OFFICE OF RAIL AND ROAD

Passenger rail

Trends and comparisons for franchised operators

March 2016

Contents

Executive summary

This report sets out our analysis of trends in the franchised passenger rail industry and compares the costs and revenues of franchised operators in the context of the service they provide.

We prepared the report with the advice and analytical support of the Department for Transport, and with data from public sources and confidential data provided by the Department for Transport, Transport Scotland, Network Rail and others.

The purpose of this report

The "Rail Value for Money" (RVfM) study[1], recommended that ORR benchmark franchised passenger operators' costs, both nationally and internationally, with a view to better understanding the key cost drivers and making efficiency comparisons between operators.

In response to this recommendation, we published our first report in 2012, along with a consultancy study benchmarking GB passenger operators against their European counterparts[2].

This is the second edition of that report and, as well as updating the analysis of the original report with more recent data, we supplement our findings with a richer analysis of their context.

In this report we discuss:

- how costs and revenues in the franchised passenger rail industry have changed over time and the factors that may have driven these changes;
- how costs and revenues differ between franchised passenger operators and what may account for these differences.

The objectives of this report are to:

- improve the understanding of the drivers of costs and revenues in the franchised passenger rail industry;
- increase transparency for taxpayers, passengers and the Government of the costs and revenues of the franchised passenger rail industry to help inform the public debate about the efficiency of the industry; and
- provide information for franchised passenger operators on how their costs and revenues compare to other operators, allowing operators to investigate the causes of any differences.

[1] http://orr.gov.uk/publications/reports/rail-value-for-money-study

[2] Both our report and the consultancy study are available on our website: http://orr.gov.uk/publications/reports/costs-and-revenues-of-franchised-passenger-train-operators-in-the-uk

Alongside this report we are also publishing the findings of two consultancy studies that we commissioned to deliver on the wider recommendations of the RVfM study. The first of these, "An assessment of the feasibility of compiling a dataset of European Train Operating Companies" by Civity, looks at options for comparing GB train operators with their European counterparts and considers the relative feasibility of these options given differences between the rail industries of each country.

The second study, "Understanding the Rolling Stock Costs of TOCs in the UK" by SDG, looks to understand the drivers of rolling stock related costs for different operators and the extent to which they are able to control those costs.

Both of these reports are available on our website: orr.gov.uk/publications/reports/passenger-rail-trends-and-comparisons-for-franchised-operators

The results of our analysis

The data used in the analysis throughout this report has been compiled from a range of industry sources. All the data in this report is in financial years, each reference to a year in this report covers the period 1 April to 31 March, for instance a reference to 2010 refers to the period 1 April 2009 to 31 March 2010. Using this data we have analysed how the revenues and costs of the franchised passenger industry have changed over time and compared the revenues and costs of each of the franchised passenger operators providing services in 2014. Our headline findings are set out below.

Revenue history

Between 2001 and 2014 franchised passenger operators' total revenue increased in real terms[3] by 31%.

The component of franchised operators' total revenue that increased the most over this period was farebox income, rising by 77% in real terms. The data suggests that the increase in the usage of the railways over the same period was the main driver of this increase in farebox income.

The large increase in farebox income was partly offset by a significant decline in direct support to operators from Government, which fell by 91% in real terms between 2001 and 2014.

However, it should be noted that although direct support to franchised operators has fallen, the Government still provides a significant proportion of the funding for the railway, in the form of the network grant, which is paid to Network Rail. In 2014 the network grant was £3.78bn (2014 prices), more than five times larger than it was in 2002.

[3] To allow values to be compared between different years, costs and revenues and changes in costs and revenues are expressed in 'real terms' (i.e. at a common price level). For a more detailed explanation see Annex A.

Cost history

The total costs of franchised passenger operators increased in real terms by 31% between 2001 and 2014. Operators' total non-access costs (i.e. excluding the charges paid by operators for access to the Network, which are set by ORR) increased by 56% in real terms over this period.

Over the same period the total number of train kilometres run by franchised operators, a measure of the volume of service they provided, increased by 20%. When you look at a measure of average costs instead of total costs operators' total non-access costs per train kilometre increased by 30% in real terms over that period, suggesting that the increase in the volume of service provided over the period explains a significant part of the real terms increase in operators' total non-access costs.

In addition to this increase in the volume of service provided, the usage and quality of operators' services also increased over this period, which may similarly account for some of the increase in costs.

In terms of quality of service provided, punctuality and passenger satisfaction levels both increased over the period. As it is costly to improve the punctuality and overall quality of the service provided to passengers, the improvement in these may account for some of the increase in costs.

Similarly, there was also an increase in the usage of operators' services over this period. The number of passengers per train increased between 2001 and 2014 by 30%. This increase in the intensity of service usage can increase a range of operators' costs (including, for instance, the number of operational staff they require and the amount of cleaning and servicing their rolling stock needs).

Cost and revenue comparisons between operators

The largest component of total revenue for the majority of operators is farebox income (i.e. income from ticket and railcard sales). Due to differences in the number of passengers each operator carries there are significant differences between operators in the amount of farebox income received.

In terms of operators' costs, there is large variation in both operators' total costs and the proportion of total costs that each component accounts for. These differences can be at least partly explained by differences in the volume of service provided and the service characteristics of each operator.

To compare operators' costs this report looks at four unit cost measures, which represent different ways of accounting for variation in volume of service; costs per train kilometre, costs per vehicle kilometre, costs per train hour and costs per passenger kilometre. Each measure takes into account a different aspect of an operator's service. For instance, looking at operators' costs per vehicle kilometre reflects differing train lengths between operators, while looking at costs per train hour brings to light differences in operating speed.

Differences in operators' service characteristics mean that the relative costliness of each operator varies depending on the measure of volume of service and, as the report sets out, no operator has unit costs consistently above or below the average. The diversity of operator services thus means that no single measure can be used to effectively compare the costliness or efficiency of different operators.

As well as the volume of service they provide, operators' costs are also affected by a range of service characteristics that are often largely, and sometimes entirely, outside of their control. For example, when an operator takes over a new franchise they may have limited ability to choose the rolling stock that they lease, while the number of stations that an operator manages is set out in the franchise specification. These and other cost drivers that operators have little control over, need to be taken into account when considering cost differences between operators.

1. Introduction

The purpose of this report

This report examines how the costs and revenues of the franchised passenger rail industry have changed over time and explores what has driven those changes. The report also compares franchised train operators' costs and revenues, and puts them in the context of differences in the volume and characteristics of the services provided by different operators.

The publication of this report, which updates our 2012 report, increases the transparency of the franchised passenger rail industry for taxpayers, passengers and Government. There is currently limited information in the public domain on the costs and revenues of the franchised passenger rail industry. This increased transparency will help inform the public debate about the efficiency of the industry; and provide information for franchised passenger operators on how their costs and revenues compare to other operators, allowing operators to investigate the causes of any differences.

Making this information readily available to taxpayers, passengers, franchise authorities and franchised passenger train operators helps improve efficiency and decision making in the industry.

The scope of this report

The focus of this report is the revenues and costs of the franchised passenger train operators. The analysis throughout this report uses the costs and revenues of franchised passenger operators and Network Rail. The freight sector and open access operators are excluded from this report. However it should be noted that some of Network Rail's costs and revenues included in this report are in part associated with the freight sector and open access operators. For example, a proportion of Network Rail's costs of maintaining and renewing assets on the network will be due to freight and open access operators using the network. In such instances it is not practical to use only the costs incurred by and revenues received from franchised passenger operators in the analysis.

All the data presented in this report comes from industry sources. The source of each piece of data is explained in Annex B and Annex C.

Figure 1 shows all of the costs and revenues for franchised passenger train operators and Network Rail[4].

[4] For consistency the figures for access charges and performance regime payments in Figure 1 are from operators' management accounts. Totals of Network Rail's and operators' costs and revenues may not equal the sum of their individual components due to rounding. For a more detailed explanation see Annex A.

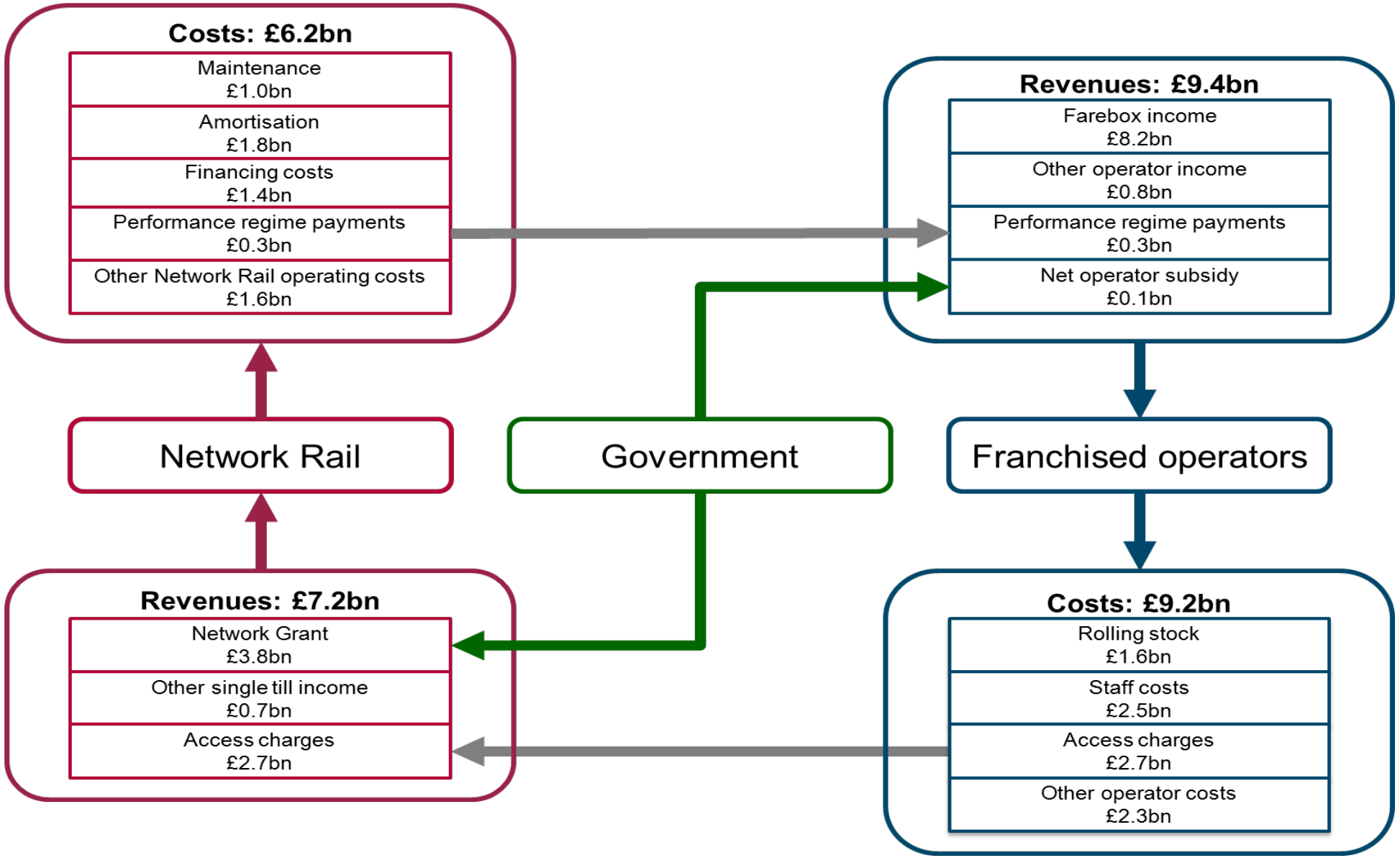

Figure 1: Money flows in the passenger rail industry in 2014 (2014 prices)

Figure 1 provides an overview of the money flowing into and out of the franchised passenger rail industry. Annex B provides more detail on each of cost and revenue categories in Figure 1.

The focus for the data used in this report has been on ensuring the consistency, and comparability, of data over time. For this reason some of the information presented in Figure 1 (and throughout the report) may not exactly match figures presented in other published documents, including the 2013-14 industry financials report published by ORR[5]. These differences are due to differences in how particular costs and revenues have been aggregated in certain categories, differences between how operators and Network Rail report certain costs and revenues, and how these have changed over time, as well as differences in rounding.

Structure of the report

Chapters 2 and 3 discuss the change in industry revenues and costs, respectively, with a particular emphasis on operator costs and revenues, and discuss the possible factors that could account for the changes in costs and revenues over this period. As Network Rail was formed in 2002 in chapters 2 and 3 we look at total industry revenues and costs from 2002 to 2014 and franchised operators' costs and revenues are considered on their own from 2001.

Chapter 4 compares the costs and revenues of train operators in the UK, in 2014. This chapter discusses the possible reasons for differences in costs and revenues between operators, such as differences in the markets they operate in and the number of services they are required to provide. This chapter is not aiming to, and does not, establish a 'league table' of operator efficiency, but instead highlights differences in operators' costs and identifies possible reasons for these differences.

[5] http://orr.gov.uk/publications/reports/gb-rail-industry-financial-information/gb-rail-industry-financial-information-2013-14

2. Revenue history

This chapter is divided into the following sections:

2.1 Introduction and overview

2.2 Revenue from Government and non-Government sources

2.3 Operators' revenue

2.4 Farebox income

2.1 Introduction and overview

Although an increasing proportion of Network Rail's revenue comes from passengers, taxpayers continue to provide 52% of Network Rail's funding through the network grant.

This chapter considers how revenues of the franchised passenger rail industry (i.e. excluding revenues to freight and open access operators) have changed over time.

The revenues to operators considered in this section include farebox income (such as ticket and railcard sales), net operator subsidy (either subsidies paid by Government to operators, or premia paid by operators to Government) and "other" income (such as advertising revenue, car parking fees).

The revenues to Network Rail considered in this section include the network grant (paid by Government direct to Network Rail) and Other Single Till Income (OSTI) (which includes income from freight and open access operators for track access and property income, amongst others).

A detailed explanation and the sources of the data for each revenue category discussed in this chapter can be found in Annex B.

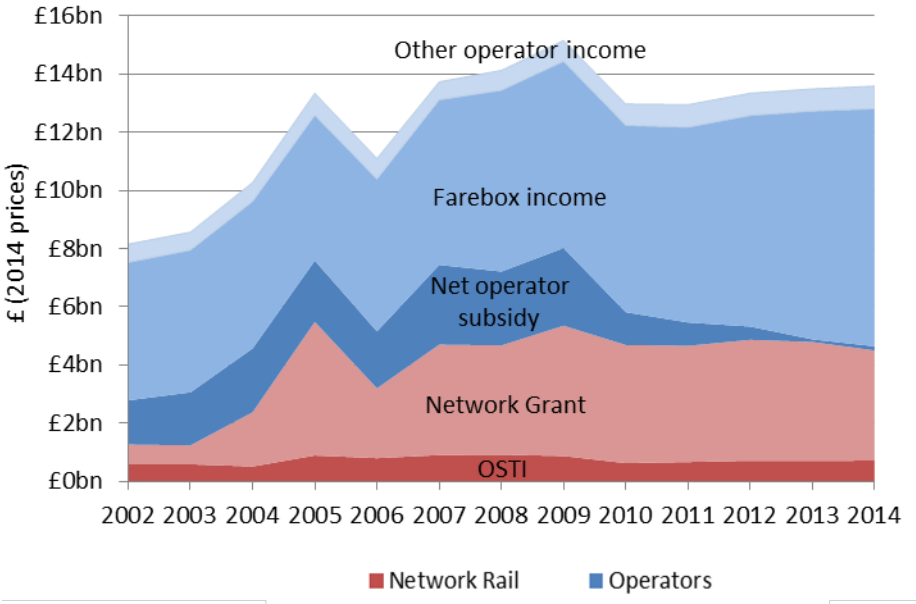

Figure 2: Revenues in the passenger rail industry between 2002 and 2014 (2014 prices)

Access charges paid to Network Rail by franchised operators account for a significant proportion of Network Rail's income; however (as with performance regime payments) since these are transfers within the rail industry they are excluded from the analysis in this chapter.

Between 2002 and 2014 total revenue to Network Rail and franchised passenger operators increased significantly; increasing 67% in real terms.

2.2 Revenue from Government and non-Government sources

Total revenue from the Government has fluctuated significantly, while total revenue from non-Government sources has increased steadily.

Revenue presented in Figure 2 can be split into revenue from Government, and revenue from other sources (e.g. passengers and non-franchised train operators).

Total industry revenue from the Government is the sum of net operator subsidy and the network grant. Total revenue from non-Government sources (excluding the revenue to freight and open access operators) consists of farebox income, OSTI and other operator income.

Although revenue from both Government and non-Government sources has increased in real terms since 2002 they have evolved very differently over the period (see Figure 3).

Total income from non-Government sources increased 62% in real terms between 2002 and 2014. The rate of the increase was relatively consistent, with income from non-Government sources increasing every year, apart from a period of slow growth/moderate decline between 2008 and 2010 – likely reflecting the impact of the recession. The real increase in income from non-Government sources is mainly driven by an increase in farebox income (i.e. income from ticket sales etc.), which is discussed in more detail in section 2.4.

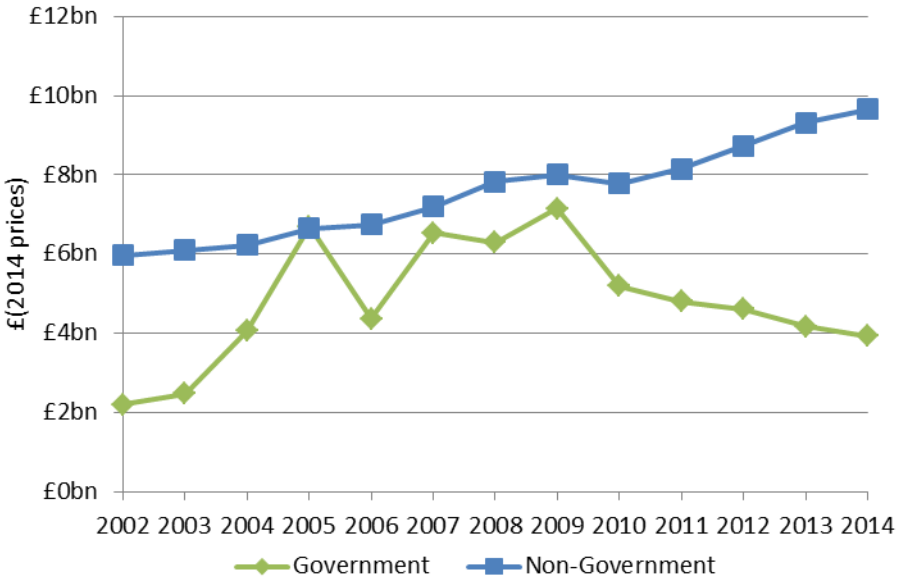

Figure 3: Revenues from Government and non-Government sources between 2002 and 2014 (2014 prices)

Revenue from Government to the franchised passenger rail industry fluctuated significantly over the period. The large changes in Government support around 2005 and 2009 reflect changes in the level of access charges as a result of ORR's periodic reviews. A fall in access charges means lower revenue from operators to Network Rail, which has to be made up for by greater support via the network grant. Revenue into the rail

industry from Government is split between payments to operators (net operator subsidy) and payments to Network Rail (the network grant):

- **Net operator subsidy:** As part of the competition to win a passenger franchise, bidders specify the level of subsidy they require from the Government to run the service, or the level of the premium they will pay to Government for the right to run the service[6]. The size of the subsidy or premia is determined by the extent to which it is expected that farebox and other income will exceed the costs of running the service. The total "net operator subsidy" is the total of subsidies the Government pays to operators minus the total amount operators pay to the Government in premiums.
- **The network grant:** The network grant is paid directly by the Government to Network Rail and funds Network Rail for the costs that are not recouped from access charges paid by users of the infrastructure (i.e. passenger operators, freight operators and open access operators).

The share of these two payments in the total industry revenue from Government changed significantly during this period (see Figure 4). In 2014 the network grant accounted for over 96% of the income in the industry from Government. This is compared to the 69% of total revenue from Government that net operator subsidy accounted for in 2002.

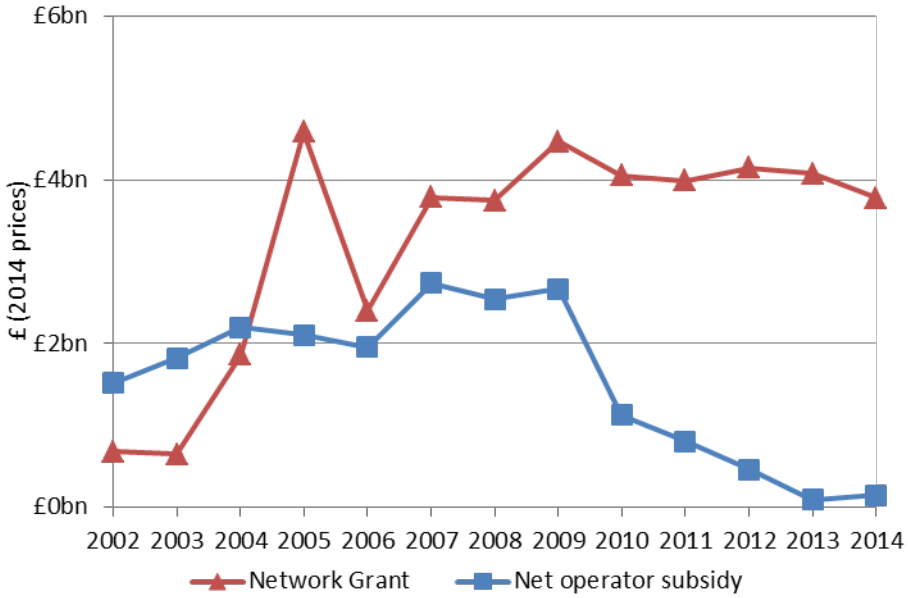

Figure 4: Revenues from Government sources between 2002 and 2014 (2014 prices)

[6] In this report payments to franchise authorities, i.e. premia paid for the right to run the service, are treated as negative revenues rather than costs. For a more detailed explanation see Annex A.

2.3 Operators' revenue

The main driver of the increase in operators' total revenue has been the increase in farebox income.

The largest component of operator revenue is farebox income. In 2014 farebox income accounted for 87% of real total operator revenue at £8.16bn (2014 prices). Farebox income is also the component of revenue that increased the most in real terms between 2001 and 2014, rising by 77%. This rise is mainly due to rising passenger numbers (this is discussed in more detail in section 2.4).

During the same period other operator income also increased in real terms, while, as discussed above, net operator subsidy decreased in real terms significantly (see Figure 5 and Table 1).

In 2001 21% of operator's total revenue came from Government subsidies to operators, compared to 2014 when 2% of total operator revenue was received from Government.

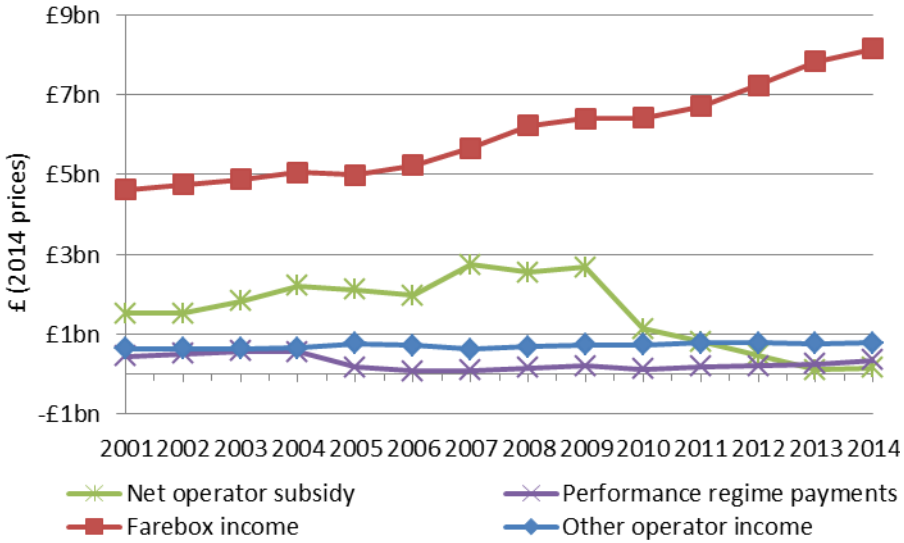

Figure 5: Operators 'revenues between 2001 and 2014 (2014 prices)

£bn, 2014 Prices	2001	2014	Change in revenues over the period (%)
Farebox income	4.62	8.16	77%
Other operator income	0.62	0.77	25%
Net operator subsidy	1.51	0.14	-91%
Performance regime payments	0.42	0.34	-20%
Total operators' revenue	**7.17**	**9.42**	**31%**

Table 1: Operators' revenues in 2001 and 2014 (2014 prices)

2.4 Farebox income

The main cause of the increase in farebox income is the growth in the usage of the railway. Average farebox income per passenger kilometre has increased by around 1% per year in real terms.

The majority of the increase in farebox income can be explained by the growth in usage.

We measure the usage of operator services using "passenger kilometres". A passenger kilometre is a measure of how many passengers a train operator carries, and how far; when one passenger travels one kilometre that counts as one passenger kilometre. If the number of passengers using a service increases, or the distance travelled by each passenger increases, then the passenger kilometres run by the service as a whole will increase. Looking at farebox income per passenger kilometre allows us to capture the effects on farebox income of changes in both the number of passengers, and the distance they travel. An increase in the number of journeys that passengers make or the length of their journeys will generally increase the amount passengers pay for rail travel.

While farebox income rose by 77% in real terms between 2001 and 2014, farebox income per passenger kilometre rose by 13% in real terms – so increased usage of services accounts for most of the increase in farebox income.

The remaining 13% real increase in farebox income per passenger kilometre is likely due to the real terms increase in fare prices over the period, as well as other factors.

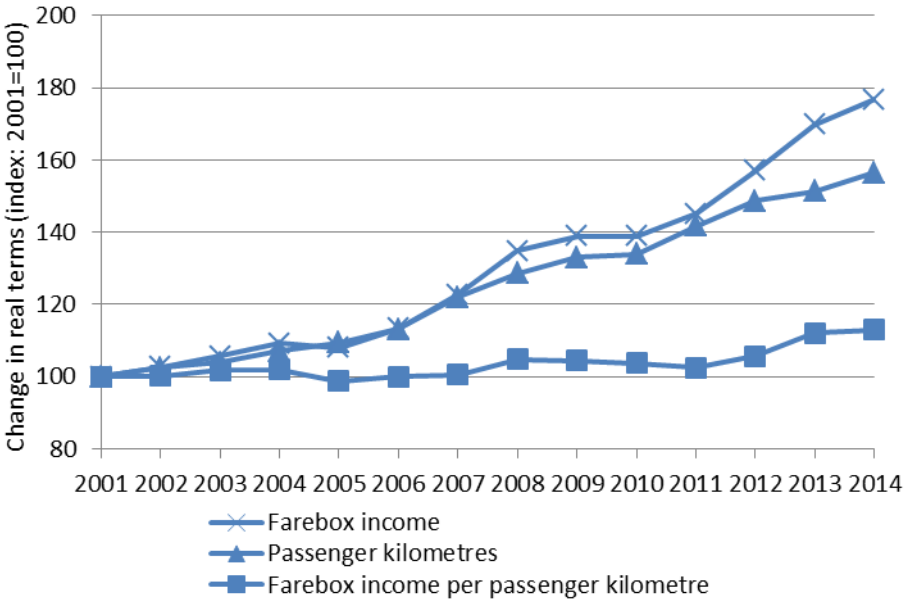

Figure 6: Farebox income; passenger kilometres; farebox income per passenger kilometre between 2001 and 2014 (indexed to 2001)

3. Cost history

This chapter is divided into the following sections:

3.1 Introduction and overview

Total industry real costs have increased between 2002 and 2014 from £10.9bn to £12.3bn (2014 prices).

This section considers how the costs of operating franchised passenger train services and of the provision of rail infrastructure have changed between 2002 and 2014. Combining infrastructure costs and the costs of train operation gives a picture of how the total cost of providing franchised passenger rail services has changed over time[7]. The costs to operators considered in this chapter consist of rolling stock costs (such as leasing and maintenance), staff costs (such as salaries and benefits) and "other" operators' costs (such as diesel[8] and marketing costs).

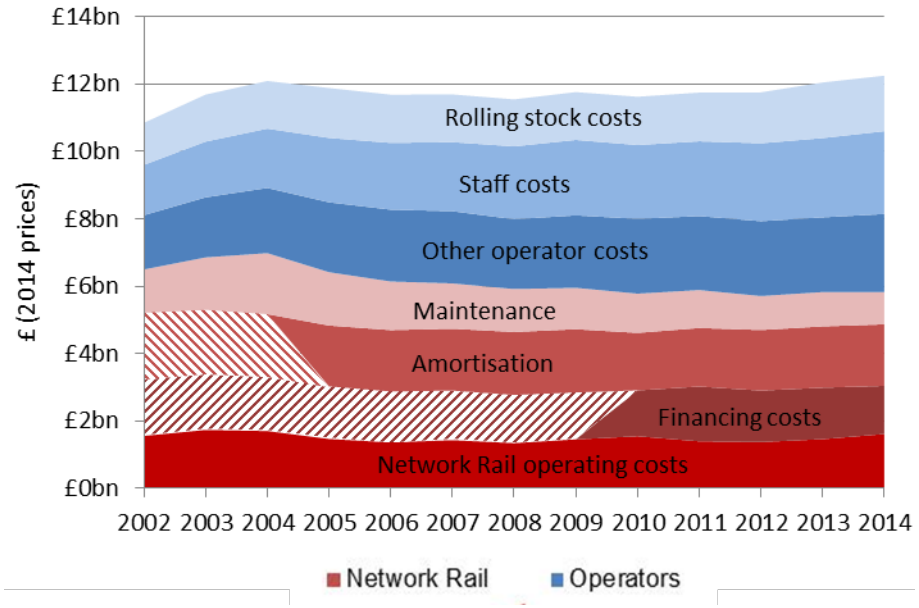

Figure 7: Costs in the passenger rail industry between 2002 and 2014 (2014 prices)[9]

[7] A proportion of the costs of infrastructure provision relate to costs incurred by Network Rail in providing capacity to freight and open access operators, so the sums presented here likely overstate the total cost of the franchised passenger rail industry. However, since franchised passenger services account for most of the traffic on the network, the sums should be treated as reasonably representative, if not entirely so.

[8] Costs for electric traction are classified differently from diesel traction because operators pay Network Rail for electric current via their access charges. For a more detailed explanation see Annex A.

[9] It has not been possible to construct a consistent time series for Network Rail's financing and amortisation costs so we have back-cast 2010

Although access charges paid by franchised operators to Network Rail account for a significant proportion of total operators' costs, since these are transfers within the rail industry (as opposed to costs to the industry as a whole) they are not considered in this section and are excluded from Figure 7.

For Network Rail, Figure 7 includes the change in expenditure on maintenance (e.g. maintenance of track and signals), amortisation of renewal costs[10], operations (e.g. operating signals and business support functions such as IT and HR) and financing.

An explanation and the sources of the data for each cost category in Figure 7 can be found in Annex B.

financing costs and 2005 amortisation costs (adjusted to inflation). For a more detailed explanation see Annex A.

[10] For the purpose of getting an understanding of changes in industry costs over time we think amortisation is better than looking at year on year expenditure on renewals. For a more detailed explanation see Annex A.

3.2 Operators' costs

Between 2001 and 2014, despite access charges decreasing, total operators' costs increased in real terms by 31%.

This section considers how the costs incurred by operators have changed between 2001 and 2014.

Operators' total costs increased by 31% in real terms between 2001 and 2014 (see Figure 8 and Table 2). The only component of operators' total costs to decrease during this period was access charges, decreasing in real terms by 5%. Despite this decrease, access charges were the largest component of total costs in 2014, accounting for 30% of total operators' costs (see Figure 9).

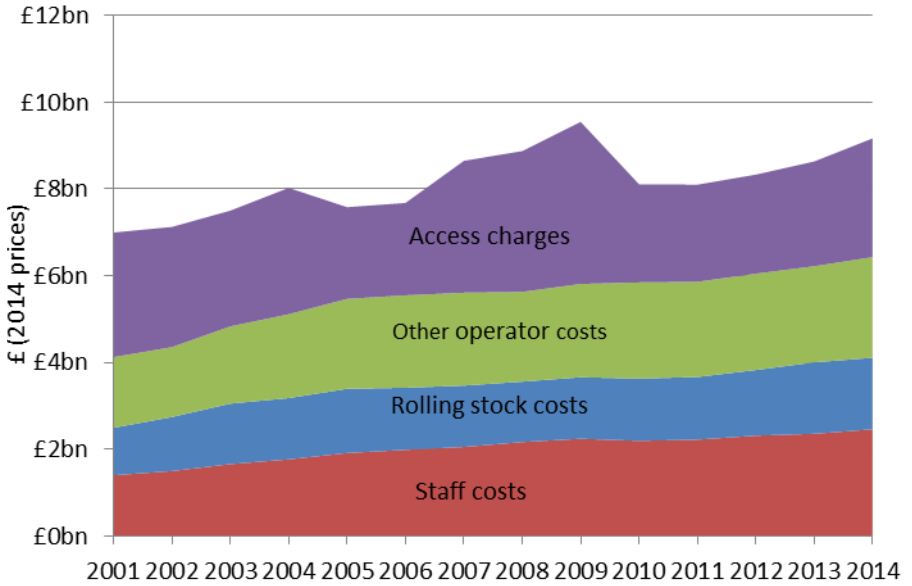

Figure 8: Operators' costs between 2001 and 2014 (2014 prices)

£bn, 2014 Prices	2001	2014	Change in costs over the period (%)
Staff costs	1.40	2.46	76%
Other operators' costs	1.63	2.32	42%
Rolling stock costs	1.09	1.65	51%
Access charges	2.87	2.74	-5%
Total operators' costs	**6.99**	**9.17**	**31%**

Table 2: Operators' costs in 2001 and 2014 (2014 prices)

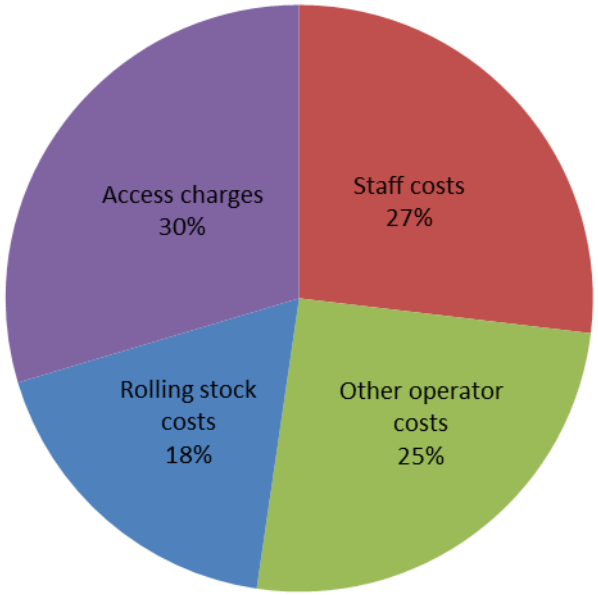

Figure 9: Composition of operators' costs in 2014 (2014 prices)

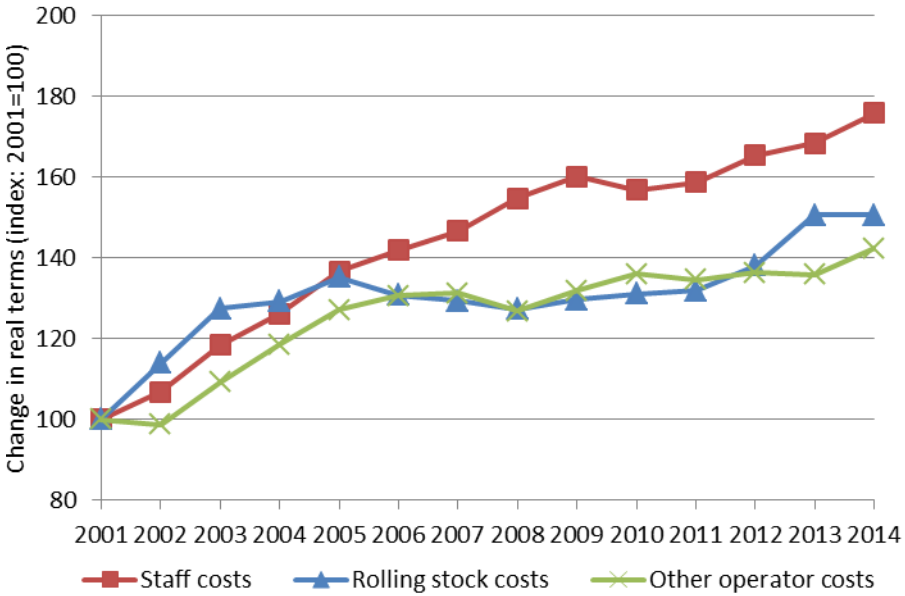

Figure 10: Operators' non-access costs between 2001 and 2014 (indexed to 2001)

Access charges are set by ORR; they can be subject to significant change at periodic reviews and operators have limited ability to affect the amount they pay. For this reason, we excluded access charges when looking at the evolution of costs for franchised passenger operators.

The remaining cost categories, which we focus on in what follows, are staff costs, rolling stock costs and other costs[11].

Staff costs, rolling stock costs and other operators' costs all increased in real terms between 2001 and 2014. The trend of each cost category was fairly similar and can be split into two phases, as can be seen in Figure 10. The majority of the increase for each category was seen at the start of the period, with staff and rolling stock costs seeing a real rise of around 35% between 2001 and 2005. After 2005 the growth of all three categories of operators' costs slowed down. For instance, between 2006 and 2014 staff and rolling stock costs increased by 24% and 15% in real terms respectively.

[11] A consistent time series of the amounts paid by operators to Network Rail for electric current is not available, so we have had to exclude the cost of electric current from this analysis. For a more detailed explanation see Annex A.

It is important to note that each operator may categorise similar expenditures differently in their management accounts. In particular, according to the nature of their rolling stock lease, some operators may class maintenance costs under rolling stock costs, while others class it under staff costs, or operators may outsource certain duties that were previously carried out in-house. These issues of inconsistency are addressed by looking at total non-access costs.

Operators' total non-access costs increased by 56% in real terms during this period. The following sections look at possible explanations for this increase.

3.3 Volume of service

The increase in the volume of service provided is the main reason for the increase in operators' costs.

Train kilometres is a partial measure of the volume of service provided by an operator. When a train travels one kilometre that is one train kilometre.

The change in train kilometres run between 2001 and 2014 provides a measure of the change in the volume of service that franchised operators provided over the period and the distances that their services travelled. However, it should be noted that it is not a complete measure because it does not take into account all aspects of operators' services; such as the length of trains that they run, the speed that they operate at, or the number of passengers they carry.

Between 2001 and 2014 total train kilometres run by operators increased by approximately 20% (see Figure 11).

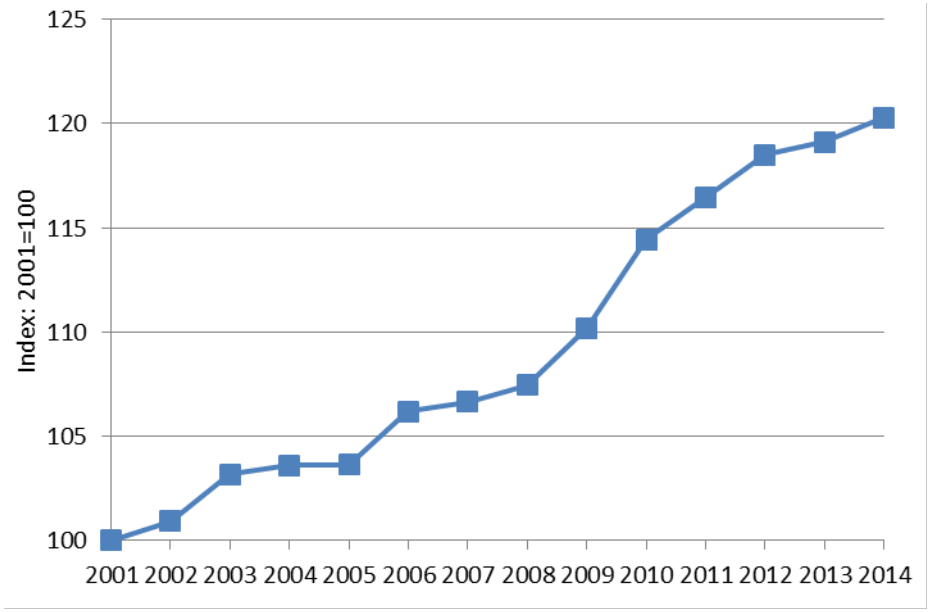

Figure 11: Operators' total train kilometres between 2001 and 2014 (indexed to 2001)

An increase in the number of train kilometres an operator runs will increase, amongst other things, the amount of electricity they use, the number of staff they hire and the leasing and maintenance costs for their rolling stock.

We should consider the real increase in operators' total non-access costs discussed in the previous section in light of this increase in train kilometres. Looking at operator total non-access costs per train kilometre gives us a measure of how average costs have changed over time, this allows us to control for the effects of the increase in train kilometres over the period. Figure 12 compares the real terms change in

operator total non-access costs with the real terms change in costs per train kilometre.

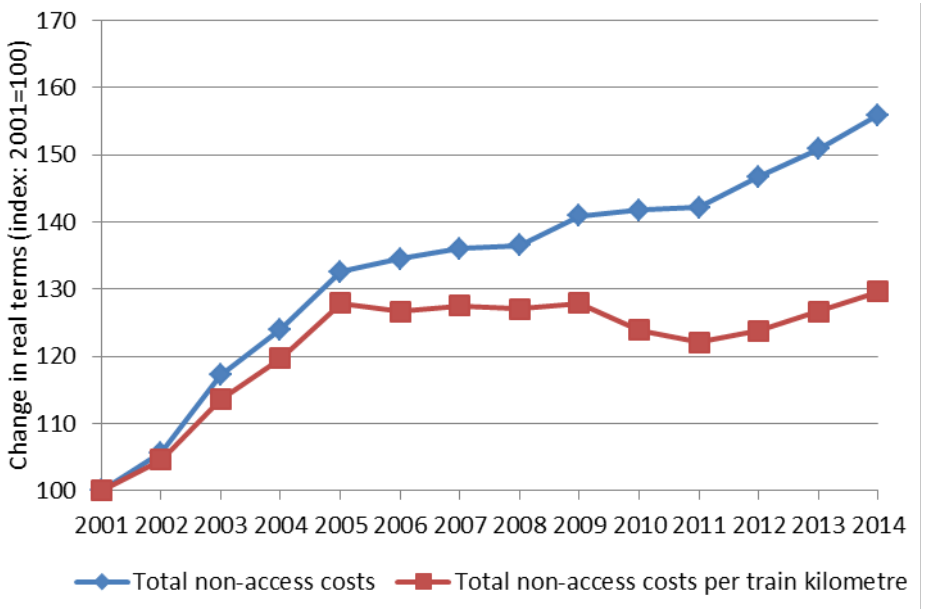

Figure 12: Operators' total non-access costs and non-access costs per train kilometre between 2001 and 2014 (indexed to 2001)

While total operators' non-access costs increased by 56% in real terms between 2001 and 2014 the real increase in operators' total non-access costs per train kilometre was 30%. Close to half of the increase in operators' total non-access costs over the period may thus be explained by the increase in train kilometres.

There are several possible explanations of the remaining 30% increase in real average non-access costs over the period, these include:

- **Train length**: Measuring volume of service by train kilometres does not take into account variation in the average length of trains over time. As running longer trains will typically increase a variety of operators' costs, if the average train lengths increased over this period a larger proportion of the cost increase over the period is likely to be explicable by the increase in volume of service. Measuring the volume of service by vehicle kilometres would take into account changes in average train length over time, however a consistent time series for vehicle kilometres that covers the entire period is not available, so we are not able to say what proportion of the 30% increase in non-access costs per train kilometre is due to increasing train lengths. However, a consistent time series is available between 2010 and 2014, and it indicates that the 5% increase in non-access costs per train kilometres over that period may be, at least partly, attributable to changes in average train length, which increased 3% over the same period.
- **Service usage:** As shown in section 2.4 there has been significant growth in the usage of the railway between 2001 and 2014. This increase in the intensity of usage of operator services is not accounted for by train kilometres and therefore may account for a portion of the 30% real rise in operators non-access costs per train kilometre between 2001 and 2014. The impacts of

the increase in service usage on operators' costs are explained in more detail in section 3.4.

- **Service quality:** Improvements in the quality of service that passengers receive are typically costly for operators to deliver. Between 2001 and 2014 there have been improvements in the punctuality of services and passenger satisfaction levels, both of which may partly explain why non-access costs per train kilometre have increased in real terms over this period. Improvements to service quality and their impacts on operators' costs are discussed in more detail in section 3.4.
- **Inefficiency:** Another potential explanation for the 30% real increase in operator's non-access costs per train kilometre is that franchised train operators became less efficient over the period. However, without being able to control for the impact of changes in train length, service quality or usage on the cost of operation, we cannot conclude whether or not train operators have become less, or even more efficient over the period.

The next section considers some of these potential explanations of the remaining 30% real increase in average costs over the period in more detail.

3.4 Operators' service characteristics

The increase in the usage of services and the quality of services provided is also likely to have contributed to the increase in operators' costs.

Service Quality

Improvements in the quality of passenger services may help explain some of the increase in average costs over the period. Improvements in service quality are generally costly to deliver, but come with benefits to passengers that are not reflected in the discussion of costs per train kilometre.

There was a significant improvement in punctuality between 2001 and 2014; the percentage of trains arriving within 5 minutes of their schedule time of arrival, or 10 minutes for long distance services, increased from 78% to 90% (see Figure 13). This increase in punctuality may account for some of the cost increase discussed in previous sections if it involved, for instance, hiring more contingency drivers or improving working practices to avoid delay. It should also be noted that improvements that Network Rail makes, such as fewer signal failures or maintenance overruns, also contribute to increased punctuality.

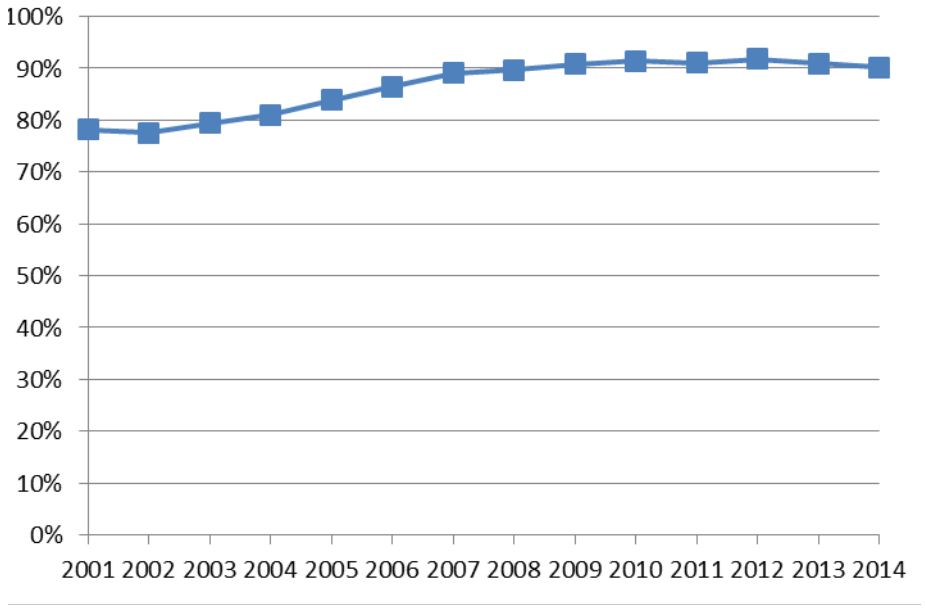

Figure 13: Punctuality between 2001 and 2014 using the Public Performance Measure (PPM)

As well as the improvement in punctuality, over the same period the percentage of respondents to the National Rail Passenger Survey who reported an overall satisfaction with their service of "satisfactory or good" increased from 75% to 85% (see Figure 14). It is difficult to attribute this reported increase in satisfaction to particular features of particular services. However, if passengers are more satisfied with their service because there has been a general improvement in service quality (for instance, through improved standards of cleanliness or better on-board catering) that increase in service quality may also account for some of the rise in average costs.

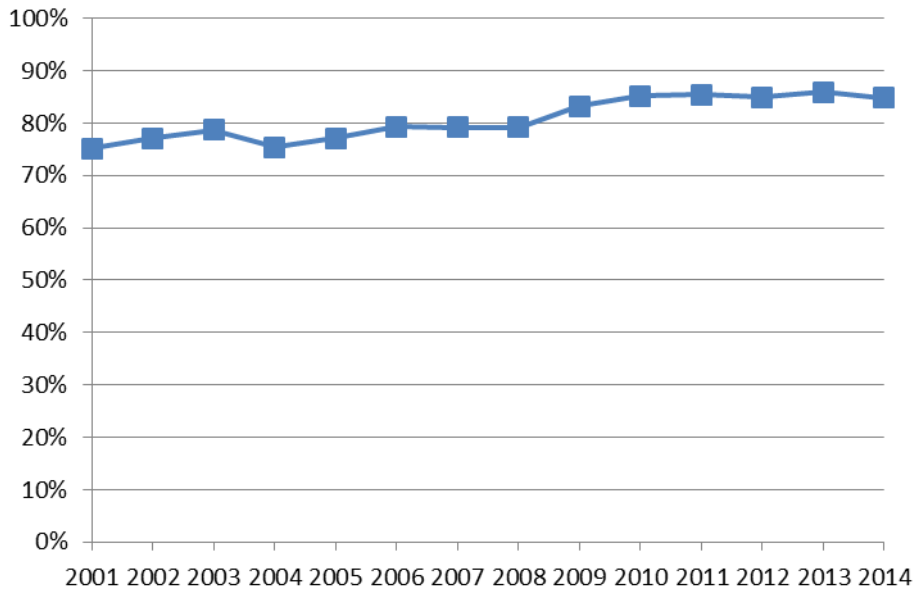

Figure 14: Passenger satisfaction between 2001 and 2014

Service usage

As well as the increase in service provided and improvements in service quality, increases in the intensity of usage of operator services may also be able to account for some of the increase in costs.

A rise in the number of passengers using operators' services increases operators' costs. The more people that use rail travel the more staff operators need to hire, for activities such as cleaning and revenue protection. An increase in passenger loading on trains is also likely to mean operators' rolling stock will require more maintenance work, as rolling stock seats and doors are used more intensively.

Between 2001 and 2014 the average number of passengers per train increased by 30% (see Figure 15), so, although the volume of services increased over the period it was less than the increase in service patronage, resulting in an overall increase in passenger loads on trains. This increase in passenger loading may also be able to account for some of the 30% real increase in average costs discussed in the previous section.

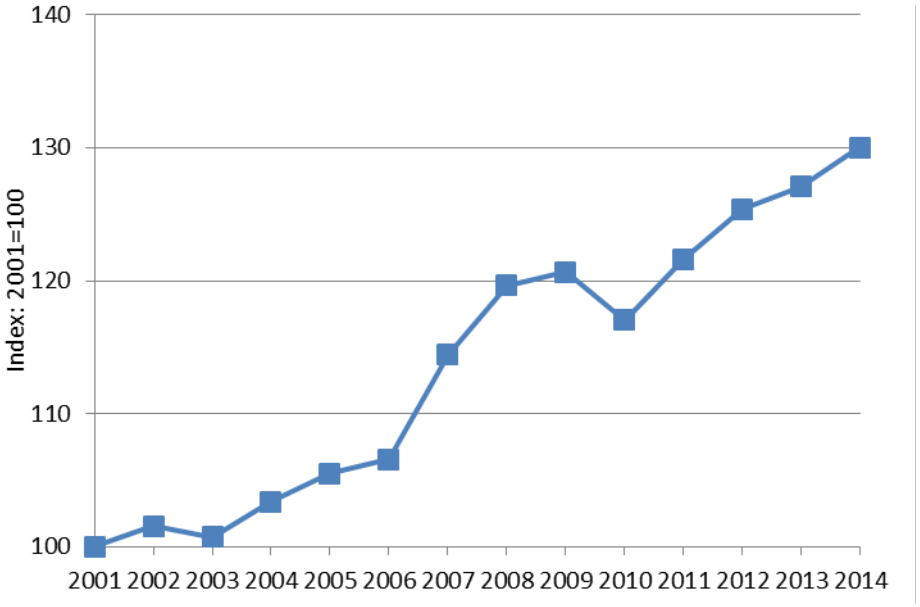

Figure 15: Passenger loading (passenger kilometres/ train kilometres) between 2001 and 2014 (indexed to 2001)

4. Operator cost and revenue comparison

In the following sections this chapter compares the revenues and costs of each franchised train operator during 2014.

4.1 Introduction and overview

4.2 Revenues of train operators

4.3 Costs of train operators

4.4 Differences in the volume of services each operator provides

4.5 Other cost drivers for operators

Annex D lists the train operators active in 2014 and the abbreviation for each operator used in the charts in this chapter.

4.1 Introduction and overview

In this chapter operators' total revenue and total cost are defined as follows:

- **Total Operator Revenue** = Operator farebox income + Other operator income [12] + Performance regime payments + Net operator subsidy
- **Total Operator Cost** = Staff costs + Other operator costs[13] + Rolling stock costs + Access charges

The breakdown of the types of revenues and costs identified above are presented in Figure 16[14].

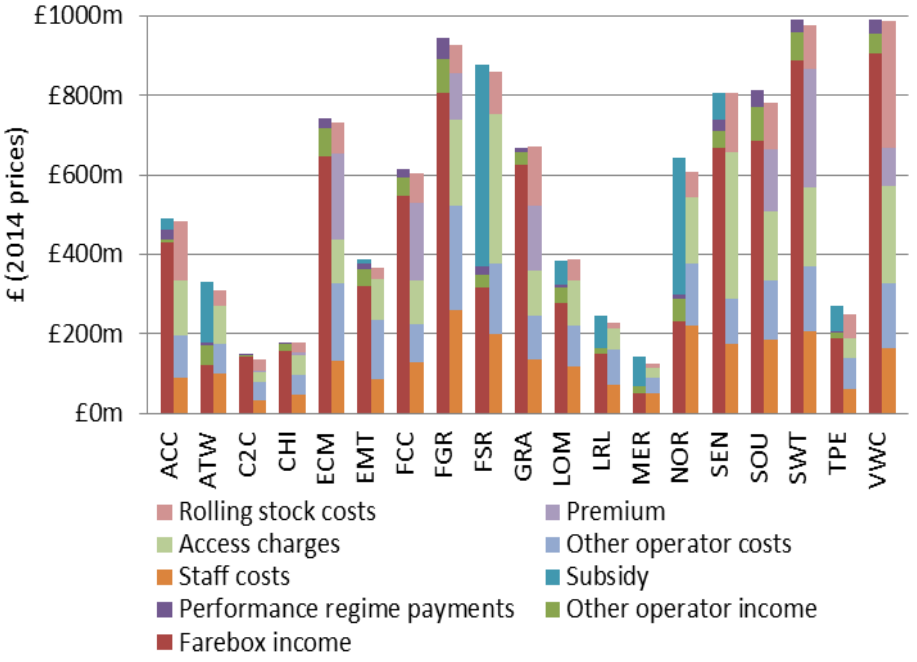

Figure 16: Operator revenues and costs (2014 prices)

[12] Other operator revenues include revenues from a wide range of sources, such as car parks, on-board advertising and catering.

[13] Other operator costs include a wide variety of costs such as: car park management costs, marketing costs and British Transport police fees.

[14] Wherever possible, we have allocated costs and subsidies relating to London Overground's management of rail infrastructure to access charges and net operator subsidy, respectively. For a more detailed explanation of the reasoning behind this approach see Annex A.

On average, total costs amounted to around 96% of total revenue generated.

There is considerable variation between operators in costs and revenues. This is due in large part to differences in the characteristics of the services provided, as is discussed in subsequent sections.

4.2 Revenues of train operators

Total revenue

We define the total revenue to be the sum of revenue from passengers, net operator subsidy and revenue from other sources (including performance regime payments as well as car parks etc.). Figure 17 shows the total revenue of each operator and breaks down that revenue into different revenue types.

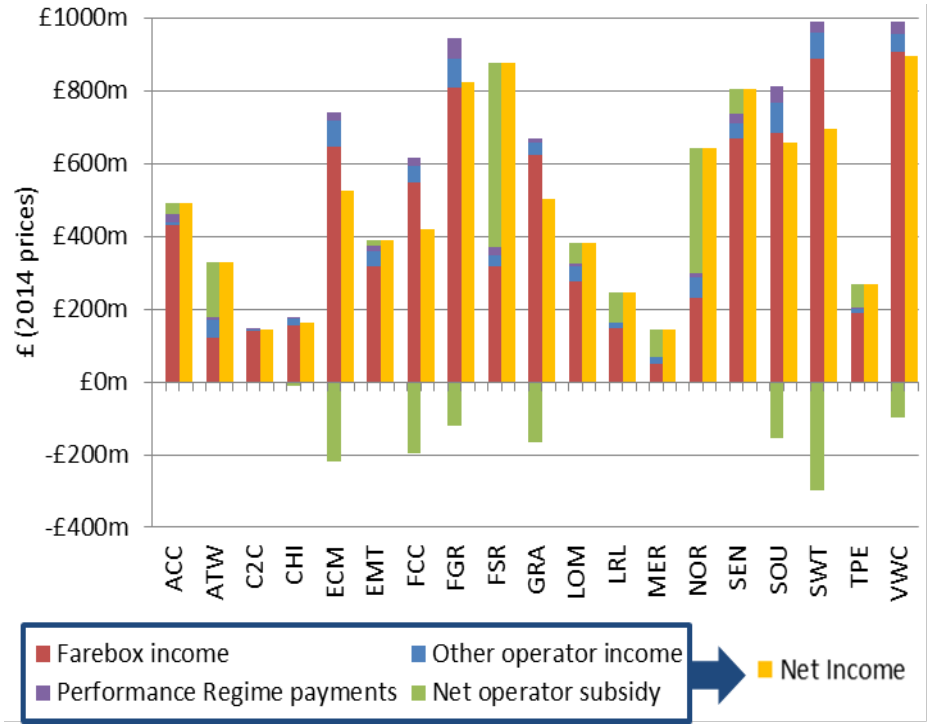

Figure 17: Total operator revenue and net operator income in 2014 (2014 prices)

Farebox income

Revenue generated from ticket sales to passengers, "farebox income", is the largest component of operator revenue, accounting for, on average, 84%.

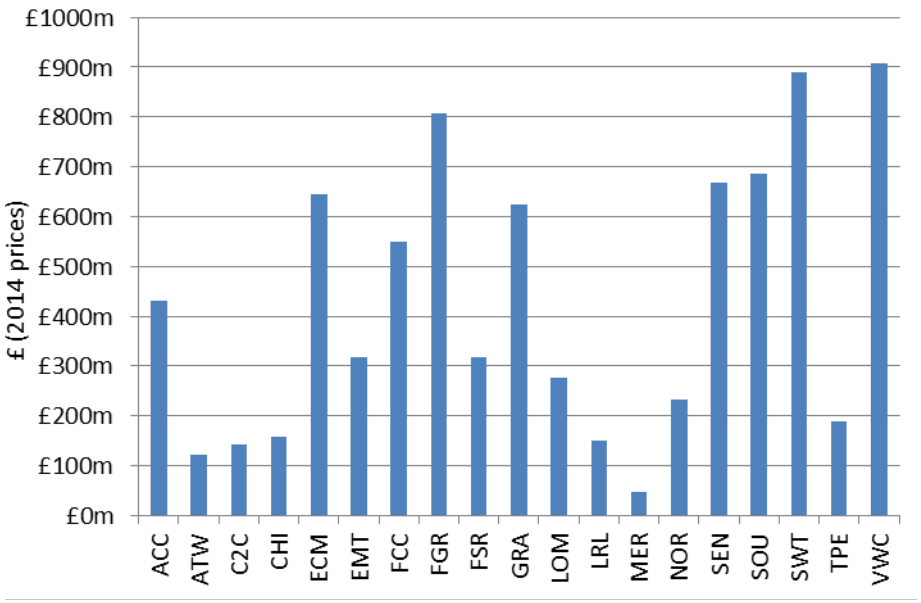

Figure 18: Operators' farebox income in 2014 (2014 prices)

There are large differences in farebox income between operators (see Figure 18). As discussed in the next section, differences in farebox income between operators should be understood in the context of differences in size and level of patronage, because they are mainly driven by differences in the scale of service provided and by the demand for that service.

Average farebox income

There are significant differences between operators in the number of passengers they carry each year and the distance that they travel (see Figure 19).

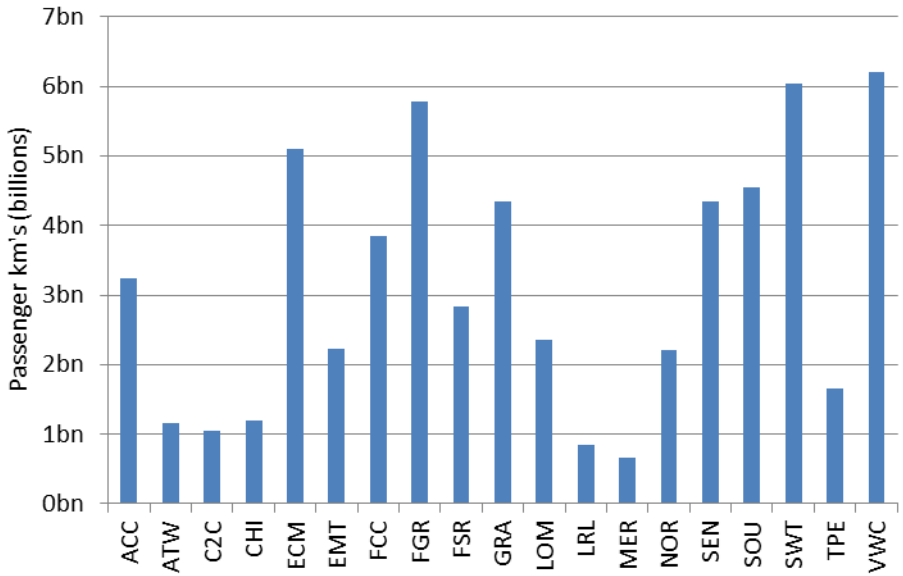

Figure 19: Operators' passenger kilometres in 2014

Operators that carry more passengers, or carry them over longer distances, might be expected to have higher farebox income. Looking at farebox income per passenger kilometre gives an indication of the average income an operator generates from fares for every kilometre that it transports a passenger. This allows comparison of operators' farebox income in a way that controls for differences in service patronage.

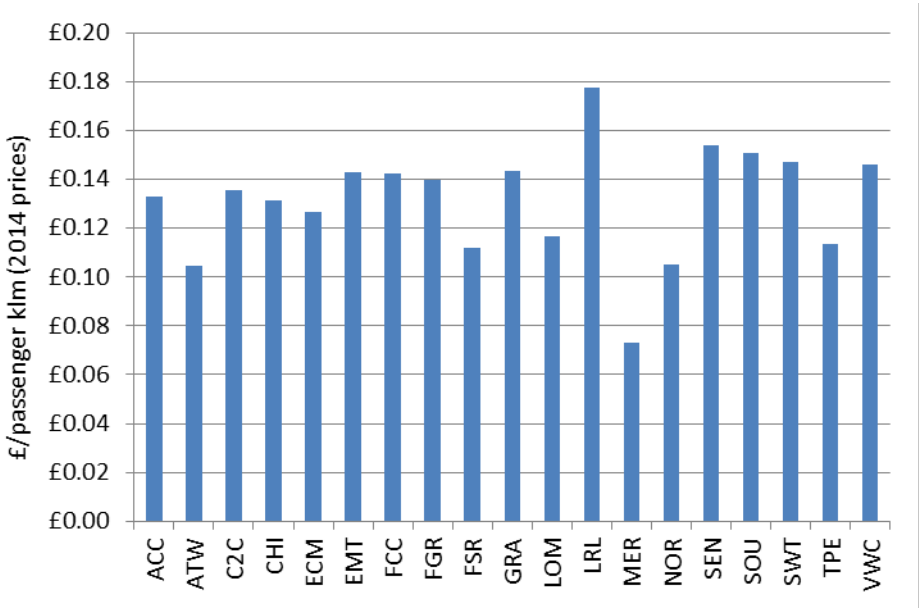

Figure 20: Operators' farebox income per passenger kilometre in 2014 (2014 prices)

As Figure 20 indicates, there is much less variation in farebox income per passenger kilometre than in farebox income itself; most operators receive between 10-15 pence in farebox income for every kilometre they transport a passenger.

It should be noted that farebox income per passenger kilometre is an average measure over several revenue sources, so it does not fully reflect fare prices. Moreover, since a large proportion of fare prices are regulated by franchising authorities, and because different authorities may have different objectives in their fares policy, differences in farebox

income per passenger kilometre should not necessarily be attributed to the actions of operators.

Net operator subsidy

If a bidder for a franchise forecasts costs of operation that exceed revenue (from fares and other sources) then they will specify a level of subsidy that they require to run the service. In contrast, if they forecast revenues that exceed costs then they will specify a level of premia to be paid to the franchise authority for the right to run the service. The net subsidy that an operator receives can also vary after the franchise is awarded, for example as a result of the franchising authority requiring the operator to run additional services.

As a result, some operators will have a positive net operator subsidy (reflecting payments from franchise authorities to the operator, to cover the cost of running the service) and others a negative one (reflecting the operator's purchase of the right to run the service). It should be noted that this is not the same as the operators' profitability as a business (which will, amongst other things, be determined by performance relative to the commitments made in the franchise).

The differences between operators in the level of subsidy or premia for 2014 can be seen in Figure 21.

It is important to note that net operator subsidy does not reflect the full scale of support to operators. As discussed in section 2.2 the Government also subsidises Network Rail directly in the form of the network grant; if Network Rail were not directly subsidised in this manner it would have to recover its costs through higher access charges paid by operators, which would mean that operators' costs would be higher and they would require higher direct subsidy. That context should be borne in mind when considering the information presented here.

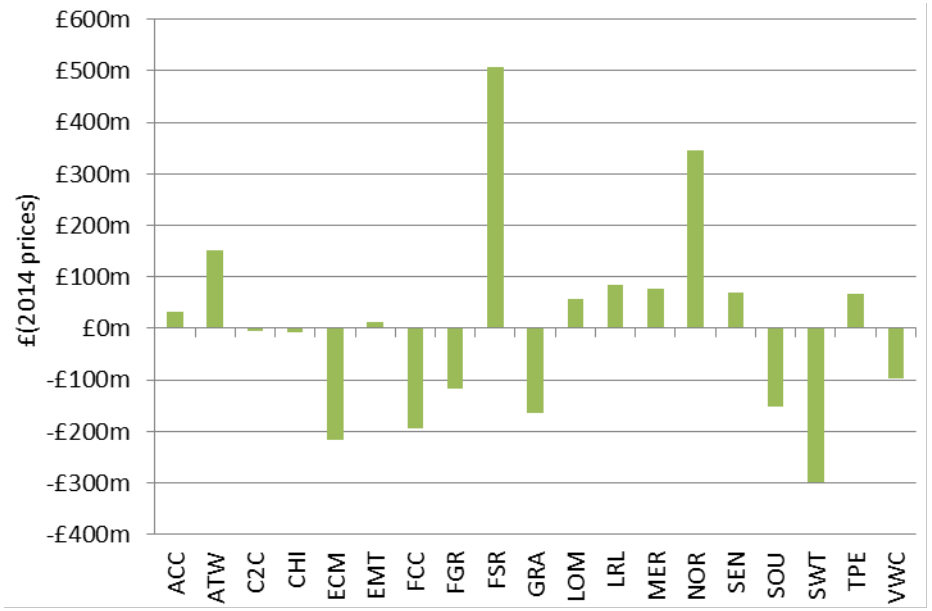

Figure 21: Operators' net operator subsidy in 2014 (2014 prices)

4.3 Costs of train operators

There are significant differences in the level of total costs that different operators incur in running their services (see Figure 22). In section 4.4 we consider how differences in the volume of service provided by operators can account for these differences. Section 4.5 considers how the particular characteristics of different operators' services can also contribute to cost differences.

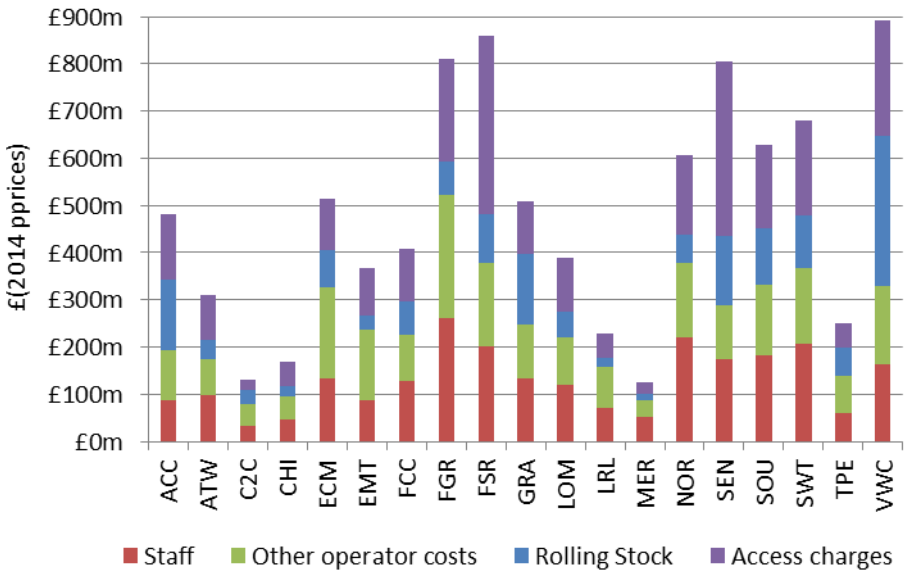

Figure 22: Breakdown of operators' total costs in 2014 (2014 prices)

The proportion of total costs that each type of cost accounts for also varies between operators (see Figure 23). Differences in the nature of operators' services, their operating model or how they classify their costs means that some cost types, e.g. rolling stock costs, may account for a greater proportion of total costs for one operator when compared to another.

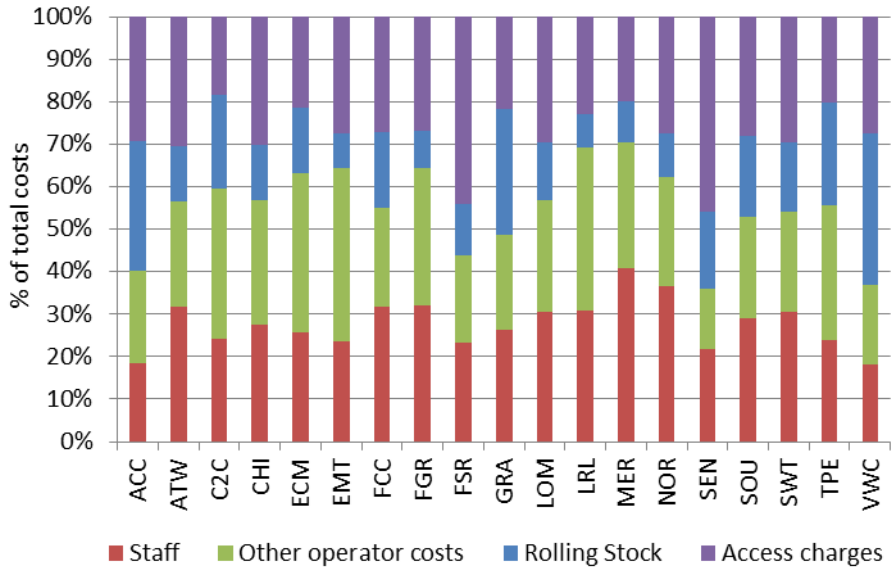

Figure 23: Proportion of total operators' costs that each type accounted for in 2014 (2014 prices)

4.4 Differences in the volume of services each operator provides

The volume of service that an operator provides has a direct impact on a wide range of costs, from the number of staff they hire to the amount of maintenance their rolling stock requires.

In this discussion we look at four different ways of measuring volume of service: train kilometres; vehicles kilometres; train hours; and passenger kilometres, which each reflect different features of an operator's service and cost base.

In this section we compare operators' non-access costs; i.e. their staff, rolling stock and other costs. We have excluded access charges because, as explained in section 3.2, the level of access charges is set by ORR and the amount of access an operator requires is largely determined by their franchise specification, so operators have limited ability to affect the amount they pay[15].

Train kilometres

As explained in section 3.3, one way of measuring the volume of service provided by an operator is to look at the number of train kilometres they run in a year; when a train travels one kilometre that is one train kilometre. The more train kilometres an operator runs, the more fuel or electricity it uses and the more maintenance their rolling stock requires.

As Figure 24 makes clear, there are significant differences in the number of train kilometres run by different operators. The differences in total costs discussed in section 4.3 should be understood in the context of these differences in volume of service.

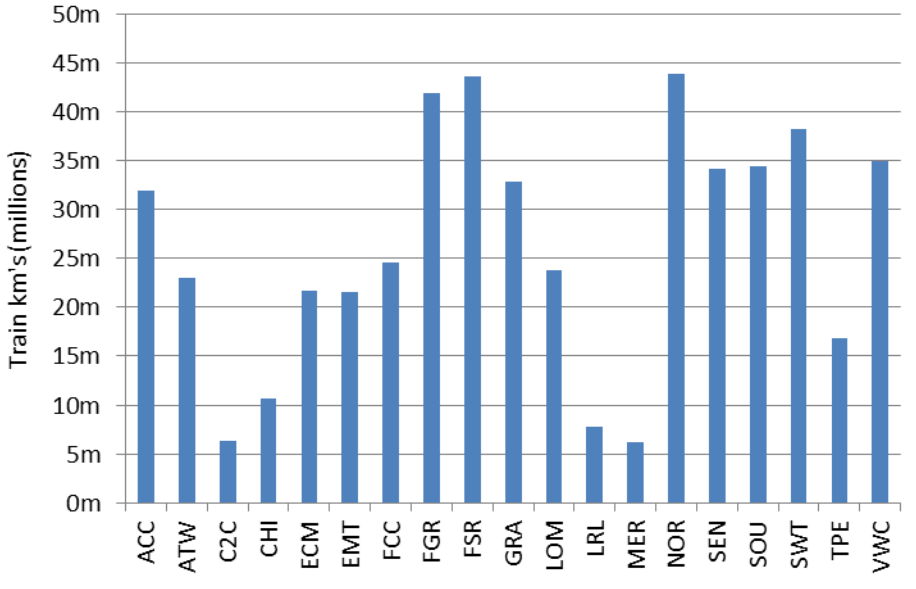

Figure 24: Operators' train kilometres in 2014

Looking at operator costs per train kilometre is a way of taking into account differences in volume of service between operators when looking at costs. As Figure 25 shows, there is

[15] Although operators can affect their variable access charges through, for instance, acquiring new rolling stock, the costs that they are able to influence in this manner represent a small proportion of the overall cost of access.

considerably less variation in operator costs on a per train kilometre basis than on an outright basis.

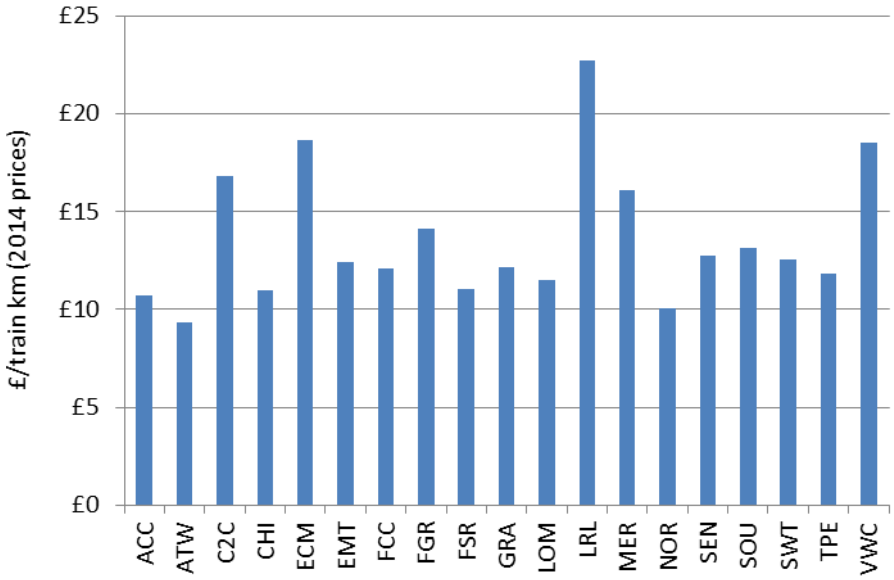

Figure 25: Operators' costs per train kilometre in 2014 (2014 prices)

Vehicle kilometres

Although train kilometres are a key driver of operator costs, they do not reflect every aspect of an operator's service. In particular, comparing operators' costs on a per train kilometre basis ignores differences in the number of vehicles in each of the trains they run.

Vehicle kilometres is a measure of volume of service that accounts for the length of train an operator runs; when a carriage on a train travels one kilometre that is one vehicle kilometre. So, if a train that is made up of ten carriages travels one kilometre, that is one train kilometre, but it is ten vehicle kilometres.

The length of a train that an operator runs affects the cost of running a train over a given distance. It will be more costly for an operator to run a train with four carriages than two carriages as, amongst other things, it would require more energy and rolling stock to provide each service. As a result, operators who tend to run longer trains tend to have higher costs per train kilometre.

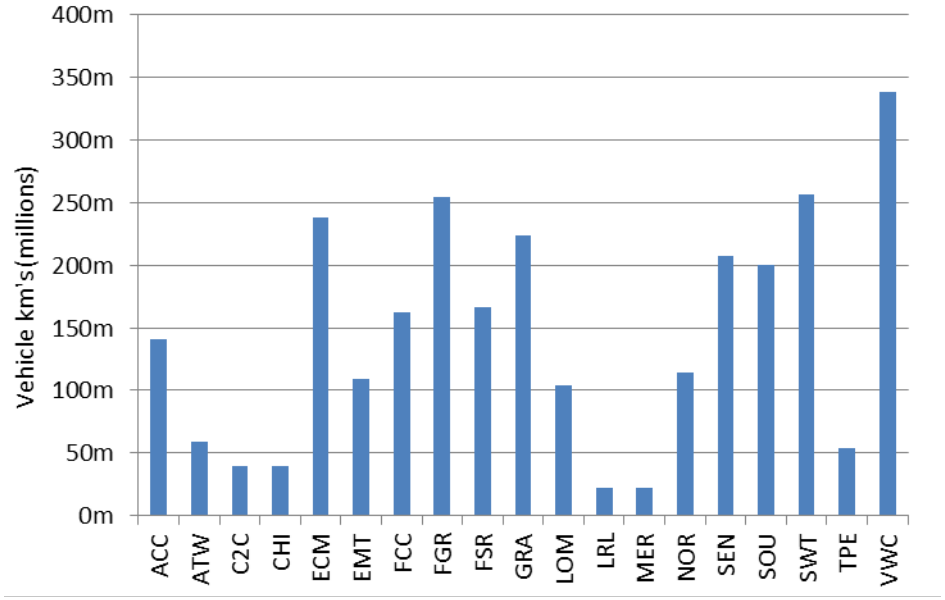

Figure 26: Operators' vehicle kilometres in 2014

Figure 26 shows that in 2014 there was significant variation in vehicle kilometres between operators.

Comparing operators' costs per vehicle kilometres takes into account that operators run trains of different lengths, and the costs associated with doing so.

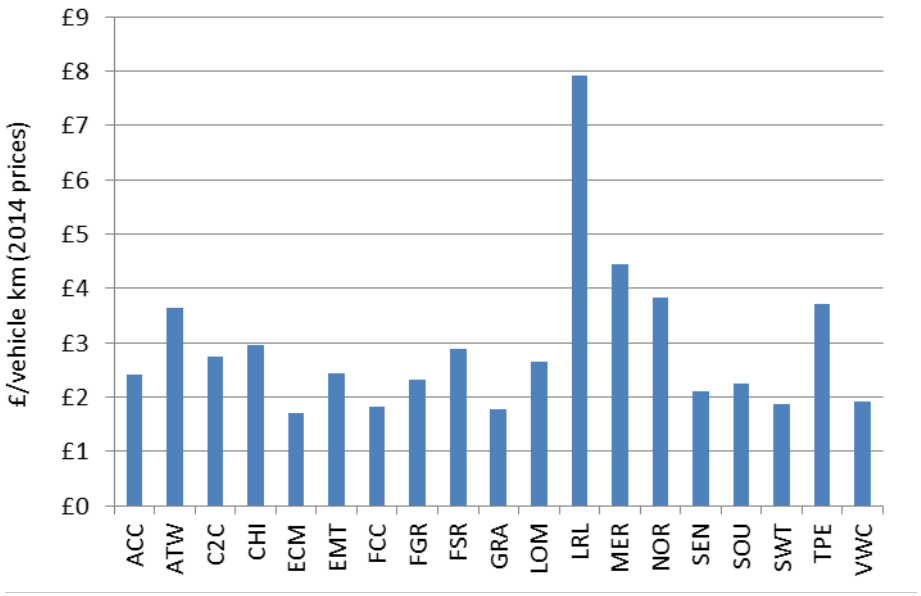

Figure 27: Operators' costs per vehicle kilometre in 2014 (2014 prices)

While operators such as East Coast and Virgin Trains, who tend to run longer train formations, have high costs per train kilometre they have relatively low costs per vehicle kilometre (see Figure 27).

As explained above, if an operator adds an additional vehicle to the trains that they run the total cost of operating each train tends to increase and the operator tends to have higher costs per train kilometre as a result.

Train hours

Although costs per vehicle kilometre help us take into account variation between operators in train length, it does not reflect other relevant features of an operator's service, such as their operating speed. An operator running a train of a given length at twice the speed of another operator, for the same amount of time, will run twice the number of train and vehicle kilometres in that time; but, for instance, the staff costs of the two services are likely to be comparable.

To do justice to these differences between operators we need a measure of volume of service that takes into account the amount of time for which an operator runs its services. We can use train hours to measure the duration of operator services; a train running for one hour accounts for one train hour.

As discussed, costs per train kilometre will tend to overstate the costliness of operators that run at low speeds relative to those that run at higher speeds. The former will have higher staff costs per train kilometre as staff are paid on an hourly basis and if they lease a similar quantity and quality of rolling stock they will likely also incur higher rolling stock costs per train kilometre.

From Figure 28 we can see that, as with train kilometres and vehicle kilometres, the number of train hours that operators run for varies significantly.

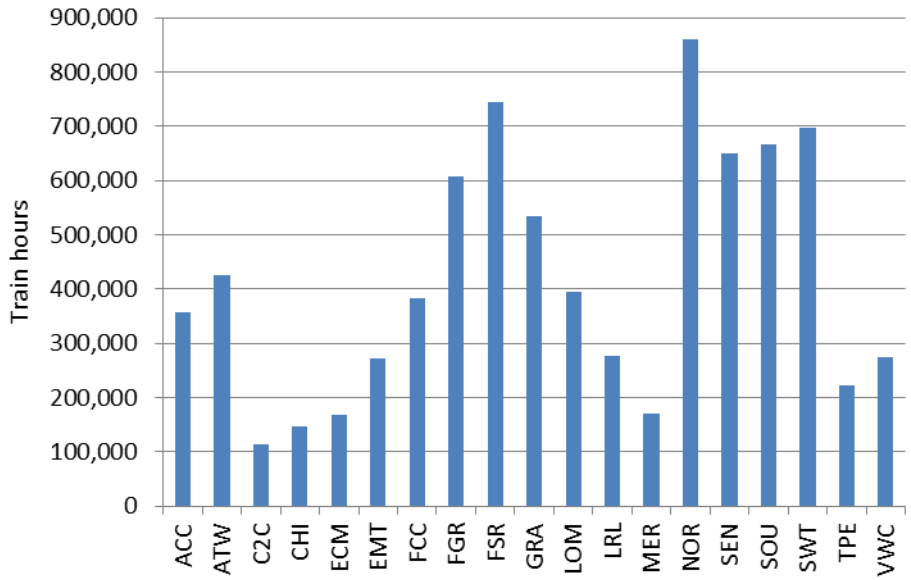

Figure 28: Operators' train hours in 2014

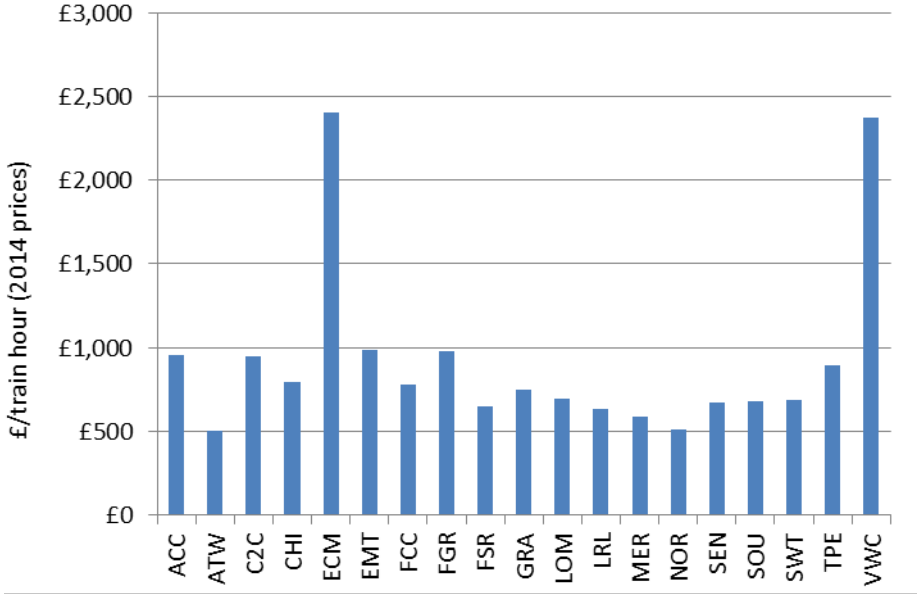

Figure 29: Operators' costs per train hour in 2014 (2014 prices)

The type of service that an operator provides affects the number of hours for which an operator runs their services. Operators that provide long distance intercity services generally run at high speeds and, consequently, have a low number of train hours relative to their train kilometres. In contrast, operators that provide regional services will tend to run at relatively low speeds, and in turn, travel less kilometres but have high train hours.

Comparing costs per train hour gives us a way to look at costs that, when considered alongside costs per train kilometre, reflects differences in operating speed, amongst other things.

The operators with the highest costs per train hour are East Coast and Virgin Trains (see Figure 29). Both of these operators provide long distance intercity services and run at high speeds. So, although these operators run a high number of train kilometres they do so in a relatively short space of time, which increases their costs per train hour.

At the other end of the spectrum London Overground is amongst the operators with the lowest costs per train hours. In contrast, on a cost per train kilometre basis, London Overground looked one of the most costly operators. However as explained above, because they provide an inner city metro service they have a relatively low average speed, meaning

their annual train kilometres are low compared to their train hours.

Passenger kilometres

A passenger kilometre is one kilometre travelled by a passenger on a train. Compared to the measures of volume of service already discussed, an operator's passenger kilometres are not a major cost driver as the cost of adding a passenger to a train already running is relatively low. However, particularly on congested services, extra passengers do create additional costs and, moreover, passenger kilometres are useful as a measure of the amount each operator's services are used.

The variation in passenger kilometres across operators, shown in Figure 30, illustrates that the amount each operator's services are used varies considerably. An operator can accumulate a high number of passenger kilometres if they either carry a high number of passengers or carry passengers over long distances.

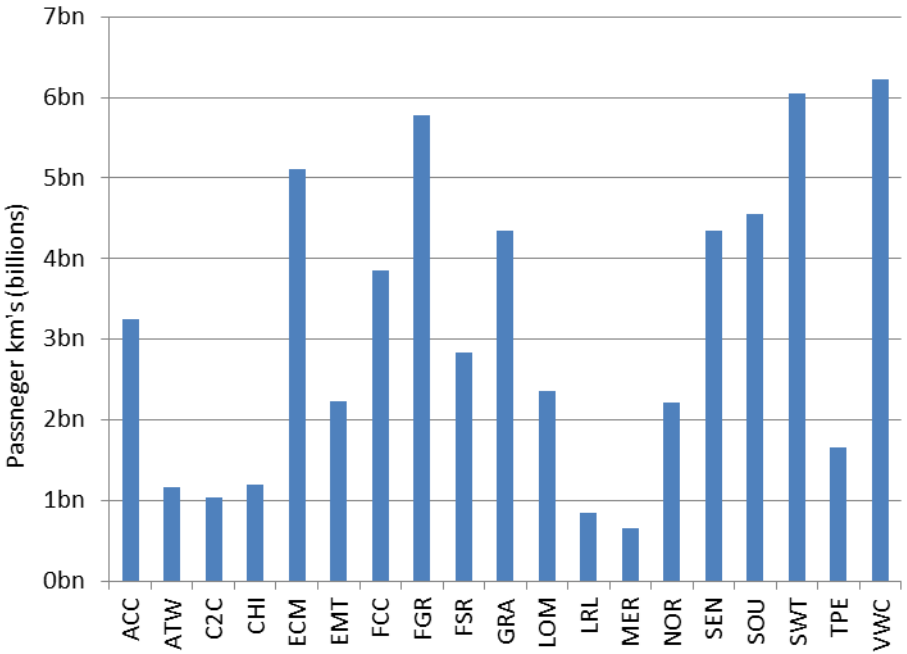

Figure 30: Operators' passenger kilometres in 2014

To take into account this variation in the usage of operators' services we can consider how costs per passenger kilometre vary between operators.

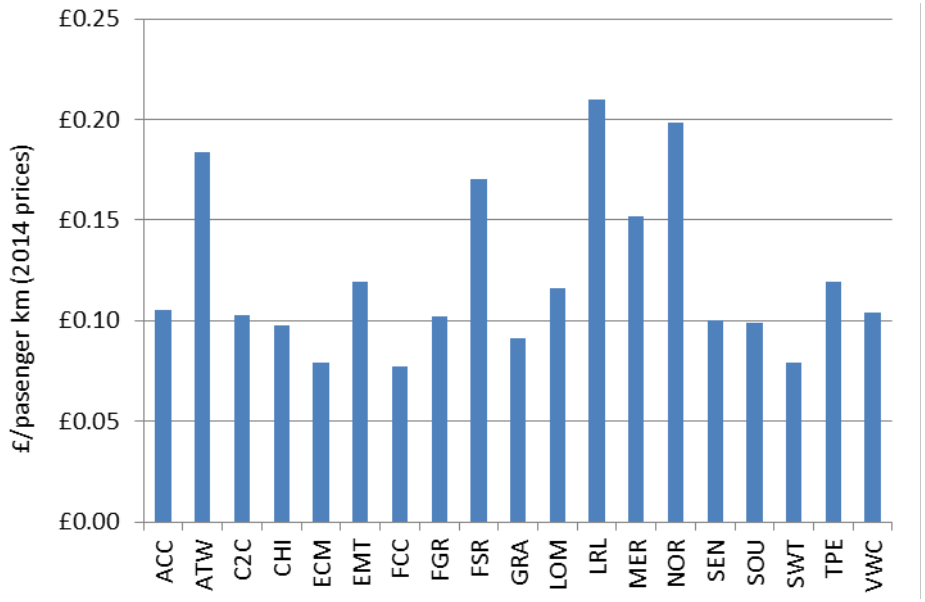

Figure 31: Operators' cost per passenger kilometre in 2014 (2014 prices)

As Figure 31 shows, the operators with the highest costs per passenger kilometre are Arriva Trains Wales, First Scotrail, London Overground and Northern. Although Arriva Trains Wales, First Scotrail and Northern run a relatively high number of train kilometres, the average number of passengers per train on their services is low, with the effect that their costs per passenger kilometre are higher. In contrast, London Overground have busy trains but they run slower services and passengers travel shorter distances. This results in London Overground also accumulating a low number of passenger kilometres and, in turn, also having relatively high costs per passenger kilometre.

Summary of all measures

This section compared operators' costs per train kilometre, vehicle kilometre, train hour and passenger kilometre, each of which captures a different aspect of an operators' volume of service.

Each measure of volume of service presents a very different picture of the relative costliness of operators. Because of the differences in service characteristics between operators, conclusions about efficiency or performance cannot be easily drawn. Figure 32 illustrates this point; it shows that while some operators have unit costs significantly above or below the average for certain measures no operator is above or below the average for all measures.

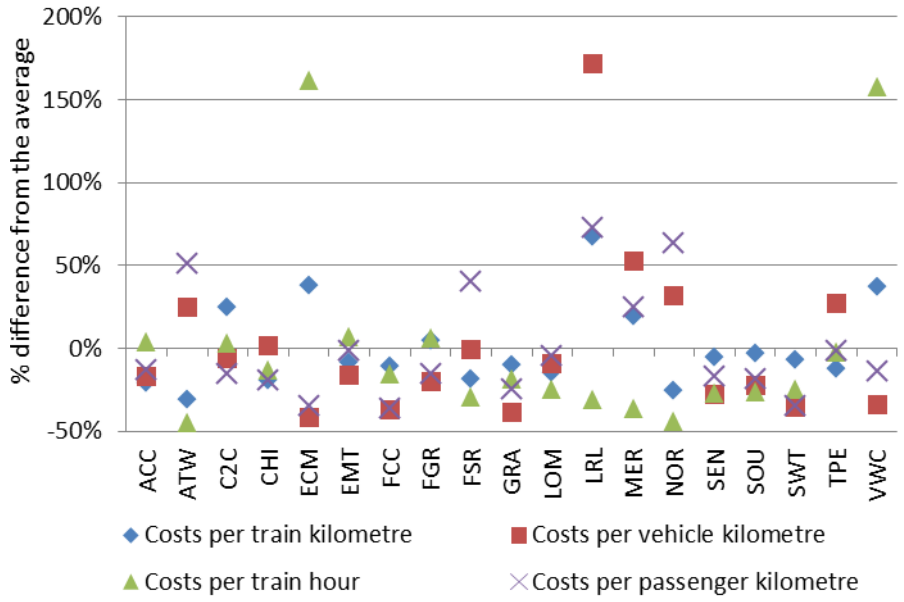

Figure 32: Deviation from the average for each average cost measure (2014)

4.5 Other cost drivers for operators

The objective of all operators is to maximise their profits, changes to their service characteristics can contribute to both maximising their revenues and minimising their costs. The previous section discussed how variation in the level of service provided by different operators can impact on their costs. In this section the focus of the discussion is on how variations in service characteristics can an impact on an operator's costs.

The extent to which a service characteristic is within an operator's ability to control varies between different operators and between different characteristics. For instance, because of the features of the infrastructure they operate on, an operator may be required to use a certain type of traction (e.g. diesel rather than electric), or the franchise specification might be such that the operator is required to stop at particular stations, and hence take longer. Factors of these kinds have an impact on operators' costs.

This section discusses the relationship between operators' costs and the following service characteristics:

- Operating speed
- Vehicle kilometres
- Stations operated
- Crowding
- Age of rolling stock
- Traction distribution
- Diversity of rolling stock
- Traction type
- Proportion of services run during peak hours

Service characteristics affect cost drivers which then have an impact on the costs that operators incur under different cost types (as seen in Figure 33). For instance, if one operator runs exactly the same distance as another but manages twice as many stations (service characteristic), we would expect them to require a greater number of staff (cost driver) which would result in higher staff costs (cost type).

Figure 33: Service characteristics and costs

The intention of the material presented in this section is to provide some context to the differences in unit costs between operators presented earlier in this chapter. The information presented here should not be considered as an attempt to provide detail on all of the service characteristics that affect operator costs, but more as an indication of how those service characteristics can be affected by factors outside of an operator's control.

The relationship between each cost driver and the different cost types is shown in Figure 34.

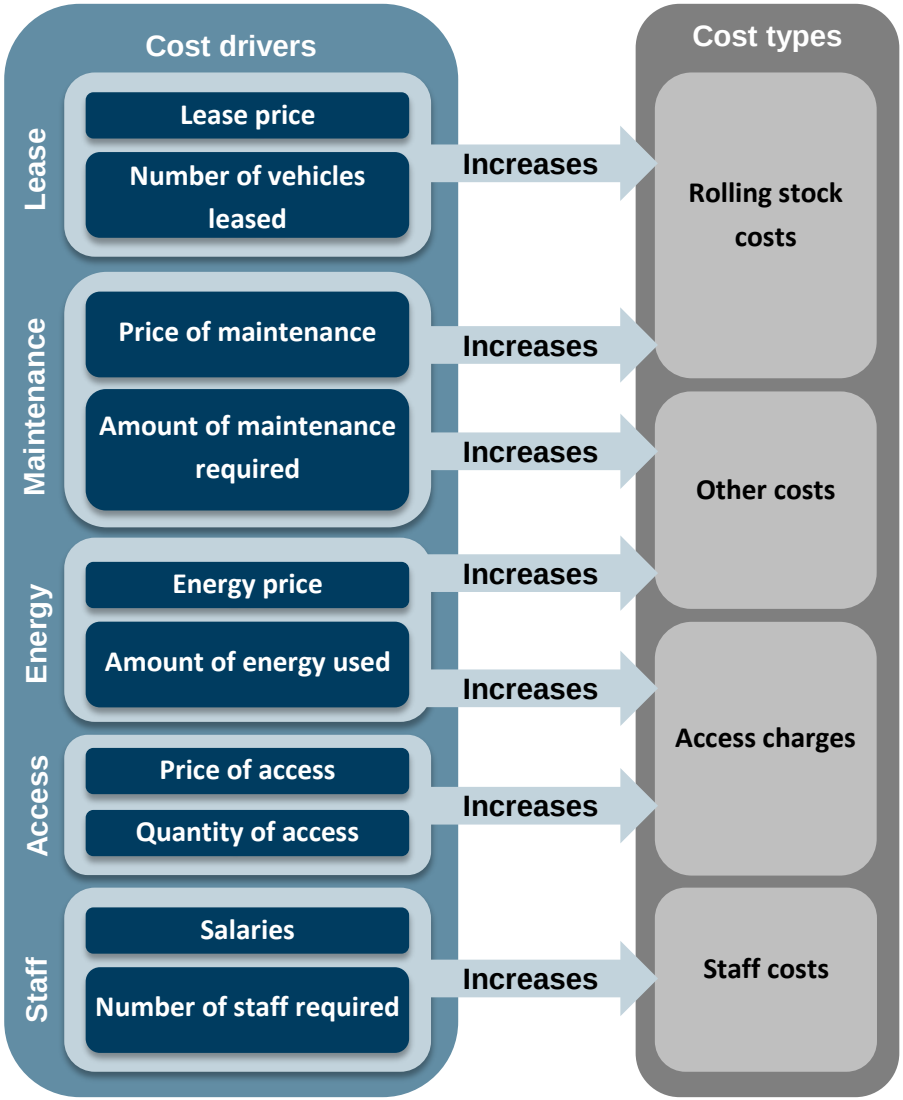

Figure 34: Relationship between cost drivers and cost types

The next sections discuss the connection between each service characteristic and the cost drivers.

Operating speed

The operating speed of a service is often outside of an operator's control. Although operators may have some ability to vary their speed within a small range, in general the requirements of the franchise specification and the characteristics of the route that they operate on will limit their discretion in determining their operating speed.

How operating speed affects cost drivers

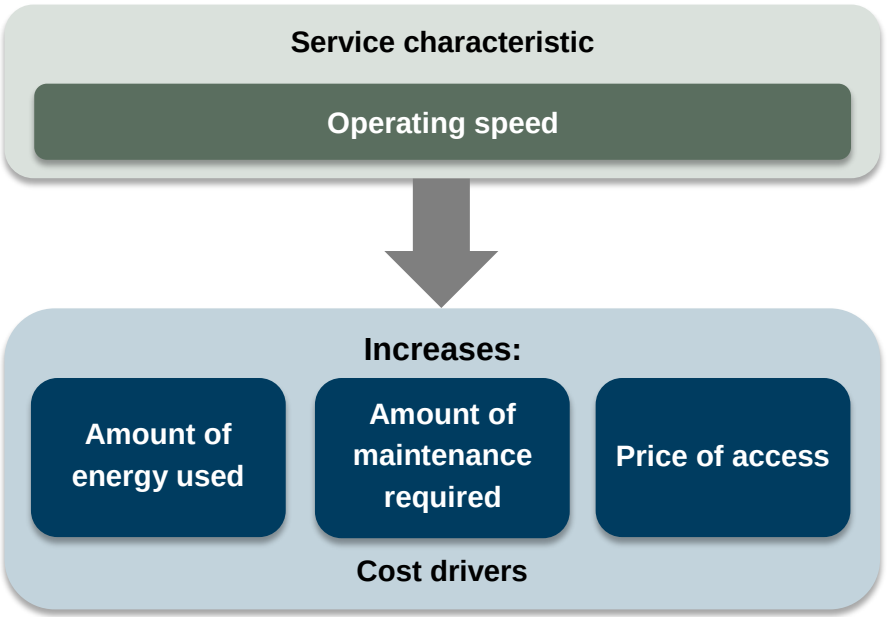

Figure 35: Operating speed and how it affects cost drivers

Amount of energy used:

As the operating speed of a service increases the air resistance, and hence the amount of energy used, increases exponentially.

Amount of maintenance required:

Faster trains are also more mechanically and electrically demanding, consequently requiring more maintenance.

Price of access:

Operators that run their services at relatively high speeds cause more damage to the track and, consequently, face higher access charges.

Vehicle kilometres

The number of vehicle kilometres travelled by an operator is largely determined by their franchise specification, which frequently specifies both the level of service required and the length of the train (which jointly determine the number of vehicle kilometres run).

How vehicle kilometres affects cost drivers

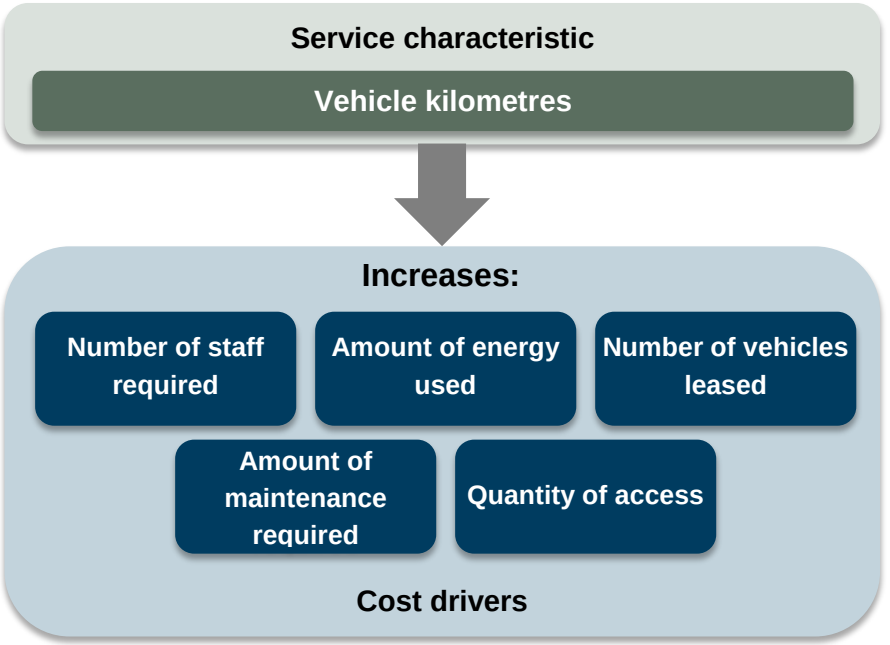

Figure 36: Vehicle kilometres and how it affects cost drivers

Number of staff required:

As the number of vehicle kilometres increases more staff are required for operational and on-board service purposes.

Amount of energy used:

Keeping all other factors constant, operators that run a higher number of vehicle kilometres use more energy.

Number of vehicles leased:

Operators that run more vehicle kilometres may need to lease more rolling stock.

Amount of maintenance required:

In addition to the maintenance required on the additional rolling stock leased, operators with higher vehicle kilometres may also use existing rolling stock more intensively; in either case this is likely to increase the amount of maintenance required.

Quantity of access:

The track access charges an operator pays are on a per vehicle kilometre basis. Hence, operators that have higher vehicle kilometres pay more in access charges.

Stations operated

The number of stations operated by an operator is set out in their franchise specification; operators have little control over that aspect of the specification.

How the operating stations affects cost drivers

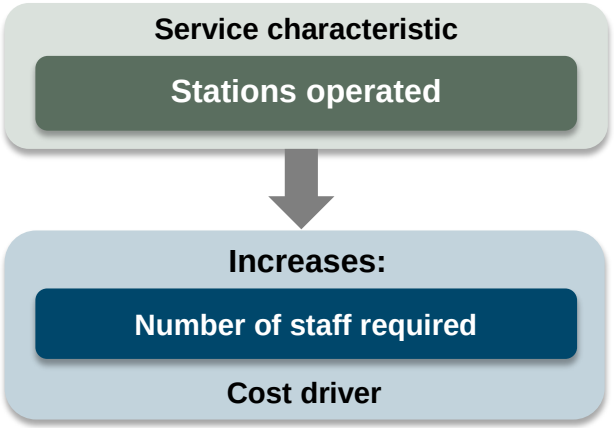

Figure 37: Stations operated and how it affects cost drivers

Number of staff required:

Operating more stations increases the number of staff required for ticket halls, cleaning, train dispatch and security.

Passenger loading

The passenger load on an operator's services is determined by the level of demand and the passenger capacity a particular service has. Whilst operators have limited ability to affect the capacity of the rolling stock they operate, they may be able to increase passenger numbers by marketing, pricing (of non-regulated fares) and wider passenger management strategies.

How passenger loading affects cost drivers

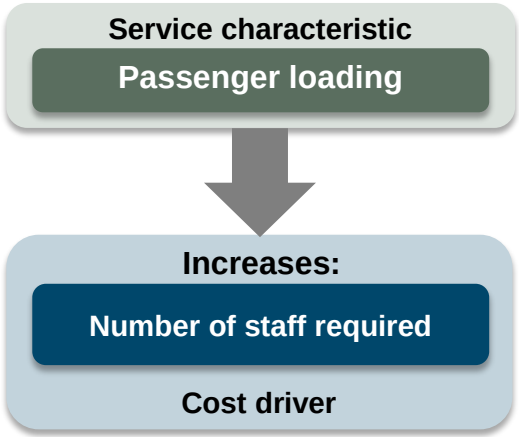

Figure 38: Passenger loading and how it affects cost drivers

Number of staff required:

Operators with services with high passenger loads i.e. relatively high passenger numbers per train, are likely to require more staff to manage crowds, check tickets and provide other services. In addition, station footfall and crowding will affect staff numbers as very congested stations will require additional platform management staff to ensure safe and reliable operation of services.

Age of rolling stock

Typically, when an operator takes over a new franchise, the rolling stock they lease is already determined. Owing to technical and operational factors, as well as the investment costs and risks associated with procuring new rolling stock, operators often have little choice but to lease the same vehicles as the previous operator. For this reason the age of the rolling stock they operate is largely outside of their control.

How the age of rolling stock affects cost drivers

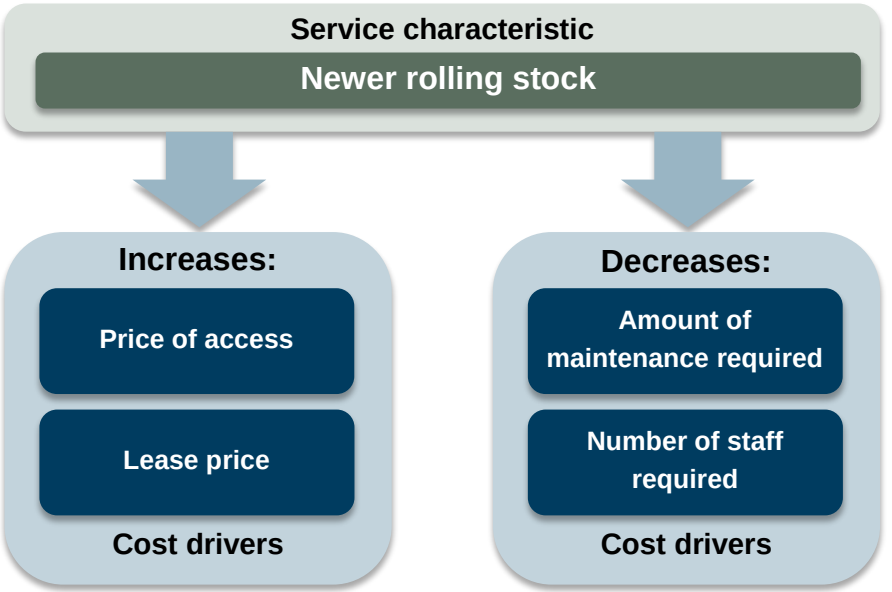

Figure 39: Age of rolling stock and how it affects cost drivers

Price of access:

Modern rolling stock often carries equipment and supports comfort features that are not typically present in older rolling stock. This may include greater crashworthiness, tilting capability, bi-mode (electric and diesel capability), air conditioning, Wi-Fi equipment, etc. Modern rolling stock is also built to more demanding structural standards than were

applicable to older rolling stock. For these reasons modern rolling stock tends to be heavier and is likely to cause more damage to the track than relatively older rolling stock.

Lease price:

Modern vehicles are typically more costly to lease, the SDG report on "Understanding the Rolling Stock Costs of TOCs in the UK" explains this is because there is more market demand for them and they tend to be to a higher specification than older ones. Additionally with older vehicles the Rolling Stock Company (ROSCO) may already have recouped its capital investment which could lower the associated lease price.

Amount of maintenance required:

New rolling stock tends to be built to be more readily maintained and more reliable, requiring less maintenance and repairs than older stock.

Number of staff required:

Operators that operate new rolling stock may incur lower staff costs as certain classes of older vehicles require more labour-intensive operations. The report on "Understanding the Rolling Stock Costs of TOCs in the UK" by SDG gives the example of certain classes of older vehicles requiring more staff for manual door operation.

Traction distribution

Rolling stock in the UK is generally formed of either semi-fixed length units with distributed traction (multiple units) or unpowered coaches pulled by a locomotive (loco-hauled). As discussed, operators have limited discretion over which rolling stock they operate when they take on a new franchise.

How traction distribution affects cost drivers

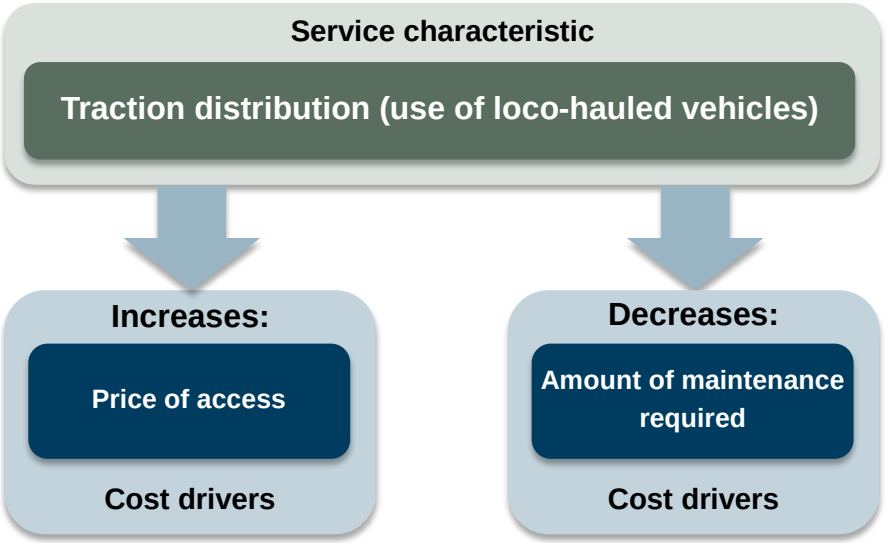

Figure 40: Traction distribution and how it affects cost drivers

Price of access:

The "Understanding the Rolling Stock Costs of TOCs in the UK" report by SDG explains that loco-hauled vehicles tend to be heavier and therefore more damaging to the track, consequently paying a higher price for track access.

Amount of maintenance required:

Only the powered locomotive of a loco-hauled vehicle requires significant maintenance. The unpowered coaches that follow are mechanically simple. Operators of loco-hauled vehicles may consequently require a lower amount of maintenance than an operator of multiple units (all other things, e.g. age of rolling stock, being equal).

Diversity of rolling stock

The variety of rolling stock an operator uses is often outside of their control. The requirements of the franchise specification, the parts of the infrastructure they operate on and the available rolling stock all limit an operator's discretion as to which classes of rolling stock they operate.

How the diversity of rolling stock affects cost drivers

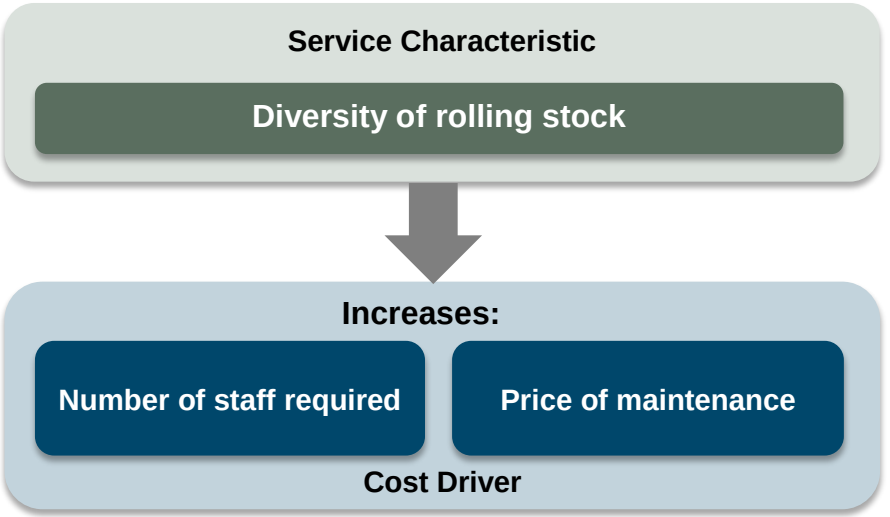

Figure 41: Diversity of rolling stock and how it affects cost drivers

Number of staff required:

Different kinds of rolling stock have different requirements and require particular skills and knowledge to operate. Operators with a diverse fleet may require a higher number of staff to meet the technical demands of operating a diverse fleet.

Price of maintenance:

Operators that operate a range of rolling stock may have different maintenance contracts, depot facilities and administrative costs for each class. Such operators may lack many of the economies of scale benefits on maintenance costs that come with having a more uniform fleet.

Traction type

Trains use either diesel fuel or are fully or part powered electrically via the network.

The traction type an operator uses is typically determined by the parts of the infrastructure they operate on, so is largely outside of their control. Although operators may have the ability to determine the associated costs at the rolling stock procurement stage and through energy cost hedging, their overall ability to affect energy consumption or the price paid is limited. For reasons discussed below, rolling stock with diesel traction is typically more costly to operate than rolling stock with electric traction.

How the traction type affects cost drivers

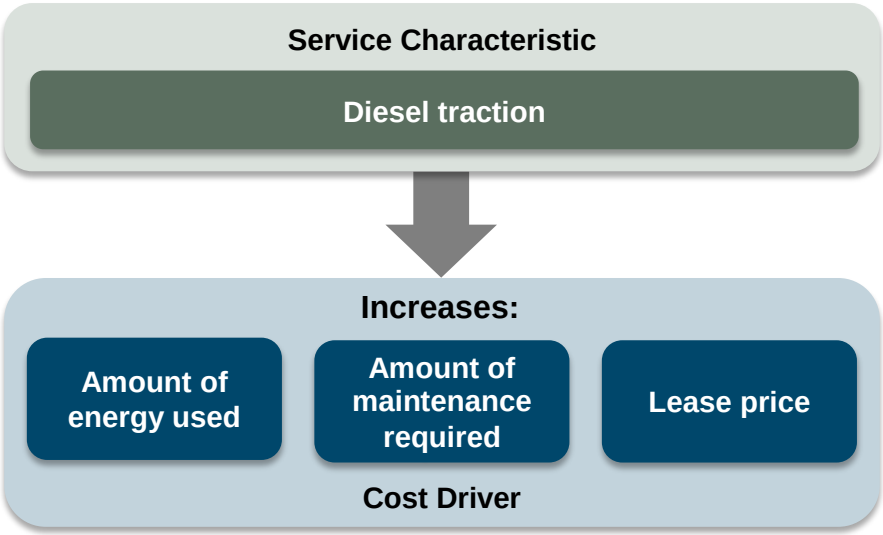

Figure 42: Traction type and how it affects cost drivers

Amount of energy used:

Operators that run their services using diesel traction need to carry fuel on board, making them (all else equal) heavier than electrically powered rolling stock, and hence increasing the amount of energy used.

Amount of maintenance required:

Diesel powered rolling stock tends to have lower levels of reliability; and may therefore require more frequent maintenance than electrically powered stock.

Lease price:

New diesel powered rolling stock is not being built because less will be required as electrification of more of the network takes place. In the interim, the lease price for this limited resource may be higher.

Proportion of services run during peak hours

The franchise specification states the number of services that an operator must operate during peak and off-peak hours, usually defined by different time intervals. During peak hours the operator runs a more frequent service than during off-peak hours.

Proportion of services run during peak hours and how it affects cost drivers

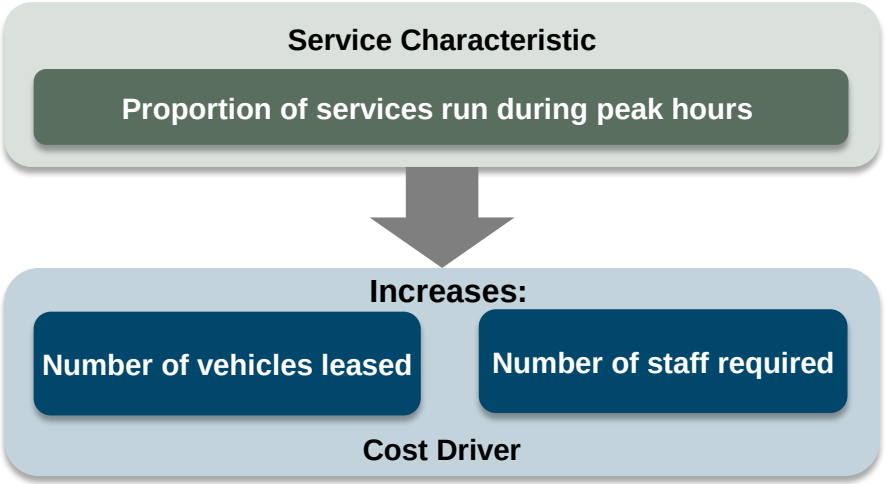

Figure 43: Proportion of services run during peak hours and how it affects cost drivers

Number of vehicles leased:

An operator that has a higher proportion of its services during peak hours will need to lease a higher number of vehicles to ensure it can meet operating requirements at peak times.

Number of staff required:

Operators that operate more services during peak hours require a higher number of staff to operate the additional peak services and also to manage the increased number of passengers during these peak hours.

Annex A: Data handling

The purpose of this annex is to explain the approaches and techniques we have used to ensure that the data used in this report allows us to look at how franchised operators and Network Rail's costs and revenues have changed over time and also compare the costs and revenues of each of the franchised operators in 2014.

Due to the adjustments made to the data (explained below), the figures presented in this report may not exactly match figures presented in other published documents, in particular the 2013-14 industry financials report published by ORR.

Real prices and real term changes

In this report, when discussing how the value of costs and revenues have changed over time we often express values and percentage changes in "real terms". This means that the costs and revenues have been converted to a common price base to adjust for the impact of inflation and allow costs and revenues across different years to be compared. In this report any real values are expressed in 2014 prices and adjusted from their original price base using annual inflation data from the HM Treasury GDP deflator.

London Overground's infrastructure

Unlike the other franchised passenger operators discussed in this report London Overground owns part of the infrastructure that they use. London Overground incurs costs related to the construction and maintenance of this infrastructure, and receives subsidies to cover those costs.

The subsidies that London Overground receives for managing this infrastructure are included in the net operator subsidy revenue category. As a result it needs to be considered that the level of the net operator subsidy for London Overground presented in section 4.2 includes a subsidy that other operators do not receive.

As London Overground owns parts of the infrastructure that their trains operate on they have depreciation costs of these assets included in their management accounts. These depreciation costs represent the some of the capital costs of their infrastructure. For the infrastructure that Network Rail owns train operators pay Network Rail access charges to recover some of those costs. As the closest approximation to the accounts of other operators, we have infrastructure depreciation costs for London Overground classed under "access charges" in their accounts. This means that the amount Network Rail received in access charges in 2014, shown in Figure 1, does not equal the access charges that operators pay.

However it should be noted that this approach is only an approximation as part of London Overground's costs in other

categories are likely to relate to the operation and maintenance of their infrastructure.

Access charges and performance regime payments

The figure in operators' management accounts for the amount they pay Network Rail in access charges does not match the figure in Network Rail's regulatory accounts for the amount they receive in access charges. The net payments operators receive from Network Rail through the performance regime are also not the same across the two sets of accounts. These differences are due to differences in how operators and Network Rail report certain costs and revenues, normally caused by differences in the timing of recognition of costs and revenues, To ensure consistency and allow comparability of operators' costs and revenues over time and against one another the figures given for access charges and performance regime payments throughout this report are from operators' management accounts only.

Amortisation of Network Rail's renewal costs

In Figure 7 we have included Network Rail's renewal costs between 2002 and 2014 under the category of 'amortisation'. Amortisation is the practice of 'smoothing' the investment of renewing an asset over the asset's life. We consider this the best way to get an understanding of annual changes in costs in the rail industry. This is because rail infrastructure assets require large investments and have a long, but finite, lifespan. Typically large infrastructure works are carried out in one go meaning that assets come to the end of their lifespan and need to be renewed at the same time. This means that Network Rail's renewal expenditure tends to be "lumpy"; a particular year's renewals expenditure tends to reflect the assets that need to be renewed that year, more than the costliness of operations in that year.

Network Rail's amortisation and financing costs

Due to changes over the years in the information included in Network Rail's regulatory accounts it is not possible to construct a consistent time series between 2002 and 2014 for Network Rail's financing and amortisation costs. To deal with this missing data we have back-cast 2010 financing costs and 2005 amortisation costs (adjusted for inflation) in order to provide an illustrative picture of industry cost levels in Figure 7.

Network Rail's enhancement expenditure

Enhancements are upgrades or additions to the existing rail network. They include activities such as the electrification of the West Coast Mainline and the redevelopment of Reading station. Enhancements are not considered among Network Rail's costs in this report in order to facilitate comparison of costs over time.

Franchise premium payments

In this report any premium payments operators pay to franchise authorities for the right to run a service, are treated as negative revenues rather than costs to ensure consistency of comparison between operators.

Electric current payments

Network Rail supplies electric current to operators and operators pay Network Rail for it through their access charges. It has not been possible to construct a consistent time series of the amounts paid by operators to Network Rail for electric current, separate from other access charges. As a result, considerations of other operator costs are only partial, since, while they include diesel costs, they exclude the costs of electric energy.

Since the proportion of operators' fleets that are electrified has increased between 2001 and 2014 this likely means that the change in operators' non-access costs is understated.

Annex B: Revenues and costs in the franchised passenger rail industry

The tables below explain the cost and revenue categories in Figure 1.

Revenues in the passenger rail industry

Revenue category	Received by…	Source	Description
Farebox income	Operators	Operator management accounts	Farebox income is the income operators receive from ticket and railcard purchases by passengers minus the cost of any refunds and delay compensation payments. Although operators have some autonomy over the prices they charge for certain classes of tickets, the majority of fares are set by the Department for Transport.
Other operator income	Operators	Operator management accounts	Operators receive revenues from a wide range of other sources, such as car parks, on-board advertising and catering. Other income generally constitutes a very small share of operators' total income.
Net Operator Subsidy	Operators	Operator management accounts	As part of the competition to win a passenger franchise, bidders specify the level of subsidy they require from the Government to run the service, or the level of the premium they will pay to Government for the right to run the service. The size of the subsidy or premia is determined by the extent to which it is expected that farebox and other income will exceed the costs of running the service. Those services that require a subsidy are those for which the costs of running the service specified in the franchise exceed the revenue that the service is expected to generate. The total "net operator subsidy" is the total of subsidies the Government pays to operators minus the total amount operators pay to the Government in premiums.

Performance Regime Payments	Operators	Operator management accounts	Performance regime payments are intended to ensure that when operators or Network Rail are affected by a disruption they are compensated for the lost revenue by the organisation that caused the disruption as well as to incentivise operators to limit delay. In this report performance regime payments are considered an income for operators as they are designed to reflect the impact of changes in performance on an operator's revenue and to act as an incentive on the operator to perform better.
Network grant	Network Rail	Network Rail regulatory accounts	The network grant is paid directly by the Government to Network Rail. The network grant funds Network Rail for the costs that are not recouped from users of the infrastructure (i.e. passenger operators, freight operators and open access operators).
Other Single Till Income (OSTI)	Network Rail	Network Rail regulatory accounts	OSTI consists mainly of revenues that NR receives from non-franchised operators and other parties. It includes revenues such as station and depot property rental income and income from track access charges from freight and open access operators. As with other operator income each of these revenues are individually relatively small and therefore it is reasonable to look at all of these as one category.

Costs in the passenger rail industry

Cost category	Paid by…	Source	Description
Rolling Stock costs	Operators	Operator management accounts	There are two main costs that are directly associated with rolling stock; leasing charges and maintenance costs. In the UK operators typically do not buy rolling stock; instead they lease it from Rolling Stock Companies (ROSCOs). As a result, how operators pay for rolling stock maintenance costs depends on the leasing agreement they have with a ROSCO. If the operator has a 'Wet Lease' the ROSCO is responsible for all the maintenance of the rolling stock. Alternatively, the operator may have a 'Dry Lease' , which means the operator would be responsible for all maintenance costs on the rolling stock .The third option is a 'Soggy Lease' which means the ROSCO is responsible for any heavy duty maintenance work but the operator is responsible for day to day maintenance work.
Staff costs	Operators	Operator management accounts	Operators employ a diverse range of staff such as train drivers, cleaners and revenue protection inspectors. Although each category of staff carries out very different duties and is paid a different wage, in this report operators' staff costs are considered as one category, principally owing to constraints in the data.
Other operator costs	Operators	Operator management accounts	In a similar way to other operator income, other operator costs include all the operator costs that are individually relatively small. This category includes a wide variety of costs such as car park management costs, catering costs, marketing costs and British Transport police fees.
Access charges	Operators	Operator management accounts	Access charges consists of a variety of charges that operators pay Network Rail to use the rail network. These charges are intended to recover some of the fixed and variable costs of renewing, maintaining and operating the rail network. The levels of access charges are determined by ORR every 5 years as part of its periodic review of Network Rail.
Traction Electricity Charge (EC4T)	Operators	Operator management accounts	This is the charge operators pay to Network Rail for the electricity they require to run their electrified train services. The amount operators pay is determined by either modelled rates or actual consumption, measured by meters on board trains.

Maintenance	Network Rail	Network Rail regulatory accounts	Network Rail is required to maintain the capability and condition of the network. To do so they require a detailed understanding of asset condition and to perform maintenance on assets to ensure they are safe and reliable. Maintenance costs reflect the costs of these activities.
Renewals	Network Rail	Network Rail regulatory accounts	Network Rail faces renewal costs when they have to replace an asset that has reached the end of its economic life. Due to the diverse nature of the infrastructure on the railway network there can be significant differences between the economic lives of different assets.
Financing costs	Network Rail	Network Rail regulatory accounts	Financing costs are the interest costs that Network Rail pays on any debt that they have accrued.
Other Network Rail operating costs	Network Rail	Network Rail regulatory accounts	Network Rail operating costs includes all the costs that Network Rail faces that are not associated with maintenance, renewal or enhancement of the network. This includes costs involved in network operations such as running signals and support functions such as HR.

Annex C: Measurements for the usage, volume, punctuality and passenger satisfaction of franchised passenger rail services

Metric	Source	Measure of…	Description
Passenger kilometres	LENNON	Usage of the railway	One kilometre travelled by a passenger on a train is one passenger kilometre. Passenger kilometres are a measure of the usage of the railway, capturing the amount of passengers that an operator carries and the distance that they carry them.
Train kilometres	DeltaRail	Volume of service provided	One kilometre travelled by a train counts as one train kilometre. Train kilometres are a measure of the volume of service provided by operators as they show the distance operators travel and the number of services that they provide.
Train hours	DeltaRail	Volume of service provided	A train running for one hour is one train hour. The train hours run by an operator shows the amount of time that there services run for in a given year; they are a way of measuring the volume of service an operator provides.
Vehicle kilometres	Network Rail	Volume of service provided	One kilometre travelled by a carriage as part of a train is one vehicle kilometre. When a ten carriage train travels one kilometre it runs ten vehicle kilometres.
Public Performance Measure (PPM)	Network Rail	Punctuality	PPM is a record of the proportion of trains that reach their final destination on time. A train is defined as on time if it reaches its terminating station within five minutes of the time in the timetable, or ten minutes for long distance services. PPM is the industry standard measurement of punctuality.

National Rail Passenger Survey	Transport Focus	Passenger satisfaction	The NRPS consults over 50,000 rail passengers each year to understand how satisfied passengers are with the service provided by operators. The survey asks passengers their views on their overall satisfaction with the service, overall satisfaction with the station and train facilities and 33 specific aspects of the service, such as space for luggage on the train and the helpfulness of staff. For each question passengers are asked if they were satisfied, dissatisfied or neither with the service they received.

Annex D: Franchised train operators operating in 2014

Franchised passenger train operator	Abbreviation
Arriva Cross Country	ACC
Arriva Trains Wales	ATW
C2C	C2C
Chiltern	CHI
East Coast Mainline	ECM
East Midlands Trains	EMT
First Capital Connect	FCC
First Greater Western	FGR
First Scotrail	FSR

Franchised passenger train operator	Abbreviation
Greater Anglia	GRA
London Overground	LRL
Mersey Rail	MER
Northern	NOR
South West Trains	SWT
Southeastern	SEN
Southern	SOU
Transpennine Express	TPE
Virgin West Coast	VWC

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