

***Development of rail freight in Europe:
What regulation can and cannot do***

Italy Case Study

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Table of Contents

- 1. Introduction 3
- 2. The rail freight market in Europe 3
- 3. Demand side 4
- 4. Supply side 7
- 5. Good practices from new entrants 11
- 6. The regulatory framework 15
- 7. Policies and measures for supporting a real rail market opening 17
- 8. Conclusions 20
- References 22

1. Introduction

This paper describes the main trends of the Italian rail freight system, in terms of traffic data and market shares. It provides an in-depth analysis of the situation at national level, taking into consideration the liberalisation process that affected the European railway freight market from 2001 onwards. This paper also presents a selection of ‘good practices’ from the Italian market supply. The aim is to outline the key factors for competing in a rail market still affected by the incumbent’s dominant role, and to examine the extent of the impact of this dominance.

2. The rail freight market in Europe

From the mid-Nineties to 2008, a process of substantial expansion (+31%) characterised the railway freight transport sector within the EU-15¹. This increase was particularly evident in the transit countries, such as Austria (+66%) and the Netherlands (+53%), as well as in United Kingdom (+60%). Moreover, by extending the observation to the EU-27², the total rail freight volume was 361 billion tonne-kilometres in 2010 and approximately 420 billion tonne-kilometres in 2011. Respectively, this marks a rise of 7.9% compared to 2009 and of 7.3% to 2010. This growth also highlights an important recovery in the rail freight industry after the economic crisis that affected the global markets in late 2008. This caused a 12% decrease in rail freight demand between 2008 and 2009 (source: Eurostat).

According to European Commission statistics, the years after 2008 saw an increasing trend in the whole European framework. However, the analysis of national patterns demonstrates significant differences between countries. The 2010-2011 period offers the most interesting findings. Latvia recorded the highest growth (+24.6%), followed by Denmark (+16.8%), France³ (+14.1%), United Kingdom (+12.9%), Ireland (+14.1%) and Slovenia (+9.7%). On the other hand, the largest decline was observed in Greece (-42.7%), followed by Luxembourg (-10.8%), Croatia (-6.9%), and Estonia (-5.5%). Minor decreases were also recorded in Finland (-3.6%) and Sweden (-2.6%).

Considering the EU-27 as a whole, the share of rail-based international freight transport remained stable over recent years, reaching around 37% of the total volume. Nevertheless, by focusing on the traffic share of single countries, it is interesting to point out the key role played by their geographical position. Countries managing the main portion of international rail transport are located in key corridors running within the core European markets. In Latvia and Estonia, located in the Baltic Region at the border between Europe and Russia, international

¹ EU-15 includes Austria, Belgium, Germany, Denmark, Greece, Spain, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden and UK.

² In addition to the EU-15 Countries, EU-27 also includes Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Romania, Slovenia and Slovak Republic.

³ In France, a 6.7% decrease was recorded in 2009-2010 period.

traffic accounts for about 90% of the total transport. In Belgium, The Netherlands and Luxembourg, all situated in a strategic position within the main European industrial catchment areas, the related shares are between 70% and 80 %.

It should be stressed that the Hamburg-Le Havre range ports manage high combined sea-rail traffic volume destined to European and/or international trade, thus strongly influencing the above rail freight figures (cf. Musso, Piccioni, Van de Voorde, 2013). In contrast, countries located in a peripheral position within Europe, such as Portugal (11%) and Turkey (9%), featured a low share of rail-based international transport. Small values are also evident in the United Kingdom (2%) because of its insular position (source: Eurostat).

Within the EU-27, an analysis of the rail segments in terms of services performed, taking into account different commodity typologies, provides interesting results. According to UIC Statistics (Table 1) the Single Wagon Load (SWL) accounts for approximately 50% of the volume of European rail traffic. This mainly consists of chemical/fertiliser products and transport-related equipment. Full or block trains account for about 35% of freight volume and typically carried coal, steel and construction industry products. Combined transport, representing about 15% of the total traffic volume share, mostly consists of finished and/or semi-finished products.

Table 1: EU 27: share of rail traffic services by commodity types

| Segment | Description | Commodities | % Traffic |
|---------------------------|---|--|-----------|
| Single Wagon | The client wants to transport a few wagons | chemicals, paper/pulp, automotive | ~ 50 % |
| Full / Block Train | The client has enough goods to fill a train (600 meter or 24 4-axle wagons) | coal and steel, construction materials | ~ 35 % |
| Intermodal | Container or trailer is lifted on the wagon | semi-finished or finished goods, containerised goods | ~ 15 % |

Source: UIC, 2009

3. Demand side

In the recent past, the Italian rail freight market has not performed strongly. Similar to the European freight transport system as a whole, this was mainly due to the economic crisis affecting global trade during the 2008-2009 period.

The effects of the consequent recession are ongoing, even if some slight signs of recovery are evident in industrial production, and thus, in the induced freight transport demand. In addition, it is clear that the modal share⁴ of the Italian freight transport sector (Table 2) is characterised by the dominance of road transport, accounting for more than 60 % of total movements. This

⁴ Values presented in Table 2 refer to goods movement performed by national carriers with origin/destination in Italy. Rail traffic includes also the share of international trade carried out on national territory.

confirms that road transport is more competitive than rail transport in terms of travel time and costs, at least for short and medium distances.

Table 2: National freight transport: modal share 2005-2012

| Mode | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|----------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Railway | 14.18 | 15.68 | 15.96 | 15.63 | 13.19 | 13.02 | 14.71 | 15.77 |
| Road | 65.64 | 62.99 | 60.51 | 62.44 | 62.77 | 61.93 | 57.69 | 55.47 |
| Sea & IWW | 19.76 | 20.86 | 23.05 | 21.47 | 23.62 | 24.58 | 27.08 | 28.22 |
| Air | 0.41 | 0.46 | 0.49 | 0.46 | 0.41 | 0.47 | 0.52 | 0.54 |
| Total [%] | 100.00 |

Source: Conto Nazionale Infrastrutture e Trasporti, 2013

In terms of traffic typologies (Table 3 and Table 4) in the internal market, the last decade saw a total decrease of 3.65%, though this value derives exclusively from the losses incurred in the 2008-2009 period. Indeed, by excluding this 2-year period, the average annual increase is about 5%. It is also interesting to note that national rail goods traffic in 2012 accounted for just under 10 billion tonne-km, an increase of 9.95% over the previous year.

A 13.24% decrease has been recorded in the volume of imports, mainly due to fluctuating performances over the years. However, the decline in industry orders had a particularly strong negative impact in the 2008-2009 and 2010-2011 periods.

Important reductions in international outgoing traffic have also been recorded in 2007-2008 (12.08%) and 2008-2009 (16.41%) even if, when considered over a decade, rail freight export traffic saw an increase close to 50%.

Table 3: Italy: railway freight traffic in the 2003-2012 period

| Freight Traffic [10 ⁶ tonne-km] | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | TOTAL |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|
| National | 10,437 | 11,616 | 12,021 | 12,955 | 13,192 | 12,445 | 8,755 | 8,791 | 9,146 | 10,056 | 109,408 |
| International incoming | 7,114 | 7,418 | 7,147 | 7,173 | 7,598 | 7,444 | 5,744 | 6,444 | 6,533 | 6,172 | 68,783 |
| International outgoing | 2,744 | 3,146 | 3,579 | 4,006 | 4,477 | 3,936 | 3,290 | 3,382 | 4,108 | 4,016 | 36,684 |
| TOTAL | 20,298 | 22,183 | 22,761 | 24,151 | 25,284 | 23,831 | 17,791 | 18,617 | 19,788 | 20,244 | 214,948 |

Source: Eurostat

Table 4: Italy: trend of the railway freight traffic in the last decade (%)

| Freight Traffic [%] | 04-03 | 05-04 | 06-05 | 07-06 | 08-07 | 09-08 | 10-09 | 11-10 | 12-11 | 2003-2012 |
|-------------------------------|-------------|-------------|-------------|-------------|--------------|---------------|-------------|-------------|-------------|--------------|
| National | 11.30 | 3.49 | 7.77 | 1.83 | -5.66 | -29.65 | 0.41 | 4.04 | 9.95 | -3.65 |
| International incoming | 4.27 | -3.65 | 0.36 | 5.92 | -2.03 | -22.84 | 12.19 | 1.38 | -5.53 | -13.24 |
| International outgoing | 14.65 | 13.76 | 11.93 | 11.76 | -12.08 | -16.41 | 2.80 | 21.47 | -2.24 | 46.36 |
| TOTAL | 9.29 | 2.61 | 6.11 | 4.69 | -5.75 | -25.35 | 4.64 | 6.29 | 2.30 | -0.27 |

Source: Author's own work

Focusing on combined transport, it is interesting to analyse the freight quantities (Table 5) handled by different Intermodal Transport Units (ITU). The prevalence of unaccompanied transport is clear, with containers and swap bodies prevalent in the first half of the 2000s. This is followed by a notable increase in semi-trailers, with growth of 12.88% in 2005-2006 and 21.86% in 2006-2007.

Table 5: Rail freight transport: millions tonne-km by rail

| ITU [millions tonne-km] | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | TOTAL |
|---|-------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|---------------|
| Containers and Swap bodies | n.a. | 8,502 | 8,354 | 8,447 | 8,705 | n.a. | 6,071 | 5,364 | 7,206 | 7,173 | 59,847 |
| Heavy Goods Vehicles (accompanied) | n.a. | 442 | 537 | 573 | 461 | n.a. | 793 | 887 | 940 | n.a. | 4,659 |
| Semi-trailers (unaccompanied) | n.a. | 490 | 466 | 526 | 641 | n.a. | 990 | 858 | 1,600 | 1,826 | 7,500 |
| TOTAL | n.a. | 9,434 | 9,357 | 9,546 | 9,807 | n.a. | 7,854 | 7,109 | 9,746 | 8,999 | 71,884 |

Source: Eurostat

The post-crisis period led to substantial changes in traffic typology. Indeed, containerised traffic has partially recovered its market share (-11.65% in 2009-2010; +34.34% in 2010-2011; -0.46% in 2011-2012). However, there has not been a return to the values of the early 2000s. The real increase has affected the rolling motorway service (+11.85% in 2009-2010 and +5.98% in 2010-2011) as well as freight volumes moved by semi-trailers (-13.3% in 2009/10, +86.5% in 2010/11 and +14.1% in 2011/12).

This data outlines some consistent variations in the dynamics of the transport market. Indeed, a decline in industrial production, in response to a reduction in market demand, has also modified the structure of induced transport demand. In other words, many production companies have adopted a strategy to reduce their warehouse stocks, by planning their own supply according to

the logic of 'on-demand' orders management⁵. This has resulted in a reduction of shipment volume size, meaning that loads are parcelled into smaller batches, with an increase in travel frequencies. In such a context, rolling highways and/or semi-trailers can be the most convenient options.

The combined traffic values shown above can be also explained taking into consideration the rate of container volume handled by Italian ports over time (cf. Musso, Piccioni, Van de Voorde, 2013). Approximately ten years ago, Italy had a 15.2% share of total volumes handled by the EU-15 countries. Though much less than Germany (more than 20%), the figure was similar to those of Spain and Netherlands (more than 16%). Two years ago, within the EU-27, Italy's share had reduced to 10.5%, below that of Belgium (12.9%) and further below that of Germany (17.5%), Spain (15.5%) and Netherlands (15%). Considered over a ten-year perspective, Italian ports saw a 35% increase in container traffic. However, this is not particularly successful if compared to a 42% increase in France, 68% in Germany, 89% in Spain, 82% in Netherlands, and 192% in Belgium.

Such trends, indicating a low level of competitiveness of the Italian port system, are partially a result of limits in the availability or capacity of rail marshalling/transshipment yards within terminals, as well as a lack of adequate sea-rail interfaces allowing proper network accessibility. Many Italian sea nodes are not directly connected to the national rail network and/or the performance of the infrastructure facilities are often not adequate to respond to customer requirements, such as market timing, or reliability. This explains why the share of rail freight traffic incoming/outgoing from/to the main Italian ports - except for the Ligurian port system⁶ and to a lesser extent Leghorn, Gioia Tauro and Ravenna - is quite insignificant if considered in a wider European context.

4. Supply side

The deregulation of rail transport is governed by Legislative Decree 08/07/2003, No. 188 ('Implementation of Directives 2001/12/EC, 2001/13/EC and 2001/14/EC concerning the railway transport field') and subsequent legislation⁷. This has induced significant changes in the rules allowing Railway Undertakings (RUs) to operate on the Italian railway network. In addition to the specific license issued by the Ministry of Infrastructure and Transport, a safety certificate issued by the National Agency for Railway Safety is now a mandatory requirement.

In Italy, the liberalisation of the rail freight sector has anticipated that of the passenger sector by nearly a decade. As a result of this legislative framework, a growing number of railway

⁵ With the exclusion of some categories of consumer goods, in a period of economic recession it is plausible to switch from a *make-to-stock* production system to a *make-to-order* one.

⁶ It includes the ports of Genoa, La Spezia and Savona.

⁷ Legislative Decree 10th August 2007, n. 162, accepted European Directives 2004/49/CE and 2004/51/CE, establishing a common regulatory framework for railway safety.

companies have entered the rail freight service market over time. Along with major foreign rail companies, these new entrants include some regional RUs, which until a few years ago were operating exclusively on their local networks.

Including the ex-monopolistic Trenitalia Cargo Division⁸, there are currently almost 30 railway companies (Table 6) holding a safety certificate and therefore entitled to provide freight services on the national infrastructure. 21 of these provide cargo services while seven are specialised in mixed-services (passengers and freight).

Table 6: RUs operating in Italian freight transport market

| Provided Service | Licences | | Safety certificate (2001/14/CE; 2004/49/CE) | Revoked licences |
|----------------------------|-----------|------------|--|---------------------|
| | Operating | Non active | | |
| Cargo | 17 | 4 | 21 | 9 |
| Mixed (pax + cargo) | 5 | 2 | 7 | 11 |
| Total | 22 | 6 | 28 | 20 |

Source: ANSF, 2012

Rail Traction Company was the first railway company to enter the Italian freight market in 2001, and was followed over time by RUs such as NordCargo, FER - Ferrovia Emilia Romagna, Ferrovia Adriatico Sangritana, InRail, Serfer and several companies controlled by foreign capital (Table 7).

⁸ It is 100% controlled by FSI – Ferrovie dello Stato Italiane Holding company.

Table 7: Market structure: main national and foreign rail freight companies operating in Italy

| Company | Shareholders | Main Connections |
|---|---|---|
| NordCargo | DB Shenker Rail Italia (Germany) 60% FNM - Ferrovie Nord Milan (Italy) 40% | Northern European destinations (NL, UK, F) and Spain |
| Rail Traction Company | S.T.R. Spa (Italy) 94.79%, DB Shenker Rail (Germany) 4.4% Reset 2000 (Italy) 0.74% | Brennero and Tarvisio axes, Trieste port, Verona – Nola link |
| FER - Ferrovia Emilia Romagna | Emilia-Romagna Region 87% 8 Provinces (Italy) 13% | Regional O/D, and across North and Central Italy, La Spezia and Ravenna ports |
| Ferrovia Adriatico Sangritana | Abruzzo Region 100% | Regional O/D and extra-regional links in cooperation with NordCargo Milan |
| InRail | Friuli Venezia Giulia Regional Bank 51% | North-East of Italy with Austria |
| Serfer | FSI - Ferrovie dello Stato Italiane 100% | Across Italy, specific manoeuvring services in ports and industrial areas |
| FerNet | Fagioli, Gavio and Orsero Groups (Italy) 60% Serfer (Italy) 30% Rivalta Terminal Europa ^(a) (Italy) 10% | Savona port from/to dry-port of Rivalta Scrivia, Mortara and Fossano |
| Fuori Muro | Spinelli Group (Italy) 30% Port company Pietro Chiesa (Italy) 10% Rivalta Terminal Europa ^(a) (Italy) 30% InRail 15% Tenor 15% | Shuttle trains among port areas, dry-ports and freight villages in Northern Italy |
| Captrain^(b) | SNCF - French National Railways 100% | Italy-France |
| SBB Cargo Italia | SBB Cargo International (Switzerland) 75% Hupac (Switzerland) 25% | North-South Axis, Northern EU ports, Germany and Italy |
| BLS Cargo Italia | BLS Ag (Switzerland) 52% DB Shenker Rail (Germany) 45% Ambrogio Group (Italy) 3% | Rail traffic crossing Switzerland |
| Rail Cargo Italia | Rail Cargo Austria 55% Tiber.Co (Italy) 45% | Genoa- Ferrandina, Tarvisio S. Stino, Villa Opicina - Piacenza |
| Crossrail Italia | Cross Rail Belgium 75% Hupac (Switzerland) 25% | Rail traffic crossing the Alps from/to Germany, Belgium, France and Netherlands |
| (a) owned by Savona Port Authority | | |
| (b) It has acquired the Veolia Cargo Italia Company | | |

Source: Authors' own work

An analysis of rail freight traffic volumes managed by the ex-monopolistic FSI Group (Trenitalia Cargo Division) and the new operators provides some interesting figures (Table 8). In 2006, the market share of the new entrants was 7.4% compared to about 93% of the incumbent FSI Group. Over four years, although a significant reduction in traffic occurred in the Italian rail freight market, new companies have trebled their overall share, to 25.7%. Moreover, in 2011 the traffic weight of new entrants in the market increased by a further 19.7% compared to the previous year. This means that in a six-year period the performance of the new companies, in terms of train-km, has grown by over 300%, in contrast to the performance of the whole rail freight sector.

Table 8: Rail Freight transport: train-km

| Companies | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| FSI Group | 60,683,916 | 57,970,890 | 53,101,824 | 36,947,825 | 31,218,000 | 29,834,023 |
| New Entrants | 4,798,964 | 6,094,570 | 7,138,810 | 7,752,911 | 10,782,000 | 12,892,064 |
| TOTAL | 65,482,880 | 64,365,460 | 60,240,634 | 44,700,736 | 42,000,000 | 42,726,087 |

Source: ANSF and FerCargo

Obviously, such quantitative findings have to be understood by considering the role of the new entrants controlled by major railway companies that are, in turn, ex-monopolistic firms in the country from which they come (e.g. SNCF, SBB, DB).

To this end, Table 9 presents the most recent data related to market share by firm size. It provides evidence of how the large enterprises⁹ – with an 85-90% market share - represent the core driver of the Italian railway system.

Table 9: National rail freight traffic volume 2005- 2012

| 10 ⁶ Tonne-km | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total Railway Transport | 22,761 | 24,151 | 25,285 | 23,831 | 17,791 | 18,616 | 19,787 | 20,244 |
| Large* Enterprises | 20,130 | 20,868 | 21,197 | 19,918 | 16,232 | 15,139 | 17,279 | 17,714 |
| Small and Medium* Enterprises | 2,631 | 3,283 | 4,088 | 3,914 | 1,559 | 3,477 | 2,508 | 2,530 |

Source: CNIT

⁹ Enterprises were classified (Large, Medium or Small) depending on the freight volume carried by individual companies, in accordance with the thresholds laid down by Regulation CE 91/2003. Large Enterprises are those carrying more than 500 million tonne-km of total traffic volumes.

This also suggests that the most important incumbents achieve the best performances, in terms of production and market coverage. They can rely on robust business models and access to the large capital that must be invested in rolling stock (locomotives and wagons) and advanced information systems, as well as finding opportunities to create synergies with international logistics operators.

5. Good practices from new entrants

This paper has selected three companies, RTC - Rail Traction Company, NordCargo and FER – Ferrovie Reggio Emilia, as examples of good practice in the Italian market. Their main shareholders are Italian firms and despite the economic recession of recent years, they have achieved improved results. In particular, after FSI Cargo Division, RTC is the main Italian RU and the leading newcomer, with almost 4% of market share, followed by SBB Cargo Italia (about 3%) and NordCargo (nearly 2%). In this context, FER has an insignificant weight (less than 1%) with respect to the above. However, it is implementing a strong strategy aimed at increasing market share through combined transport development.

RTC was the first new railway company to provide freight train services along the Brenner axis, providing rail traction (haulage) services to logistics operators who organise freight trains in both combined and traditional rail sectors. At the start of operations in 2001, it provided two rail services linking Italy with Germany through the Brenner axis. To date, these services amount to 15 pairs of trains per day. Since November 2010, RTC has also developed two new combined services through the Tarvisio border crossing, including the port of Trieste. Moreover, in 2013, RTC signed an agreement with the Turkish company EKOL Logistics, a leader in intermodal logistics in the Middle East, in order to connect the Turkish and German markets. This agreement has been finalised through further cooperation between Lokomotion GmbH, the first private German RU, and Francesco Parisi, a freight forwarder.

In 2012, company turnover amounted to €36.8 million, an increase of 8.7% compared to 2011. In the same period, train services increased by over 3% reaching more than 8,300 movements. Since 2001, when RTC entered the market, transalpine traffic through Brenner and Tarvisio increased by 54% and 5% respectively, while all-road traffic saw a reduction of 11% and 12%. This confirms that the opening of new rail services not only supports the modal shift to rail but also creates a relevant component of induced demand.

NordCargo obtained a railway license in 2003. It holds a security certificate from ANSF as well as a certificate for the transport of dangerous goods. Ferrovie Nord Milano, the Italian shareholder, is one of the most important private Italian operators in the transport sector and is owned, in turn, by Lombardy Region, with a 57% stake. In cooperation with one of the main European RUs (DB Schenker), which allows it to make use of a global European network of 1,200 transit points

and 4,200 sidings, NordCargo¹⁰ manages a workforce of 300 employees and about 13,000 trains per year. In 2012, the company achieved a net profit of about €1.77 million, an 89% increase when compared to the previous year.

FER is working to gain a specific niche role in the rail market, serving both as a locomotives owner (rail traction) and as owner/manager of the Dinazzano Po rail terminal. This terminal is a strategic transit node for the ceramics industry of the Emilia-Romagna region. As such, it is a destination for ceramic raw materials from Germany and, via the Ravenna port to Ukraine and Turkey, serves as a logistics platform for materials distribution to local industries. Daily connections between Dinazzano and the ports of Genoa, Leghorn, La Spezia and Ravenna, allow the Emilia's industry to ship containers by sea. Thus, they can deliver finished products designed for international markets, quickly and at competitive prices. The company has also developed a partnership with Sogemar, controlled by Contship Italian Group, a major terminal operator in the Mediterranean ports, through participation in the Oceanogate company. According to the 2012 traffic data of FER and their associated companies, the current market strategy deals with a progressive allocation of freight volume inside Oceanogate. As a result, the core business is moving increasingly toward the development of a combined rail-sea sector. Totally, FER provides service on both the corporate branch running railway network (350 km) as well as on the 1,777 km length of the RFI network. Its traffic volumes have increased by about 300% between 2009 and 2011, passing from 1.7 to 6.7 million tonnes. Turnover in 2009 was over €90 million; more than double that of the previous two years.

Regional Law n. 15/2009 'Measures for rail transport of goods', issued by Emilia Romagna, is of particular interest in the case of FER. The law aims to provide RUs and logistics operators with monetary contributions¹¹ if they offer, from 2010 onwards, additional rail services¹² compared to the previous year, which have both O/D within the region. Although the extent is limited to the regional area, this is a strong measure (also taking into consideration the FER's majority shareholder) aimed at supporting a modal shift toward rail transport by:

- encouraging rail traffic which remains in operation even after the end of contribution;
- promoting short and medium range links within the region or intra-regional and inter-regional connections with neighbouring regions;
- giving priority to rail links with dry-port and port areas, because of their strategic role for developing regional rail freight traffic;
- increasing both intermodal and traditional rail traffic, by considering them as functional to the vocation of the regional production system;

¹⁰ In Italy, it manages four marshalling yards, 40 transit points plus several private sidings.

¹¹ The maximum amount is 1 €cent per tonne-km. In case service lasts more than a year, the amount varies on a decreasing scale, as follows: (a) for the 1st year is 1 €cent per tonne-km; (b) for the 2nd year is 0.9 €cents per tonne-km; (c) for the 3rd year is 0.8 €cent cents per tonne-km.

¹² New links and/or new services on existing links.

Table 10 presents a summary of the main characteristics in terms of service supply and market strategies, with particular reference to specific strengths of the above companies.

It is worth noting that companies' strengths relate to a number of factors. The first of these is the provision of a heterogeneous supply. It generally includes both full trains and SWL dedicated to combined and traditional traffic and, in a particular case, management of last-mile delivery. Strengths are further related to dedicated services for handling of specific products (for example, wheat, iron/steel, ceramics) and/or management of transalpine traffic (Brenner, Tarvisio). For all companies, the creation of different partnerships is also a strategic factor. Partnerships are made with European RUs and/or logistics operators, with the aim of increasing their network coverage and developing combined rail-road and/or rail-sea transport.

Although the individual business models of these new operators are quite different, depending on corporate structure, invested capital and company mission, a common factor in their success is the involvement of a workforce with the specific expertise and skills required to meet different customers' needs. Indeed, each company's aim is to be distinguished as a competitor that provides high level performances as a whole, oriented both at improving the rail segment as well as the transshipment/handling activities required by the intermodal component. In other words, given the availability of adequate resources or capital, the best results are obtained by thinking of and managing rail transport as a segment of a wider logistic and transport chain. In this context, timing and costs are two of the main drivers underpinning not only competition among modal options but in open market, intra-modal competition as well.

Table 10: Main characteristics of the selected RUs

| Company | Provided services | Strengths |
|-----------|--|--|
| | Registered Fleet and Staff | |
| RTC | <p>Brenner axis</p> <ul style="list-style-type: none"> combined: 50 train pairs/week traditional: 34 train pairs/week SWL: 6 train pairs/week <p>Tarvisio axis</p> <ul style="list-style-type: none"> combined: 7 train pairs/week | <ul style="list-style-type: none"> high frequency of trains both for combined and traditional traffic; innovative and convenient solutions for wheat transport (current demand is almost 1 train/day); key operator for iron/steel transport between Germany and Italy, i.e. Po Valley (around 1 million tonnes moved in 2011); specialised in ‘Coloured Trains’, designed for customers who send a few cars a week and cannot fill a full train to a single destination (a novel way to define SWL service); partnership with Lokomotion (private German RU), DB Schenker Rail, EKOL Logistics (a main Turkish logistic operator); rapid network expansion (opening of new links with Czech Republic and Ukraine); certified for dangerous goods transport (cl. 7, radioactive materials, not included). |
| | <ul style="list-style-type: none"> 42 units (locos + railcars + wagons) 180 employees | |
| NordCargo | <ul style="list-style-type: none"> SWL and block trains moving a total of 7,000 trains/year; Combined road-rail-sea related services such as: terminal transshipment, equipment provision, travel program management, warehousing and temporary storage, UTIs delivery, UTIs repair and assistance, last-mile service Local delivery: through own manoeuvring drivers and train fitters, it serves private sidings and rail junctions throughout Italy; | <ul style="list-style-type: none"> consolidated presence on the Italian market through FNM SpA; cooperation with other railway operators at regional and cross-border level; close cooperation with all companies belonging to DB Schenker Rail group (7 in other EU countries); variety of services supplied (included last-mile service); certified for dangerous goods transport (cl. 7, radioactive materials, not included). |
| | <ul style="list-style-type: none"> 34 units (locos + railcars + wagons) 300 employees | |
| FER | <ul style="list-style-type: none"> focussed on rail-sea combined transport; specialised in transport and handling of raw materials and finished products for the ceramics industry, at national and international level | <ul style="list-style-type: none"> ownership of 350km of railway lines; sea-rail combined transport through the partnership with Sogemar, by connecting Adriatic, Tyrrhenian and Ligurian ports; acquisition of the ACT Reggio Emilia railway branch for accessing the Dinazzano freight terminal; management of high freight traffic flows in and out of the Sassuolo ceramic district; certified for dangerous goods transport (cl. 7, radioactive materials, not included; cl. 1, explosives, is excluded for transport by sea). |
| | <ul style="list-style-type: none"> 121 units (locos + railcars + wagons) 1,000 employees (pax+ cargo div.) | |

Source: Authors’ own composition based on ANSF data, 2012

6. The regulatory framework

The liberalisation process has led to a separation between Infrastructure Managers (IMs) and RUs which, in Europe, has been implemented according to three different organisational models:

- separation model based on a total independence of ownership and roles;
- integrated model based on a corporate shareholding aimed at managing both infrastructure and operations-related activities;
- mix-model based on a total independence of IMs which, in turn, delegates specific functions to the incumbent RUs.

In Italy, the existing relationship between IMs and RUs follows an integrated structure. The IM (RFI - Rete Ferroviaria Italiana) is a legally and functionally separated enterprise. However, it belongs to a holding group that also owns two RUs. In this particular case, Trenitalia Cargo is the freight division running on the national network and Serfer operates as a specific rail service provider in port and industrial areas. This structure, in addition to Trenitalia's national market share of nearly 80%, warrants better investigation of this wide disequilibrium that, ten years after the start of liberalisation process, still affects the national market.

In Italy, competition in the rail freight industry is weak because the incumbent is still dominant. As expected, the ex-monopolistic firm can count on consolidated, extended infrastructure, including a dense network of terminals and plants, as well as counting on a huge rolling stock fleet. The registered fleet is more than 150 times higher than that of the main competitors. Such resources make it easier to provide a wide range of services, and allows greater economies of scale when compared to those achievable by newcomers' capital and capabilities. It must be also underlined that the national legislative approach in some cases seems to be in opposition to the liberalisation process and, therefore, to the opening up of the Italian rail market. The Directive¹³ of the Presidency of the Ministers Council, July 7 2009, is a case in point. This allowed the transfer and/or assignment of freight plants from the national IM to other companies belonging to the FSI Holding group. Of 240 rail facilities in total, only 71 remained as public nodes while about 140 were transferred from RFI to other FSI Group companies, including Trenitalia Cargo. These companies have no obligation to maintain the intended use and/or to ensure access to all private operators, should they decide to keep the nodes open.

Nevertheless, newcomers have been able to pursue good opportunities in the last few years. These new entrants are still testing different strategies to gain a competitive position in the rail market, for example strong capital, specific Alps cross-border service, or niche services. Many newcomers are related to strong foreign rail incumbents such as SBB, DB, SNCF, and BSL. These can build their business through a consolidated and extended rail network, and partnerships

¹³ Directive from the Presidency of the Council of Ministers has been enacted (it is not implemented yet) with the aim to reduce to 2/3 the availability of national rail plants dedicated to freight transport.

with global logistic providers, such as DB Schenker Logistics and SNCF Geodis. Moreover, it is worth mentioning that all new operators, whether foreign or national, face strong competition on the cross border services to access the main European Corridors (Table 11).

Table 11: Rail market of the cross-border services

| Freight market | North-South axis | East axis | West axis |
|--------------------------------------|------------------|-------------------------------|--------------------------------|
| | Brenner | Tarvisio, Gorizia, V. Opicina | Verona, Frejus, Luino, Simplon |
| % cross-border traffic volume | 52% | 14% | 34% |
| Rail modal share | 42.4 % | 15.4 % | 13.3 % |
| New entrants' market share | > 40 % | 10 % | 10 % |

Source: FSI, 2012

Despite the good results achieved by some new RUs, both European and national, entering the Italian rail market, the performances of the newcomers' system as a whole seems to be inadequate with respect to timings and market needs. It must be recognised that many of the new licences issued since 2001 have been revoked over the years. This is likely to mean that many smaller freight companies did not have the necessary (economic) resources to meet the Railway Safety National Agency's requirements, or went bankrupt. Furthermore, by adding to this the six companies that are presently reported as inactive, the result is even more negative. The conclusion is that Italy is still a country with a high risk of the incumbent enjoying a dominant position.

Based on the above, it can be argued that the main barrier to entry can be ascribed to the different starting point between incumbent and new entrants, in terms of development opportunities and related (additional) costs needed to activate new rail services. According to the freight traffic trends analysed earlier, it is clear that traffic reductions registered by the ex-monopolistic company (FSI Group) have been balanced by the new entrants' traffic increase. However, within a general rail freight market featuring a substantial decline, such data could hide an incumbent's strategy of preserving or protecting key traffic links to the detriment of those considered unprofitable and, therefore, 'left' to other new operators¹⁴.

In addition, it should be noted that Trenitalia Cargo has always been the RFI's main customer. In the absence of a *super partes* body charged with monitoring rail networks accessibility, this has induced a level of distortion within the competitive environment over the last decade. This is a further disincentive for newcomers that plan to enter the Italian rail freight market.

This situation was created when the Office for the Regulation of Rail Services (URSF) was established¹⁵ in order to regulate competition and resolve disputes. It was established as directly dependent on the Ministry of Infrastructure and Transport. Within this context, the European

¹⁴ Except for the main RUs (such as RTC, SBB, etc.) managing transalpine and Northern Europe traffic.

¹⁵ Decree of the President of the Republic n. 186/2004, art. 16.

Commission launched an infringement procedure¹⁶, aimed at highlighting the improper application of specific European directives to the Italian rail framework. The Commission's concerns related to the independence of the regulation body (URSF) from each RU, in performing essential functions, as well as to the regulation of the fees system for the right of infrastructure use.

7. Policies and measures for supporting a real rail market opening

The National Transport Regulatory Authority, a new, independent regulatory body, has recently been established to overcome the critical issues raised by the European Commission.¹⁷ The Authority is responsible for ensuring that there are no discriminatory conditions or impediments to market entry by potential competitors.¹⁸ This has particular reference to the field of freight rail transport, the Ministry of Infrastructure and Transport, as well as relevant regions and local authorities. It acts as the regulator of access to railway infrastructure by defining criteria for the allocation of train paths and capacity. It also defines criteria for the allocation of the related fees, and ensures their proper application.

The Authority is not yet operating but, if conceived as an actual *super partes* body, it will become a strong strategic governance tool for ensuring a more balanced rail freight market. In such a market, an increase in management production efficiency can be translated into a general containment/reduction of costs, as well as an improvement in quality of service supply, both for RUs and consumers.

The implementation of the IV Railway Package is also anticipated.¹⁹ Some of the planned measures should reduce the time required by a new rail company to enter the market, as well as the cost and duration of the rolling stock authorisation procedure, by 20%. Companies are expected to save approximately €500 million by 2025 (source: European Commission).

In view of a recovery of the national economy as a whole, there is a growing awareness among all actors in Italy of the importance of ensuring non-discriminatory access to the rail network for new entrants. This can also be furthered by implementing an 'oriented-service' approach depending of the RUs capacity to operate efficiently, through the provision of high quality services, and by achieving a high level of utility and flexibility in responding to market needs. In other words, for a real rail market opening, network accessibility becomes a necessary but not a sufficient condition. Indeed, new companies should also be placed in a position to benefit from

¹⁶ n. 2008/2097.

¹⁷ By art. 37 of the Law Decree n. 201/2011 (so-called 'Save Italy'), as amended by art. 36 of the next decree-law n. 1/2012 (so-called 'liberalisation').

¹⁸ It can impose, if necessary, separation between accounts and corporate matters of the integrated companies.

¹⁹ The EC approved the IV Railway Package in January 2013. The European Parliament and Member State Governments must approve this, before being adopted. This is likely to take more than a year.

the services that are essential for a more equal and balanced potential competition. This means avoiding a situation where the ex-monopolistic company abuses its dominant position.

Nevertheless, it cannot be ignored that such a condition occurs in a freight market still heavily oriented to all-road transport. This suggests that some improvements can be achieved, which would contribute to truly opening the Italian rail freight market, by addressing the modal split towards rail.

From an operational point of view, some physical constraints on both the intermodal component, and the status/performance of the rail network dedicated to freight traffic, must be removed or at least reduced. Indeed, the sum of the impacts produced by inefficiencies affecting rail-related activities is highly relevant. It can influence the final cost of goods distribution by up to 20% more than the European average (source: Confetra). These inefficiencies can be linked to a number of issues. These include low commercial speeds²⁰, and unreliable travel times due to time spent in logistic activities (i.e. cargo handling). There is also a lack of homogeneity in railway lines' performances, with particular reference to the module²¹ (that limits the maximum train length), maximum axle load²² (that influences the wagon weight) and size/format²³ (containers, swap-bodies and semi-trailers must be consistent with values allowed on the rail lines). In this sense, the creation of six European Rail Freight Corridors²⁴ by November 2013, and a further three by November 2015 (of which Corridors I, III, V and VI cover a strategic role for Italy), can significantly enhance the competitiveness of the rail market through the improvement of networks' performance in terms of interconnectivity, interoperability and intermodality as a whole. Indeed rail transport, in virtue of its endogenous characteristics, is not a self-sustaining mode if compared to all-road transport. This means that the improvement of accessibility to freight terminals/nodes, and the optimisation of connections among production sites and/or freight nodes, are also essential in order to exploit synergies coming with intermodality, including a more effective utilisation of ports.

With reference to the modal split, from a regulatory point of view, a longstanding debate is in progress on the need to implement governance actions aimed at balancing the competition between rail-based and all-road transport. On the one hand, the issue related to track access charges, which necessarily invokes the corresponding road charges for heavy goods vehicles²⁵,

²⁰ As an example, in Europe the average value is 18 km/h, mainly due to operational aspects, i.e.: changes in locos and/or personnel, train formation, technical and customs inspections (source: EU White Paper).

²¹ In Italy, block trains generally are 500-550 m length.

²² Between 20 and 22.5 tonne/axle.

²³ According to the map of the Italian Railway Network (cf. PIR – Network Information Statement no. 3 - Coding for Combined Traffic, Network Operation FSI), most of the rail lines have profile categories of PC22 (3,840 mm height) and PC32 (3,940 mm height) which are quite restricted values. Only the North-East rail lines belong to the PC80 profile category (4,700 mm height) that correspond to the 'Gabarit C'.

²⁴ EU Regulation N. 913/2010 of the European Parliament and of the Council, concerning a European rail network for a competitive freight transport.

²⁵ In Italy the HGV ownership tax, on yearly basis, is 12% less than in Germany. It is also about half of what is required in Austria and about one-fifth of the related tax in Switzerland. Besides, the average net fuel taxes are about 0.44 €/l against 0.47 €/l in Germany, 0.40 €/l in Austria and 0.63 €/l in Switzerland. Moreover, tolls and distance based

could play an essential role in improving the modal split in favour of rail transport. On the other hand, the development of an appropriate pricing approach oriented to a full or partial internalisation of external costs of transport (such as accidents, congestion, air pollution, delay, etc.) could likely support the economic efficiency of the rail freight transport sector. It is clear, however, that the implementation of pricing measures is usually quite complicated due to the complexity of the externalities evaluation process, which deals with compensation mechanisms, as well as because of the relevant conflicts among the different groups of stakeholders involved in the participation process.

It is worth noting that in Europe, taxes and charges, respectively applied to the road and rail sectors, are rather different mainly due to the national governance approaches in managing fixed and variables infrastructure costs. This makes every sort of comparison in absolute terms between Italy and other European countries difficult and not significant. However, an interesting lesson can be learned from those countries (e.g. Austria, Switzerland and Germany) that have imposed strict road transport policies (higher road taxes and charges schemes), together with the implementation of incentives for rail transport, in order to significantly increase rail traffic share²⁶.

Moreover, still keeping in mind the regulatory angle, it should be considered that the railway sector, due to its functional and operating characteristics, is subject to strict network controls on weight, speed, payload, stop times, safety and security procedures. On the other side, the road sector is not exposed to systematic checks aimed at verifying possible rules infringements (e.g. overload vehicle conditions, speed and/or driving time limit being exceeded). So, without an actual control on compliance of social security and road traffic circulation rules, it is not possible to assess and compare the competitive performances of such modal options through the same criteria²⁷.

Anyway, according to the findings of the above case studies, the following two key insights can be derived:

- those new entrants that are competing effectively have all adopted different but well-defined strategies, each based on a robust business model. This means that a strong financial capability, resulting in most cases from foreign ex-monopolistic shareholders, is an essential factor to counter the incumbent's dominant position;
- the best results have been achieved using the rail option within its range of convenience - by moving high payload traffic within a high frequency system and ensuring high quality of service – also creating partnerships with different intermodal/multimodal

charges are about 0.13 €/km compared to 0.17 €/km in Spain, 0.18 €/km in Germany, 0.20 €/km in France and 0.35 €/km in Austria (source: OECD/ITF 2013).

²⁶ In 2012 Switzerland managed by rail 45.9% of the total freight traffic; this figure was 41.9% in Austria and 26.4% in Germany.

²⁷ In Italy, the road transport regulations have been implemented by specific legislations over the years, but such a theoretical framework should be better supported by an equally operating and functional governance approach.

operators and/or logistics providers. This is a common strategy aimed at enhancing the role of competitors in an Italian rail freight market still characterised by extremely low-intensity competitive dynamics.

8. Conclusions

The political approach of the European Union to transport sustainability as a whole focuses on common initiatives addressed to specific sectors, of which the railway ones (i. e. Railway Packages) have to play a pivotal role. Indeed, it can be considered the ‘greenest’ modal option within the land-based transport modes. In addition, by optimising freight payload on trains, it allows greater scale economies. In this framework, the liberalisation of the railway freight market has to work as a tool leading to an improvement of dedicated freight services, able to attract increasing volumes of freight traffic demand, as well as supporting innovation and efficiency in production supply.

However, In Italy the deregulation process of railway freight services has been affected by a significant delay; this is partially the result of the structure of supply, but it is also due to the strong competitiveness of all-road transport, as well as to the preservation of a dominant position of the incumbent over time.

In such a context, the ex-monopolistic firm’s strategy towards a relevant reduction of single wagonload services and the consequent closure of the majority of its own dedicated freight nodes (i.e. mainly marshalling yards), also hinders the potential of smaller private RUs which see their capability to benefit²⁸ from terminals opened to national and international freight traffics constrained. The above has, necessarily, brought a further distorting effect by also influencing the level of equity in market access conditions.

Despite the weak rail market opening to newcomers in Italy, some good examples have been identified. However, the majority of these can be ascribed to the coexistence of robust business models and consolidated experience in rail-based intermodal and/or logistics services. Both these factors are strengths allowing RUs to position themselves, in a permanent way, within an efficient logistics and transport chain where, most likely, valuable scale economies can be achieved together with the provision of high quality service levels.

Anyway, as discussed above, it is clear that the liberalisation process has to be fully implemented in order to open the market to a growing number of RUs and to increase the market share of these already in operation, so making the rail freight sector a really competitive environment.

Alongside selected policies aimed at countering the potential abuse of a dominant position by a single railway operator, further measures/actions addressing the reference market ‘horizontally’

²⁸ In terms of accessibility to infrastructure and availability of time slot.

(e.g. regulatory, infrastructural, operational, etc.) can be envisaged. Among them, some are aimed at disincentivising all-road transport for those connections that can be served by rail within its range of economic convenience, mainly dealing with issues such as the internalisation of external costs of road transport (e.g. Eurovignette). Others measures focus on the improvement of accessibility to rail-road and rail-sea interchange nodes, as well as on incentives to the maintenance of the main private sidings.

In any case, a common vision, shared by all involved actors, is required for a political approach aimed at taking into consideration the current and potential role²⁹ of key network elements (i.e. terminals, stations, freight villages, ports and inland ports) that are necessary to perform the freight railway service at a local and European level. This aims to increase the usability of the national railway network by increasing its connectivity with local/regional rail lines (i.e. feeder lines), by reducing differences, in terms of supply performances (mainly related to travel and dwell times) between North and South of Italy, as well as by seeking operational solutions to better manage full and/or mixed trains. In this way, traffic could also be distributed in terminals/nodes that are currently underemployed and are at risk of closure due to lack of economic sustainability.

All such issues have been a matter of intense debate for several years but currently a common 'vision' at governance level - on what are the main priorities and how to proactively implement them - has still not been achieved.

However, a wider opening of the rail freight market to newcomers will likely be dependent on the National Transport Regulatory Authority becoming operational, a national economic recovery, and the full operation of the national rail network as an integral part of European freight corridors.

²⁹ By reviewing the strategic importance of such nodes at national and regional level (also by foreseeing investments where needed).

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