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High-Speed Rail vs. Low-Cost Air: competing or complementary modes?

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Highlights

At the 2nd Florence Intermodal Forum policy makers, regulators, associations and operators of both the rail and the air transport sector came together to discuss current issues that impact both sectors alike. The central question was whether high-speed rail and low-cost air were competing or complementing modes of transport.

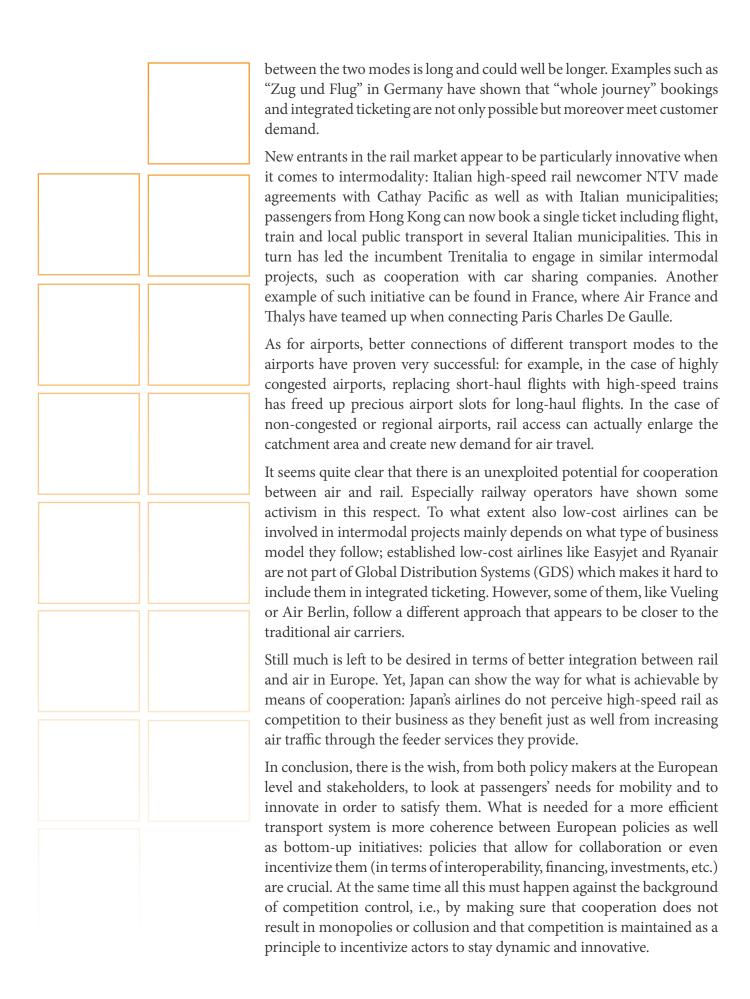
After the liberalization of the European air market low-cost air carriers had taken over many medium length routes in Europe. High-speed rail could win back a lot of ground on many routes and remains dominant especially on city connection as illustrated by the Rome-Milan corridor example. The development is taking place against the background of an ongoing liberalization process in the rail market which has an important effect on innovation in the sector.

Are the two modes serving different markets or are they in competition with each other? To what extent can they be complementary? What role does state aid play for each sector and how can policy work to address passenger needs?





Low-Cost Air and High-Speed Rail: an untapped potential for complementarity? A comment by MATTHIAS FINGER FSR-Transport Director
Comparing air and rail passenger transport is a difficult task. Apart from serving the same demand that is mobility, they differ in several essential aspects: technology, business models, customer needs, ownership structure and type of infrastructure. Moreover, the regulatory and policy environment is completely different. Still, from a mobility perspective, it is useful to look at both sectors simultaneously so as to better understand where and how they could be complementary and become more integrated.
The European Commission has promoted this view, and VP Siim Kallas made the integration of different modes of transport a high priority when he took office in 2009. However, when looking at European transport policy and regulation, the situation rather resembles a patchwork. As a matter of fact, a twofold inconsistency can be detected, namely a lack of coherence between different national approaches as well as a lack of coherence between European policies.
As far as the national level is concerned, cross-border passenger rail in Europe is still hampered by a patchwork of national regulations and a fragmented system of network managers. Even though harmonisation and the establishment of a single market in the air sector has been moving forward at much faster pace it is still facing enormous difficulties that result from conflicting national interests. Central elements of the Single European Sky initiative to harmonize Air Traffic Management systems and increase capacity are still in gridlock.
As far as the European policy level is concerned, there is a problem with competition policy: efforts fostering intermodality by means of cooperation of different transport operators can potentially clash with European competition policy, which ultimately leads to the question how to harmonize cooperation and competition.
On the whole, and despite the attempts to establish a Single European Transport Area with a top-down approach, the policies to implement this goal did not prove to be effective so far. Yet, inevitably air and rail are becoming part of an integrated mobility approach.
Competing or cooperating? While there are prominent cases of strong competition between high-speed rail and low-cost air, especially on city pairs such as Rome-Milan, Madrid-Barcelona, Paris-Marseille, the list of win-win constellations



Summary of the discussion at the Forum

The following paragraphs report briefly on the discussions that took place during the Forum. The debates are reported without identifying name or affiliation of the speakers so as to comply with the Chatham House rule.

The discussion touched upon a variety of aspects reaching from markets, subsidies to complementarity and intermodal competition. Clearly, many aspects have to be taken into consideration when aiming at linking two fundamentally different modes of transportation. The discussion was structured along the four following guiding questions.

Can high-speed rail continue to expand if low-cost airlines are taking over as the alternative also on short routes?

The very premise of the question was challenged right at the beginning of the Forum: looking especially at the French example where airlines massively reduced capacities after the establishment of high-speed rail (HSR) and seeing that today HSR dominates on most city connections, can one really speak of low-cost air "taking over"? It was presented that there are in fact many city pairs in Europe where rail has a modal share of over 50 %, such as:

Madrid-Seville: Rail 83% Air 27%

• Paris-London: Rail 81% Air 17%

• Paris-Brussels: Rail 95% Air 5%

Even though this observation is more relevant for classical air carriers than low-cost airlines, the examples from Spain and Italy show that, especially for city connections, HSR is often the preferred alternative even to low-cost flights.

The question is however appropriate in several contexts. The emergence of low-cost carriers has certainly caused many changes in travel habits. One such case was illustrated by the example of the Hamburg-Cologne route: the emergence of a low-cost alternative to the rail connections in 2002 had caused a substantial decrease in rail passenger traffic, which was however recuperated at a later stage in part because the railway operator had reformed its pricing regime and was able to lower the ticket prices. Similar developments were demonstrated in the case of other city pairs as well.

Air and rail are only substitutable within a certain distance range. The choice of the passenger is mainly shaped by travel time, cost and travel comfort. It is however crucial to make the information about all available travel options and their characteristics available to the passengers in a transparent way.

An important element is also technological development: HSR has seen significant advancements and improved its travel time and frequencies, which made competition with planes on city connections possible.

The discussion clearly showed that different regulatory models can result in very different modal shares in otherwise similar situations. Examples of Japan and China illustrated very different patterns of modal shift, as well as market development in the rest of the world: China's air carriers cannot compete with HSR even on distances of up to 1,000km, because of high ticket prices and congested airports. Japan has a very high modal share of HSR and a fully integrated system with well-functioning intermodal links and has been operating high-speed rail for over 50 years.

In the EU especially cross border rail has some severe impediments that air travel is not facing: unexpected waiting times often occur at borders due to a lack of communication between the different

Competition and Cooperation in Rail and Air

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Both rail and air transport are strategic sectors in Europe, and their importance is fully recognised by the European Commission.

Linking people and regions, air transport plays an important role in the integration and the competitiveness of Europe, as well as for its interaction with the rest of the world. It makes a vital contribution to the European overall economy and employment. Today, aviation supports 5.1 million jobs, directly and indirectly. It contributes one billion euros of European GDP every day, driving trade and tourism. Despite the economic crisis, global air transport over the long term is expected to grow by around 5% annually until 2030, as recently stated by VP Kallas.

Rail transport on the other hand is rapidly growing in the EU in terms of modal share in specific corridors thanks to the increase of the capacity of its high-speed rail network, boosted by the extension of the high-speed tracks from 643 km to 6,602 km between 1985 and 2010. Despite the pressure from the low air fares, passenger rail traffic has increased also as a result of improved management by rail operators. For example, in the Madrid-Barcelona corridor, the new RENFE ticketing policy has helped rail achieve 60% of the passenger market.

Nevertheless, the two sectors are extremely different: air operates in a European single market since 1990, while rail is still waiting for a complete opening. During the Forum it was also emphasised that while airlines are likely to continue to make significant cost savings, some rail operators are still bearing a high proportion of fixed costs related to infrastructure, therefore claiming a lack of level playing field in overall Europe. Further differences pertaining to operational costs, such as the current lack of secondary markets for rolling stock, make the comparison between the two modes even more difficult, albeit, as very often in regulation, the question is whether and to what extent this is the consequence or the cause of the current regulatory framework.

According to some authors, low-cost airlines are changing their business model, based on point-to-point connections using regional airports, originally developed by Ryanair. This structure is no more economically sustainable and it becomes

pressing to change and improve the original idea. Along these lines, some low-cost airlines developed a hub-and-spoke model (Vueling, Air Berlin) and some are introducing business services (EasyJet). Ryanair is starting services from main airports (Lisbon, Brussels, Rome) and is improving its customer services. Conventional airlines, on the other hand, are also seeking to cut costs in order to maintain their competitive position in the market. Therefore, over the last years low-cost airlines and flagship carriers have started to converge towards a very similar economic model for intra-European flights.

The Forum agreed that the analysis of competition between the two sectors could not be restricted to low-cost airlines but should include both conventional and low-cost. Low-cost airlines have brought important benefits to passengers, enabling millions of European citizens to travel more cheaply but they also receive many subsides, particularly from regional and local governments for operating new point-to-point links. Rail instead receives subsidies from national Governments or the European Union. Certainly there is a lack of transparency in local subsides to low-cost airlines through airport managers, but it is not clear how many of these are good investments. And that is the point: transparency is necessary in order to investigate the economic impact in terms of employment and contribution to a region's GDP. Is there really a link?

In this context, the European Commission is modernising the rules about State aid control: the new guidelines will update the conditions of State aid rules in agreements between airports and airlines, and it will allow subsidies in cases of real transport needs, taking also rail transport into account.

In conclusion, the opening of high-speed lines has enabled rail transport to obtain significant market share on routes where time sensitive passengers would previously have travelled by air, especially in the point-to-point market. Furthermore we expect some changes in the aviation industry in the next three years due to new economic models of low-cost airlines and the updated regulations on State aid rules. The main challenge ahead is to make air and rail complement each other rather than compete at EU level, improving EU's citizens mobility and bringing the European transport sector to new levels of efficiency.

The views expressed are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.

infrastructure managers. Crossing borders also creates problems for the responsible train manager as he technically has no legal authority in the train while it is on the territory of a state different from his own

nationality.

It was furthermore pointed at the fact that the goal from a European perspective was not only to enable competition but also to create modal shift. The question remained whether the current system would allow that.

How much did the subsidies (to both rail and air sector) influence the current market structure and the competition between the two modes?

The question of subsidies and state aid is usually highly disputed. The discussion saw very different opinions about which sector benefited more from state aid. Airlines claimed that, unlike rail operators, they fully covered the cost of their infrastructure, most importantly ground handling, security charges, and costs for air navigation services. From an airline perspective, subsidies to the rail sector far outnumber those going to the air sector; in fact, low-cost carriers even claim not to receive any subsidies at all. Furthermore, no airline enjoys the benefits of PSO (public service obligation) contracts.

Countering this argument, it was stated that aid to air is less visible: it was claimed that the entire business model of low-cost airlines depended on "deals" with regional airports that do not officially count as state aid, in spite of the fact that these airports are "fully public" and operate thanks to State funding. Furthermore, airlines still enjoy a global exemption from fuel tax.

Is high-speed rail cheaper than classical rail and air transport? On this question there was no agreement and it emerged clearly that there was dispute over numbers and the question to what extent the "full costs" were taken into consideration.

Regardless of the question which sector receives more state aid, it became clear that the most important next step is to create transparency. As a matter of fact, numbers published by the European Commission on how much aid was granted to each sector in each country says little about how much aid there was in reality because large parts of subsidies are hidden and not publically disclosed. This is important because ultimately it involves a policy question: State aid can be legitimate if it is transparent and for instance serves citizen's transport needs. Low-cost airlines claim that it would be a good strategy to further enable the point-to-point business model they follow by investing in the connectivity of regional airports: this would ease the capacity constraints on airport hubs and clearly be the cheapest alternative to extending existing airports with further runways. Furthermore it would reduce travel times by directly connecting regions.

From the Commission's perspective it was clear that one of the most important goals that state aid should pursue is enabling intermodality. This issue was discussed in the following panel.

Given that high-speed and low-cost enter the same economic discourse and the so far failed attempt of developing integrated mobility regulation, is there room for effective intermodal legislation?

Disagreement came to light as to the assessment of European intermodal legislation. It was made clear that intermodality is an integral element of European transport policy strategy. The European Commission wants to upgrade railway lines and make them the backbone of a Europe-wide multimodal grid (Trans-European Transport Network, TEN-T). It plans furthermore to have 39 major European airports connected to national railway



This panel discussed what policy can do to enable intermodality. A central problem that was identified was the limitations of a top down approach to intermodality: situations are highly diverse throughout Europe also with regard to the roles of the different transport modes.

Poland, for example, is hesitating to invest in high-speed rail which is not yet present in the country in spite of good conditions in terms of geography and distances. Even if the EU would subsidize HSR in Poland, it would, according to experts, probably remain dependent on public subsidies for the simple fact that the overall economic situation and the below average spending power in Poland does not provide for a sufficiently big customer base. With this in mind, it may actually be the better option for Poland to invest in regional airports and enable domestic low-cost flights.

Spain, on the other hand, seems to be moving back from domestic low-cost flights, and HSR is catching up. It was acknowledged that, due to significant travel time reductions and better pricing systems, rail operators were able to outcompete low-cost carriers on many routes.

How can high-speed and low-cost be complementary? Do they serve different needs? Can they coordinate and consistently develop as two parts of the "whole journey"?

Looking at the whole journey is certainly the most important aspect from a passenger's perspective. This passenger's perspective is in fact often neglected.

In order for transport modes to be complementary, there is a need to increase options to book multimodal trips on the same ticket. This is the most desirable option from a passenger's perspective. However, there was some disagreement, since, from a business perspective, integrated ticketing creates disadvantages for the individual transport operator. It could be questioned whether, in a competitive model, there is an incentive for operators to integrate information and ticketing with their (potential) competitors. Another major obstacle to integrated ticketing identified during the discussion are diverging passenger rights in the transport modes that make it hard to have single tickets for both modes.

Some of the existing forms of cooperation between rail and air have also been criticized in the discussion. According to one view, traditional air carriers supported this type of cooperation because they saw it as way to subsidise their airports. This, in turn, could be seen as a form of collusion.

Criticism was voiced from the low-cost airlines that far too little had been done instead to improve the connectivity of especially regional airports by improving intermodal links: key challenges remain because timetables are not adjusted and because of a lack of investment in rail connections to regional airports, which don't necessarily have to be high-speed connections.

In fact, room for integrated mobility was identified but mostly outside of the sphere of high-speed rail and low-cost air. As a matter of fact, HSR connections can free up capacities on congested airports that can then be used for long haul flights; better connections of regional airports would increase their catchment area and enable more point-to-point traffic, thus easing capacity on congested airports; and existing forms of cooperation start to link HSR and even air with local public transport addressing the important "last mile" of a journey.

Competition between Air and High-Speed Rail: the case of the Rome-Milan Corridor

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Recently, interesting dynamics occurred in the air and high- 2010 and 2011 collecting 1,386 interviews. speed rail (HSR) passenger transport markets in Italy. Over time, The main drivers that affect both the Ro-Mi consumers' choice the Rome-Milan (Ro-Mi) corridor received a lot of attention from the European Commission and the Italian Competition Authority. In particular, in 2012 the Italian Competition Authority investigated the air and HSR substitutability for the Rome Fiumicino airport-Milan Linate airport route between Alitalia-CAI and Trenitalia. The Ro-Mi case study is particularly interesting not only because it connects the two most populated Italian multi-airport cities with a high share of business passengers, but also because of the recent dynamics observed in both passenger transport markets (e.g. Alitalia-AirOne merger, market entry of Ryanair and Easyjet airlines, market entry of a private HSR operator -Nuovo Trasporto Viaggiatori- NTV1).

The aim of the presented research project is to analyse inter and intra-modal transport competition in the Ro-Mi corridor investigating travellers' preferences. A joint Revealed and Stated Preference (RP-SP) survey was designed and conducted from

and determine transport competition were identified by an additional ad hoc survey revealing the relevance of such factors as: total travel time (access time, station-to-station/airport-toairport, waiting time, egress time), total travel cost (access cost, egress cost and fare), delay (minutes of delay), ticket flexibility (possibility to modify the ticket before the departure date) and on-board services (availability of on-board services).

Estimating joint RP-SP discrete choice models, total travel time and cost proved to be the most important factors. However, interesting results were found for the relevance of on-board services and ticket flexibility attributes. Especially, "Mobile Phone use" appeared to be the most preferred among the tested on-board services (e.g. WiFi Internet connection).

Table 1 illustrates the estimated Ro-Mi market shares based on transport characteristics.

Table 1 - Estimated Ro-Mi transport market shares

Transport service	Trenitalia	NTV	Alitalia	Ryanair
characteristics	S THENTALIA CONTRACTOR OF THE PROPERTY OF THE	.italo	Alitalia Air One	SWANAIR OF THE STANAIR
Total travel time	3h30'	4h5'	3h10'	5h
Time travel cost	€70	€75	€150	€89
Delay	4'	4'	10'	7'
Ro-Mi market shares	40%	23%	36%	1%

is shown in Table 2.

one for HSR operators, mainly for the competitor NTV, which could increase its market share by up to 9% by this means. A In the last few years, significant improvements have been made fare reduction would allow Alitalia-CAI airlines to strongly in the Ro-Mi corridor by the HSR operators to reduce travel

From a transport operator point of view the simulations increase its market share (+11%). The market entry of EasyJet conducted imply several business policy suggestions. An airlines had an important impact on the Ro-Mi transport market overview of the all simulated policies and their estimated impact competition as they obtained 6% of market share. Simulations suggest however that, given the aggressive competition by other Overall, reduction of total travel time is the most important Ro-Mi operators EasyJet could reduce its market share from 6%

Between the main shareholders, it is interesting to note that 20% is owned by the French HSR operator Société nationale des chemins de fer français (SNCF).

air transport system provides 35 flights.

Regarding the level of fares, an ad hoc survey based on simulations through the Ro-Mi transport operators' web sites shows a progressive increase of Trenitalia average ticket price, a decrease for Alitalia-CAI and the NTV average ticket similar to Trenitalia. Except for Ryanair and Easyjet airlines, a process of fare convergence could be detected between all

time. In fact, currently HSR performs other Ro-Mi transport operators. Using discrete choice logit well on the Ro-Mi link with an average modelling, the cross-point elasticity measures² are estimated travel time of 2 hours and 55 minutes performing also by segmentation analysis by type of passenger for Trenitalia and 3 hours and 20 (time sensitive versus non-time sensitive). Overall, positive minutes for the competitor, NTV. Also values of cross-point elasticities were obtained. Moreover, with reference to the daily frequency of higher values were found for travel time variations rather transport services, the HSR system has over time improved its than travel cost. With reference to the substitutability between offer significantly especially in the early hours of the morning. the air and HSR transport in the Ro-Mi corridor, considering Currently, the HSR system provides 57 daily trains while the important improvements in daily frequency and the travel time reduction of the HSR system, the average fare convergence among operators and the estimated cross-point elasticity measures, air and HSR transport operators in the Ro-Mi corridor can be considered as substitutes serving the same relevant market for both time sensitive and non-time sensitive passengers.

Table 2 - Overview of the simulated policy results

Policy nr.	Business strategy description	The Ro-Mi transport operators					Overall impact by sector	
		Trenitalia	NTV	Alitalia- CAI	Ryanair	Easyjet	HRS	Air
	Ro-Mi base scenario	40%	23%	36%	1%	-	63%	37%
1	Market entry of Easyjet	38%	22%	34%	1%	6%	60%	40%
	respect base scenario	-2%	-1%	-2%	0%	-	-3%	-2%
2	NTV travel time reduction	37%	30%	33%	1%	-	66%	34%
	respect base scenario	-3%	7%	-3%	0%	-	3%	-3%
3	Trenitalia and NTV ticket price reduction	42%	24%	33%	1%	-	67%	33%
	respect base scenario	2%	1%	-3%	0%	-	3%	-3%
4	Alitalia-CAI ticket price reduction	33%	19%	47%	1%	-	53%	47%
	respect base scenario	-7%	-4%	11%	0%	-	-11%	11%
5	Trenitalia and NTV travel time reduction	49%	32%	19%	0.5%	-	81%	19%
	respect base scenario	8%	9%	-17%	-0.4%	-	17%	-17%
Policy mix	Combination of the previous business policies	46%	30%	24%	0.4%	0.3%	76%	25%
	respect base scenario	8%	8%	-10%	-0.6%	5.7%	16%	-16%

This type of elasticity is the percentage change in modal choice probability for transport alternative 'A', caused by a change in the travel cost (or travel time) of transport alternative 'B'.

Further readings
Community Observatory on airport capacity, 2013, An aviation stakeholder's view on intermodality
This document is based on the work plan of Working Group 3 (WG3) of the Community Observatory on Airport Capacity and constitutes WG3's main deliverable. It contains information collected during working group meetings, in particular presentations from members and invited experts, discussions and study visits. On the basis of this
work, the working group members reached a common understanding of what intermodality at airports actually means, and is likely to bring to the airport capacity crunch currently faced within the largest European hubs.
The aim of this document is not to present an exhaustive description of all intermodality issues, but to serve as a common basis for future policy discussions on intermodality concerning the aviation sector, where aviation stakeholders intend to play an active role.
The document has been finalised and delivered at the end of the mandate of the Observatory (November 2013) and it includes a set of recommendations to the European Commission, as the main policy initiator.
European Parliament's Policy Department A: Economic and Scientific Policy (ed.), 2013, Proceedings of the workshop "Competition in the transport sector: Market entry barriers in railway and aviation?" PE 507.475
Liberalisation in the railway and aviation sector takes place at a different pace and the number of competitors to former state owned monopolists in particular in the railway sector is relatively low. The participants at this workshop discussed practical experiences and specific problems in both sectors. Among others, Prof. Kay Mitusch (Karlsruhe Institute of Technology), Brian Kogan (Office of Rail Regulation UK), Hubert De Broca (DG COMP, European Commission), Jean-Eric Paquet (DG MOVE, European Commission) gave their contribution to the debate. Following the European Commission's Report on EU Competition Policy 2012, the views exchanged during this workshop discussion provided support to the members of the European Parliament's Committee on Economic and Monetary Affairs in determining their position in regard
to the then ongoing discussion of the Report on the 'Annual Report on EU Competition Policy 2012'.

European Region Airline Associations, 2011, Air and rail: Setting the record straight environment, investment, mobility and political bias
This study points towards the need for a radical rethink on how rail and air are perceived by consumers, politicians and industry. One of the main claims is that both air and high-speed rail offer a solution to providing intra-European transport, but there is the case for rail as the "preferred" mode by policy-makers and transport planners.
The aim of this study is to present facts and well researched arguments that underline both the essential role played by air transport in Europe but also the bias shown towards rail across Europe. This study maintains that such bias results in distortions of competition between air and rail with the competitive balance loaded in favour of rail. This study looks at networks and the contributions of the two modes in addition to their environmental impact, the return on investment, competition and substitution, and the different regulatory approaches taken by policy makers for each mode.
Hylén Bertil, 2013, High Speed rail connected: Intermodal ticketing between rail and other modes
Europe should, according to the EU White Paper (EU 2011), by 2020 establish the framework for a European multimodal transport information, management and payment system. The White Paper also stresses the connection of high-speed rail with other modes of transport.
This paper describes how six European countries have introduced various schemes for multimodal or intermodal passenger transport including through ticketing for long distance rail combined with local/regional public transport. These schemes are referred to as ICReg. Different systems for revenue distribution between the parties involved – rail operators, local operators, Passenger Transport Authorities (PTA) – also exist.
The six countries described in this paper (Spain, Italy, Great Britain, Germany, Denmark, Sweden) have chosen different schemes but in most other European countries there are no similar schemes at all. There are century-old barriers between long distance and local/regional operators which need to be broken down. The author recommends that the rail and public transport sectors should not wait for ITS or the EU to solve intermodal problems on a European scale but start developments on a small scale taking into account different market conditions and easily
Europe should, according to the EU White Paper (EU 2011), 2020 establish the framework for a European multimodal transport information, management and payment system. The White Paper all stresses the connection of high-speed rail with other modes of transport. This paper describes how six European countries have introduct various schemes for multimodal or intermodal passenger transport including through ticketing for long distance rail combined with loc regional public transport. These schemes are referred to as ICRO Different systems for revenue distribution between the parties involverally operators, local operators, Passenger Transport Authorities (PT – also exist. The six countries described in this paper (Spain, Italy, Great Britans Germany, Denmark, Sweden) have chosen different schemes but in mother European countries there are no similar schemes at all. There are century-old barriers between long distance and local/regional operator which need to be broken down. The author recommends that the rand public transport sectors should not wait for ITS or the EU to so the section of the EU to so the end of the EU to so the EU to



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The FSR-Transport Area's main activities are the Florence Transport Forums, which address policy and regulatory topics in different transport sectors (Rail, Air, Urban, Maritime, Intermodal transport and Postal and delivery services). They bring relevant stakeholders together to analyse and reflect upon the latest developments and important regulatory issues in the European transport sector. These Forums inspire the comments gathered in this European Transport Regulation Observer.

Complete information on our activities can be found online at: fsr.eui.eu