Evidence to support the CAA's consultation on HAL's COVID-19 related RAB adjustment

A report for Heathrow Airport Limited

Legally privileged and commercially confidential | 4 March 2021

In order to manage the significant negative impact of the COVID-19 pandemic, in July 2020 Heathrow Airport Limited (HAL) requested the Civil Aviation Authority (CAA) to make an upward adjustment to its regulatory asset base (RAB) for 2020 and 2021. It considers that making this adjustment, in line with provisions for exceptional circumstances in its Q6 license, is necessary to restore investors' risk perceptions and avoid long-term impacts on its costs of raising finance to the detriment of consumers. In its updated consultation on the issue, the CAA has recognised that it would need to consider both: (i) the impact of the pandemic on HAL's cost of equity at H7; and (ii) any immediate interventions necessary. However, it does not think that it would be proportionate to commit to making large adjustments to HAL's RAB now.

Therefore, as part of its response to the CAA's updated consultation, HAL has commissioned us to share our independent assessment on whether: (a) there is a "floor" to investors' expected returns in regulated industries; and (b) the CAA's failure to act as per the conditions in HAL's Q6 license would be seen by investors as a failure to keep to its regulatory commitment (i.e. "empty promises") and lead to a long-term negative impact on investors' risk perceptions of HAL's business.

On (a), based on our analysis of the return on capital employed (RoCE) in regulated industries over the past 15 years, we show that industry returns fit into a narrow band and do not fluctuate extremes outside of this range. This indicates that returns in these industries are stable and 'safe'. Investors are likely to view them as such and are, therefore, unlikely to have expected significant downside risk of returns, particularly in light of the regulatory protections in the Q6 license. This suggests that a failure of the CAA to intervene in this instance is likely to raise investors' views of the systematic risk of the company and increase their required rate of return to provide financing. This has the potential to significantly impede financeability going forward.

On (b), based on detailed case studies, we show that investors in strategic infrastructure hold a reasonable expectation that the government / regulator would not want firms to fail (and investors to fail to generate a return) for force majeure reasons. Therefore, in the limited cases where this has not happened, this has been coupled with negative impacts on investors' risk perceptions and firms have failed to the significant social detriment of taxpayers and/or consumers.

1. Context

1.1 Impact of COVID-19 on HAL's business

HAL's business has been severely affected as a direct result of the COVID-19 pandemic and the associated domestic and international policy responses. Specifically, its passenger numbers fell 83% in December 2020, compared to the same time in 2019.[1] In addition, its latest forecasts suggest that HAL will suffer revenue losses of about £3.4 billion over 2020 and 2021.[2]

1.2 HAL's request for COVID-19 related RAB adjustment

On its part, HAL has taken steps to reduce its operating costs and capital expenditure and raise additional debt, while its investors and shareholders have agreed to debt financing arrangements and suspended dividend payments, respectively.[3]

In addition, HAL has requested the CAA to make an upward adjustment to its RAB to reflect the impact of COVID-19 on its revenues, in line with the option in its Q6 licence to re-open the price control in exceptional circumstances. HAL considers that this is necessary to limit the upward pressure on airport charges in the long-term if its investors are expected to fully bear these risks.

1.3 The CAA's position in its October 2020 consultation

In response, in its October 2020 consultation, the CAA recognised the need to ensure that the regulatory framework does not create undue pressure on HAL's ability to finance its operations following the exceptional circumstances created by the pandemic. However, it indicated that "*the evidence that HAL has provided so far falls short of that required robustly to justify its claims that "urgent support/action is necessary" and that any such support should be in the form and of the scale in HAL's request*".[4]

Following that, the CAA has continued to engage with HAL to receive and consider further evidence, including evidence from Economic Insight on the following key issues:

- (i) Evidence that specifying a mechanism to reduce risk in the next price control (i.e., a new ex-ante mechanism), as currently being considered by the CAA, in the absence of adjustments for historical performance in 2020 or 2021, would have no impact on investors' perceptions of risk (or more broadly, that this ex-ante approach would be inferior to acting 'now', as HAL requests).[5]

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[1] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment (CAP 2098).' CAA (5 February 2021) page 6.*
[2] *'Economic regulation of Heathrow Airport Limited: Response to its request for a covid-19 related RAB adjustment (CAP 1966) – Heathrow's Response.' HAL (November 2020) paragraph 37.*
[3] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment (CAP 2098).' CAA (5 February 2021) page 6.*
[4] *'Economic regulation of Heathrow Airport Limited: Response to its request for a covid-19 related RAB adjustment (CAP 1966).' CAA (October 2020).*
[5] *'Impact of ex-ante mechanisms on investor risk perceptions: Report for Heathrow Airport Limited.' Economic Insight (January 2021).*

- (ii) Evidence that it is important that HAL's gearing should return to initial levels over the H7 period, as currently considered by HAL in its assessment of the alterative options, instead of over a longer period.[6]

1.4 The CAA's position in its February 2021 consultation

In its updated consultation, the CAA has furthered its own thinking regarding the best way to respond to the impact of the COVID-19 pandemic on HAL's business. Specifically, it has committed to "*using a framework based on our statutory duties to assess the broad range of issues raised by the covid-19 pandemic and considering the most appropriate package of options to address those issues*".[7] Hence, it is considering the following four policy options, acknowledging that a 'no intervention' option would not be consistent with its primary and secondary duties:[8]

- Package 1: No intervention before H7, but consider interventions at H7.
- Package 2: Targeted intervention now (to address any short-term financeability or other issues which may affect HAL's ability to maintain the appropriate level of investment or quality of service) and consider further intervention at H7.
- Package 3: Application of H7 traffic risk-sharing approach to 2020-2021.
- Package 4: HAL's proposed risk-sharing arrangements for 2020-2021.

It is currently minded to choose between Package 1 and Package 2 since it considers that they both: (a) allow it the flexibility to intervene should it consider it necessary; but (b) allow it the chance to consider issues at H7 in the round. On the contrary, it does not consider Package 3 and Package 4 proportionate.

1.5 The purpose of this report

HAL disagrees with the CAA's assessment. Particularly, it considers that it is important for the CAA to make a transparent commitment regarding its intention to intervene now because:

- (i) "*the WACC set at Q6 included assumptions about the level of risk to which shareholders in Heathrow were exposed and the appropriate return for bearing that risk*" and *"given [the level of the allowed return in Q6/iH7], there is an implied upper limit to the amount of risk that Heathrow was expected to bear*".[9]
- (ii) Investors will not view any future traffic risk sharing mechanism as being credible if it is not applied to the exceptional circumstances in 2020 and 2021 (as was expected by investors as part of the Q6 price control).

However, the CAA's current position on these issues differs from HAL, as follows:

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[6] *'Need for gearing recovery: Report for Heathrow Airport Limited.' Economic Insight (February 2021).*
[7] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment (CAP 2098).' CAA (5 February 2021) page 9.*
[8] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment (CAP 2098).' CAA (5 February 2021) page 12.*
[9] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment – Appendices (CAP 2098A).' CAA (5 February 2021) page 17.*

- On (i), the CAA considers that "*it is far from clear that investors had any basis for assuming either: that there was an upper limit to the level of traffic risk to which they were exposed under the Q6 settlement; or that we would intervene to protect HAL from traffic risk events*."[10] In fact, it has suggested that "*it is reasonable to assume that investors' expectations would have reflected the prospect of low-probability, high-impact events or crises, such as the current pandemic, and this would have influenced their required returns*".[11]

- On (ii), while the CAA accepts that any action now will increase the credibility of any traffic-risk sharing mechanism at H7, it does not believe that a forward-looking measure would have no impact on investor perceptions without a retrospective adjustment. For instance, it considers that "*While we consider it may be plausible that the application of a TRS* (traffic risk sharing) *mechanism in H7 would be seen as more credible if we took action in response to the impact of the covid-19 pandemic for 2020 and 2021, we do not consider that this benefit can only be gained by adopting exactly the same approach on both a forward-looking and retrospective basis*" (added).[12]

Therefore, in order to assist the CAA's consideration, HAL has commissioned us to share our independent assessment on whether there is evidence to support the above key issues. Hence, in this follow-on report, we address each of these, in turn.

2. There is a 'floor' to investors' expected returns in regulated industries

It is widely accepted that, typically, investors in regulated companies expect these to be *low risk – low reward* investments.[13] This is because, even with an incentive-based regulatory regime, the nature of economic regulation for strategic monopolies dictates that returns are bounded, both: (a) on the upside (because 'excessive profits' would imply consumers would be paying more than in a competitive market);[14] and (b) on the downside (because it is in consumers' interest for the company to continue operations and, therefore, for investors to make necessary returns)[15]. Therefore, investors' expected returns for a regulated company fall within a relatively narrow range.

As evidence, in this section, we show that rates of return in regulated industries like water and energy have been bounded within a relatively narrow range over the last 15 years (i.e. they do not peak or dip to extremes). This suggests that, based on historic returns, investors in these industries would expect there to be both a 'cap' and a 'floor' to their returns.

2.1 Analysis of historic rates of return in regulated industries

In this section, we present the historic post-tax return on capital employed (RoCE) in water and energy distribution, in turn. Conceptually, this is the most appropriate measure of rates of return for investors since it captures the fact that companies must

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[10] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment – Appendices (CAP 2098A).' CAA (5 February 2021) page 18.*
[11] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment – Appendices (CAP 2098A).' CAA (5 February 2021) page 19.*
[12] *'Economic regulation of Heathrow Airport Limited: response to its request for a covid-19 related RAB adjustment (CAP 2098).' CAA (5 February 2021) page 33.*
[13] *Please see page 22 here: https://www.ukrn.org.uk/wp-content/uploads/2018/11/Investor-guide.pdf.*
[14] *Please see page 16 here: https://www.ukrn.org.uk/wp-content/uploads/2018/11/Investor-guide.pdf.*
[15] *Please see page 45 here: https://www.ukrn.org.uk/wp-content/uploads/2018/11/Investor-guide.pdf.*

deliver returns to: (i) debt holders; (ii) equity holders; and (iii) HMRC (by way of taxation). In other words, it reflects the total opportunity cost faced by investors.

2.1.1 RoCE in the water sector

In this sub-section, we present the RoCE in the water sector between the financial years ending March 2006 and March 2020 (i.e. covering the last three price controls – PR04, PR09 and PR14 – and, including the financial crisis).

In the water sector, we calculate:

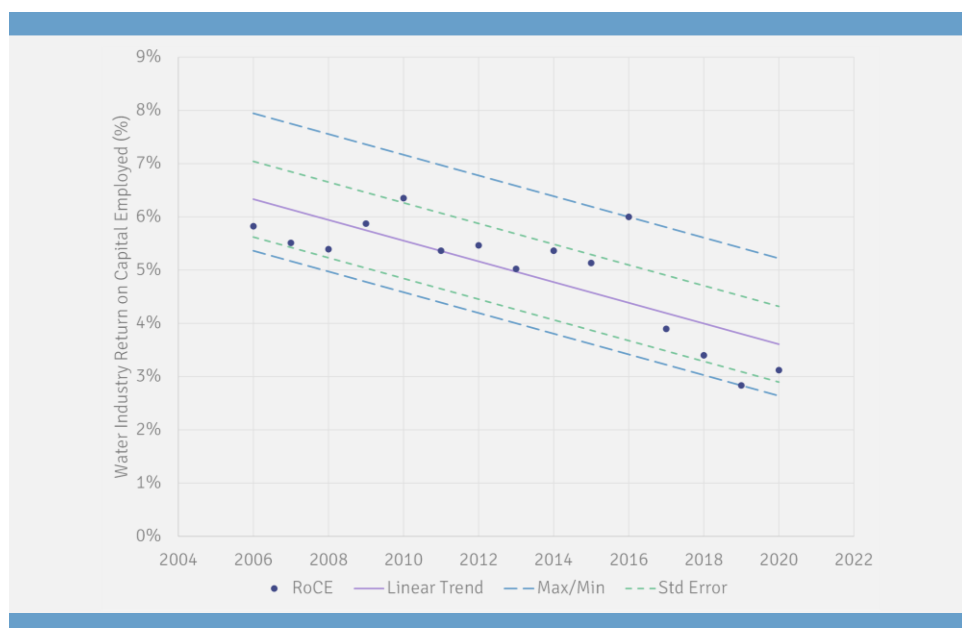
RoCE = (Current Cost Operating Profit – Current Tax) / Average Regulated Capital Value (RCV)

This is consistent with Ofwat's own measure of the basis on which the industry is regulated (i.e. Ofwat compares this to the vanilla WACC).[16]

Figure 1 presents the range for the industry average RoCE (weighted by the RCV for each company) between financial years ending March 2006 and March 2020. In the figure:

- the blue dots represent the RCV weighted industry average RoCE in each year;
- the purple line represents a linear regression of the RoCE on time;
- the green dashed bands represent the standard error of the regression; and
- the blue dashed bands represent the maximum/minimum deviations from the regression line.

Figure 1: Range for the RCV-weighted industry average RoCE in the water sector (financial years ending March 2006 to March 2020)



Notes: Please see Annex B for details on the methodology for calculation of the RoCE.
Source: Economic Insight analysis of publicly available data.

- The chart indicates that, both, the standard error and the maximum/minimum bands are within a relatively narrow bound from the regression line. This suggests that returns in the water industry tend to remain in a narrow range.

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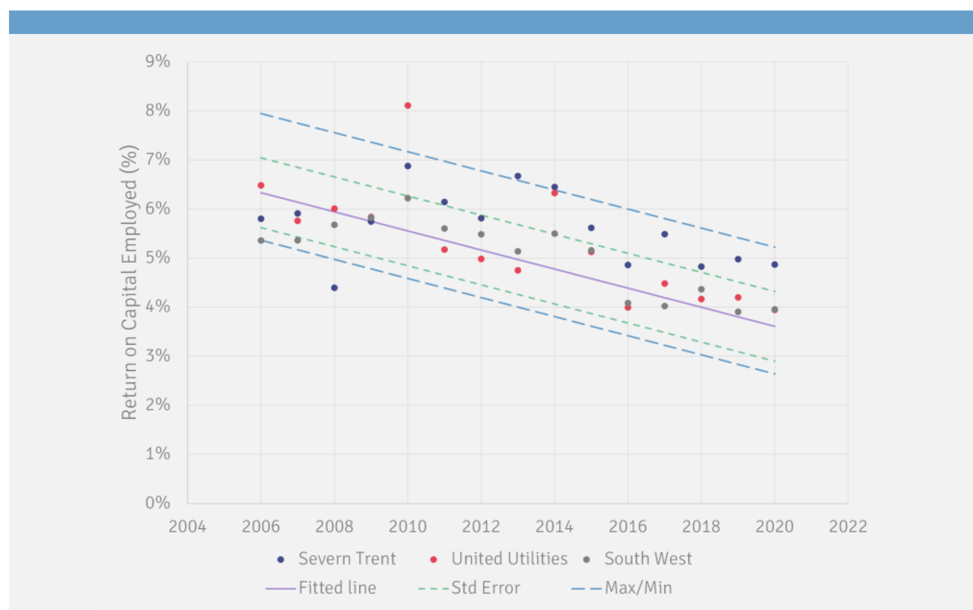
[16] *Please see: https://www.ofwat.gov.uk/regulated-companies/company-obligations/performance/companies-performance-2011-12/financial-2012-13/.*

Importantly, returns appear to be especially limited on the downside, with the minimum band being very close to the lower standard deviation.

- This indicates that water companies provide a safe rate of return, which does not deviate significantly below average. This suggests that, based on historic returns, investors' expected returns in regulated industries would also be limited within a tight band. In other words, there is a "floor" to investors' expected returns.
- On the upper end, there appears to be slightly more variation in returns, at least in relation to the maximum deviation from the trend, which is further away from the upper standard deviation band than the minimum is on the lower end. At face value, this may indicate that there is more potential to achieve higher than average upside compared with lower than average downside. However, this result is driven by a single company, Yorkshire, which has a ROCE of 15.4% in 2016. This is because of a positive capital maintenance adjustment which boosts operating profit for the year. Omitting the result for Yorkshire from the calculation brings the industry-average RoCE down to 5.0%, which is much more in line with the rest of the data. Therefore, we would view this observation as an outlier.

However, the above does not capture the position of investors in individual companies. Therefore, Figure 2 presents the RoCE for the publicly listed water companies between financial years ending March 2006 and March 2020. The fitted regression line and confidence bands in this figure are the same as in Figure 1 above.

Figure 2: RoCE for the publicly listed water companies (financial years ending March 2006 to March 2020)



Notes: (i) The fitted line, standard error, and maximum/minimum bands are the same as for the industry regression results. (ii) Please see Annex B for details on the methodology for calculation of the RoCE.
Source: Economic Insight analysis of publicly available data.

- Figure 2 shows that the returns on capital for the three publicly listed water companies also fit relatively closely within the ranges outlined for the industry. Specifically, with the exception of two instances related to Severn Trent's return

in 2008 and United Utilities' return in 2010, the returns for the three companies fit tightly within or close to the ranges for the industry as a whole.

- This consistently indicates that investors in individual water companies would likely expect their returns to fall within a relatively narrow range and not deviate significantly to the upside or the downside.

2.1.2 RoCE in the energy distribution sector

In this sub-section, we present the RoCE in the energy distribution sector between the financial years ending March 2006 and March 2020 (i.e. covering the last three price controls – DCPR4, DCPR5 and RIIO-ED1 to date – and, including the financial crisis).

In the energy sector, we calculate:

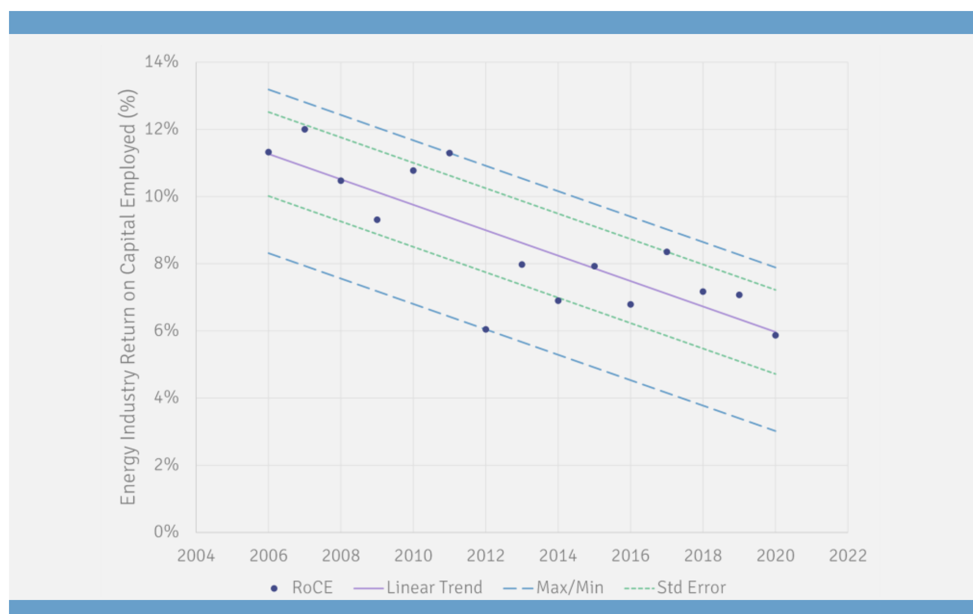
RoCE = (Operating Profit – Current Tax) / (Total Assets – Current Liabilities)

This measures the standard post-tax return on capital employed for companies. The RoCE is calculated in a different way to the water sector due to differences in the regulatory accounting information used by Ofgem to identify company performance. This means that the components used in the RoCE calculations in the water industry are not readily or consistently available.

Figure 3 presents the industry average RoCE (weighted by the capital employed for each company which is the denominator for the RoCE above). In the figure:

- the blue dots represent the RCV weighted industry average RoCE in each year;
- the purple line represents a linear regression of the RoCE on time;
- the green dashed bands represent the standard error of the regression; and
- the blue dashed bands represent the maximum/minimum deviations from the regression line.

Figure 3: Range for the industry average RoCE in the energy distribution sector weighted by capital employed (financial years ending March 2006 to March 2020)



Notes: Please see Annex B for details on the methodology for calculation of the RoCE.
Source: Economic Insight analysis of publicly available data.

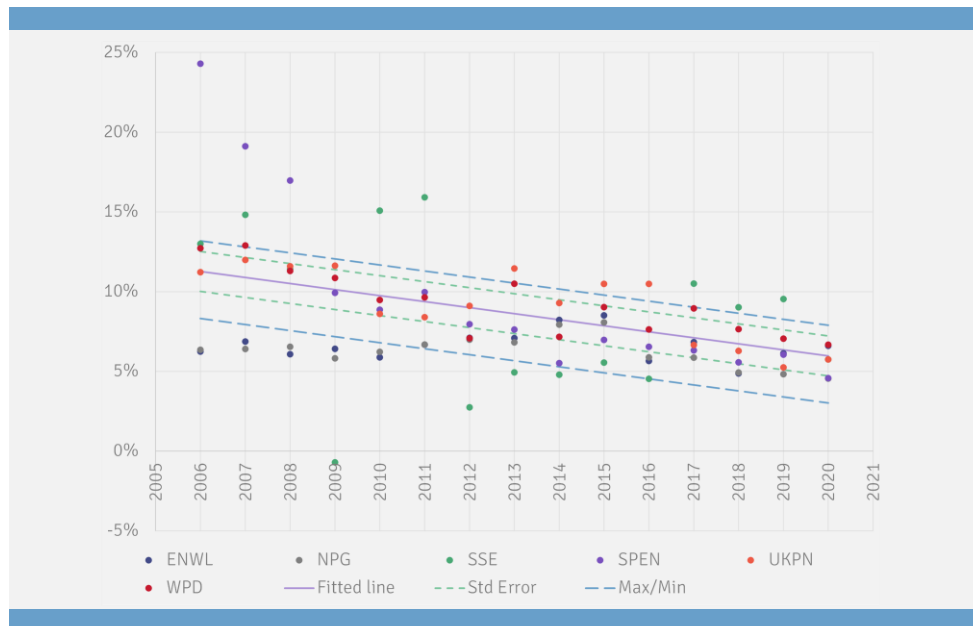
This shows that:

- For the energy distribution sector, the returns across the whole industry also fit within quite a narrow band. This indicates that returns are relatively safe and stable and, based on this, that investors would not likely expect significant downside risks.

- The only time the returns fell below the confidence band of the standard error was in 2012 when the industry-average RoCE fell to 6%. This shows that, even in relatively bad years, there remains a strong return on capital employed overall.[17]

In order to show the position of individual companies, Figure 4 presents the RoCE for all the individual distribution network operators in the industry. The fitted regression line and confidence bands in this figure are the same as in Figure 3 above and, therefore, some variation above and below the line for individual companies is expected.

Figure 4: RoCE for each energy distribution company (financial years ending March 2006 to March 2020)



Notes: (i) The fitted line, standard error, and maximum/minimum bands are the same as for the industry regression results. (ii) Please see Annex B for details on the methodology for calculation of the RoCE.
Source: Economic Insight analysis of publicly available data.

- Figure 4 shows that, even for individual companies, the vast majority fall into or relatively close to the minimum confidence band at the industry level. This indicates once again that returns in this industry fall within a relatively narrow range even at the company level and do not regularly fluctuate to extremes, which would suggest that investors' expectations are also likely to be bounded.

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[17] *In 2009, Scottish and Southern Energy (SSE) incurred a significantly higher cost of sales due to persistently high wholesale electricity prices, leading to an operating loss. This, combined with an elevated capital employed value for the year, significantly distorts the industry returns. As a result, we have omitted this observation from the above chart.*

- There are two exceptions to the above – Scottish and Southern Energy's (SSE's)return in 2009 and 2012:
  - In 2009, SSE incurred a significantly higher cost of sales due to persistently high wholesale electricity prices, leading to an operating loss.
  - The 2012 value is significantly less extreme, though was also a challenging year as a result of upheaval in global energy markets, falling demand for energy, as well as a succession of winter storms.

- On the upside, there appears to be significantly more upside return for companies early in the period being assessed, but the returns closer to the present day are much more in line with the industry-average confidence bands. Therefore, the evidence is consistent with investors' returns being bounded within a relatively narrow range.

2.2 Conclusion

The above evidence shows that investors' expected returns in a regulated company are bounded (i.e. there is a 'floor', as well as a 'cap', to their expected return). This indicates that, as a regulated company, expected returns for HAL's investors would also likely have been bounded within a range. Importantly, this would have included the expectation that, beyond this expected "floor", the CAA would respond to "exceptional circumstances" as per the conditions in the license. Therefore, it would follow that investors will likely see the lack of immediate response by the CAA as a commitment failure, which will materially change their risk perceptions of HAL's business going forward.

3. There is a negative impact of 'empty promises' on investors' risk perceptions

In our previous report,[18] we set out that it is important to ensure that the ex-post risk exposure of investors matches their ex-ante expectations, to avoid undermining the regulatory model. In HAL's case, where its Q6 license explicitly included the commitment to re-open the price control in exceptional circumstances, this existing ex-ante mechanism would have been internalised in investors' assessment of risk at the time. Therefore, should the CAA choose <u>not</u> to exercise the option to deploy said mechanism <u>now</u>, in circumstances that on its own assessment are 'exceptional', this would likely be seen by investors as a failure by the regulator to honour its commitment in the Q6 license. In turn, this would logically affect investors' perceptions of risk in the future.

In practice, this negative impact of 'empty promises' on investors' risk perceptions in regulated industries is inherently hard to show, not least because this situation is 'exceptional' by definition. Nevertheless, this logic can be evidenced through the effect on investor risk perceptions in strategic industries where, like commitments in regulated industries, investors have an expectation of government would not want firms to fail for force majeure reasons (i.e. investors' ex-ante risk perceptions internalise the 'strategic' nature of the industry and the expectation that the Government would not want firms to fail and, therefore, investors to generate returns).

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[18] *'Impact of ex-ante mechanisms on investor risk perceptions: Report for Heathrow Airport Limited.' Economic Insight (January 2021).*

Therefore, in this section, we detail three case studies which demonstrate the negative effect that expected, but unfulfilled, governmental support can have on investors' risk perceptions, leading to **long-terms costs for the taxpayers and/or consumers**. These relate to:

- (i) the failure of the East Coast Mainline franchise;
- (ii) the collapse of Railtrack; and
- (iii) the collapse of Carillion.

3.1 East Coast Franchise

Overview

National Express was awarded the contract to operate the East Coast franchise through its special purpose vehicle National Express East Coast. After the onset of the financial crisis, it became clear that the franchise would need additional funding. However, after being unable to reach an agreement on this support with the Department for Transport (the DfT), National Express announced that it would no longer provide any additional funding to its subsidiary. There was a widespread **expectation amongst investors that the DfT would provide support for the franchise when faced with financial difficulties as a result of the financial crisis, and the unfulfillment of this expectation led to an increase in both the share price and the asset beta of National Express**, indicating an increase in investors' risk perceptions. Importantly, this is an extremely relevant case study because, in this case the franchisee company experienced financial difficulties as a result of the financial crisis, i.e. due to an external shock, similar to HAL's case as a result of COVID-19.

National Express awarded the East Coast franchise

The InterCity East Coast franchise is a high-profile service, operating passenger trains between London, the North East and Scotland. Since the 1990s, passenger rail services have been delivered through a system of rail franchises. Each franchise is a competitively procured contract typically lasting seven to ten years between the DfT and a private train operating company.

In 2007, National Express East Coast (a subsidiary of National Express Group) was awarded the contract to operate the East Coast franchise. In awarding the contract to National Express, the NAO remarked that 'the DfT got a good deal'.[19] The DfT applied lessons learned from the failure of the previous franchisee (Sea Containers operating under the GNER brand) to the procurement of its successor. It required National Express to make available, from the outset, up to £40 million in the form of a subordinate loan to its subsidiary to cover any operating losses, and to pay the DfT £1.4 billion over the seven years to 2015. **The DfT has a statutory duty to ensure that passenger services continue if a franchise fails**, and therefore, a certain level of government intervention was expected in the case of economic woes, however, due to the contract signed in 2007 they were under no obligation to do so. In a similar manner, the DfT expected any holding company wishing to maintain a presence in the rail franchise market to support any of its franchisees that encounter financial difficulty, however, a holding company is, likewise, under no requirement to do so.

[19] *'The InterCity East Coast Passenger Rail Franchise'. Report by the Comptroller and Auditor General (March 2011).*

Therefore, the DfT put adequate protections for the taxpayer in the contract. If the franchise defaulted on its obligations and the contract was terminated, National Express would have to pay the DfT £31 million and would be liable to pay any outstanding balance on the £40 million subordinate loan. In view of the economic forecasts at the time, the DfT did not consider it necessary to stress test bids for delivery in an economic downturn. This was a reasonable view, given the contractual protections built into the franchise agreement.

National Express East Coast begins to face financial difficulties

In June 2008, the DfT's franchise manager began raising concerns that cost and revenue pressures might affect the profitability of the franchisee. NAO also found that profits began deviating considerably from bid forecasts at around the same time.[20] After November 2008, there was a significant decline in passenger revenues and as a result, the DfT rated the continuing viability of the franchisee as high risk at the beginning of 2009.

In the early part of 2009, the DfT had classified five other train operating companies as high risk. Passenger rail demand and revenues were falling across the rail industry. National Express East Coast was particularly vulnerable as it had relatively low income from season tickets and therefore relied on business and leisure travel. This meant that its sources of revenue that were more at risk in an economic downturn. National Express had forecast that the franchisee would have earned a cumulative profit of £45 million by the end of March 2009, but actual cumulative profits amounted to only £10 million. After April 2009, cumulative profits quickly became cumulative losses and, eventually, totalled losses of £33 million.[21]

National Express found that the global credit crisis severely curtailed the availability of debt funding for their necessary refinancing in 2009. A portion of the debt had to be refinanced in 2011 and the company considered that the best strategy would be to issue new shares to existing shareholders, a process that would be unlikely to succeed unless losses incurred on the InterCity East Coast franchise were addressed.

Negotiations between the DfT and National Express

National Express sought renegotiation of the terms of its InterCity East Coast franchise agreement. In February 2009, National Express notified the DfT that the franchise expected large losses, particularly if the DfT insisted the franchisee honour its contractually committed franchise payments. The predicted losses were estimated to be £36 million in 2009 and as large as £120 million in 2011.

While the franchisee was not entitled to contractual relief from the financial difficulties that it faced, National Express approached the DfT with a request to renegotiate the terms of the franchise contract. The company proposed a number of cost-cutting measures and also considered that major changes to the terms of the contract, including a reduction in the payments to be made to the DfT or the early provision of revenue support, would be needed. **As the economic downturn was something over which National Express had no control, the company judged that it should receive exceptional relief.**

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[20] *'The InterCity East Coast Passenger Rail Franchise'. Report by the Comptroller and Auditor General (March 2011).*
[21] *'The InterCity East Coast Passenger Rail Franchise'. Report by the Comptroller and Auditor General (March 2011).*

Between February and June 2009, there were a number of meetings between the DfT and National Express to resolve the difficulties with the franchise, but agreement could not be reached. The DfT was concerned that any change to the terms of the contract would encourage other franchisees to seek similar treatment. **The DfT refused to consider any renegotiation of the terms.** Instead, it took the position that National Express should look to cut costs and provide support to the franchisee from profits elsewhere in the group.

A deal in which the company remained in place under easier terms was rejected from the outset and the price offered for a negotiated exit was denied as the DfT considered that this would set a precedent for other struggling franchisee companies and convey the unintended message that negotiations were an option. On 1 July 2009, National Express announced that it planned to default on the franchise, having failed to renegotiate the contractual terms of operation, and would not provide any further funding to their subsidiary. This meant that National Express East Coast would run out of money by the end of 2009. Therefore, the DfT terminated the contract with National Express and the franchise was run by a newly established publicly owned company, and in December 2010 National Express agreed to transfer franchise assets that it had valued at £45 million at no cost to the public sector operator.

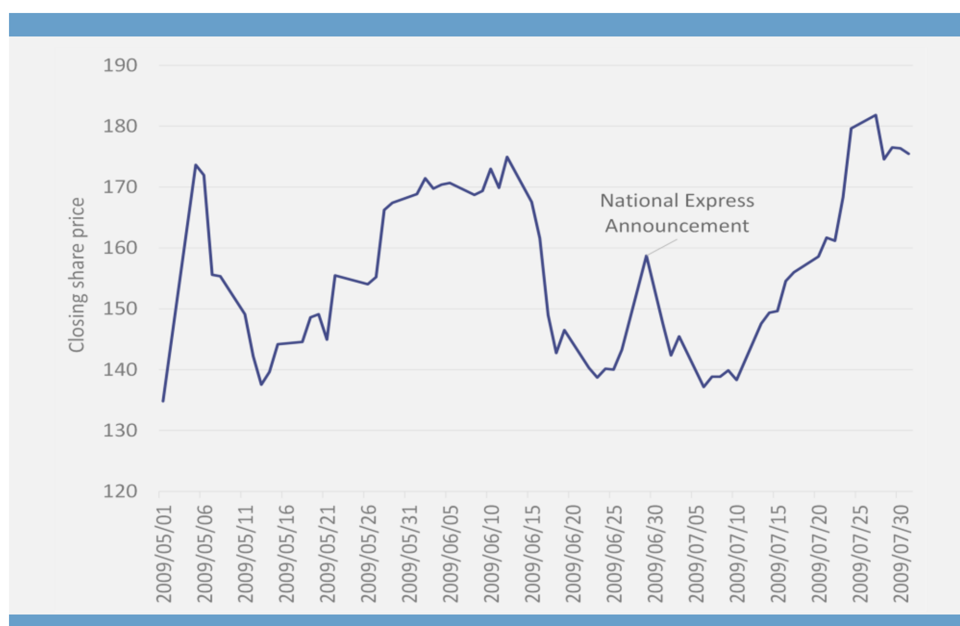
Effect on investor risk perceptions

At the outset, we note that due to the way National Express had established its subsidiary, National Express East Coast, the maximum loss they would incur if the East Coast contract were terminated was £71 million. In terms of the National Express Group, which operated two other profitable rail franchisees (East Anglia and c2c), the loss of £71 million would not necessarily be expected to have a large effect on the holding company's investors' perceptions or share price as it was only one segment of the larger Group. It is also necessary to note that these events regarding National Express and the unfulfilled expectation of support from the DfT, was taking place in the midst of the financial crisis, which would have had its own consequences on investors' risk perceptions. Therefore, although we cannot isolate the impact of the expected but unfulfilled government intervention, we note the change in investors' risk perceptions.

It was clear that there was an expectation from National Express that the DfT would provide assistance or be open to negotiation in times of financial crises because it was their duty to ensure that the services of the East coast railway continued uninterrupted and the impact of the financial crisis on the franchise was unexpected. Negotiations between the DfT and National Express took place between February and June 2009 and the unsuccessful negotiations between National Express and the DfT became clear on 1 July 2009 when National Express announced its plans to default on the franchise.

Figure 5 indicates that there was a steep, albeit moderate, fall in the share price on 1 July 2009, i.e. when it became clear that the expected DfT support was not forthcoming. This may reflect fall in investors' confidence and an increase in their risk perception.

Figure 5: National Express Group's share price (1 May 2009 to 30 July 2009)



Notes: This presents daily data on closing share price.
Source: Economic Insight analysis of data from Yahoo Finance.

This is supported by the fall in the company's asset betas after the announcement. Specifically, after the DfT's failure to act in line with investors' expectations, the company's asset beta declined by 72% from 0.32 to 0.551.[22] An increase in the asset beta is reflective of an increase in investors' risk perception. However, as noted above, we cannot isolate the extent to which this change in asset beta was related to the impact of the expected but unfulfilled government intervention.

3.2 Railtrack

Overview

Railtrack plc (a subsidiary of Railtrack Group) took control of the railway infrastructure on 1 April 1994 and was floated on the London Stock Exchange in May 1996. However, **following failed negotiations requesting financial support from the DfT, it was placed into administration on 7 October 2001**. A number of factors are understood to contribute to Railtrack's failure, including lack of attention to its core business leading to underinvestment in the infrastructure, loss of engineering skills and poor asset knowledge.[23] Nevertheless, it **eventually had to provide a £300 million subsidy the successor, National Rail, and its controversial decision resulted in Railtrack's investors embarking on legal battles with the DfT**.

The source of Railtrack's financial difficulties

Only two years after Railtrack's privatization, they were severely criticised for both their performance in improving the railway infrastructure and for their safety record, and it is commonly believed that it was the Hatfield crash on 17 October 2000 that proved to be the defining moment in the collapse of Railtrack. The subsequent major

[22] *This is calculated based on a one-year rolling average against the FTSE 100: (i) before the announcement (i.e. 1 July 2008 to 30 June 2009); and (ii) after the announcement (i.e. 1 July 2008 to 30 June 2009). The data on the closing share prices of the National Express and the FTSE 100 were collected from Yahoo Finance and the financial information is based on company's accounts available through FAME.*
[23] *'Network Rail – Making a Fresh Start.' Report by the Comptroller and Auditor General (May 2004).*

repairs undertaken across the whole British rail network are estimated to have cost approximately £580 million. Regulatory and customer pressure had been increasing, and the company's share price began to fall sharply as it became apparent that there were serious shortcomings in the company's ability to tackle and solve its greatest problems. Meanwhile, the costs of modernising the West Coast Main Line were spiralling.[24] In 2001, Railtrack announced that, despite making a pre-tax profit before exceptional expenses of £199 million, the £733 million of costs and compensation paid over the Hatfield crash plunged Railtrack to a loss of £534 million.

As a result of a spate of accidents (the Hatfield crash being only one of them), the cost of repairs meant that by October 2001, Railtrack was insolvent and plans for the restructure of Railtrack had begun.

Project Rainbow

The restructuring plan proposed by Railtrack's directors, 'Project Rainbow', was presented to the government a few months prior, on 26 July 2001. It involved the government suspending the regulator and funding Railtrack directly for a few years until its problems were resolved.[25] Railtrack would need an additional £4 billion and in return the government would receive an equity stake depending on how much the company improved.

Railtrack placed into administration

Instead of providing much needed further funding to Railtrack, and embarking on Project Rainbow, Railtrack was placed into railway administration on 7 October 2001, following an application to the High Court by the Transport Secretary, Stephen Byers. The following excerpt from The Economist demonstrates how **surprised all involved were at the decision**.

> *"On the evening of October 5th, the transport secretary, Stephen Byers, called in John Robinson, the boss of Railtrack, to tell him that he was going to announce that the company was bankrupt. Mr Robinson was astonished. Sir Alastair Morton, the government's rail supremo, was 'gobsmacked'. Tom Winsor, the rail regulator, was equally amazed when he received the news the following day."*[26]

Administration was effectively a form of bankruptcy protection that allowed the railway network to keep operating despite the financial problems of the operator. At the time the company went into administration, £370 million held by Railtrack Group was frozen and earmarked to pay Railtrack shareholders an estimated 70p a share in compensation. For most of the year in administration, the government's position had been that Railtrack would have to live within the existing regulatory settlement (£14.8 billion for the five years 2001-2006). However, it soon became clear that that was impossible, and that the aftermath of the Hatfield crash had revealed that the network required significantly more money for its operation, maintenance and renewal. It was reported, on 23 November 2001, that a further £3.5 billion may be needed to keep the national railway network running.

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[24] *Repair Costs spiral to £5bn. BBC News, 5 December 1999. Please see: http://news.bbc.co.uk/1/hi/uk/565507.stm.*

[25] *The regulator had sent stringent performance targets which resulted in costly penalties to Railtrack.*

[26] *'Blood on the Tracks'. The Economist (October 2001). Please see: https://www.economist.com/britain/2001/10/11/blood-on-the-tracks.*

Network Rail acquires Railtrack

There were various indicators as to what the Government wanted to happen next. It is reported that Stephen Byers initially hoped the administration would last three to six months, and that the successor company would be a private company. He said that he would *"propose to the administrator that a private company limited by guarantee (CLG) be established to take over Railtrack's responsibilities".*[27]

The government's intention was to replace Railtrack with a not-for-profit private company limited by guarantee to maintain and rebuild the network. It would have no equity shareholders and therefore would not pay dividends. On 12 February 2002 Railtrack Group and Railtrack plc formally separated. Network Rail was incorporated as a company on 22 March 2002 and their bid for Railtrack was announced on 25 March 2002. Under the terms of the proposal, **the government provided a £300 million subsidy to Network Rail, and this proposal took Railtrack out of administration** months earlier than expected. **Network Rail agreed to pay the £500 million to Railtrack Group to be passed on to investors.** A sale and purchase agreement for the entire issued share capital was entered into on 27 June 2002.

Litigation

Railtrack shareholders formed two groups to press for increased compensation. The lawyer speaking for one of the groups remarked that his strategy was to sue the government for incorrect and misleading information given at the time Railtrack was created. An increased offer (from 70p per share) of up to 262p per share was enough to convince the larger shareholder group to abandon legal action. However, the legality of the decision to put Railtrack into administration was challenged by the smaller Railtrack Private Shareholders Action Group. Their action against the government alleged that Stephen Byers had, by deciding to cut off funding for Railtrack and asking the High Court to put the company into Railway administration, committed the common law tort of misfeasance in public office.[28] It is believed that there was £532 million available to Railtrack comprising of £370 million in the bank and £162 million of an existing Department of Transport loan facility still available to be drawn down, but **Stephen Byers cancelled this facility, causing shareholders to believe that he had broken the loan agreement**. This demonstrates how shareholders had expected to receive government support and were aggrieved by the lack of it.

In terms of financing of the newly established Network Rail, the new company would have the existing debt transferred from Railtrack and would be able to borrow more. While future funding would not be underwritten by the government, as the financial institutions were unlikely to want to lend to the new company without some reassurance, **the government proposed a standby loan from the Strategic Rail Authority (SRA) that would be available as a 'cushion' between poor financial performance and debt providers**.

The fact that the standby loan from the SRA was needed, shows how investors' risk perceptions had been affected by the government placing Railtrack into

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27 *Butcher, L. 2010. Railways: Railtrack, 1994-2002. Please see: https://commonslibrary.parliament.uk/research-briefings/sn01224/*

28 *Generally, a civil defendant will be liable for misfeasance if the defendant owed a duty of care toward the plaintiff, the defendant breached that duty of care by improperly performing a legal act, and the improper performance resulted in harm to the plaintiff.*

administration instead of keeping the company afloat by providing additional funding that appeared to be readily available.

3.3 Carillion

Overview

Carillion was a supplier of a range of contracts to the public sector and, therefore, the government was heavily exposed to its collapse and failure. Therefore, there was an expectation amongst investors that, given the likely impact, the government would agree to its request for guarantee of bank lending and temporary tax deferment. In fact, **creditors refused to give further short-term funding unless it also approached Government**. However, the Cabinet Office instead allowed the company to go into trading liquidation. The National Audit Office noted that the **cost of liquidation was ultimately borne by taxpayers and contractors who were left to deal with the fallout**.

Background

Carillion was a supplier of a range of contracts to the public sector, including facilities management, catering, road and rail maintenance, accommodation, consultancy and construction. Carillion had around 420 contracts with the UK public sector and was the central government's sixth largest supplier.[29] It worked on major private sector projects such as the Battersea Power station redevelopment and the Anfield Stadium expansion.[30]

Collapse

Carillion's 2016 accounts showed the company to be profitable and solvent, but it issued a profit warning in July 2017, and then two subsequent warnings in 2017. In July 2017, Carillion's share price collapsed. Analysts argued that Carillion had 'overreached itself' by taking on a large number of risky contracts that proved unprofitable.[31]

Request for Government assistance

On 1st of January 2018, Carillion asked Government for £223 million in assistance, comprising £160 million loan or guarantee of bank lending and a £63 million temporary tax deferment (after **its creditors refused to give further short-term funding unless it also approached Government**).[32] It was hoped that this would enable them **to reassure lenders and secure support of new investors for additional longer-term funding**.[33] The suggested repayment of the loans and ending the government guarantees was contingent on a successful financial restructuring of the company by April 2018.

Carillion also requested help with the longer-term financial restructuring including: asking the Cabinet Office to provide up to £125 million towards the completion of Midland Metropolitan Hospital PFI scheme in return for an equity stake; favourable

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[29] *'Investigation into the government's handling of the collapse of Carillion.' Report by the Comptroller and Auditor General (2018), page 6.*
[30] *'Where did it go wrong for Carillion?' BBC News.*
[31] *'Where did it go wrong for Carillion?' BBC News.*
[32] *'Investigation into the government's handling of the collapse of Carillion.' Report by the Comptroller and Auditor General (2018), page 8.*
[33] *'Carillion begged UK government for £150m loan.' Financial Times.*

settlement of claims with public sector customers; and support in arranging a solution for the £2.6 billion pension liabilities with the Pension Protection Fund, Pension Trustees and Pensions Regulator.

Lack of Government intervention

The Cabinet Office decided that, rather than provide it financial support, it was better for Carillion to enter into a trading liquidation, wherein the company enters into liquidation, but continues to provide services until other arrangements can be made for each contract. It had concerns around Carillion's business plans, the legal implications, potential open-ended funding commitments, the precedent set, and concern about further future requests.[34] On the 15th of January 2018, a compulsory liquidation order was made against Carillion.

Negative impact on investors' risk perceptions

The negative impact of the Cabinet Office's position on investors' risk perceptions can be seen in its share prices in Figure 6 below. It shows that:

- On 1 January 2018, when Carillion asked for government support, there was a 'jump' in its share price, likely reflecting investors' optimism in terms of the Government's support and, therefore, their risk perception.

- Then, in mid-January, when the government decided that they will not provide financial help to Carillion, the share price collapsed, to levels below the levels before the request for Government support.

Figure 6: The movement in Carillion's share price (1 December 2017 to 2 February 2018)

Notes: This presents daily data on closing share price.
Source: Economic Insight analysis of data from Yahoo Finance.

Our analysis of Carillion's asset betas tells a similar story. In the months preceding Carillion's announcement where they requested government support the asset beta

[34] *'Investigation into the government's handling of the collapse of Carillion.' Report by the Comptroller and Auditor General (2018), page 8.*

was -1.53. After the request for government intervention, the asset beta decreased[35] by 0.218, showing a recovery in investor risk perceptions likely due to anticipated assistance from the government in the near future. However, once the government made it clear that they were refusing to intervene, the asset beta increased by 0.346 to -1.655 showing the effect of unfulfilled expectations regarding government assistance on investor risk perceptions.[36,37]

Economy-wide impact of liquidation

Carillion filed for liquidation in January 2018. Thirty-one of Carillion's 198 UK companies were in liquidation.

At the time of liquidation, it employed around 18,200 people in the UK, and had around 420 people employed with the UK public sector. In liquidation, Carillion staff continued to provide public services, with the **Cabinet Office agreeing to fund continuation and almost all services continuing uninterrupted**. The Cabinet Office paid the loss on liquidation, which the NAO estimated in June 2018 to be £148 million, mainly due to income post-liquidation not covering the cost of the provision of public services. Therefore, **the net loss of the liquidation was ultimately borne by taxpayers**.

In fact, the effect of Carillion's collapse was felt further. Reuters stated that **'*risks [had] piled up for the whole industry*'**.[38] N+1 Singer remarked that "*People are looking at possible winners from this but in the short term, it's a pretty grim day for the UK construction sector*".[39] On top of the abandoned projects and countless job losses, **Carillion owed about £1.5 billion pounds to its banks**. This **made future lending to other construction companies particularly hard** as they existed in the same environment as Carillion and often had low-profit work where contracts were structured so the supplier takes on a disproportionately large share of the risk.

In addition to this, much of Carillion's work had started through joint ventures. This **left Carillion's partners with the obligation to take on Carillion's share of the work where they were possibly not equipped to do so,** be it physically or financially. Joint ventures which had weak profitability or additional problems, impacted the earnings of the partner companies. This was the case with **Balfour Beatty and Galliford Try as their shares decreased by 2.4% and 3.5% respectively as they revealed the additional costs of completing projects** in which they were a partner with Carillion.[40]

The NAO also indicated that Carillion sub-contractors, former employees and investors and other creditors would also bore the losses.[41] For instance,

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[35] *Closer to zero*

[36] *This is calculated based on a one-year rolling average against the FTSE 100: (i) before Carillion requested government support (i.e. November 2016 – November 2017); (ii) between the request and the government's announcement that they would not provide the requested assistance (i.e. 5 January 2017 to 5 January 2018) and; after the government announced that they would not intervene (i.e. 15 January 2017 to 15 January 2018) . The data on the closing share prices of Carillion and the FTSE 100 were collected from Yahoo Finance and the financial information is based on company's accounts available through FAME*

[37] *It is unclear why Carillion had a negative asset beta (returns move in the opposite direction to the FTSE 100). Nevertheless, this is consistent with other sources where they are also reported as negative. For instance, please see: https://uk.advfn.com/stock-market/london/carillion-CLLN/financials.*

[38] *https://uk.finance.yahoo.com/news/investors-see-few-silver-linings-133722123.html*

[39] *https://uk.finance.yahoo.com/news/investors-see-few-silver-linings-133722123.html*

[40] *Yahoo Finance.*

[41] *'Investigation into the government's handling of the collapse of Carillion.' Report by the Comptroller and Auditor General (2018), page 9.*

Carillion's sub-contractors were not paid for some of the work they did before 15 January 2018.

Lessons learned

The case of Carillion collapse highlights the important role of the government on investors' risk perception. Specifically, lenders refused to provide Carillion further short-term funding unless it also approached government for financial support. This impact is particularly illustrated in the change in the share which 'improved' upon hopes of government intervention, but crashed when this expected support did not come through.

It should be noted, however, that there is a difference between the situation of National Express as opposed to that of Railtrack and Carillion. In the case of National Express, the franchisee company experienced financial difficulties as a result of the financial crisis, i.e. due to an external shock, similar to HAL's case as a result of COVID-19. Specifically, in the case of Railtrack and Carillion, the financial pressures were a result of bad management and, therefore, the government's refusal to intervene and/or provide assistance may be justified to avoid moral hazard issues in the future.

However, the case with National Express however is unique. The National Express group established its special purpose vehicle which operated the East Coast Franchise in a way which ultimately capped investor losses as £71 million. However, had this not been the case, and investors and creditors were fully exposed, it is likely that government would have provided assistance, as **the losses to society would have been significantly greater**.

3.4 Conclusion

The above case studies indicate the negative impact expected, but unfulfilled, governmental support can have on investors' risk perceptions, to the detriment of taxpayers and/or consumers.

Therefore, consistent with HAL's position, we would expect that the CAA's failure to act now will be perceived as failure to act in accordance with the conditions in HAL's license, and affect investors' risk perceptions of its business in the long term.

4. Annex A: RoCE for individual companies

Table 2: RoCE for companies in the water sector (financial year ending March 2006 to March 2020)

Water Company	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Yorkshire	5.1%	4.4%	6.0%	4.9%	4.5%	5.6%	5.1%	4.9%	4.3%	5.1%	15.4%	5.8%	4.6%	3.6%	3.5%
Anglian	5.3%	6.1%	5.3%	6.0%	5.5%	5.4%	5.3%	4.2%	4.7%	4.6%	0.0%	1.9%	2.4%	1.6%	2.6%
Bristol	6.4%	5.7%	5.5%	6.9%	5.2%	4.1%	4.5%	4.9%	3.9%	5.4%	2.4%	0.1%	2.1%	2.2%	1.1%
Dwr Cymru	5.6%	5.2%	5.1%	4.7%	5.8%	5.6%	5.6%	5.2%	5.0%	5.0%	5.4%	3.3%	2.8%	2.7%	2.2%
Northumbrian	5.8%	5.8%	5.2%	5.0%	4.6%	5.2%	5.7%	5.2%	5.3%	7.0%	5.6%	4.8%	4.1%	4.1%	6.1%
Portsmouth	3.4%	5.9%	3.4%	4.1%	4.3%	4.4%	4.3%	4.2%	4.1%	4.2%	2.8%	0.6%	0.5%	0.4%	0.7%
Sutton & East Surrey	6.5%	6.5%	5.5%	6.0%	3.7%	6.1%	6.3%	5.7%	5.8%	6.0%	4.9%	4.5%	3.9%	3.7%	4.1%
Severn Trent	5.8%	5.9%	4.4%	5.7%	6.9%	6.1%	5.8%	6.7%	6.4%	5.6%	4.9%	5.5%	4.8%	5.0%	4.9%
Southern	6.1%	6.5%	4.9%	6.7%	5.0%	1.8%	3.2%	4.4%	4.3%	4.7%	4.1%	2.9%	2.5%	-0.6%	1.0%
Thames	5.5%	4.4%	5.2%	6.8%	7.3%	6.1%	6.3%	4.3%	4.9%	4.3%	5.8%	2.8%	1.6%	1.0%	1.5%
Wessex	6.3%	6.5%	6.8%	7.3%	7.4%	6.4%	6.6%	6.0%	6.5%	6.4%	6.3%	5.0%	6.0%	5.1%	4.5%
United Utilities	6.5%	5.8%	6.0%	5.8%	8.1%	5.2%	5.0%	4.8%	6.3%	5.1%	4.0%	4.5%	4.2%	4.2%	3.9%
Affinity	7.6%	5.3%	5.8%	4.8%	6.1%	2.1%	5.9%	5.5%	5.8%	6.5%	4.8%	2.8%	2.1%	0.4%	-0.2%
South West	5.4%	5.4%	5.7%	5.8%	6.2%	5.6%	5.5%	5.1%	5.5%	5.2%	4.1%	4.0%	4.4%	3.9%	4.0%
South Staffordshire	8.7%	8.1%	7.6%	6.5%	6.9%	6.6%	6.2%	6.3%	6.1%	6.4%	6.1%	6.0%	4.6%	3.3%	4.4%
South East	7.1%	5.2%	4.9%	5.2%	6.1%	6.1%	6.2%	6.3%	6.4%	5.4%	5.5%	4.4%	2.2%	3.2%	3.0%

Source: Economic Insight analysis of publicly available data.

Table 3: RoCE for companies in energy distribution (financial year ending March 2006 to March 2020)

DNO	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ENWL	6.2%	6.9%	6.1%	6.4%	5.9%	6.7%	7.1%	7.1%	8.2%	8.5%	5.7%	6.8%	4.9%	6.1%	6.6%
NPG	6.4%	6.4%	6.5%	5.8%	6.2%	6.7%	7.0%	6.8%	7.9%	8.1%	5.9%	5.9%	4.9%	4.8%	4.5%
SSE	13.0%	14.8%	11.4%	-0.7%	15.1%	15.9%	2.7%	4.9%	4.8%	5.6%	4.5%	10.5%	9.0%	9.5%	5.7%
SPEN	24.3%	19.1%	17.0%	9.9%	8.9%	10.0%	8.0%	7.6%	5.5%	7.0%	6.5%	6.3%	5.6%	6.1%	4.6%
UKPN	11.2%	12.0%	11.6%	11.6%	8.6%	8.4%	9.1%	11.5%	9.3%	10.5%	10.5%	6.7%	6.3%	5.3%	5.8%
WPD	12.7%	12.9%	11.3%	10.9%	9.5%	9.6%	7.1%	10.5%	7.2%	9.0%	7.6%	9.0%	7.6%	7.1%	6.7%

Source: Economic Insight analysis of publicly available data.

5. Annex B: Methodology for calculation of RoCE

This annex sets out our methodology for the calculation of RoCE, in the water and energy distribution sectors, in turn.

5.1 Methodology for calculation of RoCE in the water sector

The ROCE in the water sector is calculated as the 'current cost operating profit net of the current tax' (which we refer to as the numerator) over the 'average RCV' (which we refer to as the denominator).[42]

RoCE = (Current Cost Operating Profit – Current Tax) / Average Regulated Capital Value (RCV)

5.1.1 Data sources

The table below lists the sources used for calculating RoCE for each time period.

Table 1: Data sources for RoCE calculations

	PR04	PR09	PR14
Current Costs Operating Profit	Company June returns (table C).[43]	Company regulatory accounts.[44]	Company performance reports.[45,46]
Current tax	Company June returns.	Company regulatory accounts.	Company performance reports.
Average RCV	Company June returns. (calculated as follows, Average RCV = ["Current cost operating profit" + "current tax"] / "Post tax return on capital"	Ofwat Website.[47]	Ofwat Website.[48]

Where data was not available from these sources, we used Ofwat's own RoCE figures. In particular, we used Ofwat's RoCE figures in the following instances:

- for Anglian between 2011 to 2015 (year-end);
- for Southern in 2011 (year-end);
- for Thames in 2012 (year-end);
- for Cambridge between 2011 to 2013 (year-end);
- for South East Water between 2011 and 2015 (year-end);
- for Dee Valley Water between 2013 and 2015 (year-end);
- for Severn Trent Water in 2011 (year-end); and

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[42] *This is consistent with Ofwat's own definition of the post-tax return on capital compared against the real vanilla WACC in the PR09 period, please see: https://www.ofwat.gov.uk/regulated-companies/company-obligations/performance/companies-performance-2011-12/financial-2012-13/.*

[43] *Available here for 2006 to 2010: https://www.ofwat.gov.uk/regulated-companies/company-obligations/performance/*

[44] *Available on each company's website, or on the Companies House website.*

[45] *Available on each company's website.*

[46] *Note: For the PR14 period current cost operating profit is reported only for the wholesale segment of the company (in Table 4G), therefore for these years the retail portion has been added using the relevant figures in Table 2A.*

[47] *Available here: https://www.ofwat.gov.uk/publications/regulatory-capital-value-updates/*

[48] *Available here: https://www.ofwat.gov.uk/publications/regulatory-capital-value-updates/*

– for South West Water between 2014 and 2015 (year-end).

However, Anglian Water has been excluded from the analysis in 2016 since: (i) its regulatory accounts / performance report were not available for the financial year ending 2016; and (ii) there is no Ofwat figure for comparison.

5.1.2 Mergers and changes in company structures

In order to account for mergers, we present our analysis at the level of the companies of relevance for PR19. Specifically, we have combined the relevant companies across all three of the price controls by summing the numerator and denominator before calculating the RoCE.

It has not been possible to disaggregate the relevant publicly available data to reflect the structural changes which occurred between Hafren Dyfrdwy and Severn Trent. As such, Hafren Dyfrdwy and Severn Trent have also been combined and are presented together throughout.

5.1.3 Checks against Ofwat's own figures

We have also undertaken checks against Ofwat's reported figures to ensure these figures are consistent with our calculations of RoCE for the other time periods. The following cross checks have been used:

- **PR04**: The RCV (which was calculated using the RoCE) has been cross checked against the average RCVs presented on Ofwat's website. Furthermore, using the current cost profit and calculated RCV we were able to cross check our values against Ofwat's own calculation of pre-tax RoCE.
- **PR09**: The RoCE figures have been compared directly to those published on Ofwat's website.
- **PR14**: There are no available relevant comparisons against Ofwat's figures in this period.

5.2 Methodology for calculation of RoCE in the energy distribution sector

The ROCE in the energy sector is calculated as the 'operating profit net of the current tax' (which we refer to as the numerator) over the 'total assets net of current liabilities' (which we refer to as the denominator).

RoCE = (Operating Profit – Current Tax) / (Total Assets – Current Liabilities)

5.2.1 Data sources

The table overleaf lists the sources used for calculating the RoCE for each time period.

Table 2: Data sources for Energy RoCE calculations

	Source
Operating profit	Report Section: Income statement Regulatory accounts [49]/ Annual reports [50]
Current tax	Report Section: Tax breakdown Regulatory accounts / Annual reports
Capital employed	(Total Assets – Current Liabilities) Report Section: Consolidated Balance Sheet Regulatory accounts / Annual reports

5.2.2 Mergers and changes in company structures

Once again, in order to account for mergers, we present our analysis at the level of the companies of relevance in the present day. Specifically, we have combined the relevant companies across all of the relevant periods by summing the numerator and denominator before calculating the RoCE.

[49] *Regulatory accounts for earlier periods are sourced here: http://dcmf.co.uk/dno-regulatory-accounts.html*
[50] *Generally available on each company's website or on the Companies House website.*

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