CERRE

CENTRE ON REGULATION IN EUROPE

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

United Kingdom Case Study

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1. Introduction

This case study forms part of the input to the Centre on Regulation in Europe (CERRE) project, with the overall objective of understanding why competition has been successfully implemented in some countries while in others it has led to a decline in rail freight's mode share. The United Kingdom is one of the countries where rail has increased its share of the freight transport market, albeit from a very low level, since operations were privatised and competition was introduced. As a contribution to the overall project objective, therefore, this paper presents an in-depth analysis of the British experience since the privatisation of British Rail in the mid-1990s. It should be noted that the analysis and discussion in this paper focuses on Great Britain (i.e. England, Scotland and Wales) rather than the United Kingdom, since railways in Northern Ireland have a separate organisational structure and no rail freight activity.

Section 2 focuses on the demand side, considering the underlying trends in the different markets suited to rail. This is followed in Section 3 by an assessment of the supply side, presenting the trends in rail freight activity and analysing the structure of the rail freight market. Section 4 examines the regulatory structure and the role of the key players. Section 5 assesses the issues relating to the competitive environment and the extent to which rail freight operating companies are able to increase the relevance of rail in the British freight market given the current industry structure and regulatory environment. Section 6 provides a brief conclusion to the report.

2. The demand side

This section first considers the bulk freight markets which are traditionally associated with rail in Britain, and then moves on to examine the new freight markets where rail has a presence. The freight market segmentation is based on the categorisation in earlier studies and official statistics. Much of the discussion in this section summarises and updates the Freight Modal Choice Study: Addressable Markets work carried out by the University of Westminster for the Department of Transport (DfT, 2010).

2.1 Key bulk freight markets

Coal – The consumption of coal has generally declined in the last 30 years, although there was an increase of around 30% between 2009 and 2012 (DECC, 2013a). The vast majority of coal is consumed by electricity-generating power stations, and the volumes vary from year to year dependent on the price of coal relative to other energy sources. Coal production has been declining and, since 2001, imported coal has comprised the majority of coal being consumed (DECC, 2013a). This imported coal has tended to have much longer lengths of haul than domestic coal, which largely accounts for the fact that tonne kilometres of rail freight have

grown much more than tonnes. It seems likely that coal consumption will continue to fluctuate in the short- to medium-term, but that it will decline in the longer-term if there is to be a transition to a low carbon economy.

Aggregates – Aggregates production and consumption are closely linked to the economic cycle, since this relates closely to the amount of construction activity. Aggregates production has been generally downward over the last 20 years, with a considerable decline since 2007 due to the economic downturn (DfT, 2010; BGS, 2013).

Metals – This sector is dominated by flows associated with crude steel manufacturing, which has shown a general downward trend over the last 25 years. In the last decade, production was fairly stable until 2008 but then dropped by 25% in 2009 due to the economic crisis; it was then fairly stable between 2009 and 2012 (ISSB, 2013). Steel demand has followed a similar trend, but this broadly matching supply and demand belies the fact that around half of the steel produced in Britain is exported and, conversely, around half of the volume consumed is imported.

Petroleum – This market has exhibited similar trends to metals, although with more stability until 2008. Both refinery output and demand for petroleum products were broadly stable until this time, but the former dropped by 15% and the latter by 10% between 2008 and 2012 due to the economic downturn (DECC, 2013b).

2.2 Other freight markets

Automotive – British car and commercial vehicle production was fairly stable in the decade until 2008, but dropped sharply due to the economic downturn. Car production has largely recovered, with 2013 figures looking likely to match those in the period before 2008; commercial vehicle production is only around half that prior to 2008 (SMMT, 2013a). New car registrations have also recovered and are back to pre-2008 levels (SMMT, 2013b). Around three-quarters of cars produced in Britain are exported, with similar numbers of imports, reflecting the centralised production strategies of major car manufacturers.

Waste – This market, comprising both domestic and commercial waste, is diverse and complex and has limitations on data availability. Household waste recycling has increased from 11% in 2000/01 to 43% in 2011/12, and 90% of construction and demolition waste in England is recovered (Defra, 2013). Overall, less waste is now going to landfill sites, and more is being reused, recycled or disposed of in other ways.

Intermodal – Container flows to/from ports comprise the majority of unitised freight. Port container volumes were broadly increasing until the economic downturn, but declined by 15% between 2008 and 2009; by 2011, around half of this loss had been recovered (DfT, 2013a). There has been a shift away from the use of 8'6" high containers to those that are 9'6" in height,

which has implications for rail's ability to carry containerised traffic. There are other intermodal flows on rail, but these are considered under "other general freight" since, unlike port container flows, they would not be unitised were they not moving by rail.

Channel Tunnel – prior to the economic downturn, there was considerable growth in freight volumes between the United Kingdom and the European mainland. The number of goods vehicles travelling to mainland Europe increased almost three-fold in the 20 years up to the 2007 peak, but volumes in 2012 were around 15% lower than this peak (DfT, 2013b). Over the last 25 years, flows have become more concentrated on the Dover Straits route which now handles around two-thirds of all volume as opposed to less than half in 1987 (DfT, 2013b). These vehicles are carried by ferries and by rail through the Channel Tunnel.

Other general freight – This market can be sub-divided into other bulk commodities not already considered, such as chemicals, minerals and timber, and non-bulk flows such as consumer goods, main and parcels. Given the diverse characteristics, it is difficult to make generalisations about this market but, broadly speaking, the bulk commodities are stable or declining in importance while the non-bulk flows were growing prior to the economic downturn. One new bulk market that is emerging is biomass, with a number of coal-fired power stations converting either fully or partially to burning biomass instead (DECC, 2013a), and a new market for rail is developing. For non-bulk flows, parcels volumes have been growing, largely as a consequence of the growth of internet shopping.

2.3 Summary

Table 1 summarises these market trends, showing clearly that the traditional bulk markets to which rail is best suited are at best stable, but in some cases are in decline. By contrast, the intermodal, Channel Tunnel and some parts of the general freight market were growing prior to the onset of the economic downturn. Overall, most of the markets experienced contraction around 2008/09, with varying degrees of recovery since then. The table also shows an assessment both of rail's current role within each of the markets and the potential for it to take a greater market share.

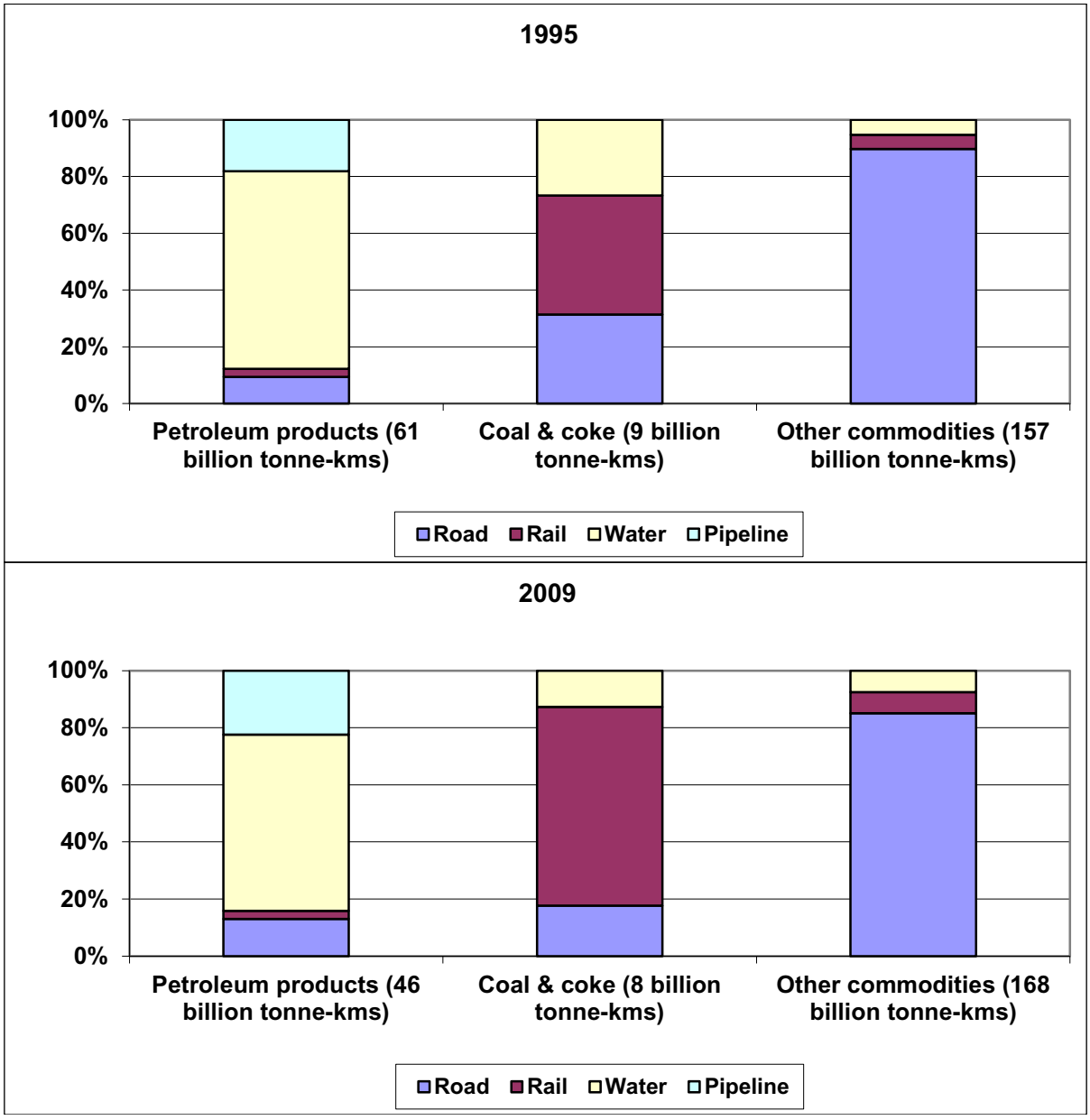
Table 1: Summary of British freight market trends and rail's role in the markets

Market	Degree of market Maturity	Current rail position	Potential for growth in rail share
Coal	Mature and stable	Dominant	Limited
Aggregates	Mature and stable	Strong for longer distance flows	Moderate
Metals	Mature and stable/declining	Strong for certain sub-markets	Moderate
Petroleum	Mature and stable (until 2008)	Strong for high volume flows where no pipeline exists	Limited
Automotive	Mature and stable (until 2008)	Low	Considerable
Waste	Mature and stable/declining	Low	Limited
Intermodal	Dynamic and growing (until 2008)	Significant share of deep sea; low share of other unitised	Very considerable
Channel Tunnel	Dynamic and growing (until 2008)	Very limited	Very considerable
Other general freight	Variable – generally mature for 'other bulk', but growing for parcels and pallets	Variable, but generally limited	Variable – greatest potential where volumes can be aggregated

Source: DfT (2010)

Figure 1 shows the relative sizes of three markets, namely petroleum products, coal and coke, and 'other commodities' in 1995 and 2009, and relates this to the role of the different transport modes. Rail has the majority of the coal and coke market and its share has increased since 1995, but in 2009 this represented just 4% of the total freight market. By contrast, the huge 'other commodities' market is dominated by road freight and rail has a very small share. It can be seen, though, that rail has gained some ground in this market, increasing its share from 5% in 1995 to 7% in 2009. Rail's share of the petroleum market has changed little over the 14 year period, but the market itself has contracted considerably. It is challenging to disaggregate mode share to a greater extent, but further analysis of rail freight activity is provided in Section 3.

Figure 1: Domestic freight transport moved in Great Britain: mode share for selected commodities (1995 and 2009)



Source: DfT (2002, 2012)

3. The supply side

This section first presents an overview of rail freight trends, focusing on rail's share of the British freight market and the volumes for the various commodity groupings shown in official statistics. It then considers the structure of the rail freight market, with a particular emphasis on the number and role of rail freight operators.

3.1 Trends in rail freight activity

Table 2 summarises the recent domestic freight trends in Britain relating both to the total market and rail's share.

The total domestic freight market was between 245 and 255 billion tonne kms from 1998 to 2007, with a 10-15% reduction since then due to the economic downturn. Rail's share of freight moved edged upwards from 7% in 1998 to almost 9% in 2009, though slipped back slightly in 2010. Considering just the road (HGV) and rail combined market, which is of particular interest to policy makers given the limited scope for water freight and pipeline as alternatives to road for the majority of Britain's freight requirements, rail's share has increased from 10% in 1998 to 12% in 2010 although the data suggest that the growth in coal and, to a lesser extent, intermodal, has been responsible for the majority of the growth in rail's mode share. The measures of rail freight's impact on road haulage also demonstrate a broadly increasing impact of rail freight activity. The overall picture is one of an increasing presence for rail freight in the domestic market, although the trends are not always particularly apparent and there is a time lag in data availability across all modes.

Given that Great Britain is an island, with the Channel Tunnel as the sole fixed transport link to the rest of Europe, the overwhelming majority of international trade is by sea. Of the combined sea and Channel Tunnel market for international freight, the Channel Tunnel carries only around 5% of the tonnage (DfT, 2013). As Table 3 shows, almost 95% of Channel Tunnel rail freight uses the Eurotunnel lorry shuttles, with the remainder being carried by through freight trains operating to/from terminals on the British rail network. Therefore, in tonnage terms, through freight trains carry only around 0.25% of British international trade (excluding pipeline and air).

Table 2: Detailed modal comparisons for domestic freight (Great Britain)

Rail market share (1998 - 2010)		1998 (R)	1999 (R)	2000 (R)	2001 (R)	2002 (R)	2003 (R)	2004 (R)	2005 (R)	2006 (R)	2007 (R)	2008 (R)	2009 (R)	2010
Freight moved (billion net tonne kms)	Road (HGV)	152	149	149	151	149	150	152	153	152	157	146	125	139
	Road (All)	160	158	159	159	159	162	163	163	163	169	157	137	151
	Rail	17	18	18	19	19	19	20	21	22	21	21	19	19
	Pipeline	12	12	11	12	11	11	11	11	11	10	10	10	10
	Water	57	59	67	59	67	61	59	61	52	51	50	49	42
	Total	246	246	256	248	256	252	253	257	248	251	238	215	221
Percentage of goods moved by rail		7.0	7.4	7.1	7.7	7.4	7.4	8.0	8.3	8.8	8.5	8.9	8.9	8.4

Impact on road haulage (2002/03 - 2012/13)	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10 (R)	2010/11 (R)	2011/12 (P)	2012/13 (P)
Rail freight lorry kilometres equivalent (billions)	1.36	1.35	1.20	1.22	1.36	1.38	1.37	1.41	1.44	1.58	1.60
Avoided lorry journeys (millions)	5.59	5.89	6.95	6.74	6.58	6.69	8.19	6.81	6.14	6.90	7.59

Source: (ORR, 2013a); R – revised data, P – provisional data.

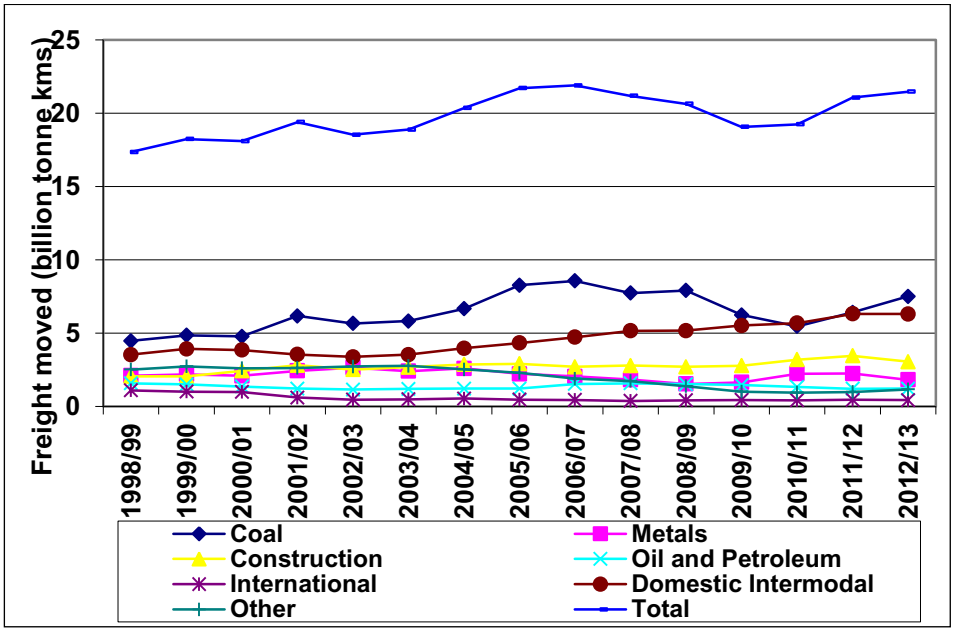
Table 3: Channel Tunnel rail freight volumes (1998 – 2012)

Year	Eurotunnel freight shuttles		Through rail freight trains		Total (est.) (million tonnes)
	No. of HGVs	Tonnes (est.) (million)	No. of trains	Tonnes (million)	
1998	705,000	9.2	n/a	3.1	12.3
1999	819,000	10.9	n/a	2.9	13.8
2000	1,133,000	14.7	n/a	2.9	17.6
2001	1,198,000	15.6	n/a	2.4	18.0
2002	1,231,000	15.6	n/a	1.5	17.1
2003	1,284,875	16.7	n/a	1.7	18.4
2004	1,281,207	16.6	4,943	1.9	18.5
2005	1,308,786	17.0	3,902	1.6	18.6
2006	1,296,269	16.9	3,786	1.6	18.5
2007	1,414,709	18.4	2,840	1.21	19.6
2008	1,254,282	14.2	2,718	1.24	15.4
2009	769,261	10.0	2,403	1.18	11.18
2010	1,089,051	14.2	2,097	1.13	15.33
2011	1,263,327	16.4	2,388	1.32	17.72
2012	1,464,880	19.0	2,325	1.23	20.23

Source: based on Groupe Eurotunnel (2013 and earlier years)

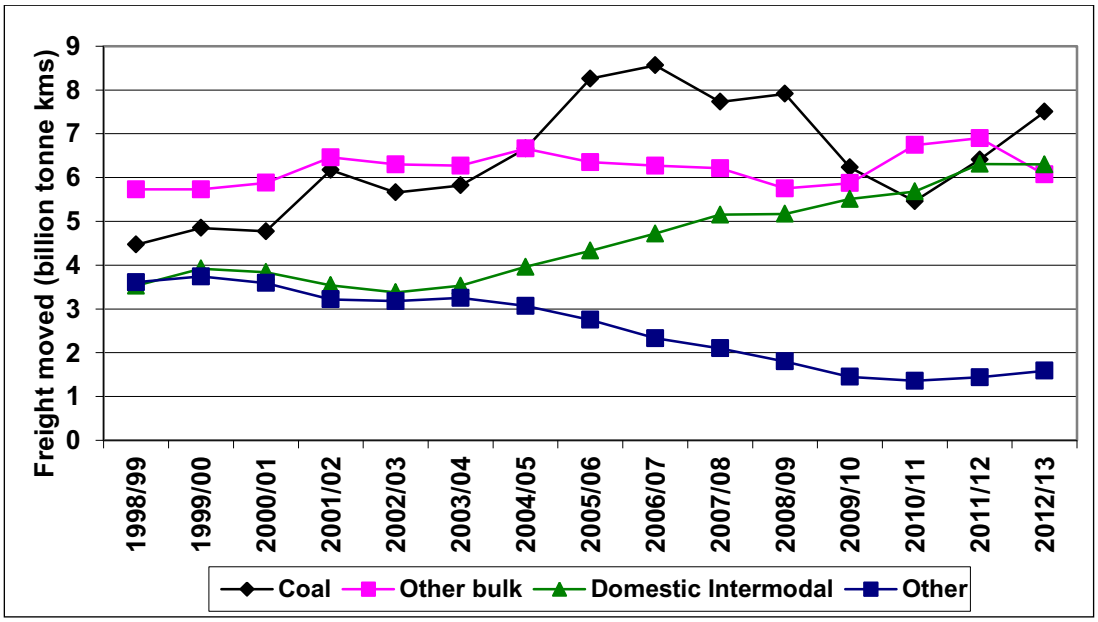
Moving on to consider changes in the composition of the domestic rail freight market, Figure 2 shows the trend in volumes since 1998/99 based on the official commodity categories. Figure 3 combines the categories to make it easier to see the trends in the different types of rail freight operation. Over the time period, the traditional bulk traffics (i.e. coal and 'other bulk', which comprises metals, construction and oil and petroleum) increased their share of rail freight volumes from 59% to 63%. Coal volumes have fluctuated considerably, for the reasons outlined in Section 2. Of the other three bulks, construction has broadly shown an upward trend while volumes for oil and petroleum and metals have been fairly erratic.

Figure 2: Freight moved by rail in Great Britain using official commodity categories(billion tonne kilometres, 1998/99 - 2012/13)



Source: based on ORR (2013a and previous years)

Figure 3: Freight moved by rail in Great Britain grouped by type of freight (billion tonne kilometres, Great Britain, 1998/99 – 2012/13)



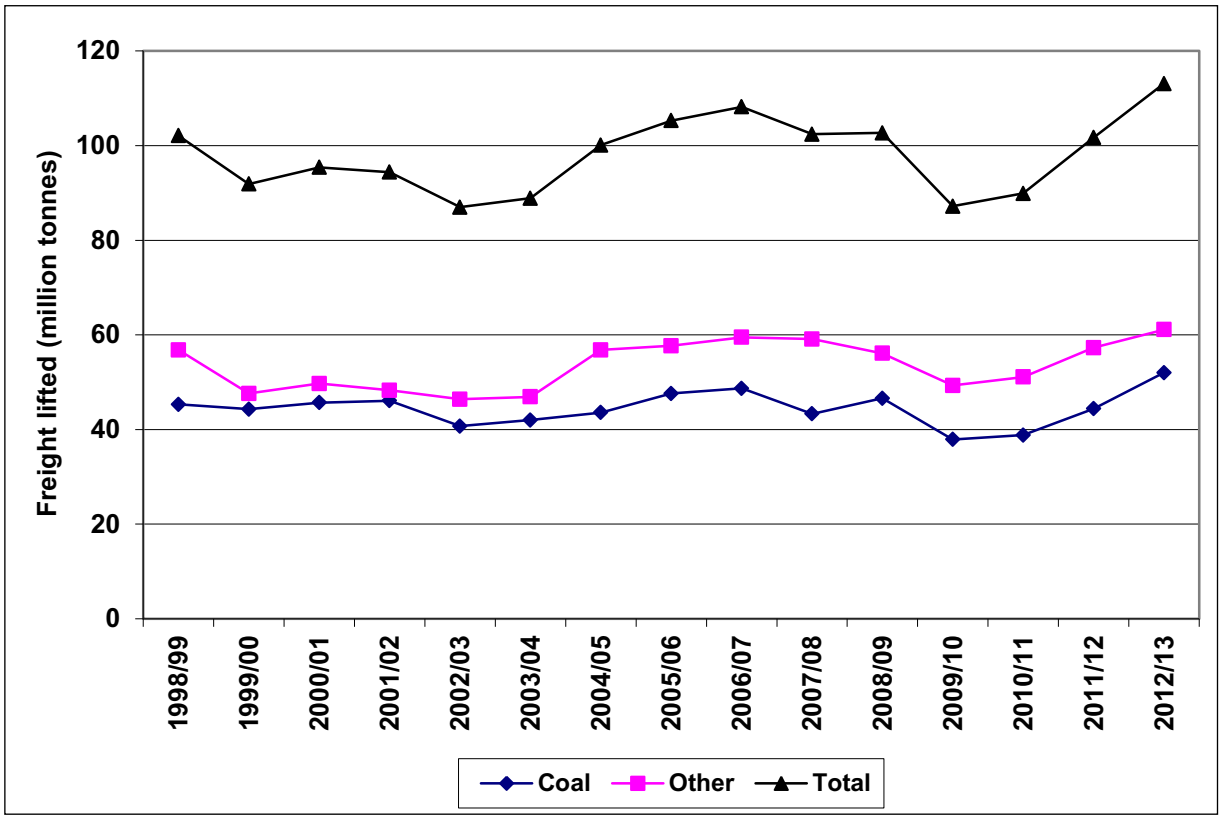
Source: based on ORR (2013a and previous years)

What has happened in the remainder of the rail freight market is more dramatic and interesting. It should be noted that the domestic intermodal category is dominated by port hinterland flows of deep-sea containers rather than true domestic flows unconnected to international trade. At

the start of the time period, domestic intermodal and 'other' (i.e. international and the remaining domestic traffic not otherwise categorised) had almost equal shares of the rail freight market. Since then, domestic intermodal volumes have grown substantially (by 78%) while 'other' rail freight volumes have more than halved. The rail freight market has therefore become far more focused on traditional bulk traffic and port hinterland flows of deep-sea containers. Other trainload commodities, wagonload flows and Channel Tunnel traffic have all been in decline. There is evidence of some new markets, such as pure domestic intermodal (i.e. serving domestic supply chain requirements rather than the domestic leg of international supply chains) and biomass, but both are currently fairly small-scale within the overall rail market.

For comparison, Figure 4 shows the trend in freight lifted over the same time period. Official statistics only break this down into coal and 'other'. It is evident that the rate of growth since 1998/99 has been lower than for freight moved, so rail flows are taking place over longer distances.

Figure 4: Freight lifted by rail in Great Britain (million tonne kilometres, 1998/99 – 2012/13)



Source: based on ORR (2013a and previous years)

Tables 4 and 5 respectively display the typical types of rail freight operation in 2010 and 2013 for the nine markets discussed in Section 2. Trainload operations have been separated into traditional and intermodal, since they have quite different characteristics, and wagonload is shown as a separate category. It is clear from the two tables that trainload operations

dominate. Even before rail privatisation, the British rail freight market was characterised by flows of bulk commodities or intermodal traffic, operating point-to-point in entire trainloads. At present, there are some exceptions to trainload operation, but they are fairly insignificant. DB Schenker operates some less-than-trainload services, formerly known collectively as the Enterprise network, but these have dwindled considerably over the last decade. In the early days of rail privatisation, EWS heavily promoted its Enterprise services with some initial success, but this was not sustained and the network contracted considerably since around 2006 and the wagonload network concept was dropped. Freightliner Intermodal also operates a small number of port container services with portions for multiple terminals. While difficult to quantify precisely, it is likely that considerably more than 95% of rail freight volume is carried in direct trainloads operating between a single origin and a single destination. Comparison of Tables 4 and 5 shows that the only structural change to rail freight operations has been the contraction of wagonload operations. This has primarily affected metals, petroleum, intermodal and Channel Tunnel flows.

Table 4: Typical types of rail freight operation, by market (as at January 2010)

Market	Traditional trainload	Intermodal trainload	Wagonload
Coal	***	-	-
Aggregates	***	-	-
Metals	***	-	**
Petroleum	***	-	**
Automotive	**	*	**
Waste	-	***	-
Intermodal freight	-	***	**
Channel Tunnel	**	**	**
General freight	**	-	**

*Source: DfT (2010); *** considerable use; ** moderate use; * limited use; - no (or virtually no) use*

Table 5: Typical types of rail freight operation, by market (as at January 2013)

Market	Traditional trainload	Intermodal trainload	Wagonload
Coal	***	-	-
Aggregates	***	-	-
Metals	***	-	*
Petroleum	***	-	*
Automotive	**	*	**
Waste	-	***	-
Intermodal freight	-	***	*
Channel Tunnel	**	**	*
General freight	**	-	**

*Source: updated from DfT (2010); *** considerable use; ** moderate use; * limited use; - no (or virtually no) use*

3.2 Structure of the rail freight market

At present, there are seven rail freight operators, as follows:

- Colas Rail (www.colasrail.co.uk);
- DB Schenker Rail UK (DBS) (formerly English Welsh & Scottish Railway (EWS)) (www.rail.dbschenker.co.uk/);
- Devon & Cornwall Railways (DCR) (www.rmslocotec.com/dcr/);
- Direct Rail Services (DRS) (www.directrailservices.com/);
- Freightliner (FL) (www.freightliner.co.uk/);
- GB Railfreight (GBRf) (www.gbrailfreight.com/);
- Mendip Rail.

Both DB Schenker and Freightliner can be traced back to the privatisation of British Rail's freight operations (see Section 4.1). Mendip Rail is a unique 'operator' that has been active since the 1980s, its two constituent aggregates companies having bought powerful locomotives to improve the efficiency of rail freight operations from their quarries. This therefore predated privatisation though Mendip Rail has never itself actually operated freight trains. Before privatisation, the company's services were operated by British Rail and, since privatisation, they have been operated by EWS/DBS. The other operators are new entrants, with operations starting in 1996 (DRS), 1999 (GB Railfreight), 2007 (Colas Rail) and 2011 (DCR). There have been several other rail freight operators since privatisation who are no longer active. National Power, the electricity generator, started operations in 1995 and was the first new entrant post-privatisation, but sold its operations to EWS in 1998 (Whiteing and Brewer, 1998). Advenza Freight and Jarvis Fastline were both short-lived operators that ran into financial problems and ceased operation. In the case of Advenza, the problems were a direct consequence of its rail operations, while with Jarvis Fastline ceased as a result of its parent company (Jarvis plc) entering administration. These operators were only active for short periods of time and had a negligible role in the rail freight market.

Table 6 shows financial data for the freight operators although, as ORR (2013b) highlights, the figures need to be treated with caution. For some operators, the income and expenditure includes activities other than British rail freight. This is particularly the case for Colas Rail, which is predominantly a rail maintenance company so the vast majority (possibly 95% or more) of its financial data relate to the operation of maintenance machinery rather than freight trains. For other operators, the data presumably include income from Network Rail for the operation of engineering trains. GB Railfreight's financial data are believed to include some Eurotunnel activities, although this is not likely to be significant, and DB Schenker's information may not be wholly accurate due to its use of multiple legal entities. DCR is not included in the data, although its freight operations were, and indeed still are, negligible. Finally, the data do not cover the same time period.

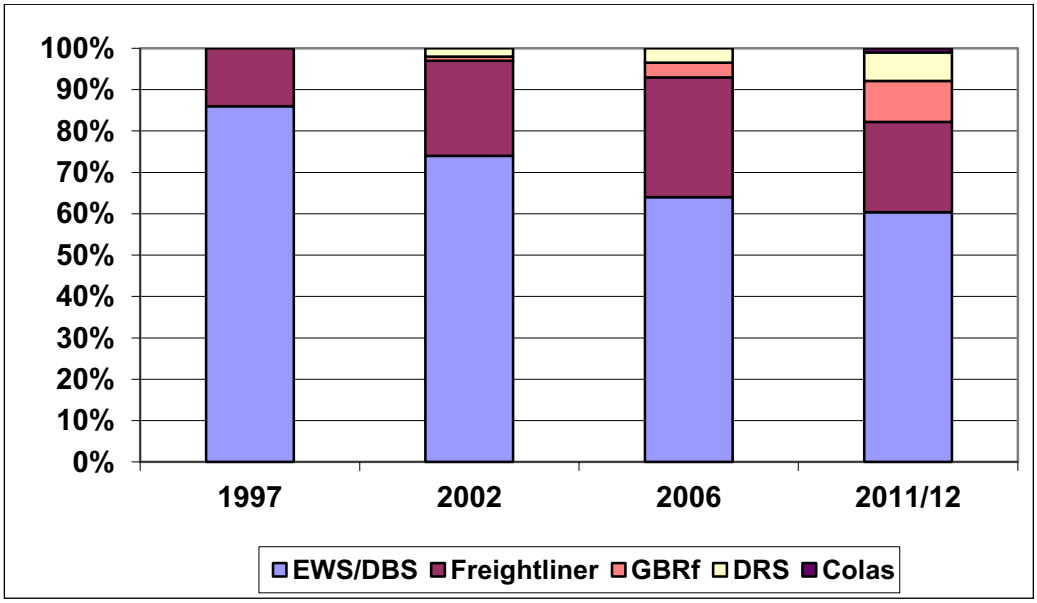
Table 6: Freight train operators' income and expenditure in 2011-12 (approximate)

Operator	Turnover (£m)	Operating costs (£m)	Other costs/ income (£m)	Profit after tax (£m)
Colas Rail [a]	133	122	9	2
DB Schenker [a]	452	413	(7)	46
Direct Rail Services [b]	50	48	1	2
Freightliner [c]	164	131	29	4
GB Railfreight [a]	73	69	1	3
Mendip Rail [a]	24	22	1	1
Total	**895**	**803**	**33**	**59**

Source: ORR (2013b); [a] year ended 31/12/11; [b] year ended 31/03/12; [c] year ended 31/03/11

The biggest anomaly relates to Colas Rail. Adjusting its freight turnover down to a more realistic £7 million gives indicative freight operator market shares as shown in Figure 5. Also shown are market shares for three earlier years from a different source, which may not be fully comparable, but the two sources together are helpful in showing the general trend between 1997 and 2011/12. It is clear that EWS had a near-monopolistic position in the early days of privatisation, but that its share of the rail freight market has been gradually eroded. In 1997, EWS and Freightliner had non-overlapping rail freight activities, with Freightliner having a monopoly of the intermodal market and EWS monopolising all other markets. Over time, these two operators have directly competed in each other's traditional markets and the new operators have entered certain of the markets.

Figure 5: Estimated market share of British rail freight by revenue (1997 – 2011/12)



Source: based on Railway Gazette International (2008) and ORR (2013b)

Table 7 provides an indication of the extent to which there is competition within the different freight markets. Not surprisingly, there is a clear relationship between the scale of an operator's activities and the number of markets in which they are involved. Only DB Schenker is active in all of the markets, although Freightliner has strong representation in several key markets. Coal, aggregates, waste and intermodal all have three or more highly active operators, while metals, petroleum and general freight all have three or more operators but some are only slightly active. Even at this level of disaggregation, what looks like competitive markets many not actually be the case. The general market is very diverse and, for example, DB Schenker is the sole operator that caters for wagonload volumes – as stated earlier, this activity has declined considerably in recent years. For intermodal traffic, DB Schenker, Freightliner and GB Railfreight all compete within the port hinterland sub-market, while DRS has a near-monopoly of the pure domestic intermodal sub-market. It is also important to note that, in some cases, there is competition to gain contracts so the absence of multiple operators in a particular market does not necessarily mean that market is not competitive.

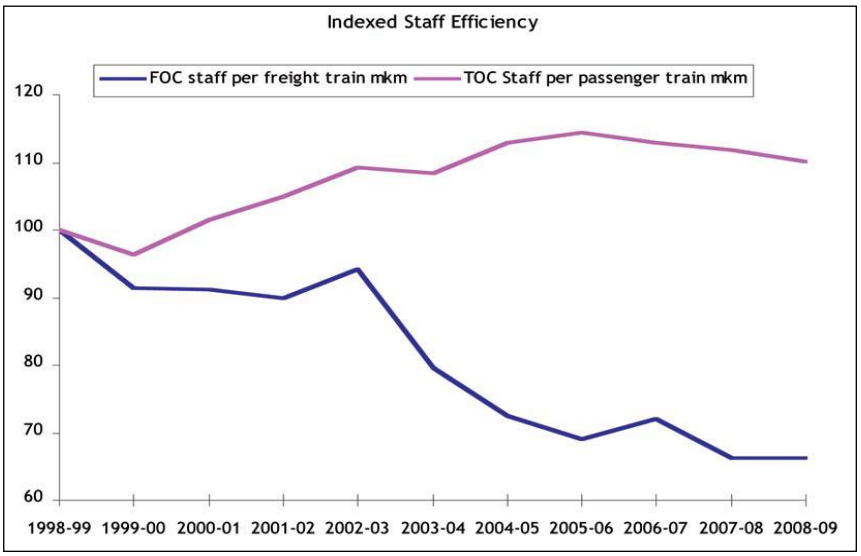
Table 7: Indicative level of competition in rail freight markets (as at January 2013)

	Colas	DBS	DCR	DRS	FL	GBRf	Mendip
Coal	○	●	-	-	●	●	-
Aggregates	-	●	○	-	●	○	●
Metals	○	●	○	-	○	○	-
Petroleum	○	●	-	-	-	○	-
Automotive	-	●	-	-	-	-	-
Waste	-	●	-	-	●	●	-
Intermodal	-	●	-	●	●	●	-
Channel Tunnel	-	●	-	-	-	○	-
General freight	○	●	-	○	●	-	-

Source: author's database; ● highly active; ○ slightly active; - not active

There is little published information relating to rail freight efficiency (see, for example, the missing UK data in UNECE, 2012), but there is reasonably strong evidence that the industry is becoming more efficient. Figure 6 shows that there has been a dramatic reduction in the number of freight staff per unit of activity, while the passenger rail business has seen an increase in the number of staff per unit. According to the rail freight industry, the 60% growth in rail freight volumes in the first 14 years of privatisation was achieved at the same time as investment by rail freight operators resulted in the locomotive fleet being halved and the wagon fleet reducing in size to two-thirds of that at privatisation (RFOA/RFG, 2009).

Figure 6: Comparison of freight (FOC) and passenger (TOC) staff productivity (per train km)



Source: DfT/ORR (2011)

Table 8 reveals a dramatic upward trend in the average freight train load since 2003/04. The general trend shows both a reduction in the number of freight trains operated and an increase in tonnages carried. The combined effect has been an almost doubling in the average freight train load within a decade. There are likely to be several reasons for this, but the industry as a whole has focused on running longer and heavier trains, and the growing share of intermodal traffic typically results in more two-way flows and less empty running (ORR, 2013a). The decline in wagonload freight operations is also likely to have removed short distance, lightly loaded trains from the network.

Table 8: Average freight train load (2003/04 – 2012/13)

	Total no. of freight train movements	Freight lifted (million tonnes)	Average freight train load (tonnes)
2003/04	416,053	88.9	214
2004/05	381,965	100.9	264
2005/06	455,561	105.3	231
2006/07	364,949	108.2	296
2007/08	332,218	102.4	308
2008/09	316,684	102.7	324
2009/10	278,472	87.2	313
2010/11	265,559	89.9	339
2011/12 (R)	273,897	101.7	371
2012/13	275,827	113.1	410
% change 2003/04-2012/13	(34)	27	92

Source: based on ORR (2013a); R – revised data

There are no published statistics relating to the average age of the freight locomotive or wagon fleets, but there has been considerable investment by the rail freight operators. Freight operators have made investments totalling £1.5 billion since rail privatisation (ORR, 2013c), largely in new locomotives and wagons. Table 9 shows the approximate composition of the rail freight locomotive fleet in late-2012.

Table 9: Approximate composition of active mainline locomotive fleet (October 2012)

Loco class	Date built	Colas	DBS	DCR	DRS	FL	GBRf	Mendip	Total
20	1957-1968	-	-	-	7	-	9	-	16
31	1958-1962	-	-	3	-	-	-	-	3
37	1960-1966	-	-	-	24	-	-	-	24
47	1963-1977	-	-	-	11	-	-	-	11
56	1976-1984	2	-	4	-	-	-	-	6
57	1997-2004*	-	-	-	10	-	-	-	10
59	1985-1995	-	6	-	-	-	-	8	14
60	1989-1993	-	19	-	-	-	-	-	19
66	1998-2008	5	175	-	19	116	45	-	360
67	1999-2000	-	30	-	-	-	-	-	30
70	2009-2011	-	-	-	-	19	-	-	19
73	1965-1967	-	-	-	-	-	9	-	9
86	1965-1966	-	-	-	-	16	-	-	16
90	1987-1990	-	11	-	-	9	-	-	10
92	1993-1996	-	12	-	-	-	6	-	18
Total		7	253	7	71	160	69	8	565

*Source: Pritchard and Hall (2012); * - rebuilt from class 47s*

In absolute terms, just 25% of the fleet dates from the British Rail era, so there has been considerable investment by the private sector operators to renew the fleet. The contribution to rail freight volumes moved of the British Rail era fleet is likely to be much less than 25% since much of that fleet is less intensively used than the ubiquitous class 66s. The fleet totals for the different operators also serve to emphasise the dominant role of DB Schenker and, to a lesser extent, Freightliner.

3.3 Key characteristics of the rail freight operators

DB Schenker is the largest and most international of the seven rail operators, having purchased EWS in 2008. It is part of Deutsche Bahn AG, a privately operated company with the German government as its shareholder. Despite being Europe's largest rail freight company, with a growing presence across the continent, the decline in market share experienced under EWS does not seem to have been arrested (see Figure 5). DB Schenker Rail (UK) remains a largely standalone operation which appears not to have benefited from integration into the wider DB Schenker networks to any significant extent. There have been some successes, such as the introduction of the Wroclaw (Poland) to Barking (UK) intermodal service (DB Schenker, 2012a) and the increase in service frequency of the Domodossola (Italy) to Hams Hall (UK) intermodal

service to five times per week (DB Schenker, 2012b). However, as Table 3 showed, rail freight activity through the Channel Tunnel remains below the level when DB Schenker took over EWS, and EWS had a monopoly on this route whereas there is now competition. It has been argued that DB Schenker's real motive for taking over EWS was to get access gain access to the French rail freight market, since EWS had set up its Euro Cargo Rail operation in France in 2005 (Shannon, 2012). More than any other operator, DB Schenker appears to have been constrained in its operating practices by the fact that it took over previously nationalised rail freight staff on traditional contracts. While the rail industry as a whole tends to be heavily unionised, DB Schenker is the only private operator known to have experienced industrial action. In 2012, for example, train drivers took industrial action over pay, causing disruption to the company's operations (Rail Business Intelligence, 2012). There have also been wider issues relating to rest day working, rostering, etc. (ASLEF, 2012).

Freightliner established its Heavy Haul operation in 1999 when it diversified its operations from its core container traffic, which allowed it to introduce operating practices and staff terms and conditions that differed from its container business that had been taken over from British Rail. This is a good example of the introduction of new operating practices, since Heavy Haul drivers' contracts specified a total of 1,575 hours per year but without the traditional distinction between weekdays and weekends (Shannon, 2013). Other new practices included drivers carrying out wagon inspections, lodging away from home to improve productivity and using hire cars for driver changeovers at new locations. Freightliner Heavy Haul also adopted a committed asset approach with certain customers, where it guaranteed that certain resources (typically drivers and locomotives) would be dedicated to a customer's flows. An early example was with Blue Circle Cement, where one locomotive and three drivers were outbased at the customer's site (Shannon, 2013). The establishment of a new separate operating company allowed Freightliner to modernise its working practices for the new bulk operations while continuing with its existing container business on established terms. Freightliner was acquired by Arcapita Bank in 2008. It has a Polish division and has recently acquired ERS Railways (Freightliner, 2013), so now operates in mainland Europe as well as in Britain, though with no direct overlap.

The new entrants have adopted various strategies for growth and to differentiate themselves from their competitors. DRS, for example, has been successful in working with medium-sized logistics service providers to provide rail-based domestic intermodal solutions for large retailers. DRS operates trains on behalf of The Russell Group, The Stobart Group and WH Malcolm, who in turn have contracts with key retailers such as Tesco and Asda (FreightBestPractice, 2010a, 2010b). DRS is actually a division of the Nuclear Decommissioning Authority (NDA), which is a public body. It remains a niche operator in the rail freight market, focusing primarily on serving the nuclear industry and the domestic intermodal market, though it also has passenger charter activities. GB Railfreight was established in 1999 by GB Railways, a small rail company that started with one passenger franchise and then established freight and open access passenger operations. The company was purchased by First Group, who then sold it on in 2010 to

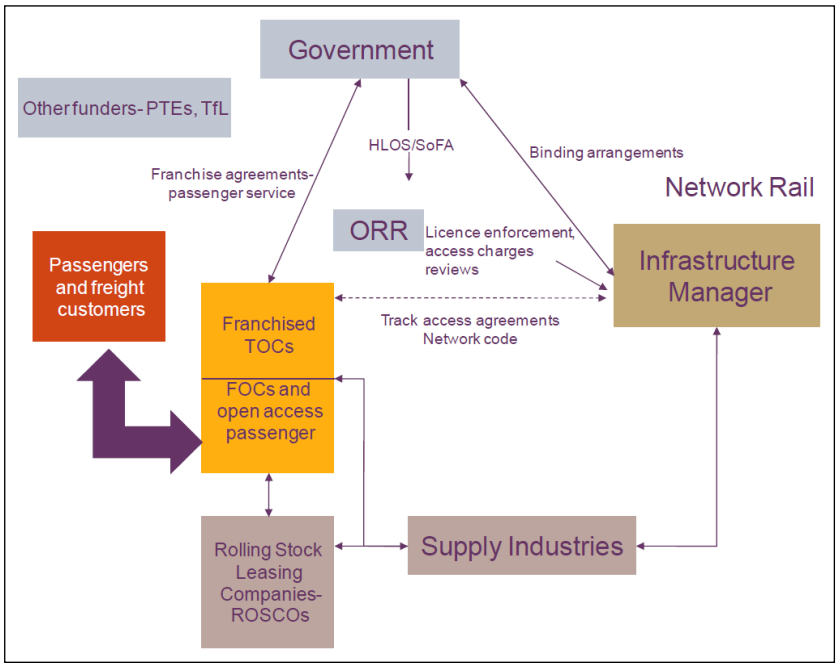
Europorte which is a subsidiary of Eurotunnel. From the outset, GB Railfreight has successfully portrayed itself as innovative and customer-focused and has grown fairly rapidly. Its integration into the Eurotunnel organisation has presented opportunities for Channel Tunnel traffic although this is currently on a small scale. Colas Rail is a division of Bouygues, the large French multinational organisation. It expanded into British rail freight operations from its existing rail engineering and maintenance base, which provides it with the resources and experienced drivers to offer nationwide coverage (Colas Rail, 2011). DCR is part of British American Railway Services (BARS) which is owned by Iowa Pacific Holdings, an American short line operator, and has various rail interests in Britain. It has been involved in the spot market but appears to be gaining some fairly regular customers, albeit on a small scale at present.

Overall, it is clear that there is considerable diversity among the group of rail freight operators, with different ownership structures and business models. Some of the issues raised in this discussion are further developed in Section 5 in the assessment of competition.

4. Rail freight regulation

This section sets out a factual account of the regulatory framework and approach to competition within rail freight. Figure 7 shows the overall structure of the British rail industry.

Figure 7: British rail industry structure



Source: Oxera/Arup (2010)

The key bodies of relevance to the regulation of rail freight operations, network access and the competitive environment are the government, the Office of Rail Regulation (ORR) and Network Rail. Each of these actors is dealt with in turn after a brief account of the salient points of the rail privatisation process. The regulatory framework is complex, but this section aims to summarise the main elements that pertain to freight. A detailed assessment of the issues affecting the actual competitive situation follows in Section 5.

4.1 Rail freight privatisation

The privatisation of British Rail during the 1994-1996 period was based on vertical separation, i.e. a split between railway infrastructure and the operation of trains on that infrastructure. A comprehensive account of the privatisation process can be found in Freeman and Shaw (2000), so only the most salient points are set out here. With the exception of Railtrack, which was established as the monopoly private sector infrastructure operator, the intention was to create a competitive rail system. Railtrack was subsequently placed into administration by the government in 2001 (BBC, 2001) and Network Rail was established to take stewardship of the rail network (see Section 4.4). Passenger services were split into 25 franchises which were awarded to train operating companies for fixed periods of time, and freight services were sold off to two freight operating companies (FOCs). A fundamental difference was therefore created between passenger and freight operations, in that freight was the subject of a one-off sale to the private sector. Competition was sought in other areas too, such as the split of passenger rolling stock between three rolling stock companies (Roscos) and the creation of 13 infrastructure maintenance and track renewal companies.

Prior to privatisation, British Rail's freight operations had been divided into six separate units, the intention being to sell each one separately to promote a competitive rail freight market. The bulk operations, comprising coal, metals, aggregates and petroleum, were divided into three regional companies (Loadhaul, Mainline and Transrail) which were expected to compete with each other. The other three units were "commodity" focused:

- Freightliner, responsible for container traffic;
- Railfreight Distribution (RfD), dealing largely with the developing Channel Tunnel business;
- Rail Express Systems (RES), handling Royal Mail's letters and parcels traffic.

These attempts to create competition from the outset largely failed. As a result of a lack of bidders, the three regional trainload companies were re-integrated and were sold, along with RfD and RES, to Wisconsin Central. This American consortium used the English, Welsh and Scottish (EWS) name to operate its new British businesses. Freightliner was sold to a management buyout team with hefty government financial support to ensure its transition to the private sector. The early days of privatised rail freight operations were therefore

characterised by a dominant player (EWS), with an overwhelming share of the market, and Freightliner, with its niche market for containers. The two companies served different markets and customers, so there was no direct competition. The competitive situation that now exists within the rail freight market, discussed in Section 3.2, has therefore evolved as a result of new entrants rather than a competitive market established by the privatisation process itself. That said, the separate sale of EWS and Freightliner did establish two substantial companies (unlike anywhere else in Europe) and has formed the basis of most of the competition within the rail industry in the UK.

4.2 Government

Compared to the passenger market, where the government awards operating franchises, there is little direct involvement by government in rail freight. The role of the British (and Scottish and Welsh) government is primarily to establish the policy direction, level of public funding and overall industry structure and responsibilities. The British and Scottish governments are heavily involved in specifying passenger rail operations, which interface with rail freight operations, but freight operations themselves are not specified. Government has had a role in freight-specific policy and funding (for example in the development of the Strategic Freight Network (SFN), discussed in Section 4.4) and it directly administers rail freight grant funding.

As part of the Sustainable Distribution Fund (SDF), rail freight operators can apply for grants from the Department for Transport under its Mode Shift Revenue Support (MSRS) scheme (DfT, 2009a). If most of the environmental benefits apply to either Scotland or Wales the respective government bodies there administer the scheme. MSRS is currently approved by the European Commission to operate until March 2015, but an application for extension may be made. MSRS is divided into Intermodal and Bulk, and is designed to be transparent and non-discriminatory (i.e. company-neutral). It provides funding to support track access payments. For Intermodal, for example, Britain is divided into 18 zones and there is a matrix of maximum zone-to-zone grant rates for each intermodal unit moved by rail. There are different zone-to-zone rates for port intermodal flows and domestic intermodal traffic. MSRS grant awards are made on the basis of 'financial need', with standard mode shift benefit values for removing flows from different types of roads being used in the calculation of the amount of grant to award. Awards are normally paid to a rail freight operator, although they can also be paid to logistics service providers or rail freight customers. Award decisions are published periodically by the government (see, for example, DfT, 2013c). Freight Facilities Grants (FFGs) are intended to support investment in freight handling facilities (such as terminals or wagons). The FFG scheme in England was suspended in 2011 but remains operational in Scotland and Wales. It should be noted that the logic of the freight grants schemes is that for these flows at least road haulage is not being charged its full marginal social cost. Although the British government developed proposals for charging road haulage on a kilometre basis, it is in fact implementing a time based

vignette system which will be broadly neutral in its impact on British hauliers and do little to correct this imbalance in competitive conditions.

In 2012/13, rail freight grant funding totalled £17 million (ORR, 2013a), almost all of it funded by the British government as revenue support for rail freight operating costs where these are higher than the road alternative. This sum of grant funding was the joint lowest annual amount since rail privatisation.

There is another aspect of government funding which is more opaque but involves larger sums of money. Network Rail receives around £4 billion per annum (i.e. almost two thirds of its total income) in the form of network grants. Freight Avoidable Costs, defined as "the Network Rail costs that would be foregone if freight services were no longer to use the network" (ORR, 2013h) are estimated to be between £215 million and £428 million per annum averaged over a 35 year period. Once revenue generated from charges levied on rail freight operators by Network Rail is taken into account, net Freight Avoidable Costs are estimated to be between £130 million and £311 million per annum. In essence, these costs are paid for out of the network grants from government, reflecting the economic, environmental and social benefits of rail freight.

4.3 Office of Rail Regulation

The Office of Rail Regulation (formerly the Office of the Rail Regulator) is the independent regulator for the British rail network. Since 2006, ORR has been responsible for both economic and health and safety regulation (ORR, 2013c). Prior to this time, health and safety regulation was the responsibility of HM Inspectorate of Railways, a division of the Health and Safety Executive. The basic premise of the economic regulatory framework is that it is designed to be fair and transparent, and all operators should be treated on a non-discriminatory basis so long as they meet the licensing requirements for rail network access. The ORR (2012a) provides detailed information relating to the transposition of the European Union railway packages into British law. There is a vast amount of information on the ORR website (www.rail-reg.gov.uk), but this section focuses on the key issues affecting the regulatory framework for freight operations. The ORR has statutory duties towards freight as follows (ORR, 2013d):

- "To promote the use of the railway network in Great Britain for the carriage of passengers and goods, and the development of that railway network, to the greatest extent which it considers economically practicable;
- To contribute to the development of an integrated system of transport of passengers and goods;
- To protect the interests of persons providing services for the carriage of passengers or goods by railway in their use of any railway facilities which are for the time being vested

in a private sector operator, in respect of the prices charged for such use and the quality of the service provided".

The ORR performs these duties in three key ways (ORR, 2013e):

1 To "regulate Network Rail's stewardship of the national rail network";
2 To "licence operators of railway assets";
3 To "approve track, station and light maintenance depot access".

Each of these duties is dealt with in turn.

4.3.1 Regulation of Network Rail

As identified by the ORR (2013c), certain elements of Britain's rail system are monopolistic. In relation to freight, Network Rail as the monopoly national infrastructure owner is the biggest single challenge since its actions are fundamental to activity within the rail freight market. The ORR also highlights that, compared to other regulated industries such as the utilities, both government and the regulator are heavily involved in detailed decision-making. This seems likely to act as a constraint on the commercial freedoms of freight operators, particularly given that passenger operations dominate in terms of network activity levels, costs and revenues.

The ORR (2013c, p.57) "recognises that the freight industry requires a stable and predictable environment" in order that it can invest for the long term. The ORR carries out periodic reviews of Network Rail's financial structure, usually every five years. This process establishes track access charges for each type of freight locomotive and wagon for different commodity types, together with a range of other charges such as a coal spillage charge and a freight-only line charge (ORR, 2008). The 2013 Periodic Review is in progress and will set the financial framework for Network Rail for the 2014-2019 period (Control Period 5) (ORR, 2013f). Broadly, rail freight access charges in Britain are levied on a marginal cost basis, with a high degree of differentiation according to the damage done by specific vehicles, and also a congestion charge which for freight is so averaged that – other than a mild incentive to run trains at weekends rather than during the week – it has little effect. As part of the framework, the ORR intends to phase in a freight specific charge (FSC) for certain commodities, to better align rail freight activities with their network costs (ORR, 2013g). This will in effect be designed to recoup freight specific fixed costs on the basis of what the market will bear. This charge will apply to specific commodities which are regarded as not very price sensitive: electricity supply industry coal, spent nuclear fuel and iron ore. It had been intended to levy a FSC on biomass flows, but this will now not happen in Control Period 5. The ORR has published a detailed account of the proposed charging principles for Control Period 5 (ORR, 2013h).

Finally, the ORR ensures that Network Rail's Network Code is non-discriminatory with regard to contractual issues surrounding access to the network (ORR, 2012b). The code itself is discussed in Section 4.4).

4.3.2 Operator licensing

The ORR (2013i) produces a guide for potential operators, identifying the following key requirements before entering the market:

- Gain the appropriate operator's licence;
- Meet the necessary safety requirements;
- Arrange a track access contract with Network Rail.
- Have the appropriate access agreements for maintenance facilities, stations, etc.

Under the Railway (Licensing of Railway Undertakings) Regulations 2005 (DfT, 2005), the ORR is responsible for authorising companies to operate freight trains, and all operators must hold a licence or a licence exemption. To gain a licence, operators must demonstrate good repute, financial fitness, professional competence and insurance cover. Most licences issued are European licences, which are valid across the European Union. The ORR has the power to investigate potential licence breaches and to take action, including revoking an operator's licence in the case of a serious breach. The ORR has the power to issue improve improvement notices and prohibition notices for health and safety violations, and to prosecute where appropriate. A total of nine improvement notices and two prosecutions have specifically related to rail operators' freight operations since 2006 (ORR, 2013j).

4.3.3 Network access approval

The ORR has detailed, non-discriminatory procedures in place for operators to enter into track and terminal access agreements with Network Rail. Detailed criteria and procedures are set out for the approval of track access contracts (ORR, 2011a), and a model freight track access contract template is provided (ORR, 2011b). The ORR approves all track access contracts (and any subsequent variations) and acts as arbiter to resolve any disputes between operators and Network Rail. There are also arrangements whereby the ORR can grant general freight track access contract approvals (ORR, 2012c). Track access decisions are made public on the ORR website (ORR, 2013k).

The ORR is also responsible for approving facility (or site) access contracts, and similar criteria and procedures apply (ORR, 2013l). A study of issues relating to access to rail freight sites was conducted in 2011 (ORR, 2011c). This identified some concerns relating to the inhibition of competition within the rail freight market, with some customers effectively having no choice of operator if the rail site was owned by a rail freight operator. Many sites are owned by customers or third parties, so this is only an issue in some circumstances. A draft code of practice was published in late-2011 (ORR, 2011d), and the ORR is monitoring the situation.

The ORR has also carried out other studies with some relevance to network access, such as those looking at the freight rolling stock market. The market for freight locomotives and wagons was deemed to be working well (ORR, 2011e), and the forthcoming technical specification for interoperability (TSI) for freight wagons (European Commission, 2013) is expected to bring standardisation benefits as well as short-term costs (ORR, 2009).

4.4 Network Rail

Network Rail is a 'not for shareholder dividend' company, the intention being that it operates as a commercial company. It is accountable to its members rather than shareholders and any profits it makes are reinvested in the rail network (Network Rail, 2013a). There are 30 – 50 members, including the Department for Transport (DfT) which has special member rights. Freight currently represents just 1.3% of Network Rail's income (ORR, 2013b), with around 60% of its income coming directly from government in the form of the direct block grant (ORR, 2013c). As custodian of the rail network, Network Rail is responsible for arranging track access contracts with operators, network maintenance and enhancements, and leading the development of long-term network strategy. Examples of each of these aspects of Network Rail's involvement in rail freight follow.

Network Rail is responsible for the Network Code which is "a common set of rules and industry procedures that apply to all parties who have a contractual right of access to the track owned and operated by Network Rail" (ORR, 2012b). For example, it includes rules relating to changes in the working timetable, changes in the railway vehicles covered by an access contract, operational procedures in the event of network disruption and the establishment of a performance monitoring system (Network Rail, 2012a). There are detailed processes to deal with delay attribution on a standardised basis (Delay Attribution Board, 2010).

Related to the network infrastructure maintenance and access, Network Rail provides information to potential customers regarding freight sites and their ownership and access rights (Network Rail, 2013b). At the time of rail privatisation, active freight sites were generally taken over by the successors to British Rail based on the nature of their operations, so Freightliner gained a fairly small number of intermodal sites and EWS inherited the remainder. Some non-active freight sites were allocated to Railtrack (now Network Rail) so that they were safeguarded for potential future use. Following on from the ORR study (ORR, 2011c) on access to freight sites, Network Rail consulted on a proposal to acquire a number of DB Schenker's freight sites with the aim of improving access options for rail freight operators to attract more freight to rail (Network Rail, 2012b). Following consultation, Network Rail decided not to proceed with the original proposal but it is currently acquiring more than 100 key freight sites from rail freight operators with the aim of opening up network access to cater for freight growth (Network Rail, 2014).

With money ring-fenced by government, the introduction of the Strategic Freight Network (SFN) fund was announced in 2007 to provide a network-wide focus to funding infrastructure enhancements for freight (Network Rail 2008; DfT, 2009b). Network Rail has overall responsibility for the management and implementation of SFN initiatives. Projects financed by this fund must have strategic significance for the longer-term and benefit rail freight in general rather than a single operator. Network Rail (2013c) recently published its Freight Market Study which forms part of the Long Term Planning Process. This presents an overview of recent trends and projections for the future to assist with the planning of network investments. This is very much a strategic document which sets the agenda for rail freight as a whole rather than considering the market position of individual operators.

4.5 Access Disputes Committee

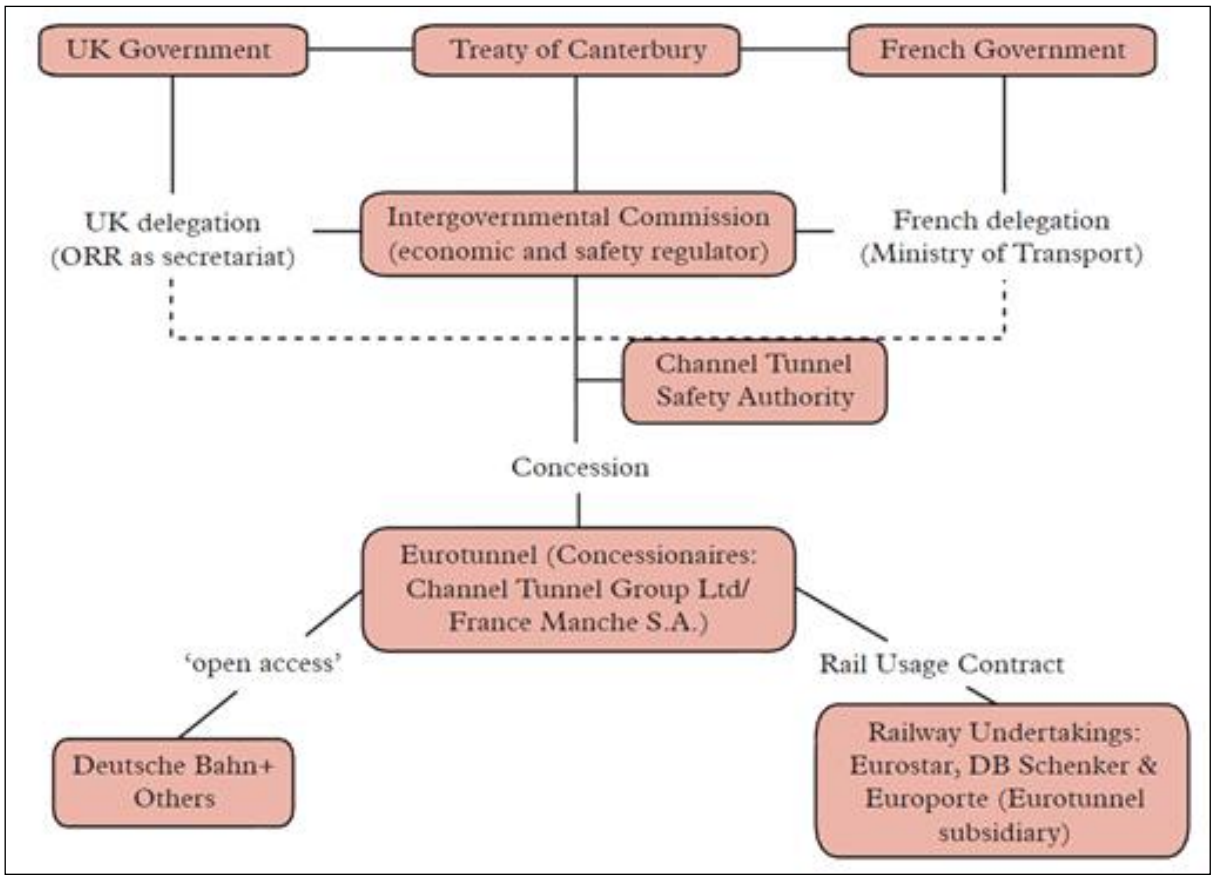
The Access Disputes Committee (ADC) investigates disputes relating to track, station or maintenance depot access contracts. The Access Dispute Resolution Rules (ADC, 2012) are an Annex to the Network Code. The ADC is made up of a number of personnel from passenger and freight operators and Network Rail, who are expected to operate impartially. The ADC is responsible for the operation of either an Access Dispute Adjudication or a Timetabling Panel, depending on the nature of the dispute. Further details can be found on the Access Disputes Committee website (http://accessdisputesrail.org). The majority of disputes are settled between the parties without invoking the full dispute resolution process, with details of the resolutions not being made public. However, where disputes go through the full process the determination is published on the website, and there is a right of appeal to the ORR. Typical freight-related disputes handled by the ADC include:

- changes to Network Rail's Rules of the Route and Engineering Access Statement, which govern the periods when routes are open for trains to operate;
- Network Rail's proposed timetabling planning rules for future timetable periods;
- rejection by Network Rail of operators' train path requests;
- changes to or transfer of access rights, such as when a customer changes freight operator;
- use of train paths and the Failure to Use rules, where there are arguments over the extent to which existing train paths are being used by an operator or are being held to inhibit competitors from using them;
- network changes, such as the proposed removal of track crossovers or sidings;
- attribution of train delays between operators and Network Rail.

4.6 The Channel Tunnel

The Channel has a unique regulatory regime, as shown in Figure 8. The Intergovernmental Commission (IGC) is the economic and safety regulator, established under the Treaty of Canterbury. The IGC is made up of delegates appointed in equal numbers by the British and French governments, and including members of the Channel Tunnel Safety Authority (CTSA). The British delegates are nominated by the government based on advice from ORR, while the French delegates are direct Ministry of Transport employees. The arrangements are explained in more detail by the European Union Committee (2011), but the aim was to provide a unified regulatory body to take account of the joint British-French nature of the infrastructure.

Figure 8: Channel Tunnel governance structure



Source: European Union Committee (2011)

Under the original access agreement when the Channel Tunnel opened in 1994, the British, French and Belgian governments entered into a contract to buy 50% of the tunnel's capacity at guaranteed prices (European Union Committee, 2005). When EWS took over the through Channel Tunnel rail freight services from British Rail, the British government continued to pay its portion of the contracted volume, including a Minimum Usage Charge (MUC) to guarantee Eurotunnel a particular level of income. This meant that access charges for EWS were lower

than they would have been for a competitor, and EWS had a monopoly. The MUC ended in November 2006 and EWS had to start paying the access charges directly, so not giving it preferential treatment over other potential operators. The only other operator to date to have entered the market is Europorte, the subsidiary of Eurotunnel.

The corridor from the Netherlands through Belgium, northern France and the Channel Tunnel will become part of Corridor 2 of the European Freight Network in November 2015, which should lead to greater regulatory standardisation (ORR, 2013c). In addition, the European Technical Specification of Interoperability (TSI) on safety in railway tunnels (European Commission, 2012) may assist in encouraging rail freight competition by removing some of the non-standard regulatory and safety elements relating to Channel Tunnel access.

5. Assessment of competition issues

It is widely reported that Great Britain has a successful, competitive rail freight market, and in many respects this is undoubtedly the case. There are some aspects, however, that do not appear to function as efficiently as they could do. This final section of the report therefore presents an assessment of the rail freight market, weighing up the positive and negative aspects of how competition has manifested itself. It begins with an evaluation of how well the rail freight market functions and then considers the barriers to entry for prospective rail freight operators. Potential distortions of competition are highlighted next, with the section finishing with a review of key issues for the future.

5.1 Functioning of the rail freight market

With a score of 862 out of 1,000, rail freight in Great Britain is classed as “advanced” in the Rail Liberalisation Index (IBM, 2011); Sweden, Netherlands, Belgium, Germany and Austria all have slightly higher scores. The COM Index is a separate measure which is designed to quantify the effects of rail liberalisation. The results are expressed at the industry level rather than separately for passenger and freight, but Great Britain has by far the highest score, largely due the break-up of British Rail into numerous separate operations rather than leaving an incumbent in place. The Economist (2013) argues that the way in which rail freight competition has evolved is a success story in comparison to the issues facing the passenger operations. Cowie (2010) studied the 1996/97 to 2006/07 period and found that there was a decrease in market power over that time period but that high seller concentration persisted and the market displayed oligopolistic characteristics. The changes since then (shown in Figure 4) suggest that there has probably been some further decline in market power since 2006/07.

The ORR has carried out four Freight User/Customer Surveys, published in 2000, 2003, 2010 and 2012. The importance of a competitive rail freight market is evident, with 92% of respondents in the most recent survey stating that it is very or fairly important, and that the increasingly

competitive environment has led to a reduction in prices (AECOM, 2012). This score had increased from 83% in the 2010 survey (AECOM, 2010); it was not included in the first two surveys. In both the 2010 and 2012 surveys, cost was identified as the most significant barrier to using rail, which is an issue that can be influenced through the regulatory framework. Indeed, there were specific comments relating to the level of track access charges (AECOM, 2010; 2012).

The infrastructure operator (formerly Railtrack, now Network Rail) has been instrumental in fostering rail freight competition, helping new entrants to become established or grow in scale. GB Railfreight's first contract, which commenced in 2001, was awarded by Railtrack for the operation of infrastructure maintenance trains to engineering sites (Modern Railways, 2000). This allowed GB Railfreight to invest in seven new locomotives which, in turn, allowed it to bid for other contracts. Similarly, the first contract for Freightliner's Heavy Haul division was with Railtrack (Shannon, 2013). Network Rail has actively sought a competitive market for the provision of trains to service its infrastructure maintenance requirements, with contracts changing from one operator to another. At the present time, Colas Rail, DB Schenker, DRS, Freightliner and, GB Railfreight all have contracts with Network Rail.

National Power, then one of the key electricity generating companies, also played an important role in establishing rail freight competition. In 2005, it became the first new entrant to the rail freight market with six locomotives and 106 wagons, operating coal and limestone trains to its own power stations (Clarke, 2000). It entered the market to gain transport cost reductions and give it a competitive advantage over Powergen, its main competitor (Whiteing and Brewer, 1998). Having succeeded in reducing its unit transport costs, National Power sold its operation to EWS in 1997 but used its bargaining position to retain the cost benefits it had gained from its period of open access operations.

Elsewhere in the rail freight market, flows have switched between operators as contracts have been re-tendered. This has happened in several different commodity sectors including coal, aggregates, petroleum, automotive and mail. Some commodity flows are dependent on the supply of specific wagons or on access to specific terminals, which may reduce the choice of operator (see Section 5.3). The analysis in Section 3.2 (particularly Table 7) demonstrated that there is limited on-rail competition in some rail freight markets, although there may be off-rail competition to bid for contracts.

The regulatory approach to the rail industry is generally praised, despite recent concerns relating to uncertainty over future track access charges (AECOM, 2012). The regulator is perceived to be independent, the track access approval process is considered to be non-discriminatory and transparent and the Network Code is seen as being thorough (IBM, 2011). A common point of criticism raised by the railway companies surveyed is network bottlenecks creating delays. With both freight and passenger volumes predicted to increase further, there is a risk of a loss of flexibility in the rail network's ability to respond to demands for new freight flows and, indeed, new operators. The current financial structure, whereby a low proportion of

Network Rail's income is volume-dependent, does not incentivise the company to provide additional incremental capacity for new flows (ORR, 2013c). Rail freight investment and grant support is also seen as being non-discriminatory. The key mechanisms such as the Strategic Freight Network Fund and the Sustainable Distribution Fund are operator-neutral.

The Channel Tunnel is clearly a special case, with different characteristics to the British rail network. It is evident that many of those involved in providing rail freight services see the IGC as an unnecessary layer of bureaucracy, with some claiming that it does not conform to current EU legislation (European Union Committee, 2011). The Rail Freight Group, representing British rail freight users, argues that the current arrangements do not comply with the requirements of the first railway package (RFG, 2013a). There is also criticism of the level of track access charges with, for example, the Freight Transport Association (FTA, 2010) claiming that Channel Tunnel charges per train kilometre are around 30 times higher than on Network Rail infrastructure as a consequence of the Channel Tunnel's unique regulatory environment. Following a threat of legal action from the European Commission, Eurotunnel has announced that charges for most rail freight will be reduced by around 35%-40% (RFG, 2014).

5.2 Barriers to entry

Whiteing and Brewer (1998) identified *a priori* a number of potential barriers to entering the British rail freight market (which may no longer apply):

- experience – considerable sunk costs likely for both senior management experience and operational experience (such as driver route knowledge and fleet maintenance);
- technology – lack of second-hand locomotives for sale or of a leasing market for locomotives, incompatibilities with mainland European rolling stock (e.g. due to loading gauge), challenges in getting a safety case and operator's licence, etc.;
- pricing, regulation and charging for track access – Railtrack's pricing regime based on negotiation with customers rather than standard public rates, difficulties in gaining track access where network congestion exists, etc.

Many of these were borne out in a survey of rail freight users conducted at the time of rail privatisation, with 16 barriers mentioned by more than half of respondents (Whiteing and Brewer, 1998). The broad conclusions were that significant barriers were perceived to exist and that it would not be easy for new operators to enter the market. When specifically considering the examples of National Power and DRS, the study found that the most important actual entry barriers that had to be overcome were high track access charges, costly insurance cover, economies of density and the requirement to take on staff.

Soon after privatisation, the Rail Freight Group identified the following barriers to entry for new rail freight operators (Clarke, 2000), with some commonality with the previous findings:

- non-availability of second-hand locomotives;
- safety case development and approval;
- recruitment of appropriately trained drivers and/or training of new drivers;
- third-party liability insurance.

Cowie (2010) found that economies of scale in British rail freight drop off quite substantially and that the minimum efficient scale is represented by annual revenue of just over £100 million per annum. With estimated total rail freight revenue of £895 million in 2011/12 (ORR, 2013b), the rail freight market size is conducive to competition, although entering the market at or above the minimum efficient scale requires a substantial level of resources. In practice, given the right circumstances, it is possible for new entrants to compete at less than this minimum efficient scale, as was the case with the emergence of GB Railfreight.

Almost 20 years on from rail privatisation, the nature of the competitive rail freight market suggests that some of these entry barriers are considerable and some have been largely overcome. All of the active operators are part of a larger organisation, although the relationship between the rail freight operator and its parent company is not always clear. Overall, it appears that there are considerable financial barriers to entry, and the regulatory requirements may be onerous for a small new entrant company. The emergence of GB Railfreight, arguably the only current rail operator to have started from nothing (although even it started as a subsidiary of a small passenger operator), would probably have been more challenging without the initial Railtrack infrastructure maintenance contract which gave it the financial certainty to allow it to invest in business development (including the leasing of new locomotives).

Issues faced by small new entrants, and of their regulation and monitoring, have been brought to the fore recently by an official investigation into a locomotive operated by DCR, the newest and smallest operator, which passed through a signal at danger in 2012 (RAIB, 2013). A number of failings were identified, with recommendations made to both DCR and ORR. The recommendations to DCR related to locomotive maintenance and the competence of safety-critical staff, while those to ORR covered the approval and monitoring of a new operator's safety management system. An additional recommendation was made to the Rail Safety and Standards Board (RSSB) covering the assessment of training requirements for staff moving between operators. The detailed investigation report highlighted the heavy reliance on external consultants and safety-critical staff that DCR was making at that time given its very small scale, although as the company has become more established most of this activity has now been brought in-house.

Each of the three operators that have left the market to date had managed to attain only an extremely small share of the market in the time that they were active. The National Power example discussed earlier (in Section 5.1) was unique in that the operation was sold on as a going concern. In the other two examples (i.e. Advenza Freight and Jarvis Fastline), the operations were wound up as a result of financial problems either directly in the rail operation

(Advenza Freight) or the parent company (Jarvis Fastline). Advenza Freight therefore represents the only case of an exit from the market as a result of failure in the rail freight operations. The company was wound up in 2009 as a consequence of a petition brought by Her Majesty's Revenue and Customs (HMRC).

5.3 Potential distortions of competition

As this report has established, the British rail freight market is generally open to competition. As this section discusses, there are (or have been) some concerns about the functioning of certain elements of the market.

There is evidence that EWS (now DB Schenker) abused its dominant market position in the first decade of the liberalised rail environment, in contravention of the Competition Act 1998. In 2006, the ORR found that EWS had engaged in anti-competitive practices in the coal market, including discriminatory and predatory pricing, and levied a penalty of £4.1 million as a consequence (ORR, 2006). A more recent investigation into DB Schenker's pricing of a petroleum contract found no evidence of anti-competitive behaviour (ORR, 2010). EWS had earlier been investigated in relation to its procedures for the supply of second-hand locomotives. A full investigation was not held, but the ORR (2004) reported that EWS had amended its procedures and there has been no further action on the part of ORR. DB Schenker's disposals policy is available on its website (DB Schenker, 2009). Both Colas Rail and DCR are now operating locomotives formerly owned by EWS, which suggests that the revised procedures are leading to greater availability of second-hand locomotives. The lack of any infringements since 2006 suggests that the market is functioning better now, most likely as a consequence of the combination of changed procedures at the dominant operator (EWS/DB Schenker) and the ongoing reduction in its market share. In any case, most of the locomotives and wagons introduced since privatisation have been leased by the rail freight operators rather than purchased outright and this has led to these assets moving more freely between operators.

Despite the considerable regulation that exists in the industry, the investigation into the signal passed at danger by the DCR-operated train (RAIB, 2013) highlights the potential for operators to breach the conditions of their licence and for this not to be identified by the ORR. While there is no evidence of operators doing this deliberately, there is the potential for a non-compliant operator to undercut its law-abiding competitors.

The investigation of access to freight sites, and the effects this may have on restricting competition, was raised in Sections 4.3 and 4.4. A similar situation may arise in respect of monopoly provision of rolling stock. Some commodity flows are dependent on the supply of wagons that limits the range of potential operators to those who can offer appropriate ones. To get around this, customers may opt to provide their own wagons. For example, Drax Power Station has ordered 200 biomass wagons (Modern Railways, 2013) which, by owning the wagons itself, allows the electricity generating company to stimulate competition among rail freight

operators instead of being tied to a specific operator. This typically involves more commitment and a greater financial outlay on the part of the customer, so will not be appropriate in all circumstances.

The larger operators may have a hidden influence on government policy and industry decision making as a result of their representation on industry-wide bodies. For example, the four largest rail freight operators (i.e. DB Schenker, DRS, Freightliner and GB Railfreight) have combined to form the Rail Freight Operators' Association (RFOA). In some cases, the RFOA represents the rail freight industry; for example, the RFOA was a member of the Working Group for the Draft Freight Market Study (Network Rail, 2013c) and the Initial Industry Plan for the direction of the railway from 2014 (Network Rail *et al*., 2011). Similarly, the Strategic Freight Network Steering Group has representation from the same four operators, although wider interests are represented by bodies such as the Rail Freight Group (RFG) and Freight Transport Association (FTA) (Network Rail, 2013d). The Rail Delivery Group (RDG), tasked with providing leadership to improve services and value for money across the industry, has only DB Schenker and Freightliner as members from the rail freight operators. While there have been no complaints from the smaller operators, nor any suggestion of deliberate bias, the general lack of representation from smaller market players may mean that their perspective, or that of potential new entrants, is not being taken into account.

Finally, whereas there is complete separation between infrastructure and operations on the British rail network, there is a potential conflict of interest with the Channel Tunnel in that Eurotunnel, through its Europorte subsidiary, owns GB Railfreight (European Union Committee, 2011). This is just one area of concern related to the Channel Tunnel (see also Sections 4.6 and 5.1).

5.4 Key issues for the future

The aim of this final section is to take a broad perspective and briefly to highlight a range of issues that may affect the rail freight market in the future. The statutory duty placed on government and the ORR to promote rail freight is an important tool in ensuring that freight is considered alongside passenger activity, and the regulator has shown a willingness to promote competition and remove anti-competitive practices. The key concerns for the future really relate to strategic issues such as the changing nature of the British freight market, rail capacity constraints and network access, and railway industry structures. The Channel Tunnel is an ongoing concern. Each of these is discussed in turn.

The stable or declining bulk markets and the growth of consumer goods flows presents a considerable challenge. Some of the bulk markets look likely to decline in importance, notably coal, although biomass may emerge as a large-scale replacement energy source with a sizeable rail market. Intermodal traffic represents a big growth opportunity, so long as the rail freight operators are able to integrate themselves more fully into contemporary supply chains.

Emerging trends such as e-commerce pose particular challenges for rail, but may provide opportunities (e.g. in the development of rail-based parcels networks).

One of the biggest challenges relates to the projected growth in passenger and freight activity and the potential capacity constraints that may arise. In combination with issues relating to the development of new rail freight terminals, where the land use planning process has often blocked or delayed new terminal development, there are risks that the rail network will not have sufficient capacity or access points to allow continued rail freight growth. That said, there is a lot of strategic work taking place to consider capacity constraints and there is the prospect of the construction of High Speed 2 (HS2), a new high speed passenger route from London to Birmingham and onwards to Manchester and Leeds. The Rail Freight Group is strongly in favour of HS2 given the capacity that it should release on the existing network for additional freight trains (RFG, 2013b). With regard to land use planning, rail freight operators and the Rail Freight Group have made representations about the importance of reforming the process and presenting a clear statement of intent on rail freight terminal provision (see, for example, RFG, 2011).

The structure of the British rail industry has undergone considerable change in the 20 years since rail privatisation and there is a risk of freight being marginalised by structural reforms to Britain's mixed-traffic railway by the greater focus on passenger traffic. Network Rail has recently been devolving much of its network operations activity to route level. 10 strategic routes, each essentially a geographical area, were established to operate as separate business units (Network Rail, 2011a); two routes have subsequently so there are currently nine. These routes fairly closely mirror the territories of passenger franchises, but freight flows tend to be far less correlated with the route boundaries given the more diverse routings of freight trains. To counteract this route level devolution, Network Rail has created a Freight Director (Network Rail, 2011b), since freight customers need a network focus. Overall, this represents a move by Network Rail to try to be more responsive by getting closer to its customers, but it is currently too early to judge the effects of the restructuring.

There are other uncertainties and risks caused by regular restructuring, with examples including inconsistent political direction and differing policy priorities from devolved administrations, or the unknown impacts on freight of closer working relationships between Network Rail and passenger franchises (such as the “deep alliance” between Network Rail and South West Trains) (Network Rail, 2012c). Overall, changes that are focused primarily on the passenger railway pose risks for rail freight operators who tend to operate nationally rather than on a route or regional basis, although an alliance between Network Rail and freight operators has been signed at a national scale. In addition, the significant direct block subsidy from government to Network Rail undermines commercial decision-making because of its centralised and politicised nature (ORR, 2013c), and it offers little incentive for Network Rail to proactively encourage the operation of more freight trains, although it would require freight train operators to pay more

than marginal cost for such an incentive to be given. On the other hand, the development of the Strategic Freight Network has provided a network-wide focus on freight requirements for promoting key traffic such as containers moving between ports and inland terminals. The continued funding for the network in the 2014-2019 period provides some certainty for rail freight operators and customers.

The regulatory structures and market access arrangements for the Channel Tunnel are a major issue for through rail freight services between mainland Europe and Great Britain. The fact that through rail freight volumes are now at a much lower level than when the train ferry operated prior to the opening of the Channel Tunnel, and despite the growing cross-Channel freight traffic as a consequence of the Single European Market, is a cause for concern. It is to be hoped that the British and French politicians can agree on a revised regulatory structure, and that the European Union will ensure the implementation of the technical standards for interoperability for the Channel Tunnel. The dramatic difference in the way that the British rail network and the Channel Tunnel infrastructure are regulated is anomalous, with rail freight operators and shippers arguing that this is one of the main reasons for suppressed rail freight volumes. Although track access charges for freight trains through the Channel Tunnel have been reduced, they remain very high compared with those elsewhere in Great Britain and continental Europe.

6. Conclusions

This report has presented a detailed assessment of the rail freight market and the regulatory structure in Great Britain. As far as possible, the assertions and discussion have been supported by evidence, although there are some shortcomings in the availability of data relating to certain aspects of the rail freight market. This is particularly the case at the rail freight operator level, where commercial sensitivities exist. The assessment has shown that Britain's rail system was liberalised in a more dramatic way than most, which has led to ongoing challenges for the franchising of passenger operations (and, in the early days, for the infrastructure manager) but is widely regarded as being successful for the freight market. Considering just the road (HGV) and rail combined market, rail's share of tonne kilometres increased from 10% in 1998 to 12% in 2010, although to a large extent this increase has been the result of increased lengths of haul for coal and growth in deep sea containers rather than rail penetrating new markets. Furthermore, there is evidence of a considerable reduction in the dominance of the main operator (EWS, now DB Schenker), although the market still displays oligopolistic tendencies and there have been relatively few new entrants. Moreover, because Freightliner was privatised separately, the dominance of the main operator in the UK is lower than almost anywhere else in Europe. Despite some concerns about the wider rail network strategy, and the treatment of freight within this, there is now a clearer industry focus on freight than before. In addition, there are considerable checks and balances built into the system to ensure transparent and non-

discriminatory practices. As the Rail Freight Group (RFG, 2013c) asserted, when marking the 20th anniversary of the Railways Act 1993 which led to rail privatisation:

> "The 1993 Act created the role of the Rail Regulator and set out its duties. There was no doubt that this was vital in securing investment and competition, giving the certainty that access would be fairly awarded, that the Infrastructure Manager's costs would be challenged and that prices would be fair and transparent. These roles remain as vital today as ever."

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