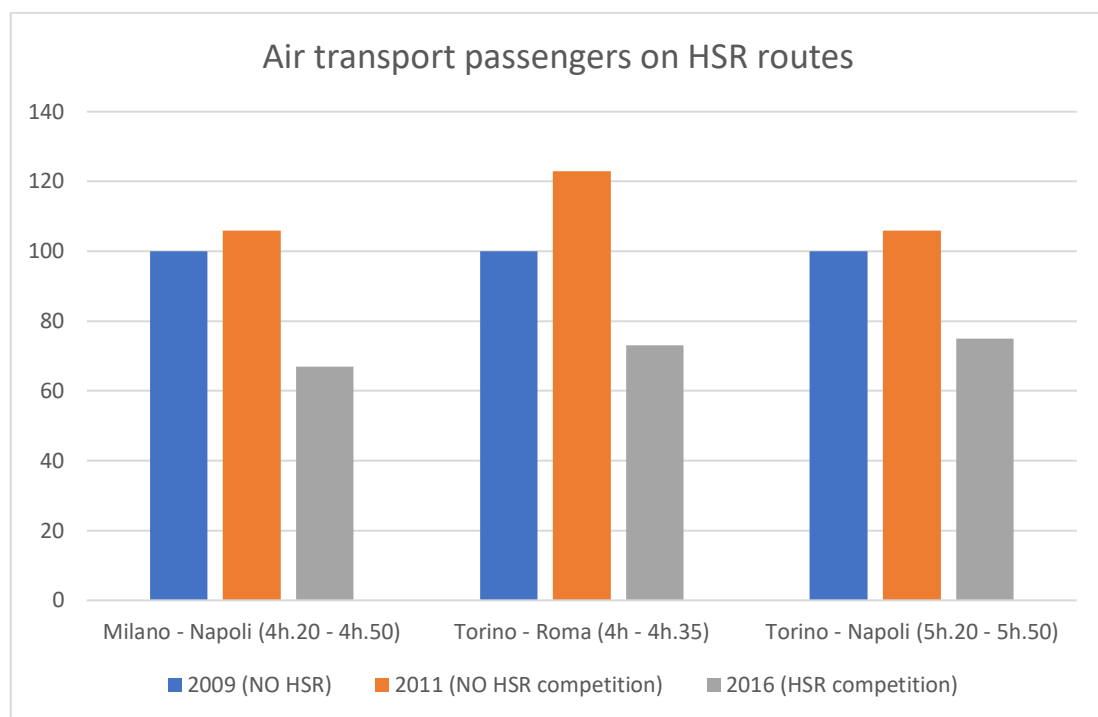
As already mentioned in the previous paragraph increasing in transport quality and time reduction hardly contributed to the shift of demand from air to rail transport.

To confirm this increasing trend by train traffic it is useful to think about decisions taken by air carriers regarding their investments in Italy. Alitalia faced reduction in its domestic traffic, the fact contributed to create problems in alimentering its hub in Rome Fiumicino airport.

Low costs air carriers also suffered the decrease of passengers using air for short-medium routes. EasyJet decided to drastically reduce its coverage of route in competition with train transport and definitely closed its “Linate-Fiumicino” route that connects Milan to Rome and Ryanair did even the same.

⁶⁹ Comparing rail transport growth rate in Italy, Germany and France. Air - Rail competition. Andrea Giuricin - TRA CONSULTING. 2017

On the basis of what we analysed about market shares for train we will present the evolution of the air transport use. Air market shares will be compared in different period of times (the same period used for train analysis): 2009, the pre-competition year at the end of construction period for “Torino-Napoli” line, 2011 with competition present only on traditional infrastructure and not on high-speed lines, 2016 with competition on high-speed. The characteristic of this graph is that it is constructed to compare market shares on different routes: “Milano-Napoli”, “Torino-Roma” and “Torino-Napoli”.



70

Air transport passengers on HSR routes

The graph has a crucial importance to deeply understand mechanisms behind the evolution of transport market in Italy.

⁷⁰ Air transport passengers on HSR routes. Air - Rail competition. Andrea Giuricin - TRA CONSULTING. 2017

- On the “*Milano-Napoli*” route, that is a 4.20 hours long non-stop trip, from 2009 to 2011 the number of air passengers increased by 6%. This percentage shows as the high-speed infrastructure introduction did not negatively impact on air traffic. The competition again plays a crucial role in the shift from air to train. Between 2011 and 2016, four years later the entrance of Italo-NTV in the market, the route faced a fall of 39%.
- On the “*Torino-Roma*” route the trend is almost the same. The route can be travelled by high-speed train between 4 and 4.35 hours. In this case the effect of the high-speed introduction even worse. Indeed, the increase in air utilisation for the route is equal to 23% between 2009 and 2011. As the previous example the route faced a strong loss in passengers once the competition was allowed in this market. From 2011 to 2016 the it lost 50% of market share.
- The last trip taken in consideration is “*Torino-Napoli*”. The trend remains the same even if the distance is longer respect to the other routes. The initial increase equal to 6% is followed by a strong decrease in the second part of the graph.

We can continue sustaining the thesis that in general air transport suffered losing market share not for the high-speed infrastructure development but mainly for the introduction of competition that favoured the increase of traffic for the whole rail market.

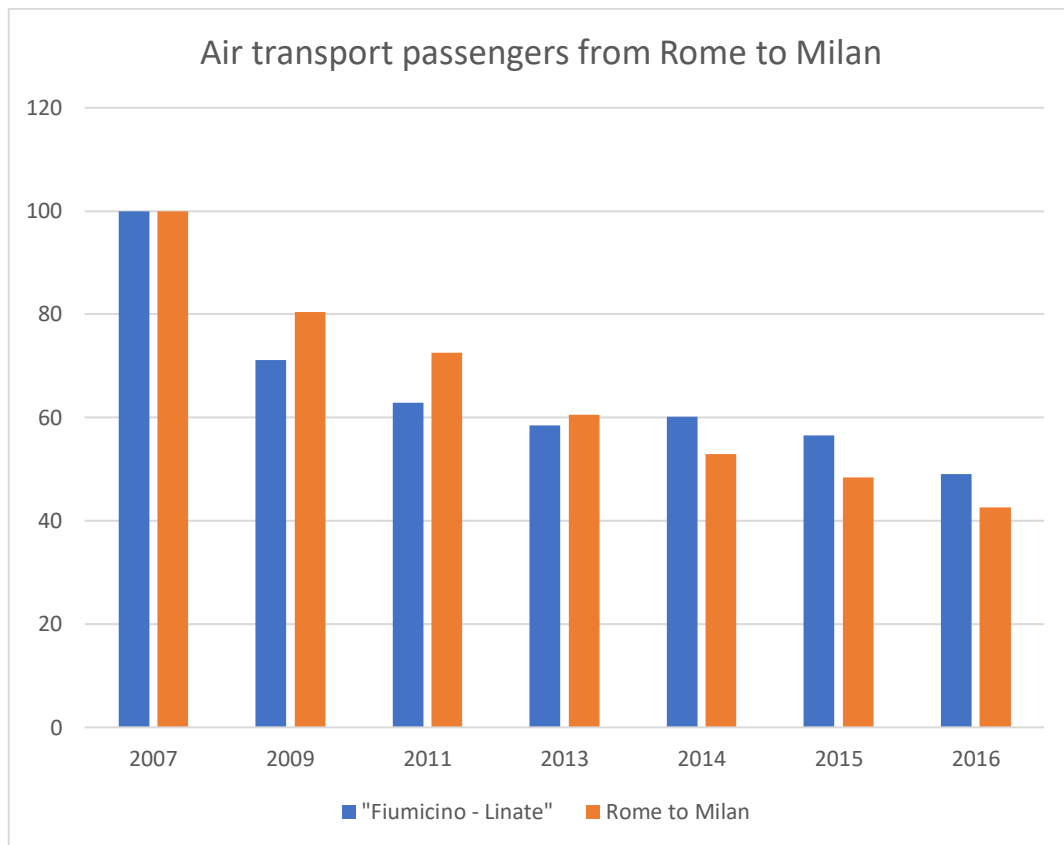
The shift was also directed by the opportunity to travel by train from and to the city centres. By the contrary in many cities the problem of airports outside the centre would enlarge travel times addressing travellers to the choice of train. An interesting example about this fact is represented by the third route taken in consideration, the “*Torino-Napoli*”. Even though the journey time is far longer by train than by plane, passengers prefer rail transport.

3.3.2. Air-Rail competition on “Roma-Milano” high speed line

Rome and Milan are the two most important cities in Italy, most of companies have their headquarters there, one represents the centre of the financial life of the Country. Roma instead, is the site of the institution Country’s side.

People every day usually commute from the centre to northern cities in Italy, because of work, pleasure and this route is one of the most travelled. For several year the air route that connect Rome to Milan was considered the most important for number of passengers, now surpassed by “Roma-Catania” line.

The graph below helps us to justify the importance of the rail market development showing the evolution of air market share from Rome to Milan. The route lets us to understand that the introduction of competition created benefit for the rail market, being able to steal passengers from air transport.



71

Air transport passengers from Rome to Milan

⁷¹ Air transport passengers from Rome to Milan. Air - Rail competition. Andrea Giuricin - TRA CONSULTING, 2017

The graph analyses number of passengers starting from 2006 as base year until 2016 both on the route from Fiumicino Airport to Linate Airport and on the general Milan to Rome route.

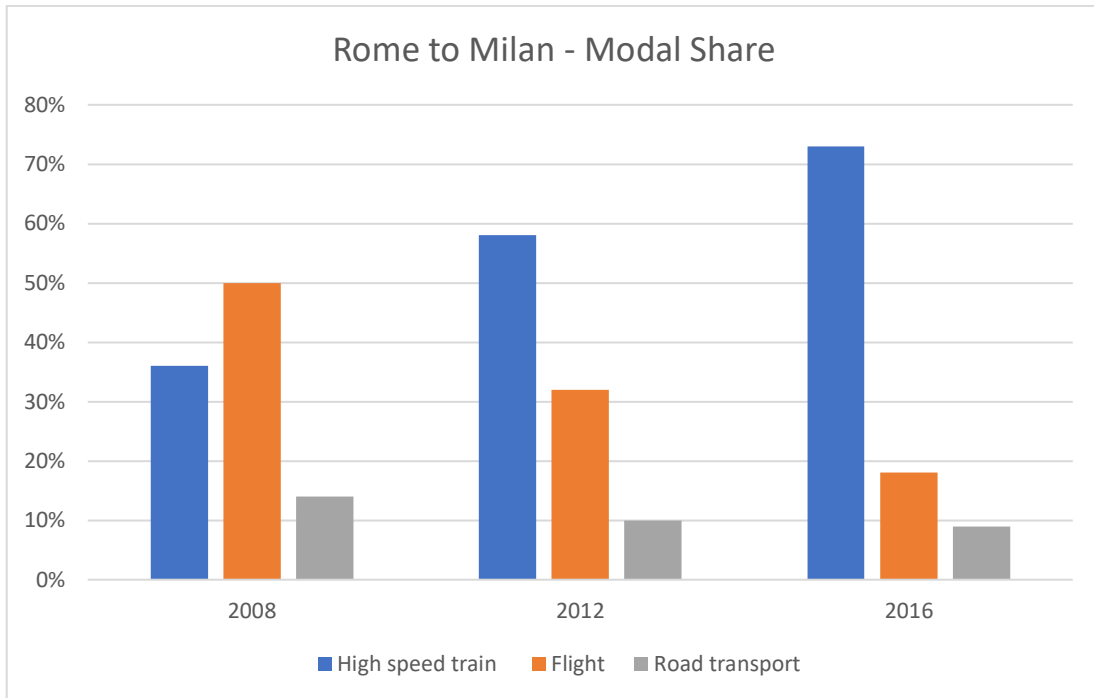
We can easily analyse two periods in the graph referring to the introduction of competition: from 2007 to 2011, last year without competition and years after 2012. In general, the graph shows a greater decrease in passengers in the general route from Rome to Milan with a fall of 57,4%. The decreasing trend for the “Fiumicino-Linate” trip instead, leads to a final value of 49.1% with a change of 50,9%.

Analysing the two periods it is possible to observe:

- *Between 2007 and 2011* the route “Fiumicino-Linate” registered a strong decrease in passengers because of the finalisation of high-speed rail infrastructure at the end of 2009. In an inferior dimension we can observe a fall in the whole air traffic between Rome and Milan. As we already discussed the main cause can be attributed to the cut of travel time by train.
- *Between 2013 and 2016* the graph shows a different trend. Air traffic between Rome and Milan faced a strong fall due to the entrance of Italo-NTV in the market, in the meanwhile competition invaded the air route “Fiumicino-Linate” with the entrance of EasyJet that retired in 2015.

After the brief analysis of the graph we can assume as the competition in Italy impacted on both air and train markets allowing to consider the Country as a clear example of intermodal competition.

The last graph that will be presented explains this analysis, showing the intermodal share of transport between high-velocity train, flights and road transport.



⁷²

Rome to Milan - Modal Share

Train has conquered 3 out of 4 parts of the market, highlighting all the benefits after liberalization. Throughout previous paragraphs we treated all the benefits obtained thanks to the introduction of new players in the market. Ecological sustainability is also part of those positive aspects, the more the use of train, the more the reduction of pollution because of the use of a “greener” mean of transport.

⁷² *Rome to Milan - Modal Share. Air - Rail competition. Andrea Giuricin - TRA CONSULTING. 2017*

3.4. What the Italo's equity change will change

During the whole chapter we focused on the Italian rail market evolution thanks to the liberalization process since the entrance of the new player.

This final section of the work will pay attention to the important news that changed the market at the beginning of 2018. Previous paragraphs mainly analysed Italo-NTV market behaviours, pointing out the importance of its choices for the whole Italian rail sector.

“NEW YORK, NY – February 12, 2018 – Global Infrastructure Partners (GIP), a leading independent, global infrastructure investor, announced today that its third equity fund, Global Infrastructure Partners III, has agreed to acquire 100 percent of the equity interest of Italian railway operator Italo – Nuovo Trasporto Viaggiatori S.p.A. (Italo) for Euro 1.94 billion in cash.”⁷³

The abovementioned part is the literal transcription of the GIP press communication at the moment of agreement signature. The Fund announces as the acquisition process was finalized by its third equity fund: Global Infrastructure Partners III. The offer proposed to the Italian rail undertaking was equal to € 1,94 billion in cash plus the amount needed to cover its debt exposure of around € 440 millions.

Through its declarations the investment fund highlighted the important growth that Italo had during previous years of activities in the market with the achievement of 35% of passenger/km share per year.

“Italo, headquartered in Rome, is the first and only private operator in the European high-speed rail passenger transportation market, and the second largest operator in Italy, with a market share of more than 35% in terms of passenger/km per year.

Since 2012, Italo has offered high-end, long-haul, high-speed railway transportation services through a fleet of 25 AGV trainsets under the Italo brand and four new EVO-Italo branded trains, with the fleet set to increase to 42 trains by 2019. The company's network connects Italy's most densely populated and economically active cities and presently runs 68 daily services on three key routes serving 19 railway stations and 14 major Italian cities, including Rome, Milan, Venice, Florence, Bologna and Naples.

⁷³ *Global Infrastructure Partners agreement announcement*. Global Infrastructure Partners press. 12/02/2018

The company expects to increase frequencies, as the new EVO fleet becomes available, to 98 daily services.”⁷⁴

The fund focused also on the intention to continue supporting the company in the way they achieved incredible performances and results. In the document it was also given information about passenger served and some financial data.

“In 2017, 12,8 million passengers travelled with Italo (+15% compared to 2016), generating approximately €455m in revenues and EBITDA of approximately €156m. In the three-year period 2015-2017, total operating revenues and EBITDA recorded a CAGR of 21% and 78%, respectively.

The transaction is subject to antitrust approval and it is expected to be completed by the second quarter of 2018. *Mediobanca* acted as financial advisor and *Latham & Watkins* as legal advisor to GIP in the transaction.

Adebayo Ogunlesi, Chariman and Managing Partner of GIP said: ‘We look forward to supporting the company’s ambitious growth plans and ongoing commitment to providing quality service to Italo’s passengers’”.

⁷⁴ *Global Infrastructure Partners agreement announcement*. Global Infrastructure Partners press. 12/02/2018

3.4.1. Focus on the acquirer, Global Infrastructure Partners

Investment Fund.

Global Infrastructure Partners III, the Italo's acquirer, is the current Equity Fund of Global Infrastructure Partners investment fund (GIP).

The fund manages around \$ 40 billions for investors and it is able to obtain annual revenues for more than \$ 5 billions. Through its investments the fund currently occupies 21 thousand employees.

GIP is an independent infrastructure fund manager. In its management the fund combines several industry expertise with best practice operational management.

The fund is currently led by its Managing Partner *Adebayo Ogunlesi*, him and other senior members have at least 20 years of experience in investment banking or in operation in the fund's three sector of concentration.

Gip is implementing a precise strategy to be able of delivering a superior risk-adjusted return for investors. To reach their goal the strategy is characterised by three peculiarities:

- Investment profile: GIP invests in larger scale investment assets that have high barrier to entry and have significant governance position. The primary target remains the OECD countries' investments, but it also maintains a global possibility to invest in high quality assets for their attractive capacity of risk-adjusted returns.
- Proprietary origination: Knowledge and relationship in its three-target industry by the fund have critical importance to implement proprietary transactions but also to conduct due diligences and detect potential exits opportunities. This skill composition provides insights to create investment opportunities and to motivate potential sellers.
- Prudent leverage: GIP operates with a conservative approach to leverage and ensure that investments have an appropriate risk profile. This is in the view of an investment oriented to the operational value creation rather than a financial engineering approach.

The fund organizes its equity investments into three matrixes corresponding to its three target industries: Energy, Transport and Water & Waste.

The pool of its investments is composed by harbours, airports, renewable energy and in it decided to invest in Italy to engage rail industry and maybe to acquire the know-how needed to replicate the investment abroad.

On transport sector the fund holds *Gatwick Airport* in London, the *Edinburgh Airport* and in 2016 the fund sold its stake in *London City Airport* after a ten-years long management.

The fund has now acquired *Italo-NTV* but this is not its first experience in the rail sector. Indeed, GIP holds the leading rail freight infrastructure company in Australia since 2016, the *Pacific National*.

3.5. An important evidence from current Managing Director at Italo - Nuovo Trasporto Viaggiatori

In the Italian landscape the update of European directives, the entrance of Italo in the market and the last change of property shocked the market. The future opening to the competition on foreign domestic rail market in 2020 contributes to make the current period as a preparation phase to important changes in the market.

During this chapter it was very important to highlight benefits from the introduction of competition and modification in the market. To enrich this work, I had the great opportunity to interview the Managing Director in charge at Italo - Nuovo Trasporto Viaggiatori, Mr. *Giambattista La Rocca*.

The interview represented an important chance for me, first because of his long working experience in rail market operators, then it was an amazing opportunity to directly verify what this work has been sustaining throughout previous chapters.

Mr. *Giambattista La Rocca* was very helpful by explaining the strategy implemented since the new management board was appointed in the company.

During the interview I had the opportunity to ask useful questions about the future agenda of the company due to the important modifications of the scenario they are operating in.

The interview was thought to deeper understand if the acquisition operation would have influenced the future strategy of the company. I also asked information about feasible synergies that could be exploited thanks to the fund's pre-existing investments.

Following, the interview to the manager will be transcribed in its integral form.

“I will provide you a brief introduction of our work until here.

Italo was born between 2006 and 2007, thanks to the introduction of competition in the Italian railway transport on long-routes and high-speed lines. Its commercial service started in 2012 after some years of gestation. The market is still not liberalized in the whole European Continent. The fourth Railway package, briefly, constitutes a European area without borders and different States. People are free to move inside this area thanks to no restrictions to rail transport.

Nowadays the situation appears fragmented among different European Member States. In Italy we have liberalization on freight transport, long-routes and high-speed lines. Regional market is still not opened to competition.

In Europe we have the possibility to find opposite cases, as in Germany, where the liberalization process only affected the regional market. In France and Spain liberalization is not present in rail markets.

Italy represents the unique case in Europe of complete rail competition, when a company competes against the incumbent it constitutes the unique case in the World because Italo is a fully private company. What exists in terms of liberalization in Europe is the international traffic. It consists in agreement between incumbents of different states to control the cross-borders rail traffic. The interoperability in this case leads us to consider the European Market under two points of view. First, the cross-border traffic that consists in the creation of a line on which a company operates to transport people and connecting different European cities (Rome-Paris-Amsterdam for example). Secondly the opportunity to replicate the Italian rail market structure abroad. In this second case a company would be able to enter in a foreign market and

to compete with the pre-existing incumbent. Until the 2020, when the Fourth Railway Package will be received by all the governs in of Member States, the competition on foreign domestic markets is not possible.

Italo clearly demonstrated that the competition works in rail sector and it is able to improve the market itself. In the Italian case the competition was a success not only for the newcomer undertaking but also for the incumbent and for the whole Country. Numbers confirm the trend, since the introduction of competition the Italian rail market demand for high-speed rail transport increased by 70% and level of prices decreased by 40%. In parallel competition also let the quality of services provided to significantly increase.

Italo changed the way of people to move. In Italy it does not only means to change their preferences of transport from car and plane to train. We gave the opportunity to people to move, people who did not usually move throughout the Country now have the possibility to do it, thanks to low fares and shorter travelling time.

The example we often present is the one in which parents from Calabria have a son studying in Milan. Once the travel to visit their son was difficult, they should drive 9 hours or alternatively they should flight for a round trip expenses of 300€ per person. Now they have the opportunity to visit son in 4 hours by train, paying a ticket around 80€. It is the prove of positive effects by the competition, the increase of demand improved the value of the Italian transport market in the Country. Other examples are represented by people that live in Bologna but works in Florence or Rome and Naples, Turin and Milan, showing a change also in other sectors of the Country.

The company's history was not easy at the beginning, the company faced several problems because of internal difficulties caused by its start-up phase. At the beginning of the liberalization process we were the first undertaking to play in a market where new rules were completely unknown.

The liberalization process leads to a successful market if it is also well regulated and controlled. Controlling authorities for rail transport supervise on safety and transport regulation. Those entities at the moment of Italo's entrance in the market were in FS Group or controlled by the Minister of Transports. In this case the supervisor entity was part of our competitor. That situation was the effect of the initial phase of this

important and difficult process. Following, with the introduction of Railway Packages the problem was gradually solved.

The Fourth Railway Package contributes to the solution giving major autonomy to National Authorities to avoid cases as the Italian one at the beginning of Italo's career. Italo nowadays is continuously growing in the Italian rail market, since 2015 we are increasing our fleet and we received 12 out the total of new trains bought, while 10 more trains will be delivered during the next year. Our strategy is to continue competing on national network with a higher quality and presence on the market. Frequency is one of the most important drivers to be competitive in this market, together with quality of service offered and price. To be competitive on the foreign market a company cannot start with a low number of trains, being not able to offer a competitive price and ensure frequency on lines. Some of these examples were implemented in Germany where some companies tried to enter the market with 3 trains. Their experience lasted just few months because the market ejected them even without fight efforts by the incumbent. This proves as the investment at the beginning must be significant to create a fleet to guarantee the service. Italo started its business spending € 650 million to buy 25 trains, investing € 1 billion in this business.

The initial start-up phase was influenced by the period in which the company was waiting to be ready of entering the market. Since the agreement for buying trains the delivery period lasts from 3 to 4 years. Period in which the company needs to obtain license to operate in the market and to develop the structure of the company. To sustain the business, it is needed to find investors who accept of having a starting period like this, having the certainty of a market that will continue to grow. Incumbents are now starting to be worried by this situation, they understood that this is a feasible and profitable market structure.

SNCF two months ago signed a contract to buy 100 new trains, in part to replace old rolling stock, but also to prepare the company to the opportunity to attack foreign rail markets.

Italo in this scenario has some advantages, it owns the know-how to operate in this market, we know mistakes made to avoid of making them again and the company is now very efficient.

This is the actual situation about the European market, in which companies are monitoring markets to understand if and where operate.

- ***Through the introduction you provided many of questions were already answered. Relying on the nature of the acquirer as an investment fund that holds equity in infrastructure companies. Could be possible to exploit synergy opportunities between Italo and GIP's Investments?***

“GIP is the biggest infrastructure investment fund for capital invested. It is the first time for the fund investing in companies that move passengers, as air and rail carriers, but they focused investments on harbours, airports, renewable energies. They just acquired a freight rail operator in Australia.

What I was impressed by the contact with the new property is their attitude to finding synergies between companies they already invested in. It must be read as sharing know-how between industries, even if different from each other. Optimisations can positively influence different areas as industrial, commercial, marketing. The fund often presents an example they are proud of: it is the case of airport. The team changed the way in which people live airports, providing a pool of services letting people to consider them as shopping mall. They also acted to improve safety of passengers in airports. We know that similarities with rail industry are not so easy to find, mainly because of the difference in the way of moving people. However, we are sure that sharing ideas and modes of operate will let us to be more innovative.

About the question of possible future investment by GIP in Italy I have to admit being not able to answer. GIP is an investment fund that operates with infrastructure companies' equity. The fund follows economical drivers, if it will recognise an opportunity to profit in the Italian infrastructure sector the team will be ready to invest in it. On the geographic side the fund is not worried by investments in Italy because thanks to our acquisition the team already knows the Country.

I am sure about the fact that they are not worried by these kinds of investment, because the fund decided to invest in a company that organises its core business moving people in a very regulated market with all duties derived.

On the side of future opportunities that Italo would represents in other Countries the fund did not decide yet. Again, being an investment fund, the team follows the profit. It means that funds want to invest in something that will appreciate in the future. In this market the company has to invest in other services to get value and in few years the international market will be the place in which the company will be able to compete. The fund has chosen Italo because of its ability of surviving to the liberalization of the market and to be able obtaining profit in the same market against a very strong public competitor. In the way of the complete introduction of the Fourth Railway Package, it will constitute an opportunity. It is to invest in a company that operates in a market that will allow it to grow and the investor to get profit.”

- **About the offer for Acquisition by GIP. Could you please provide any insights from the negotiation?**

“Negotiation proceeded smoothly. The company at the moment of receiving the offer was hardly working to prepare the IPO on the Italian Stock Exchange and we already received good feedback by the CONSOB. It was the last step to be listed. In parallel and quietly, GIP was working to study a strategy of offering. It very quickly proposed the offer to the surprised shareholders.

Shareholders were not previously informed about the offer. The company was working to ultimate phase of IPO since the October 2017 and the process was completed in January 2018. It means that the offer was really presented after the beginning of 2018, when the effort of preparing the company for the IPO was on the verge of bearing fruits. It shows the goodness of the operation. The fund chose Italo because of its performance, not particularly for what the company created even if great, but for what it can do in the future.”

- **Indeed, on the base of what you just answered, the company got amazing results, the operative leadership will remain unchanged after the acquisition?**

“GIP is an incredibly organised fund. The team has important expertise in several infrastructure industries. Indeed, both its operative and investment side they are composed by professionals that covered top management roles in important companies, getting enormous experience in the business. However, it is also true that their nature is the investment fund, so they will operate in companies just if a restructuring process is needed. If, as in this case, the company is demonstrating to be well organised and it is able to increase value an intervention is not requested.

This is the difference between being acquired by an investment fund or, as a hypothesis, by one other rail company. In that case the operative guide of the company would be the core operation of the acquirer.

In contrast with other kind of business, the transport of people can slightly give more certainties. To prefer an alternative instead of Italo, customers need to find something able to move people faster and with a more competitive price. Due to the composition of the Country it is not easy to intervene on the infrastructure to completely modify it. In the recent past Alitalia tried to re-compete on the Milan-Rome route but without reliable success. The train can transport almost 500 people against plane with its around 160 passengers. The peculiarity of train is the ability to make intermediate stops as Bologna, Firenze on the ‘Milano-Roma’ route. Furthermore, travel time between these two means of transport is comparable. By train the passenger has the opportunity to start from city centre and arrive to the centre of its destination city. Travellers also have the possibility to work or rest during the travel without losing time for boarding or checking controls.”

- **What about the regional rail market in Italy? Could Italo compete also in that segment?**

“In Italy we have two systems of rail transport that present several differences. Their connection is the need of transport from big city destinations to small cities that people reach by regional rail transport. Italo is the first case of a successful competition on the high-speed rail market with an increase of quality and decreasing prices. In the opposite case a monopolist individually operates in the market and has not incentives to increase quality of service. Changes in monopolistic market are often operated due to complaints by customers. In this scenario the operator will only run after problems without improving its services to be chosen by clients.

English rail market model historically presents a different type of competition. In England, companies compete for the market, the franchisor competes to obtain the right of operating on the infrastructure, then it gives the possibility to franchisee to manage services on it. The model can be recognised as a monopolistic organisation since the operator is a single entity to have the right on the infrastructure. In Italy the situation is very different, the incumbent now has to face a challenge competition by the newcomer on national lines. In Italy, the English type of competition on regional market would lead to make comparison between operators anyway.

Currently in Italy we have the theme of new trains that are arriving on regional infrastructure because actual rolling stocks are old and no anymore suitable for services to provide. The problem is not only related to the technical seniority of trains. It must constitute a driver to improve the quality of the whole pool of service provided. In Italy the rail sector has historically been considered as a technical oriented market for 150 years. The attention was not focused on the passengers, but operators paid attention to the technological development of infrastructure and rolling stocks. Since the entry of competition, the focus shifted to the passenger side, because now passengers have the opportunity to choose operator.”

During this work I had the possibility to analyse the rail sector in several of its characteristics. Throughout the last chapter, the attention was oriented to the Italian Market and to implications that significant changes had in the Country's sector.

The opportunity to interview one of the main professionals of the Italo - NTV top management has great importance to the results of this work.

Mr *Giambattista la Rocca* gave us the chance to cast light on important events that are going to characterize the market itself. He deeply explained some internal dynamics of this market, giving precious prospective insights for the Italian landscape.

Conclusions

Throughout the first chapter of this work we basically presented the whole transport sector to the reader, focusing on domestic and international mileage. It was exposed as the history of rail system lasts from almost 200 years when the first railway was constructed in 1825 in England. Since the beginning this way of transport went through a successful phase with the use of rail for sustaining war and it started enhancing performance of countries. Because of those positive effects the infrastructure quickly spread among the Europe. Nowadays, its importance among means of transport favoured the development of new alternative engines, to face sustainability targets in current businesses.

The high-speed rail market instead, was developed more recently. It constitutes the high-end segment of the market, currently companies are investing to develop infrastructure able to sustain ever faster rail transport. Japan opened the way to high-speed lines in 1964 and French was the first comer in Europe with the first line constructed in 80s. Italy finalized the construction of its first high-speed infrastructure in 1992. Currently its lines' length allows to cover the 6th position on the worldwide ranking for high-speed rail development. It was highlighted as the Italian line hardly increased its length and quality during the last years to sustain a steady increase in demand for high-speed transport equal to 80%.

Through the use of European Railway Performance Index, it was possible to present the rail sector situation relying on three key factors: intensity of use, quality of service and safety. Italy is classified in Tier 2, collecting a high-performing rail system overall, with very good ratings in quality and safety. In the first chapter it was also observed as the current performance in Italy have overtaken Spanish ones during the last year due to the liberalization process developing.

Liberalization has been the central theme of this work, throughout all the chapters pros and cons were analysed and effects of this process were presented under several prospective. Since the establishment of the Single European Railway Area, liberalization changed the rail sector in the whole European Union. The progressive implementation of the first, second and third Railway Packages contributed to enhance performance of rail transport.

The finalisation of the market opening to competition will be executed in 2020 thanks to the transposition of the “Fourth Railway Package”. This pool of European directives will allow companies to compete on domestic rail markets abroad.

The Italian dimension is analysed in the third chapter where the structure of rail market is provided, then effects of liberalization are deeply analysed.

The competition entrance in the Italian rail sector significantly modified the market, enhancing quality of transport services and improving rail infrastructure.

Italy still represent the unique case in Europe where a fully-private company entered the market facing the competition of a state-owned incumbent. Again, competition is one of the most important drivers of the market, by the entrance of the private company *Italo-NTV* positive effects influenced the whole market. The increase of demand by 80% gave the opportunity to the incumbent of increasing its revenues, both the companies made investments to increase quality and services. Everything led to the choice of train as best mean of transport on major Italian routes. On the passengers' side, they have the possibility to save money thanks to reductions of prices by around 40%. An important event in the market was the acquisition of Italo by the investment fund *Global Infrastructure Partners GIP* at the beginning of 2018. Thanks to the contribution of an interview to the managing director of the company, *Giambattista La Rocca*, it was possible to forecast future scenarios in the market.

The new property invests in infrastructure companies around the world, Italo represents its first experience in moving-people business. By the way the investment fund is able to exploit synergies even if its business is differentiated and investments are addressed in different industries. After the equity change the operational management of the company was confirmed to continue the business model started some years ago. This is a relevant decision by equity holders due to the trust in the management. Investments funds take decisions thanks to economic drivers and Italo's performance are increasing by year, improving quantity of passengers moved and revenues collected.

Quality of services, frequency of use and safety are drivers recognised on the European market to measure performance, it remains true on the Italian landscape. Investments are needed to sustain the business and liberalization contributed to stimulate players to perform better.

Bibliography

- Andrea Giuricin. Changing the mentality of competition. 31st May 2017. RailProfessional.com.
- Andrea Giuricin. Concorrenza tra treno e aereo. 2016. TRA Consulting.
- Andrea Giuricin. High-speed competition delivers passenger benefits and market growth. 30th November 2016. International Railway Journal.
- Andrea Giuricin. I benefici della concorrenza nel settore ferroviario. 2016 TRA Consulting.
- Andrea Giuricin. Italo, a case of success. 18th February 2018. Reuters.
- Andrea Giuricin. Ownership change heralds expansion at Italo-NTV. 10th May 2018. Railway Gazette International.
- Andrea Giuricin. The high-speed rail in the World. 2017. TRA Consulting.
- Angela S. Bergantino, Claudia Capozza & Mauro Capurso. Pricing strategies: who leads and who follows in the air and rail passenger markets in Italy. *Applied Economics*, 50:46, 4937-4953. 2018
- Angela Stefania Bergantino, Claudia Capozza, Mauro Capurso. L'effetto della liberalizzazione ferroviaria sulle politiche di prezzo delle compagnie aeree e ferroviarie. Evidenze preliminari sui principali collegamenti ad Alta Velocità in Italia. 2013. *Rivista di Economia e politica dei trasporti*.
- Angela Stefania Bergantino. Open Access Passenger Rail Competition: the case of Italy. 11th November 2016. Round Table On Open Access Passenger Rail Competition 2016, Brno.
- Christian Desmaris, Fabio Croccolo. The HSR competition in Italy: How are the regulatory design and practices concerned? 16th May 2018. Elsevier, Science Direct.
- European Commission. First Railway Package. 2001
- European Commission. Fourth Railway Package 2016
- European Commission. Second Railway Package 2004
- European Commission. Third Railway Package 2007

- Fabrizio De Francesco, Graziella Castro. Beyond legal transposition: regulatory agencies and de facto convergence of EU rail liberalization. 2018. Journal of European Public Policy. 25:3, 369-388.
- Fernando Soto. NTV-Italo, ecco cosa cambierà per l'Italia con il fondo Gip, parla il prof. Giuricin. 20th February 2018. Start Magazine
- Ferrovie Dello Stato Italiane. Investor Presentation. September 2018
- Francesco Rotoli, Eva Valeri, Stefano Ricci, Luca Rizzetto, Gabriele Malavasi. An analysis of the railway access charges regime in the Italian context. 3th February 2018. Elsevier, Science Direct.
- Global Infrastructure Partners. Global Infrastructure Partners announces agreement to acquire 100% of Italo – Nuovo Trasporto Viaggiatori. 12th February 2018.
- Italo - Nuovo Trasporto Viaggiatori. 2017 Financial Statement.
- Italo - Nuovo Trasporto Viaggiatori. Institutional Company presentation. June 2018.
- Italo - Nuovo Trasporto Viaggiatori. Pedaggio per l'utilizzo dell'infrastruttura ferroviaria. Call for inputs.
- Luca Belviso. Il sistema dei canoni di accesso e utilizzo dell'infrastruttura ferroviaria a seguito dell'adozione della delibera n. 96/2015 dell'ART. 2016. Regolazione dei mercati.
- Malcolm Abbot, Bruce Cohen. Vertical integration, separation in the rail industry: a survey of empirical studies on efficiency. February 2017. EJTIR.
- Marco Valsania. Chi è GIP, il fondo USA che vuole comprarsi Italo. 07th February 2018. Il Sole 24 Ore.
- Marketline Industry Profile. Global Passenger Rail. June 2018.
- Marketline Industry Profile. Railroads in Europe. January 2015.
- Marketline Industry Profile. Railroads in Italy. January 2015.
- Nicholas Newman. "Rinnovabili pronte al Binario". Eniday.
- Paul Amos. Vertical separation of railways. 10th May 2007, Washington DC. World Bank.

- Sylvain Duranton, Agnès Audier, Joël Hazan, Mads Peter Langhorn, Vincent Gauche. “The 2017 European Railway Performance Index”. 18th April 2017. BCG Boston Consulting Group.
- Thanaphon Charanwanitwong, Anna Fraszczyk. Rail liberalization in Europe and lessons for Thailand: Policy makers vs. academic views. 1st May 2018. Elsevier, Science Direct.
- Ugo Arrigo. Ferrovie: I Frutti di una liberalizzazione per caso. 20th February 2018. Lavoce.info.
- Vittorio Marzano, Daniela Tocchi, Andrea Papola, Dario Aponte, Fulvio Simonelli, Ennio Cascetta. Incentives to freight railway undertakings compensating for infrastructural gaps: Methodology and practical application to Italy. 31th January 2018. Elsevier, Science Direct.

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Summary

Chapter 1: International Railway Scenario

During the first chapter of this work it will be conducted an analysis on principal trends and characteristics from rail transport system in the European Union. The aim of the chapter is to provide a description about mobility of passengers throughout boundaries of EU, focusing on the European Railway Sector.

1.2. Passenger transport statistics

Since 2004 with the also called “Free Movement Directive” 2004/38/EC it was defined the right of free movement for citizens in the European Economic Area. The act in 2004, consolidated older regulations and directives with the aim to simplify movement process of individuals within the boundaries of the Union. About territorial constraint, member states of the European Union and European Free Trade Association (EFTA) are the object of the agreement. It is needed to notice the different position of Switzerland; the Country is not bound by the Directive, but it entered into a Bilateral Agreement. Under a practical view the Bilateral Agreement allows the Switzerland to be considered as part of the Directive on free movement in EU.

Different transport means are used by people to move, every kind of transport has its peculiarities. In a common view anyone would choose air transport for long distance, while the use of cars could be preferred for short distances and for major mobility and flexibility.

Although the two last-cited characteristics would usually lead people to use cars as means of transport, they are responsible of increasing of congestion and pollution in many urban areas within European Union.

The majority of choices for cars is reflected in the 83,4% of inland passengers transport in 2014. The gap from other is relevant: buses and trolley buses are used to cover 9,1% of all traffic, while trains just 7,6%.

Between 2004 and 2014 the transport of passengers increased at a rate of 5%, at a lower level than constant price gross domestic product GDP in the European Area. Thus, train transport is the one facing a positive growth trend over recent years. It is expected to keep an increasing trend thanks to investments by countries in this sector. This work will have Rail transport sector as main subject because of its key-role in the development of transport throughout the Europe.

1.2. Brief History of the European Railway Sector

The rail industry is something coming to far from the beginning of the unification process in Europe. It easily leads us to understand its fragmented origins. The introduction of this kind of transport was a real revolution for the European continent. During its initial spread it changed the way of moving for people and freight making travels easier and faster. The first Country invaded by this transport invention was the Great Britain. After the spread in the island, railroads approached to several countries to the continental Europe in different way and at different time. We can easily summarise the origins of railroads mentioning the two most relevant reasons for the train transport invention

- Technological advances
- War

The progressive expansion of railways in Great Britain influenced the birth of this sector also in Germany, the British experience represented the locomotive for German railroads with 5000 kilometres constructed in 1849.

After the first experiment, building a short railway to connect St. Petersburg with Tsarskoe Selo it did not take too long for Russia to catch up with its European neighbours. Starting from 1840s Russian system surpassed length of France in 1876, Britain in 1886 and Germany in 1900.

Railroads continued to expand throughout the Europe and by the early 1900s all of European countries had railway lines, the system formed a grid able to connect Europe in a way it had never been connected before.

1.3. High Velocity Train

The first high-speed infrastructure for train transport was built between 1980s and 1990s with the aim of shortening travel times and improving efficiency of journeys. The high-speed rail construction has always been associated to “Innovation” and “Technological Development” concepts.

The first Country developing a high velocity system was Japan in 1964. Japanese line connecting Tokyo to Shin Osaka reached its maximum speed of 270 km/h.

The technology arrived in Europe thanks to the French construction of “LGV Paris - Sud Est” in 80s. In Italy the high-speed system took place with the “Direttissima”, the rail link connected Rome to Florence in 1 hour and 30 minutes. The construction operations were finalized in 1992.

In a worldwide landscape China is the Country with the most developed high-speed rail system, its line covers 19’241 km.

In Europe, Spain can be considered as the first Country for the presence of “first category” infrastructure, followed by France, having a slightly shorter high-velocity rail system than the Iberian Country. Currently Italy hosts 981 kilometres of “First category high-speed” line once the construction of Milano-Brescia link was completed. Thanks to this score, the Italian sector holds the 6th position worldwide for length of its infrastructure. Overseas this kind of infrastructure is not yet widespread. Currently North America’s territory is equipped of only “Second category high-speed” rail, the velocity on these lines can reach at maximum 240 km/h. United States of America will complete 483 kilometres of *first category* HS rail to connect Fresno and Bakersfield by 2022.

This lack in rail infrastructure could be partially justified by the incredible air transport efficiency in USA. Domestic flights in North America are the most used means of transport for medium-long distance because of their moderate tariffs and high grade of efficiency.

1.4. European Railway Performance Index

To the general aim of analysing performance for the European Railway sector, this paragraph will use the Railway Performance Index, it is periodically computed by Boston Consulting Group to have an overview about results of this sector.

The RPI report can be considered as one of the most comprehensive benchmarking for the European Railway sector's operations. It is because it takes in consideration three critical components of railway performance:

- intensity of use,
- quality of service,
- safety.

About "Safety" and "Quality of service" we can consider them as the most influent on changes in performances. From statistical analysis it was observed as these two factors are drivers of performances both on negative and positive trends. In particular, punctuality is the most influence factor in quality of use, it is really able to change the overall performance of this sector.

Analysing the results three groups of countries emerged by the difference of score received.

Tier 1 is yet composed by Switzerland, Denmark, Finland, Germany, Austria, Sweden and France (in this order) with an increase in performance of Finland and a slight decrease of Sweden and France that lost some grounds. In Tier 1 countries have railways that are performing well in at least 2 out of 3 dimensions.

Tier 2 is composed by countries with a high-performing rail system overall. If we consider the whole result for RPI it could lead us to ignore some sub-results. In some cases, the highest rank in safety correspond to low level of intensity of use or quality of service, even though it is not recognizable from the overall score.

Tier 3 is the group in which majority of countries have poor performance in all three dimensions. As already stated, statistics confirm the fact that safety records have decisive impact in the negative performance of a Country. Safety scores, indeed, are so low in Tier 3 countries, it is a common element in all cases of this group with the exception of Ireland.

1.5. European Railway market analysis

In 2014 the European railroads system faced a steady increase, during the period growth in UK and Germany outweighed weakness in Russia and France.

From the study, the sector was forecasted to continue growing at positive healthy rate through the starting period to 2019. Analysing the total value created by the sector, railroads generated total revenues for \$149.9 billion in 2014. Furthermore, its represented compound annual growth rate (CAGR) reached a level of 3,9% from 2010 to 2014.

Besides differences in the characteristics of the business and the nature of transportation, freight and passenger differ by their share on the total transport traffic. Passengers transport's value represented the majority of the total creating value for \$90 billions. It represented the 60,1% of the sector overall value, being the most lucrative part in 2014. On the other hand, rail freight transportation contributed to represent 39,9% of the sector, generating revenues of \$59,9 billions.

The sector was expected to face a growth of its performance at a CAGR equal to 4,6% from 2014 to 2019. At the end of 2019 railway sector would create value through revenues of 188 billion.

1.6. Liberalization Process

The new settlement that Europe presents is going to be adopted through a series of regulator agreements to ensure the good utilisation of European rail infrastructure. Several technical directives have already been proposed to the implementation of the *interoperability* concept. The abovementioned figure plays a crucial role in the final target to the creation of a Single European Transport Area. In this respect, the liberalization process is part of a wider aim of common transport policy harmonisation to safeguard both competition and the freedom to provide services. The harmonisation process involves several kinds of rules, such as technical, administrative and safety ones. The liberalization process was started in 2001 when the European Union issued directive to create the Single European market for Rail. The process continued stage by stage by the emanation of several legislation packages. The structural separation and the wider opening of the market to the competition by the EU is paving the way

to new entrance operators. Since its initial spread and for a period of time rail transport was considered the most technologically developed mean of transport. The sector was typically organised as a natural monopoly with the existence of a single operator. This structure was usually dominated by a public entity, it has been serving the market as a monopolist and separation was not applied. In this scenario during the last years of second millennium, national operators increased their power in the market while competition was absent and often discouraged. Because of some endogenous and exogenous factors, performance in the sector started to sharply decline in a worldwide outline.

The decreasing trend during 1970s - 1980s was partially attributed to the spread of transport modes in general. During those years the rise of low-cost carriers strongly influenced gaining market shares of air companies in transport sectors. The renovation process started in 1990s, the final aim of the rail revolution was to let this sector being one of the most profitable in the transport landscape. The introduction of competition constituted an important opportunity to develop. It really worth as a disruptive transformation in the structure of the market, starting from a monopoly-based organization to the liberalization. It was needed, as one of first steps, making a public and social service as rail transport to be competitive and efficient.

Chapter 2: European legislation on Liberalization process

The creation of an Integrated European railway market for rail passes through the opening up national freight and passengers' lines to cross-borders competition. It is considered one of the main steps to the achievement of the final goal.

The interoperability is one of the major aspects concerning the creation of the single rail area. We already talked about this concept in the first chapter of this work. Furthermore, interoperability is a longstanding concept that was settled by the directives *96/48/CE* and *2001/16/CE*, respectively emanated on 23th July 1996 and 19th March 2001.

The road to a more competitive sector is going to be helped by a greater technical harmonisation of the European Rail sector. This is in the direction to breaking down barriers along with better connection throughout European markets.

Boosting competition has always been the main part of the liberalization process to create a more efficient and customer responsive rail sector. As we already mentioned in the first chapter, EU rail legislation has strongly encouraged it over the years. With competition and market opening directed actions, European regulators guided the change with the first major law dating back to 1991.

Early legislations were based on the settlement of vertical separation. The distinction consisted in the existence of an infrastructure manager who run the network and a company that uses it to transport passengers and goods. The important aspect of this separation is the fact that two different organisational entities must be created to run the business.

Moreover, regarding the idea of providing fair access and to ensure competition the theme of public funds was also analysed. It was stated to be guaranteed that public intervention may not be used to finance transport operations. Precisely public funds for infrastructure and compensations cannot interfere with the transport business to avoid distortions of competition.

The opening rail markets among the Europe did not only encouraged greater degrees of competition within national transport sectors, but it also gave rail operators the opportunity to run their business crossing the borders of Country in the continent.

On the passenger transport side, the market can be considered as completely “*liberalised*” since the 1st January 2010. Even in this case any licensed and certified rail firm has the right to operate in this market and to offer transport services to passengers. The domestic sector for rail has not yet been opened to European competition. In this case it means that operators in domestic transport services, at the moment, do not face the competition by other European players.

In 1998 existing legislation structure on European rail transport was presumed to be updated. In that situation, on July 1998, three new legislative proposals were decided to be presented. Those proposals constituted the *First Railway Package* and the European Council called them the “Rail Infrastructure Package”.

This set of rules was adopted on 26th February 2001, it used a non-discriminatory basis to allow rail operators to free access the trans-European network. This is the first of several versions implemented to facilitate the enjoyment of this sector.

On the Europe rail freight's side, the Commission met needs of improving train paths to improve quality of transport in the sector. The strategy pointed out the possibility to reduce delays and to establish a tariff organisation able to reflect relevant costs.

After its implementation the European Commission conducted an assessment of the implementation of the First Railway Package, the report *COM(2006)189*.

The "Second Railway Package" is a new pool of legislative measures proposed by the European Commission on 23th January 2002 and published in 2004. It is the second stage to the liberalization process started in 1991 for passengers and freight rail transport. This set of rules is composed by 4 different directives emanated by the European legislator.

The general aim of this package was to revitalise the whole rail transport structure through the creation of an integrated European Railway Area. Thus Interoperability, improvement of safety and opening the rail market to competition, are crucial concepts analysed in this set of rules.

Those rules in 2004 have significantly accelerated the liberalization process for the rail freight market. From 1st January 2007 the freight side of the transport market on rail can be considered as fully opened to competition.

Following the steps of the revitalising process for railway sector, the European Commission adopted its "Third Railway Package" on 3th March 2004. The previous package partially focused the attention on the freight market, opening the market to competition. Instead, this set of rules casts light on international passenger rail transport. When it was emanated, the "Third Railway Package" was considered as the one completing the European regulatory framework. The package developed new proposals to regulate passengers' rights and also certification of train crews.

The open access rights for international rail passenger were introduced in October 2007, from that date operators were able to pick up passengers at any station and set down them in any other, also in the same Member State. The Third Package also contributed to the introduction of a license regulation for train drivers. In the direction of creating a more regulated and integrated rail market in Europe one of the main passages to cover was about driver licenses. It was through the creation of a unique European driver license that every driver should obtain to continue driving trains in the European Network. The "Fourth Railway Package" is the last set of regulation

designed by the European commission to complete the rail sector revolution. The aim is to renovate the European Rail network and market to face the competition of different modes of transport and provide better services to customers.

To get this ambitious goal the European Union considers as a strategic action the removal of all the barriers to the creation of a “*Single European Rail Area*”. Through the reinforcing actions to the presence of competition in the market the European Union wants to reach the target of enhancing interoperability, safety and reliability of European Rail Network. It must be allowed also implementing market structural and technical reforms started in 2001 with the “First Railway Package”.

Nowadays the European rail network is still fragmented with different procedures applied in several Member States, under a technical and safety point of view. On the international side for example, transnational rail changes must face different signalling systems and different authorisations by states’ authorities. The example is useful to understand the current scenario in the market, it can be considered a critical reason for new rail operators to entering the market.

When it was published the Fourth Railway Package was composed by 6 legislative texts which constitute 2 pillars: the market pillar and the technical pillar.

As already mentioned the market pillar was published to continue the process of market opening started with the first legislative package establishing the general right for railway undertakings to operate in the passenger transport market over the Europe. Furthermore, it pointed out more the necessity of improving the impartiality in railway sector both on market access side and about public service contracts. The centrality of passenger figures was again stressed together with their interests. Following this idea, the European Commission’s position was in favour of the competition introduction in the market. It was considered as the way to direct efforts to passenger’s interests. The Fourth Package even comprised attention to domestic passengers’ market. It was set to open the domestic market for passenger transport to competition by December 2019, allowing new companies to enter those markets and compete. The competition would also create opportunities for undertakings to provide services through the use of new trains or offering new transport routes. Tendering opportunities were also allowed to adjudicate public service rail contracts, and the concept was enlarged to the mandatory nature of tendering for public service in EU.

The rail industry faces an increasing in workforce demand with the increasing of its dimensions and technology. “The Fourth Railway Package” also gives solutions to this aspect of the industry. In this market the use of high skilled workers is common and thanks to the change introduced by the new legislation settlement, public service contracts for workers are protected in the transitory phase to new contractors.

Chapter 3: The Italian Case

3.1. Liberalization

From the definition, the *Liberalization* is “a bundle of politic operations implemented to abolish restrictions to internal production, movement of capitals, international and internal trade (...). Those are usually adopted to eliminate any regulations able to obstruct the market access and the free competition. As an effect of the technological progress or of markets evolution, some regulations, can be considered as an obstacle to the development of the economic activity.”

Consequently, the process was enlarged to public and private services. Approaching the end of 80s, difficulties about management of public industries or with a consistent public influence (as a result of the Nationalization period), conducted thoughts to the decision of privatising several big companies. Nevertheless its effort in the direction of a progressive reduction to the presence of public entities, Italy is still considered as a Country with high regulated sectors, even if it implemented operations to eliminate barriers to entrepreneurship by 90s. The liberalization process introduced competitive mechanisms through the opening of market boundaries. It lets efficient companies to join the market, pushing out other not-efficient firms. The introduction of incentives to the efficient allocation of production factors also contributed to the increase of productivity.

3.2. Italian Railway Market

3.2.1. Ferrovie dello Stato S.P.A.

Ferrovie dello stato S.p.A. is the holding company of the FS Group, the Italian railway transport Group. It is currently one of the largest industrial companies in Italy and it is completely state-owned by the Italian Minister of Economic and Finance since 1992. Trenitalia is the company of the group responsible for the rail transport in Italy and one of the leading railway operators in Europe. The company moves around 600 million passengers per year. It is present in abroad markets as *c2c* in United Kingdom and *Thello* in France.

Trenitalia organizes its passenger business in two segments:

- Medium-long distance passengers
- Regional passengers

The first segment allowed the company to collect revenues for € 2.506 millions in 2017. The segment includes High-Speed services and International traffic. The change in revenues from 2016 to 2017 is equal to +9,9%.

Regional rail traffic delivers revenues to the company for € 2.774 million in 2017 with a change of +0,8% from the previous year.

Trenitalia operates in high-speed rail transport market since the “*Frecce*” network was launched at the end of 2008. Thanks to this project and to the new infrastructure settlement, the company contributed to start the shift of demand from air transport to rail on routes served by high-speed trains.

3.2.2. Italo - Nuovo Trasporto Viaggiatori

Italo - Nuovo Trasporto Viaggiatori is the first fully-private company operator on the high-speed rail transport in Italy. Italo is currently considered as the first transport company in the world using the new train Alstom AGV, the one detaining 360 km/h speed record.

Italo’s adventure started in 2006 when co-founders *Luca Cordero Di Montezemolo*, *Diego Della Valle*, *Gianni Punzo*, and *Giuseppe Sciarrone* decided to create the company with a portfolio almost completely Italian hold. Founders decided to exploit the change of European directives just introduced about the theme of competition in

rail market and constituted the company with around € 1 billion private capital. The start-up period lasted 6 years to get the company ready to operate in the market.

The first trip started from Naples on the 28th April 2012 at 07.00 a.m. and now it counts around 1000 employees and over 700 operating staff people.

After a ramp-up period from 2012 to 2014 the company changed its business and in 2015 Mr. *Cattaneo* was appointed as new CEO of the company.

During the 2016 and 2017 the company grew-up in financial and operational terms by the acquisition of several trains completing the fleet. In June 2017 Italo issued a bond for €550 millions to foreign institutional investors and the company welcomed “*Peninsula Capital*” as new shareholder (13% of shares). Between June and December 2017, the company first restructured €160 millions of debt and after the subscription of a new capital increase restructured again € 740 million debt.

Italo continued increasing the quality and quantity of services provided, in 2018 it is providing 88 daily services from previous 56 daily in 2017.

In line with the company view Italo was able to increase market share from 9% in 2012 to reach the current level at approximately 35% in 2017 in its competing area.

As results of the company’s new business orientation, financials data are highly encouraging the management. With an increase of 24,8% revenues collected are equal to €454,9 millions in 2017

3.3. The entrance of “Italo - NTV Nuovo Trasporto Viaggiatori” and the effect for the market.

Italy is considered as the unique Country in the world where a fully private player competes with a state-owned company on the high-speed rail network.

The new player started its carrier in the rail market on 28th April 2012 with its first run. In this situation it started directly competing with the state-owned incumbent *Trenitalia*. As it could be predicted, at that moment the competition delivered a lot of benefits to consumers that used train transportation every day, being able to choose between two operators for the same high-speed service. It also forced *Trenitalia* to

adapt its standard because of facing the competition with a private player with the result of developing one of the most advanced high-speed infrastructures in Europe. In the second chapter we have studied as the liberalization process started in 1991 its long process that is not yet completely actuated. After different directives presented by the European Council the European Union allowed European Member States to open the market to competition. Thanks to this in 2003 Italy issued a decree to implement those directives and open its rail market.

NTV was incorporated in 2006 and in 2008 bought its fleet of 25 *AGV Alstom high-speed trains*. During an initial period of testing, NTV got its AGV certified and could start running its trains on March 2012. The first period of activity was characterised by difficult events that strongly influenced its performance. During those years the Italian gross domestic product dropped by 4% contributing to create negative effects to the NTV' forecasted financials.

From its entrance in 2012 *Italo* has continuously been updating its fleet buying trains to provide a more precise and high-quality service to customers. In this way, the company is currently using two different kind of trains, the "*Alstom AGV*" and the "*Alstom Italo EVO*". At the beginning of its career in the rail market NTV bought around 25 AGV Alstom trains, a high-performance train, that is able to travel at a speed of 300 km/h. During the years, the company as it was said, decided to increase the number of its trains. On the 1st October 2015 the management placed an order to progressively buy 22 Italo EVO trains again powered by Alstom. This kind of train is slightly shorter than the first type, but it is able to travel to the speed of 250 km/h and it can deliver 10 more passengers.

To quickly open the discussion comparing the market to another transportation service that we will deepen in next paragraph, an expansion of demand like this was never registered in transportation market. During the 90s it was not even recorded after the liberalization of air transport market.

Starting from the consideration of the fall in prices after Italo started providing transport services we can analyse the money saving effect after the introduction of competition. The comparison relies on the average ticket price available during the analysed period and the ticket price before the competition by the incumbent.

The higher quality of service offered by train and its convenience shifted travellers' preferences to the use of train, and it is recognised as the most ecological transport mean.

To deeper understand this change in preferences it is useful to compare utilisation shares for train before and after the competition introduction. The route considered is the already cited one that connects Rome to Milan. The market share of train increased by years. In 2008 the train share was 37%. The use of air transportation was preferred, as the time needed to travel that distance by train was far longer than by flight.

In 2011 the situation changed and more than one out two people preferred using train to reach Milan by Rome or vice versa. It is because the high-speed infrastructure installation allowed people to significantly cut travel time.

With the introduction of competition and the increase of quality and price reduction as consequences the market share of train for the route reached 70%. The increase was driven by private investments to make the infrastructure more efficient and being ready to sustain a higher level of traffic.

The entrance of NTV create several benefits that positively impacted on the whole market. On the incumbent side, for example, between 2012 and 2016, thanks to access fees paid by NTV, "Rete Ferroviaria Italiana" was able to collect revenues for more than € 400 millions.

3.4. Italo - NTV acquisition by Global Infrastructure partners investment fund

"NEW YORK, NY – February 12, 2018 – Global Infrastructure Partners (GIP), a leading independent, global infrastructure investor, announced today that its third equity fund, Global Infrastructure Partners III, has agreed to acquire 100 percent of the equity interest of Italian railway operator Italo – Nuovo Trasporto Viaggiatori S.p.A. (Italo) for Euro 1.94 billion in cash."

The abovementioned part is the literal transcription of the GIP press communication at the moment of agreement signature. The Fund announces as the acquisition process was finalized by its third equity fund: Global Infrastructure Partners III. The offer

proposed to the Italian rail undertaking was equal to € 1,94 billion in cash plus the amount needed to cover its debt exposure of around € 440 millions.

Through its declarations the investment fund highlighted the important growth that Italo had during previous years of activities in the market with the achievement of 35% of passenger/km share per year.

“Italo, headquartered in Rome, is the first and only private operator in the European high-speed rail passenger transportation market, and the second largest operator in Italy, with a market share of more than 35% in terms of passenger/km per year.

Since 2012, Italo has offered high-end, long-haul, high-speed railway transportation services through a fleet of 25 AGV trainsets under the Italo brand and four new EVO-Italo branded trains, with the fleet set to increase to 42 trains by 2019. The company’s network connects Italy’s most densely populated and economically active cities and presently runs 68 daily services on three key routes serving 19 railway stations and 14 major Italian cities, including Rome, Milan, Venice, Florence, Bologna and Naples. The company expects to increase frequencies, as the new EVO fleet becomes available, to 98 daily services.”

The fund focused also on the intention to continue supporting the company in the way they achieved incredible performances and results. In the document it was also given information about passenger served and some financial data.

“In 2017, 12,8 million passengers travelled with Italo (+15% compared to 2016), generating approximately €455m in revenues and EBITDA of approximately €156m. In the three-year period 2015-2017, total operating revenues and EBITDA recorded a CAGR of 21% and 78%, respectively.

The transaction is subject to antitrust approval and it is expected to be completed by the second quarter of 2018. *Mediobanca* acted as financial advisor and *Latham & Watkins* as legal advisor to GIP in the transaction.

Adebayo Ogunlesi, Chariman and Managing Partner of GIP said: ‘We look forward to supporting the company’s ambitious growth plans and ongoing commitment to providing quality service to Italo’s passengers’”.