Case Study

SNCF Réseau[337]

1 Introduction

France was the first country in Europe to use the Public-Private Partnership (PPP) model to finance high speed rail (HSR) investment. France has the largest PPP program in Europe, accounting for about 57 percent of the total PPP investment in HSR across all European countries.

Using PPPs allowed the French rail infrastructure manager, Réseau Ferré de France (RFF, now SNCF Réseau[338]), to significantly accelerate the development of the French HSR network beyond what it could have with traditional state funding and RFF resources. Before the use of PPPs, the first four HSR projects took about 20 years to be completed[339]. With the use of PPPs, however, RFF was able to launch and construct four additional HSR projects within a seven-year period[340].

This case study begins by describing the reforms undertaken by the French national railway. It then discusses the emergence of PPPs as a new tool for financing railway investments in France. The study then proceeds to discuss the institutional structures, laws, and regulations underpinning the French national railway, followed by a discussion of the financial impact that PPPs had on RFF (prior to its restructuring). The case study concludes with lessons to be drawn for other railways considering the use of PPPs in financing new developments.

2 The Reform Process

French National Railway Reform

Prior to 1997, the French National Railway Company (SNCF) was a vertically integrated railway, managing both rail infrastructure and train operations. SNCF was restructured in 1997 to satisfy the European Union acquis communautaire for railways, which required vertical separation of the accounts for rail infrastructure and

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[337] This case study is largely based on Lawrence, Martha; Ollivier, Gerald. 2015. *Attracting Capital for Railway Development in China*. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/23800 License: CC BY 3.0 IGO. URI: http://hdl.handle.net/10986/23800

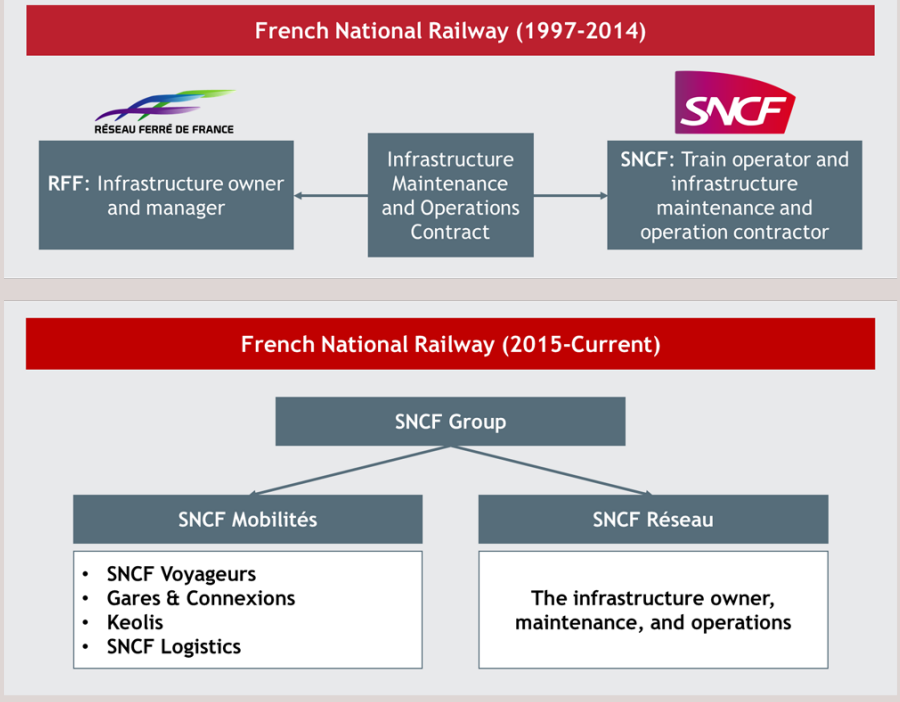
[338] On January 1, 2015, RFF was restructured and subsequently renamed as SNCF Réseau, a division of SNCF.

[339] Inclusive of approvals, construction, and operations.

[340] The four PPP projects include: (1) the GSM – Rail Telecom Project (signed 2010), (2) the South Europe Atlantic HSL (signed 2011), (3) the Brittany-Loire Valley HSL (signed 2011), and (4) the Nîmes and Montpelier Bypass HSL (signed 2012). Whereas the GSM-Rail Telecom Project was concluded on 31 March, 2016, the remaining three projects are reported to be on schedule, becoming fully operational by the final quarter of 2017.

train operations. Ownership of the railway network was transferred to a separate company, named Réseau Ferré de France (RFF)[341]. RFF focused on track improvement and development, network investment choices and financing. RFF contracted with SNCF to undertake the maintenance and operation of railway infrastructure. All national rail infrastructure and infrastructure-related debts were put into RFF (€20.5bn)[342]. SNCF continued to provide train services, in addition to maintaining and operating the railway infrastructure under contract with RFF, and paid track usage charges to RFF. (See Figure 1.)

Figure 1 French National Railway 1997-2004 and 2015-Current



Source: SNCF and RFF

On 1 January, 2015, RFF and SNCF were once again restructured to be combined into the SNCF Group[343]. All infrastructure assets were put into SNCF Réseau, which became responsible for infrastructure development, operations and maintenance. Units of SNCF that previously carried out the infrastructure maintenance and operations contract were transferred to SNCF Réseau, enabling SNCF Réseau to carry out these activities directly. SNCF Mobilités became responsible for the provision of transport services, including freight and passenger services, as well as station management and development.

[341] Law No. 97-135 effectively reorganized the French railway sector and created RFF.
[342] Decree 97-444, 97-445 and 97-446 of 5 May 1997 respectively set out the duties and articles of incorporation of RFF, the initial assets of the public establishment, and charges for the use of the national rail network payable to Réseau Ferré de France - This decree established the rules for the calculation and collection of charges for the use of the national rail network.
[343] The Act of 4 August 2014 created the new state-owned SNCF Group as of 2015. The Group's components included SNCF Mobilités, which became responsible for all SNCF transport operations (both in France and internationally), and SNCF Réseau, which became responsible for managing France's national rail network.

3 Institutional Structures, Laws, Regulations, and Environment

Actors influencing the development and operations of French rail

In addition to the SNCF Group, the French railway sector includes a number of other licensed railway operators providing train services using the infrastructure of SNCF Réseau.

The railway sector, including the HSR lines, is subject to regulation from the following:

- The Railway Activities Regulatory Authority (ARAF), which is responsible for ensuring that all railway operators have fair and equal access to the railway infrastructure in France. ARAF was created by the Act on the Organization and Regulation of Railway Transport in 2009 and is an independent administrative authority responsible for *guaranteeing* equal treatment for all organizations involved in the railway system. It ensures that access to the national railway network is provided under equal conditions for all railway companies, and that the development of competition is not hindered by rules governing the pricing of infrastructures in particular; and
- The Public Establishment for Railway Safety (EPSF), which ensures compliance with safety rules and consistency in operational safety and technical conditions for all railway companies, on behalf of the Minister for Transport.

The French PPP structure includes three groups of actors: public authorities, railway procurement authorities and the private sector.

- **Public Authorities:**
    - The Ministry of Economy, Finance and Industry and the Ministry of Budget, Public Accounts and Civil Administration provide high-level guidance on railway investment, defining the network's general directions, making decisions on major works, and participating in the financing of projects and the renovation of the network.
    - The MAPPP, a central PPP unit, was created in 2004 and is responsible for the preliminary evaluation of PPP projects.
    - The regional governments are taking on a growing number of responsibilities in the area of public transport. On 1 January, 2002, they became regional transport organization authorities, and have since made a significant contribution to defining transport policies and financing the development of the network, particularly under State/Region Strategic Plans (CPER).
- **The Railway PPP Procurement Authorities:**
    - SNCF Réseau (formerly RFF) is the owner and operator of the French railway system. It decides how the network is to be run and maintained.

- European Organizations help to define and ensure compliance with the access and other rules imposed on all national companies.

- **The Private Sector:**
  - A number of private sector companies have been involved in PPP rail projects. In France, three contractors (Eiffage, Vinci, and Bouygues) have won most of the rail PPP projects to date.

Laws and regulations

French PPP legislation very clearly outlines the scope and applicable models of PPPs. The legislation covers the obligations of public authorities with regard to feasibility and consultation, procurement procedures, issues to be addressed in contractual provisions, payments, the institutional framework and the duration of projects. This clarity has allowed the private sector to clearly understand the risks it accepts in a PPP deal, and has therefore facilitated its continued involvement in HSR projects.

SNCF governance and incentives

SNCF Réseau is the ultimate owner and manager of the French railway network. Regardless of the financing model used for a particular project, SNCF Réseau remains in charge of the network, ensuring a national perspective in network development and management.

SNCF Réseau is governed by a Supervisory Board (Board of Directors) that defines the company's policy and oversees its implementation. The Board is composed of representatives from the company (1/3), representatives of the state (1/3), and representatives of employees (1/3). The Chairperson of SNCF Réseau is appointed by the French Government's Council of Ministers, following the Board's proposal. The Chairperson is responsible for applying the policy defined by the Board, improving the economic and financial situation of the company, and coordinating amongst the national and territorial divisions of SNCF Réseau.

Well established HSR sub-sector

The high speed rail sub-sector capacity had become mature after more than two decades of experience in building high speed lines, with a high level and constant commitment from the various governments. Thus, when PPPs were launched, consultation processes were well established at provincial and local levels, commercial experiences successfully carried out, and technologies well known and tested. This experience provided a level of comfort to private financiers and enabled the private sector, with higher financial interest and bringing technical know-how, to participate and perform well.

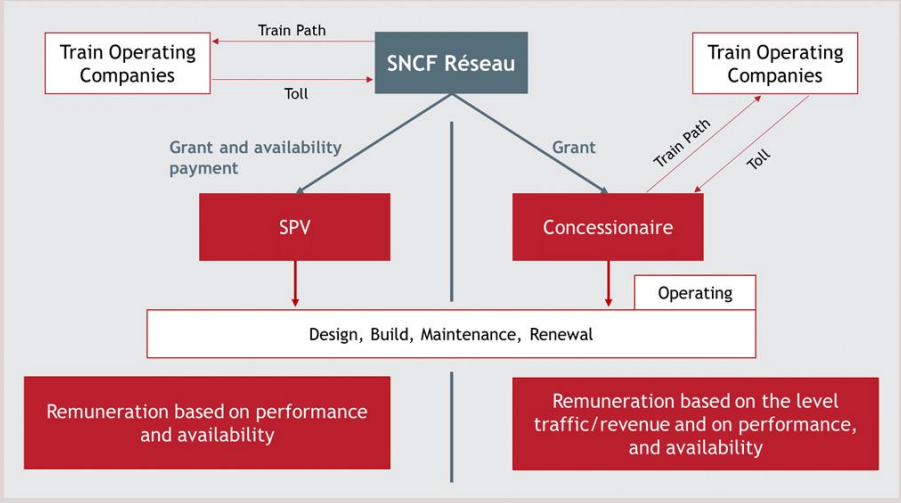
4 PPPs for Financing Railway Investment Projects

PPP Models in French HSR

In 2004, new legislation created a legal framework for Public Private Partnerships and established a central PPP unit (MAPPP) to carry them out[344]. One year later, MAPPP was set up and began operating.

In 2006[345], modifications to the existing legislation allowed RFF to enter into PPPs. This allowed RFF to draw on the technical and financial capacity of the private sector to help finance and deliver major infrastructure projects.
Two main PPP models have since been adopted in French HSR: partnership and concession[346]. Both models have the same objective—to finance, design, build and operate railway infrastructure. The main difference is in the allocation of traffic risk between the public and private parties, which alters the basis on which the private sector partner is reimbursed for providing new facilities. The mechanism behind each model is shown in Figure 2 and discussed below.

Figure 2 Partnership vs. Concession Models



Source: Adapted from RFF website

The partnership model: In the partnership model, SNCF Réseau pays a rental or availability fee for the asset for the duration of the agreement. The fee is based on the performance of the private sector partner against contractual performance indicators, related to both the quality and availability of the infrastructure provided. The fee paid to the partner is not related to the volume of traffic using the infrastructure asset. SNCF Réseau collects track access fees from train operators, assuming the entire traffic risk. The partnership model is used when forecast traffic

[344] The Legislation of 2004 (PPP law) created a central PPP unit (MAPPP), which became responsible for the preliminary evaluation of PPP projects.
[345] Law No. 2006-10 of 5 January 2006 modified the constitutive law for RFF. RFF was required to allow the participation of private parties in the construction, maintenance and operation of railway infrastructure. However, RFF would remain the ultimate owner of any infrastructure. SNCF remained in charge of the management of regulation and safety systems and the operational management of rail traffic.
[346] The 6 December 2006 Decree clearly defined the roles and the obligations of RFF and its private sector partners.

is relatively low, so the private sector partner is unwilling to accept any traffic or revenue risk.

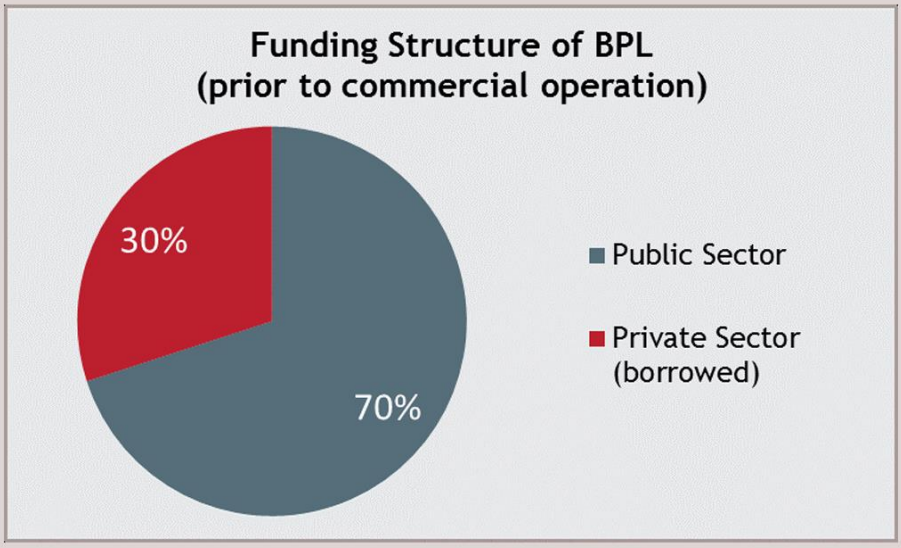
An example of the partnership model is the Bretagne Pays de la Loire (BPL) high-speed rail line in France. Built at a cost of 3.4 billion euros, the 182 km BPL HSR line connects Le Mans with Rennes (see Figure 3). With the improved travel speed, travel time between Paris and Rennes will be reduced by 37 minutes to 86 minutes. Once commercially operational in 2017, this line is expected to provide significant economic benefits to western France, improving connectivity between regional centers and to major European cities. Shifting passenger traffic to the new line will also increase capacity for freight on the existing lines.

Figure 3 Partnership Example: BPL Line

Source: RFF

Eiffage Rail Express (ERE) was contracted to build and maintain the BPL line, under a 25-year PPP contract. Figure 4 provides the breakdown of the funding sources prior to the BPL line's commercial operation and a breakdown of the funding sources throughout the concession (i.e. the project is fully financed by the public sector).

Figure 4 Funding Structure of BPL



Proportion of BPL Funding over Concession Period

Source	Proportion
RFF	43%
French Government	28%
Regional Authorities	28%
European Union	0%

Source: http://www.eiffage.com/files/live/sites/eiffage/files/Actualites/communiques/en/dossier_de_presse_en.pdf

The concession model: In the concession model, the private sector investor collects access charges from railway operators who use the infrastructure asset. These access charges pay for the operational costs of the line, in addition to providing for a return on the private investment. Since access fees are rarely sufficient to provide a return on the whole investment, RFF (now SNCF Réseau), regional authorities, and the national government must fund part of the investment. The concessionaire takes on the risks of project construction, financing, and operation.

An example of the concession model is the LGV Sud Europe Atlantique (SEA) line; a 303-kilometer HSR line connecting Tours and Bordeaux. The SEA is the largest Greenfield HSR project in Europe, with an estimated cost of 7.8 billion euros. Once the SEA is operational, it is expected that the travel time between Paris and Bordeaux will be reduced from three hours to two hours and 10 minutes. With the improved accessibility, this line is expected to carry about 18 million passengers per year when it opens in 2017.

Figure 5 Concession Example: SEA Line

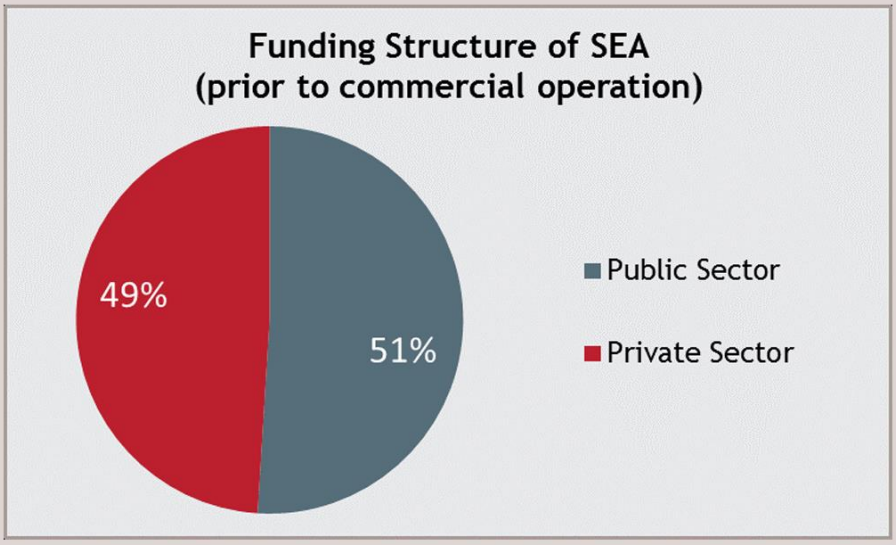
Source: Skyscraper city

The SEA project has been structured on a 50-year concession model, contracted with the Vinci-LISEA consortium in 2011. All design, construction, and operations risks, including traffic risk, are borne by the concessionaire. In return, the concessionaire will collect track access fees on trains using the corridor, including both those operated by SNCF Mobilités and other operators.

Figure 6 provides the breakdown of the funding sources prior to the SEA project's commercial operation and a breakdown of the funding sources throughout the concession. The overall funding of this project included a mix of debt and equity contributions, with about 13 percent of the total costs funded by RFF (now SNCF Réseau), and 39 percent funded by the national government, regional authorities, and the European Union. Given the concessionaire's acceptance of traffic risk, the Vinci-LISEA consortium directly contributed nearly 10% in equity, in addition to having raised the remaining 39 percent in debt (i.e. the privately financed share is greater under a concession than it is under a partnership since the private sector accepts traffic risk)[347].

[347] Note that 28.4% of the (private) debt raised by the concessionaire is backed by guarantees provided by the national government and RFF (now SNCF Reseau).

Figure 6 Funding Strucure of SEA



Sources of SEA Funding over Concession Period

Source	Proportion	Amount (millions of Euros)
French State, Regional Authorities & European Union	39%	3,000
Debt backed by French Government	19%	1,460
RFF	13%	1,000
Debt backed by RFF	10%	757
Concessionaire Equity Contribution	10%	772
Non-Guaranteed Debt	10%	812
Total	100%	7,801

Such PPP arrangements are not without challenges. As the train schedule is being developed, SNCF is arguing that the track access costs are too high compared to the existing conventional line. SNCF has also suggested a reduction in the number of stops, to shorten transit time. This, however, runs counter to the interest of local authorities, which have provided substantial financing for the development of the line. The concessionaire notes that the rates were set in the original concession agreement and are competitive when compared to other similar HSR lines. Managing such negotiations has added to the project's complexity.

Risk Allocation

In HSR projects with full public funding, the risks of financing, design/construction, operations and maintenance, and traffic all belong to SNCF Réseau. However, the use of PPPs transfers the financing, design/construction, operations and maintenance risks to the private sector. In the concession model, the private sector also takes the traffic risk, while in the partnership model, SNCF Réseau would assume the traffic risk. The allocation of traffic risk to the public sector reduces the risk of the private sector taking a short-term view, in order to ensure adequate revenue to service the debt in the early years. (See Figure 7.)

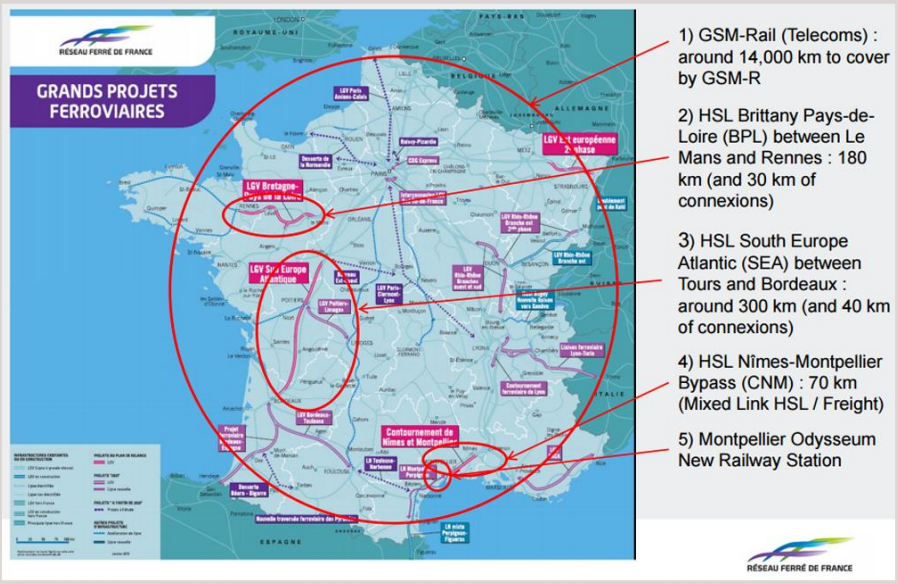
Figure 7 Allocating the Risks

	Public Scheme	Partnership	Concession
Financing Risk	State & SNCF	SPV/Concessionaire	SPV/Concessionaire
Design and Construction Risk	State & SNCF	SPV/Concessionaire	SPV/Concessionaire
Operation and Maintneance Risk	SNCF	SPV/Concessionaire	SPV/Concessionaire
Availability Risk	SNCF	SPV/Concessionaire	SPV/Concessionaire
Traffic Risk	SNCF	SNCF	SPV/Concessionaire

Source: Henn, L., Sloan, K., and Douglas, N. (2013). European Case Study on the Financing of High-Speed Rail. Australasian Transport Research Forum.

Using the partnership and concession models, RFF launched four HSR-related projects between 2010 and 2012 and also had a train station built (see Figure 8). In total, the length of new lines being built through PPPs is over 620 km, with an estimated cost of 15 billion euros, of which, the central government has financed only about 2.2 billion.

Figure 8 Recent PPP Projects



Source: PPP Projects for the Railways Network in France, 2012

5 Financial Impact

Changes in Financial Structure

Prior to 1997, French TGV lines were financed by SNCF debt, on the basis of estimated profitability. For example, the Sud-Est line was fully financed with SNCF debt, while the Nord line was financed with 20 percent of the funding from public authorities and 80 percent with SNCF debt.

With the introduction of RFF (now SNCF Réseau) in 1997, all debt related to existing HSR lines was transferred to RFF, the new infrastructure manager, (about 20 billion euros, accounting for some 60 percent of SNCF debt in 1997). During this phase, the total investment cost of each project was covered by RFF, together with subsidies from the French state, local authorities, other neighboring states and EU

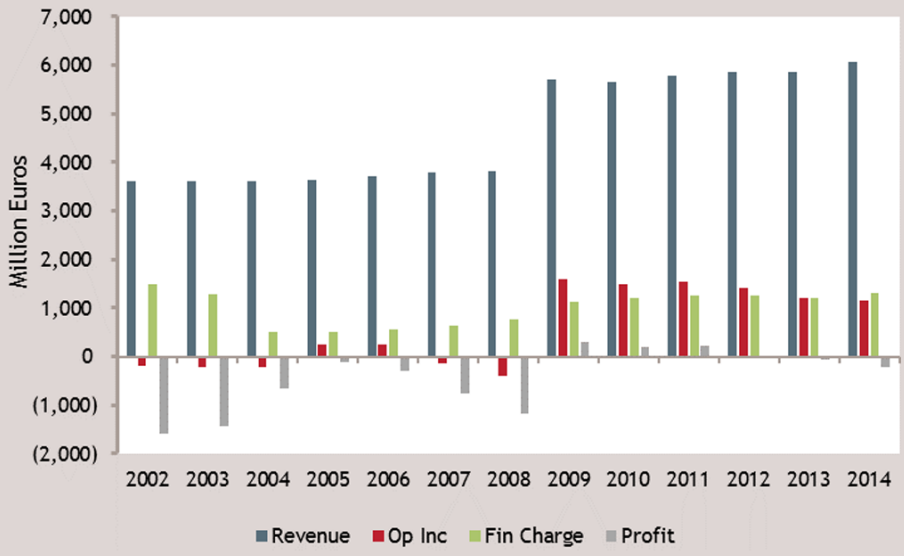
contributions. For example, 40 percent of the TGV Est line, opened in 2007, was financed by RFF.

With the introduction of PPPs, the financial strategies and structure changed significantly. The private sector now plays a major role, contributing financing through either a partnership or concession contract. Between 2010 and 2012, RFF launched four PPP projects (including GSM-Rail Telecom, BPL, CNM, and SEA) with varying degrees of private financing. For example, in the case of LGV Sud Europe Atlantique (SEA), private financing will amount to 3.8 billion euros throughout the concession period, almost 50 percent of the total cost.

Financial impacts for RFF

In the 2014 financial year, RFF declared total gross revenue of 6,067 million euros, with a net loss of 213 million euros. Details on the financial trends for RFF are shown in Figure 9. RFF revenue and operating results improved as of 2009, when access charges were significantly increased. Between 2009 and 2012, operating income exceeded financial charges, and RFF showed a small profit. However the "profit" (the gap between operating income and financial charges) declined steadily during this period. RFF resultantly recorded a loss in 2013 and 2014[348].

Figure 9 Financial Impacts to RFF



Source: RFF Financial Report (2001-2014)

[348] Because RFF was restructured into SNCF Reseau as of January 1, 2015, financial statement for RFF are only available through 2014.

6 Conclusion

This case study highlights the role of PPPs in the development of French HSR. In particular, it illustrates that:

- The PPP model can attract private sector financing for HSR infrastructure and enable projects to be delivered more quickly than would be possible with a traditional strictly public sector rail financing approach;
- A clear, predictable and legitimate institutional framework/law/regulation facilitated the development of HSR PPPs;
- PPP models that allocate traffic risk differently (partnership vs. concession model) are needed to attract the private sector, depending on anticipated traffic levels and financial performance of the project; and
- The PPP mechanism provides a way to get the private sector to define the degree to which a proposed investment is self-funding or requires a subsidy or revenue guarantee to be viable. PPPs therefore provide a transparent mechanism for outlining the initial and ongoing financial support which lower volume lines may require to be financially viable.

However, the overall financial rate of return of new HSR lines is declining as the network has become mature. The lines with highest traffic (i.e. those with the most potential for private financing) were built in the last two decades while the new projects are mostly for lower density branches. This will likely limit the appetite from the private sector.

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