

## Travel, Transport & Logistics (Europe)



# A new line to growth

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# A new line to growth

The passenger-rail industry in Europe is undergoing significant change. For many years, the industry benefited from a general increase in demand for mobility and from public investment in infrastructure and services. The future looks more austere, with weak economic growth, stagnating mobility demand, and limited public funds. To grow, passenger-rail operators must devise strategies to increase modal share<sup>1</sup>—in other words, take share from other modes of transport. Our latest research suggests that passenger rail can continue to achieve attractive growth rates, provided management keeps operations on track and invests in solutions that make rail more attractive than cars. At the heart of our study are three scenarios of future growth. In the most likely scenario, we expect passenger rail's market share to grow at the expense of other modes of transport by 2.5 percentage points, an increase of 35 percent over today's market share of 7 percent.

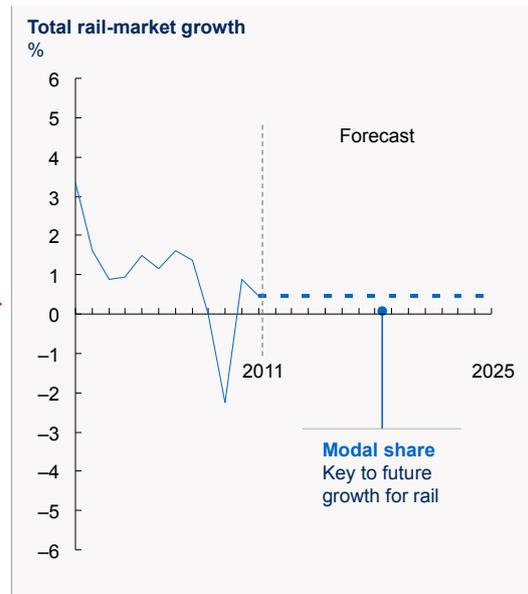
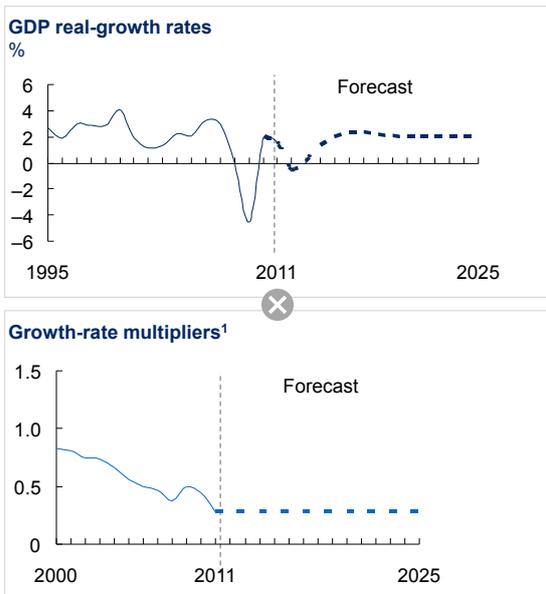
## A look in the rearview mirror: Past growth

Since 1995, passenger rail volumes have grown on average by 1.7 percent per year. Around 60 percent of this increase stems from general growth in the passenger-mobility market, which essentially shadows the path of GDP. From the 1960s to the early 1990s, passenger-rail service actually grew faster than the economy as a whole, as evidenced by its GDP multiplier being greater than 1. However, in the mid-1990s, the multiplier dropped below 0.5, where it appears to be stuck. The persistence of the low multiplier is a clear indication that the mobility market is saturated and that operators can no longer rely on broader economic growth to drive passenger volumes (Exhibit 1).

**Exhibit 1** Growth in the mobility market is stagnant.

### EU-15

#### Development of underlying drivers



<sup>1</sup> Growth of total mobility market (passenger-kilometer) over growth in real GDP calculated as 10-year moving average.  
Source: Eurostat; International Transport Forum; OECD Statistics

<sup>1</sup> For the purposes of this article, we define modal share as the relative share of each mode of inland transport. The unit of measure is the number of kilometers a passenger travels using a particular mode of transportation.

The remaining 40 percent of growth in passenger rail has come from market-share gains at the expense of other modes of transport. Because the factors most responsible for these gains are likely to remain important for future modal-share growth, our study examined 18 factors related to passenger rail and competing modes of transport—everything from railway-network density and station locations to the regulatory environment for countries in the EU-27.<sup>2</sup>

When we analyzed differences in the absolute levels of modal share across countries, the results were not particularly surprising. In countries where operators invested heavily in railway-line density and train frequency and speed, passenger rail captured a much larger share of the mobility market, as one might expect. For example, France has become well known for expanding its high-speed rail network, Train à Grande Vitesse, and has succeeded in increasing passenger-rail modal share by about 2 percentage points nationwide.

When we analyzed the rate of change of modal share over time, several factors came into play. The most influential were the availability and performance of competing modes of transport, in particular the car. The availability and performance of rail itself was also important, though to a lesser extent. While

operators may have little control over the availability and performance of cars, they can pursue strategies to make rail perform better than competing modes. The Dutch rail operator Nederlandse Spoorwegen offers a case in point: between 2004 and 2011, the company worked to improve its communication with customers on train punctuality and at the same time increased its on-time performance to 95 percent, from 86 percent. Customer satisfaction rose sharply, as did the railway’s modal share, which jumped to 9 percent from 8 percent.

## Full speed ahead: Future growth

With a clearer understanding of what influenced growth in the past, we sought to isolate the specific forces most likely to influence passenger-rail modal share in the future. They include some factors related to business performance (use of big data, competition from new operators, expansion of high-speed rail), technological innovation (automotive energy efficiency, autonomous cars, door-to-door connectivity), regulations (carbon emissions, integrated traffic management, traffic regulation and pricing) and public funding, and behavioral trends (urbanization, attitudes about cars) (Exhibit 2). After analyzing the potential effect of these forces on passenger rail, we identified three

**Exhibit 2** A number of forces could affect modal share through 2025.

Impact on rail modal share relative to other modes of transport

Extent of industry influence	General competitive differentiators		Unique competitive differentiators of rail versus car		
	Price/cost	Ease of use	Passenger productivity	Predictability	Eco-friendliness
High	<p><b>Business-performance improvements</b></p> <p>▲ Competition ▲ Big data ▲ High-speed rail</p>		<p>▲ High-speed ▲ Wi-Fi</p>	<p>▲ Big data</p>	<p>● Energy recuperation</p>
		<p>▲ Door-to-door connectivity</p>	<p>▼ Autonomous cars</p>	<p>▼ Integrated traffic management</p>	<p>▼ Automotive energy efficiency</p>
	<p>▼ Decreased public funds</p>		<p>▲ Traffic regulation and pricing</p>		<p>▲ Tighter CO<sub>2</sub> emissions</p>
Low		<p>▲ Urbanization</p>			<p>▲ Changed attitude toward cars</p>

<sup>2</sup> Our analysis of the EU-27 plus Croatia, Norway, and Turkey excludes Malta and Cyprus, as they are EU countries without rail. We analyzed data from 1995 through 2012.

possible scenarios—low growth, moderate growth, and high growth—that could unfold over the next decade.

The low-growth scenario assumes that the car and other competing modes of transport will improve significantly. In this scenario, the value of technological innovations (such as improved automotive energy efficiency and autonomous cars) outweighs the value of improved rail performance and behavioral trends, like urbanization. The result is a slight decline—of 0.1 percentage points, or 1 percent—in rail’s share of the mobility market.

The high-growth scenario is based on the assumption that railways will significantly improve their performance, participate in technological innovations, and at the same time benefit from behavioral trends such as a shift away from car ownership. In the high-growth scenario, the modal share of passenger rail almost doubles as rail gains nearly 6 percentage points of market share.

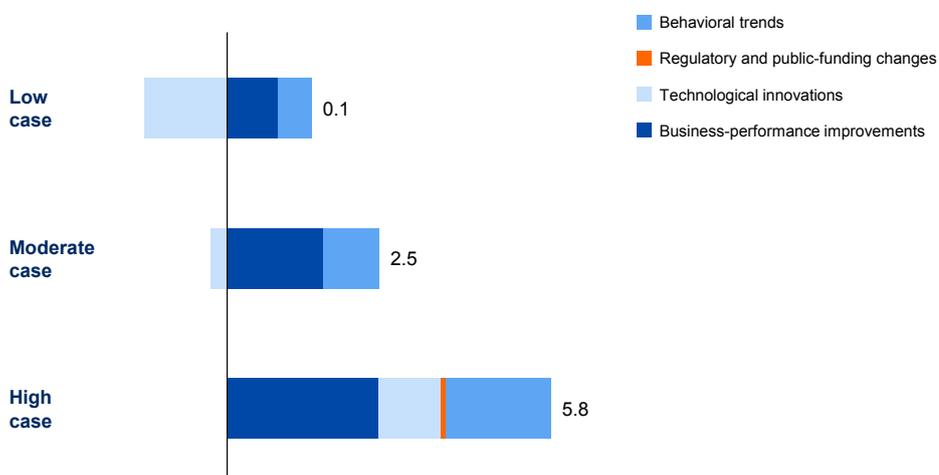
In the moderate-growth scenario, better rail performance and technological innovations that improve service, coupled with changing behaviors, increase rail’s market share by 2.5 percentage points, or 35 percent (Exhibit 3). Balance among the most relevant factors and the absence of extreme forces make this growth scenario the most likely. We isolated the three factors that we believe will have the greatest influence

on passenger-rail market share; each has the power to increase rail’s share by 0.6 to 1 percentage points:

- Big data.** The amount of data in our world continues to multiply. The ability to analyze large data sets—so-called big data—is becoming a key source of competitiveness, productivity growth, and innovation across sectors. Transportation is no exception. Railways should make use of new opportunities and technology to compile and evaluate large quantities of data. Doing so will help optimize the passenger-rail business in three important ways. One, data and analytics can be used to design schedules and manage capacity and pricing. Airlines have used similar techniques, referred to as yield management, to improve their networks, scheduling, and fleet utilization. Two, electronic-ticketing solutions offer rail operators an opportunity to better understand their customers, many of whom remain unknown to them. Electronic ticketing also makes it easier to capture fare data and more economical to collect fares. Three, a number of metro and rail operators have begun using electronic maintenance-management systems, powered by big data, to monitor track conditions and train performance in real time. With a clear picture of the current condition of their fleet and infrastructure, operators can better plan maintenance and repairs, proactively order spare parts, ensure train availability

**Exhibit 3** By 2025, passenger-rail modal share could increase by as much as 5.8 percentage points.

**Projected change in modal share for EU passenger rail, 2012–25, percentage points**



and performance, respond to demand, strategically staff personnel, and avoid breakdowns. Although some rail operators are using big data, most have yet to tap the full potential of customer, fleet, and operating data.

- **Door-to-door connectivity.** Integrating rail with other modes of transport—including new models such as car sharing—to provide door-to-door service makes rail a more attractive and efficient option for passengers. We are seeing first steps toward door-to-door connectivity in some markets. For example, in Berlin and Hamburg, car-sharing businesses are heavily concentrated around mass-transit hubs, which suggests that these cars are often used as the connector to customers' final destinations. In addition to bridging the last mile to a destination, door-to-door connectivity can offer customers another important advantage—information. Customers want a single transport solution, or at least a single point of contact. By giving passengers real-time information about the availability of all modes of transport, railway operators can become the sole solution. Ideally, a rail operator's digital platform will identify a customer's location, display the best route and connections to the customer's final destination, and offer the customer choices in comfort, speed, and pricing. A natural extension would be to handle ticket sales and automatic billing for all modes of transport. Passenger-rail operators should forge alliances early with car-sharing, taxi, and even bike-rental companies in order to offer customers better service and door-to-door connectivity and gain access to a broader data pool. They should also look for opportunities to obtain the technology or partner with Internet companies that can provide the platform.
- **Attitudes toward cars.** Studies suggest that a growing number of consumers view cars as just another method of transportation, rather than a necessity or status symbol. Young people, in particular, seem to have a new attitude toward car ownership. In many EU countries, particularly in Western Europe, the share of people under 30 with driver's licenses is declining; in the United Kingdom, for instance, the share has fallen by around 10 percentage points since 1992. A recent analysis of new-car registrations in Germany revealed that just 27 percent of new-car buyers are under the age of 45.<sup>3</sup> Although rail operators have little control over consumers' perceptions of car ownership, this trend could amount to a 0.7 percentage-point shift in modal share.

Three additional forces will have important effects on passenger rail. However, their impact on modal share is less clear:

- **Competition.** Competition from new rail operators is a double-edged sword for incumbent railways—which in many cases, are national railway operators. While competition from new rail entrants may temporarily compromise an operator's market share, it makes the overall market grow faster. At the same time, competition forces all participants to recognize the need for change, including employees, labor unions, politicians, and the general public. Transformational changes to legacy business models and contracts suddenly become possible, and rail travel as a whole becomes more efficient. Since deregulation in the mid-1990s, the unit cost in rail concessions has decreased by approximately 25 percent in the first round of competitive tendering and, in subsequent rounds, declined slightly further or remained at the same level. Customers in Austria, the Czech Republic, and Italy enjoy lower prices and more attractive schedules and service offerings because of new competition in long-distance rail.
- **High-speed rail.** Historically, the opening of new high-speed rail lines has resulted in a strong bump in passenger volumes. However, many of the most attractive high-speed lines—for example, in France, Italy, and Spain—were built years ago, and today the cost of expansion may outweigh the benefits in some markets. Most new connections are associated with very high costs, met with resistance from people who live along the routes, and unlikely to generate the passenger volumes that their predecessors did. Still, to fully tap the potential of existing high-speed rail lines, it is important to complete in-process projects and close gaps in high-speed rail routes.
- **Urbanization.** Increasing urbanization favors mass-transit solutions, such as rail or bus, mainly at the expense of the car. Urbanization also encourages other modes of transport such as walking and biking. This trend could boost rail-passenger modal share by 0.3 percentage points.

Having weighed the forces most likely to affect passenger rail in the future, rail operators would be wise to focus on those most within their realm of influence: big data, door-to-door connectivity, and competition. Together, they could improve passenger rail's market share by approximately 1.9 percentage points.

3 Chris Bryant, "Carmakers face difficulty attracting young buyers," *Financial Times*, February 9, 2014, ft.com.

## Trouble down the tracks: Barriers to growth

Two forces could present real challenges to rail operators and significantly decrease rail's modal share. The timeliest force is uncertainty surrounding the cost position of the car. Improvements in fuel consumption and energy efficiency are making the car an increasingly eco-friendly option for consumers. As the related technology, in particular the electric-vehicle battery, matures, the cost of owning an electric vehicle will eventually decrease.

The most important and potentially disruptive force is still years away. However, rail operators cannot ignore the autonomous car.<sup>4</sup> The technology is established. Google reports that its self-driving cars have traveled more than 700,000 miles.<sup>5</sup> Mercedes-Benz is incorporating autonomous driving functions such as stop-and-go autopilot into its new S-Class cars. Industry experts believe that the largest barriers to widespread adoption of autonomous vehicles—liability, regulations, and consumer perception—are likely to be resolved by 2025. Autonomous vehicles offer several potential benefits, including fewer fatalities from motor-vehicle accidents and reduced carbon emissions. With computers

controlling acceleration, braking, and steering, tightly spaced cars and trucks can safely travel at higher speeds. Traffic jams are likely to be reduced. The autonomous vehicle also directly threatens a key advantage rail travel offers passengers—productivity. In an autonomous vehicle, drivers become passengers who can make more productive use of their time in the car. They can work, read, or make calls, much the same way they do today on the train.



Despite sluggish growth in the European Union and stagnating passenger volumes, the outlook for passenger rail is promising. Following a period of infrastructure expansion, digitization is creating new and important opportunities for operators in the form of big data and door-to-door connectivity. At the same time, increased intermodal competition continues to encourage innovation and improvements to the rail business model and technology. To succeed in this environment and take market share from competing modes of transport, passenger-rail operators must position themselves strategically and build their capabilities. Those who wish to move quickly and take part in today's innovations may consider strategic partnerships, joint ventures, or acquisitions to be a crucial first step.

<sup>4</sup> To read more about autonomous vehicles, see *Disruptive technologies: Advances that will transform life, business, and the global economy*, McKinsey Global Institute, May 2013, on [mckinsey.com](http://mckinsey.com).

<sup>5</sup> *Google Official Blog*, "The latest chapter for the self-driving car: mastering city street driving," blog entry by Chris Urmson, April 28, 2014, [googleblog.blogspot.com](http://googleblog.blogspot.com).

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