NEED FOR GEARING RECOVERY

A report for Heathrow Airport Limited

Legally privileged and commercially confidential | 4 March 2021

Economic Insight

As a result of the significant impact of COVID-19 on its business, Heathrow Airport Limited (HAL) has requested the Civil Aviation Authority (CAA) to re-open its price control to make an upward adjustment to its regulatory asset base (RAB), in line with the provisions in its license. However, the CAA is currently not minded to grant this request, since it does not consider that HAL has robustly demonstrated that this solution is proportionate and targeted, against other possible alternatives. Amongst other concerns, the CAA has questioned HAL's assumption that its gearing needs to be restored to efficient levels within the next price control period. In the following, we show that: (a) companies typically become highly geared during periods of crises, but this is not sustainable in the long term (and we observe rapid reductions in gearing post crises); and (b) notwithstanding the efficient level of gearing, which may differ between companies, there is a trade-off between high levels of gearing and low levels of investment around periods of crises, which could be detrimental for consumers (whereas, in more 'normal' times, this trade-off does not appear to arise, because unlike in periods of crises, borrowing is not being used to address revenue shortfalls, for example).

1. Context

As a result of the significant impact of COVID-19 on its business, wherein it is expected to lose about £3.4 billion in revenues over 2020 and 2021, Heathrow Airport Limited (HAL) has requested the Civil Aviation Authority (CAA) to re-open its price control to make an upward adjustment to its regulatory asset base (RAB).

As part of this, HAL has shown that it has been forced to raise significant additional debt in order to manage the immediate impact of the crisis, which has meant that it has gearing levels that are well above the level it would normally consider to be efficient. Specifically, even if it had started at the notional 60% gearing level at the end of 2019, HAL expects its gearing for the end of 2021 to be as high as 74%. As a result, HAL considers that this adjustment to the RAB is necessary to restore its gearing to efficient levels, which will otherwise constrain investment in the near term to the detriment of customers.

In its preliminary assessment of HAL's request in its consultation, while it acknowledges the impact of COVID-19 on HAL's revenues, the CAA has 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".[1]

2. Purpose of this report

Following Heathrow's response to the CAA's consultation, before the CAA makes its final decision, it has been engaging with HAL through supplemental questions. As part of this, in its latest round of questions, the CAA has requested HAL provide evidence 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).

- (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 alternative options, instead of over a longer period.

HAL has engaged us to provide our independent assessment of each of the above issues, to support its response to the CAA. In the following, we present evidence on the second of these issues. The first of these issues is addressed in a separate report.[2]

3. Evidence on the need to restore gearing to the pre-crisis level.

Based on its consultation on the issue, we understand that while the CAA recognises that the global pandemic has created exceptional circumstances for HAL, it has questioned: (a) whether this has actually raised financeability issues; and (b) whether these issues have been exacerbated by HAL's decision to maintain gearing above the notional level.[3]

However, it is our assessment that, notwithstanding the *initial* level of gearing, increases in gearing above efficient levels in times of financial crises would likely constrain investment, to the detriment of consumers in the long term. Specifically:

- It is widely understood that, while the notional gearing serves as an incentive to manage financing costs, the regulated company is best placed to manage its financing risk; and therefore, determine the efficient level of gearing.

- However, notwithstanding the above, the COVID-19 crisis has resulted in an unexpected fall in revenues, which has necessitated HAL to raise more debt, resulting in higher levels of gearing, compared to pre-crisis levels.

- In this case, since the company's gearing has increased due to external factors (as opposed to being internally managed to fund debt-financed investments), this must logically constrain its debt capacity to fund any further investments.

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1 *'Economic regulation of Heathrow Airport Limited: Response to its request for a covid-19 related RAB adjustment (CAP 1966).' CAA (October 2020).*
2 *Please see: HAL-Draft-RAB adjustment-Final-STC-14-01-21.pdf.*
3 *'Economic regulation of Heathrow Airport Limited: Response to its request for a covid-19 related RAB adjustment (CAP 1966).' CAA (October 2020) paragraph 15.*

- Therefore, in the years following the crisis, the longer the company takes to restore its gearing ratio to pre-crisis levels, the longer the excess leverage will constrain its ability to invest (also likely leading to a suboptimal profile of investment over time).

The remainder of this short report further expands on the above, as follows:

- In section 3.1, we examine the relevant academic literature regarding the link between a companies' capital structure and its investment. This points towards a clear trade-off between gearing and investment, and therefore, the need to maintain efficient levels of gearing to ensure long-term investment.

- In section 3.2 we present an analysis of the gearing for regulated companies. This indicates that, even though the efficient level of gearing may vary between companies, their activities after the 2008-09 financial crisis suggests there is a "rush" to restore gearing levels to pre-crisis levels.

- Finally, in section 3.3 contains an analysis of FTSE 100 companies, which further suggests that, in and around periods of crises, there is a marked trade-off between gearing and investment.

3.1 Academic Literature

Our review of academic literature shows that leverage has a significant negative effect on investment, suggesting that capital structure plays an important role in the firm's investment policies (and that excessive leverage can have detrimental effects on firm's investment levels).

The theory is that a firm with significantly more debt than equity may be considered to be 'highly levered', and the issuance of debt commits a firm to pay cash as interest and the principal amount. Highly levered companies are therefore forced to service such commitments, and this can have a constraining effect on investment (or at least, leaves less room for manoeuvre in times of crisis).[4] For example, Myers (1977) explains how highly levered firms are less likely to be able to exploit valuable growth opportunities, as compared to firms with low leverage levels.[5]

Further, Myers, Stulz (1990) describe the channels through which debt has a negative effect on investment behaviour of firms. As increased debt raise bankruptcy risk, corporate managers become concerned about the possibility of shareholders holding them accountable, and thus tend to curb borrowing through a reduction in investment.[6]

Empirical academic studies confirm the above theory holds in practice. For example, Aivazian, Ge and Qiu (2003) used a panel data methodology to examine the relationship between leverage and investment, controlling for heterogeneity among individual firms They found that leverage has a significantly negative impact on

[4] *Odit, M.P and Chittoo, H.B. 2008. 'Does Financial Leverage Influence Investment Decisions? The Case of Mauritian Firms' Journal of Business Case Studies 9(4), p49-60.*

[5] *Myers, S.C. 1997. "Determinants of corporate borrowing", Journal of Financial Economics, 5, p.575-592.*

[6] *Stulz, R.M. 1990. "Managerial Discretion and Optimal Financing Policies." Journal of Financial Economics 26: 3-27*

investment for Canadian firms and that it has a stronger negative impact on firms with low growth opportunities.[7]

Similarly, Odit and Chittoo (2008) found that an increase in the leverage ratio leads to a significant decrease in net investment. This implies that, as leverage increases, firms in their sample struggle to increase investment. In fact, net investment decreased as firms tended to become more dependent on debt as a source of long-term financing.[8] [9]

Likewise, Aygun *et al.* (2014); Dang (2011); Franck, Huyghebaert and Hogeschool (2008); and McConnell and Servaes (1995) found leverage to be negatively related to investment and the relationship to be more significant in firms with high-growth opportunities.[10] However, Aivazian et al. (2005); Fernandez (2011); and Lang, Ofek and Stulz (1996) found the negative relationship between leverage and investment to be stronger in firms with low growth opportunities.[11]

3.2 Analysis of gearing for regulated companies

Our analysis of the level of gearing for regulated firms suggests that:

- (i) The regulators' view of the notional level of gearing varies, depending on the network industry (consistent with the optimal level of gearing varying between companies / industries).

- (ii) However, notwithstanding the starting point, evidence suggests that while the level of gearing for publicly listed regulated firms increased sharply during the 2009/09 financial crisis, gearing was restored to pre-crisis levels by 2015 for the majority of them.

3.2.1 Regulators' view of notional level of gearing

In the UK, regulatory precedent suggests that there is no standard view of the notional level of gearing for regulated companies,[12] which is consistent with the view that the optimal level may vary between companies.

For instance, Table 1 shows that the assumed notional gearing levels set by Ofwat, Ofcom and Ofgem vary, depending on the network industry.

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7 *Aivazian, V.a., Ge, Y. and Qiu, J. 2003. 'The impact of leverage on firm investment: Canadian evidence'. Journal of Corporate Finance 11, p277-291.*

8 *Odit, M.P and Chittoo, H.B. 2008. 'Does Financial Leverage Influence Investment Decisions? The Case of Mauritian Firms' Journal of Business Case Studies 9(4), p49-60.*

9 *The sample used comprises of 27 Mauritian firms that are quoted on the stock exchange of Mauritius for the year 1990-2004.*

10 *Aygun, M., Suleyman, I. & Sayim, M. 2014. 'The Impact of debt structures on firm investments: empirical evidence from Turkey', Archives of Business Research 2(2) p24-30; Dang, V.A. 2011. 'Leverage, debt maturity and firm investment: an empirical analysis', Journal of Business Finance & Accounting, 38(1-2), p225-258;3333; Franck, T., Huyghebaert, N. & Hogeschool, L. 2008. 'The impact of leverage on investment expenditures: New insights from analysing private enterprises, viewed on 19 January 2021, https://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2008-Athens/papers/FRANCK.pdf; and McConnell, J.J. & Servaes, H. 1995. 'Equity ownership and the two faces of debt', Journal of Financial Economics 39(1), p131-157.*

11 *Aivazian, V.a., Ge, Y. and Qiu, J. 2003. 'The impact of leverage on firm investment: Canadian evidence'. Journal of Corporate Finance 11, p277-291.; Fernandez, V. 2001. 'The driving factors of firm investment: Latin American evidence', Emerging markets finance and trade 47(5), p4-26.; and Lang, L., Ofek, E. & Stulz, R. 1996. 'Leverage, investment and firm growth', Journal of Financial Economics, 40(1), p3-29.*

12 *Notional gearing refers to a regulator's view of the efficient level of debt used to fund assets. Please see: Review of cost of capital ranges for Ofgem's RIIO-2 for onshore networks, Ofgem (February 2018), p60.*

Table 1: Regulatory determinations of notional gearing

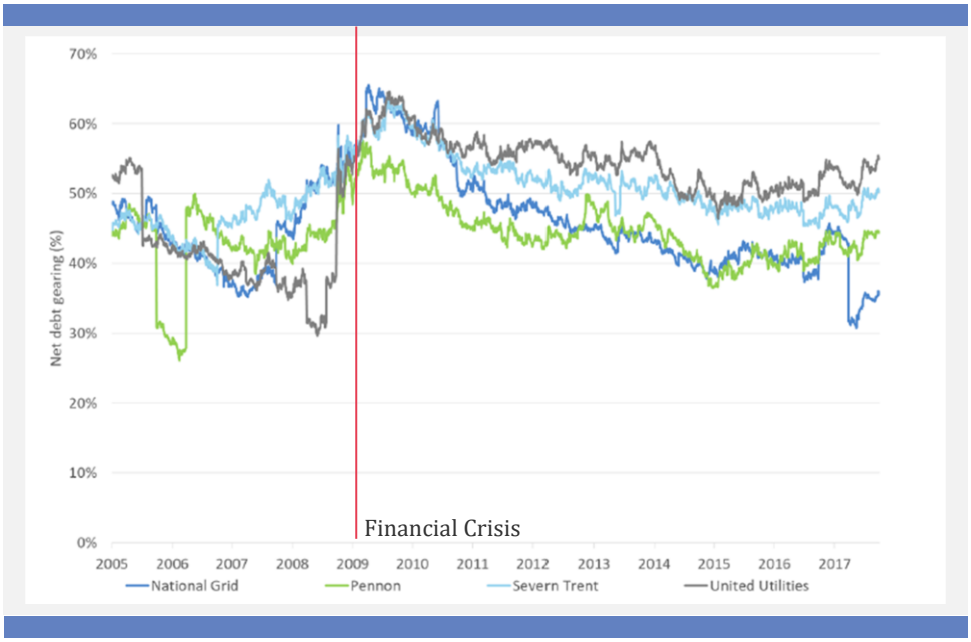
Regulator	Notional gearing
Ofwat (PR19)	60%
Ofgem: Gas distribution networks (GDNs)	65%
Ofgem: Distribution network operators (DNOs)	65%
Ofgem: Transmission owners and system operators	55-62.5%
Ofcom	25-50%
CAA: NATS	60%

Source: Ofwat PR19 Final Determinations; Review of cost of capital ranges for Ofgem's RIIO-2 for onshore networks, Ofgem (February 2018), p63.; Joint Regulators Group (JRG) Cost of Capital and Financeability (March 2013), p23-24; and CAA NATS Final Decision.

3.2.2 Ofgem's analysis of gearing for publicly listed regulated companies

As part of its thinking for RIIO-2, for the purpose of its own assessment of the notional level of gearing for onshore network companies, Ofgem considered the gearing for four publicly listed network companies: National Grid, United Utilities, Severn Trent and Pennon Group. Ofgem's analysis is presented in Figure 1.

Figure 1: Ofgem's assessment of gearing for publicly listed regulated companies



Notes: Years are assumed to represent financial years (which typically follow tax years from April to March).
Source: Review of cost of capital ranges for Ofgem's RIIO-2 for onshore networks, Ofgem (February 2018), p63.

Figure 1 shows that while companies tend to become highly geared during periods of crises, these are unsustainable in the long term, as indicated by the rapid decline in these gearing levels soon after. Specifically:

- Before the financial crisis, the gearing level for each of the companies varied, but was broadly under 50%.
- As a result of the financial crisis, in financial year ending 2009, the gearing levels increased sharply for all four companies by about 20-30 percentage points.
- However, gearing levels started to fall again towards pre-crisis levels, as soon as in 2010, although the speed of recovery varied between the four companies.

In order to assess the speed of gearing recovery, in Table 2, we show the percentage of the initial increase in gearing from 2008 to 2009 that was restored in each year starting financial year 2010. Specifically:

- A positive value indicates that gearing in the year is moving back towards the pre-crisis levels in 2008 (i.e., it is decreasing) and a negative value indicates that gearing in the year is moving away from the pre-crisis levels in 2008 (i.e., it is increasing).
- A value of 100% would indicate that gearing has reached the pre-crisis level in 2008. Therefore, a value under 100% indicates that gearing is still higher than in pre-crisis levels, while a value over 100% indicates that gearing is lower than in pre-crisis levels.

Table 2: Percentage of initial increase in gearing in 2009 that was restored in each year after the financial crisis (2010 to 2015)

	2010	2011	2012	2013	2014	2015
National Grid	-9%	47%	76%	114%	133%	171%
Pennon Group	23%	61%	76%	38%	46%	119%
Severn Trent	-37%	50%	50%	62%	62%	112%
United Utilities	-36%	-27%	-22%	-13%	-25%	19%

Notes: Gearing levels in each year based on our reading of the chart in Figure 1.
Source: Economic Insight analysis of the chart presented by Ofgem in Review of cost of capital ranges for Ofgem's RIIO-2 for onshore networks, Ofgem (February 2018), p63.

Table 2 suggests that 3 out of the 4 regulated companies assessed by Ofgem had restored their gearing ratio to the pre-crisis level by 2015. Specifically:

- While National Grid's gearing increased slightly further in 2010, as it still showed the after-effects of the financial crisis, it recovered as much as 48% of its pre-

crisis gearing in 2008 by 2011. By 2013, National Grid had reduced its gearing to below pre-crisis levels.

- Pennon Group slowly reduced its gearing between 2010 and 2015 and had reduced its gearing to below its pre-crisis level by 2015.

- Similarly, after a further increase in gearing in 2010, Severn Trent also reduced its gearing below pre-crisis level of gearing in 2015.

- However, United Utilities kept increasing its gearing further till 2014, and had only begun to recover it in 2015. Nevertheless, this appears to be driven by the higher than average growth in its regulatory capital value (RCV) over this period (3.2% for United Utilities compared to the industry average of 1.35%) which may need to have been funded by raising debt and, therefore, increasing gearing.

This indicates that, while both the original level of gearing and the speed of recovery varied between companies, most companies showed a rush to return back to the levels of gearing pre-crisis.

3.3 Analysis of FTSE 100 companies

In the following, we present evidence from an analysis of the gearing and investment levels of FTSE 100 companies. This shows that, while gearing and investment can increase at the same time during normal economic times (when companies typically use debt to fund investment), an external squeeze on revenues around periods of crisis constrains investment (as a result of firms using up their overall debt capacity to cover revenue shortfalls).

We have undertaken an analysis using the FAME database, which includes company accounts published by Companies House, for the period between 2002 and the latest financial year. We note that we have focussed our analysis on the 17 years between 2003 and 2019 since: (a) the investment variable we have used is the annual change in fixed assets (and therefore 2003 is the first year illustrated); and (b) 2019 is the latest year for which published accounting data is available consistently.

From this, we used the following data on the companies on the FTSE 100 in 2009:

- (a) 'change in fixed assets' as the indicator of the levels of investment since this indicates levels of long-term investment; and
- (b) 'gearing ratio' as the measure of financial leverage calculated the ratio of long-term debt[13] to assets (long-term debt and net assets).[14]

Using these, we study the effect of the financial crisis in 2008 to ascertain the relationship between gearing ratios and the level of investment. Our sample consists of the companies on the FTSE 100 in 2009, because out of the current FTSE 100 constituent companies, 77 companies were not on the FTSE 100 in 2009, just after the financial crisis.

We acknowledge that the difference in each company's accounting may impact their reported 'fixed assets', 'long-term debt' and 'net assets'. These differences can include: (a) their financial years which may affect their period of reporting; (b) their gearing

[13] *Long-term debt is used because the risks of long-term liabilities are different than for short-term debt and payables.*

[14] *Net assets = Assets – Liabilities*

ratios, which may differ based on their definition of long-term debt and net assets (equity); and (c) their reported fixed assets, which may differ based on accounting practices in the valuation of assets. However, we believe that our analysis is robust, since it aggregates 100 companies, which somewhat mutes the noise in the data from individual companies and any accounting differences between companies are likely to be stable across time and, as a result, the implications based on the trends in gearing and investment remain valid.

3.3.1 Analysis for all FTSE 100 companies

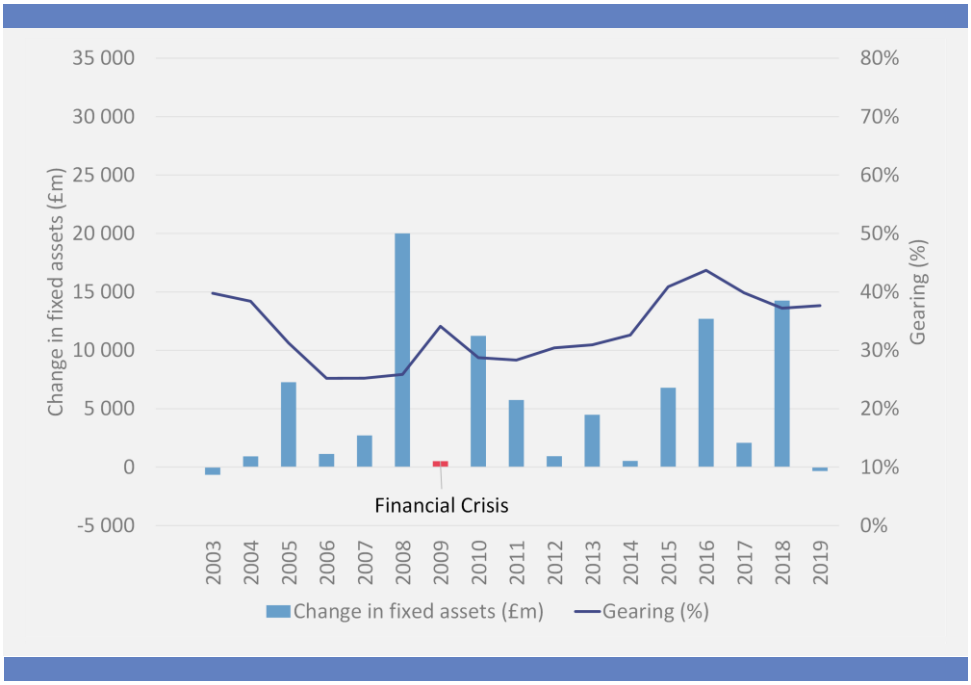
Our analysis of FTSE 100 companies indicates that the relationship between gearing and investment is complex. Specifically, it shows that:

- In normal economic times, most recently between 2014 and 2019, companies often use debt to fund investment, such that gearing and investment increase and decrease at the same time.

- However, in times of crisis, most recently in financial year ending 2009, an increase in gearing is associated with a decrease in investment. This is because, given the fall in revenues, it becomes harder to borrow, which then constrains investment.

Figure 2 shows the (turnover) weighted average change in fixed assets and gearing ratio for all the companies in the FTSE 100 between 2003 and 2019.

Figure 2: Weighted average change in fixed assets and gearing ratios for the FTSE 100 companies (2003 to 2019, weighted by turnover)



Notes: (i) This includes companies on the FTSE 100 in 2009; (ii) for the year 2017, GlaxoSmithKline PLC has been excluded from the analysis since it reported a negative net asset value in this year; (iii) in 2016 Shell has been excluded from the analysis as their acquisition of BG makes them a significant outlier in terms of change in fixed assets and this has the effect of distorted the data due to companies being weighted by turnover.
Source: Economic Insight analysis of companies' accounts available on FAME.

This shows that:

- In the few years leading up to the financial crisis, although average gearing fluctuated, the relationship between gearing and investment was not constant, since high levels of gearing were sometimes linked to high levels of gearing and vice-versa.

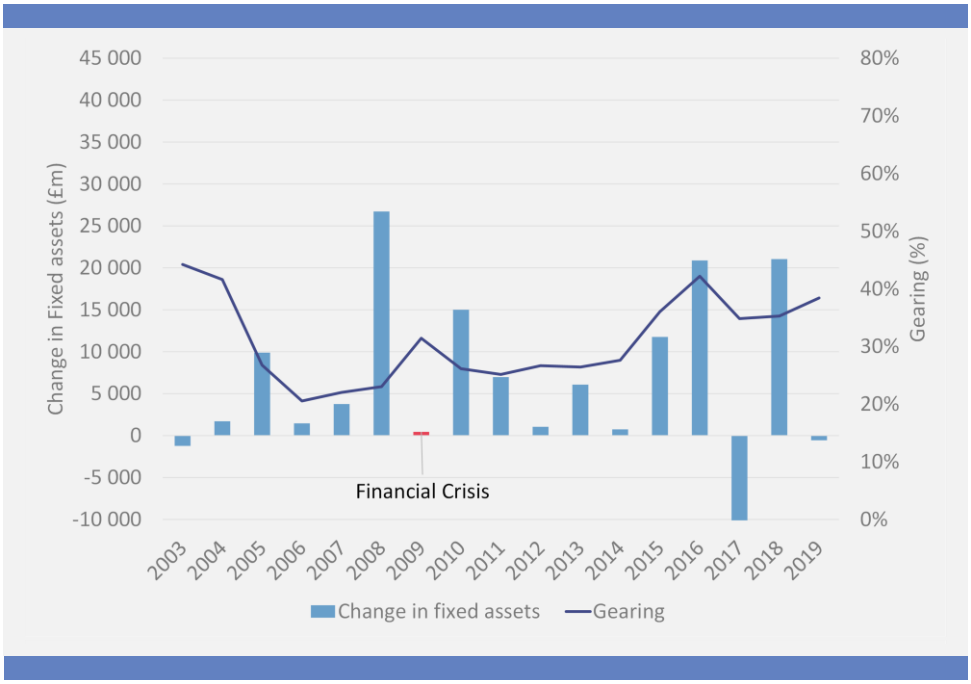
- As a result of the financial crisis, in 2009, gearing increased to 34%. This is an increase of approximately 32%, while at the same time investment decreased by as much as 97%. **This indicates gearing's constraints on investment during periods of crisis.**

- In 2010, the gearing ratio was substantially lowered to 28.75%, illustrating the importance that companies place on restoring their gearing ratios to lower levels after times of financial crises.

- However, since 2013, the relationship between gearing and investment was restored to pre-crisis times, wherein high levels of gearing were sometimes linked to high levels of investment and vice-versa.

This picture is consistent when looking specifically at the companies with generally high levels of investment which may be more comparable to HAL and its investment needs in the near future. Figure 3 shows the (turnover) weighted average change in fixed assets and gearing ratio for the top 20 companies with the highest fixed asset values in the FTSE 100 between 2003 and 2019.

Figure 3: Weighted average change in fixed assets and the gearing ratios for 20 companies with the highest fixed asset value (2019) of the FTSE 100 (2003 to 2019, weighted by turnover)



Notes: (i)This includes 20 companies with the highest value of fixed assets in 2019 from the FTSE 100. (ii) companies with negative net asset positions have been excluded.
Source: Economic Insight analysis of companies' accounts available on FAME.

Figure 3 shows that:

- Before the financial crisis, there was no obvious trade-off showing high levels of gearing and low levels of investment. However, during the financial crisis, the increase in gearing ratio was coupled with a fall in investment.

- In fact, the increase in gearing (from 23.05% in 2008 to 31.45% in 2009) for these companies was coupled with a significant reduction in investment (from £26,7 billion in 2008 to £463 million in 2009).

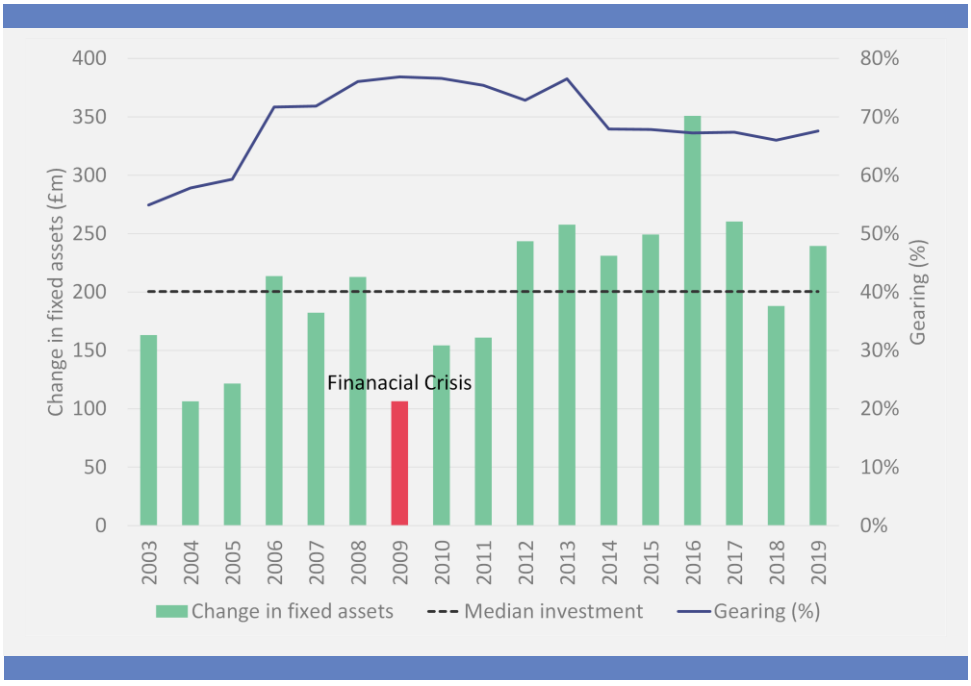
- This shows that **companies with high fixed asset values, such as HAL, are likely to have their investments impacted to a larger degree than the average company,** and therefore restoring gearing ratios to the notional level should be a priority post-crisis.

3.3.2 Analysis for individual companies

Further, we look specifically at individual companies to assess whether there is a relationship between the speed of recovery of gearing and investment.

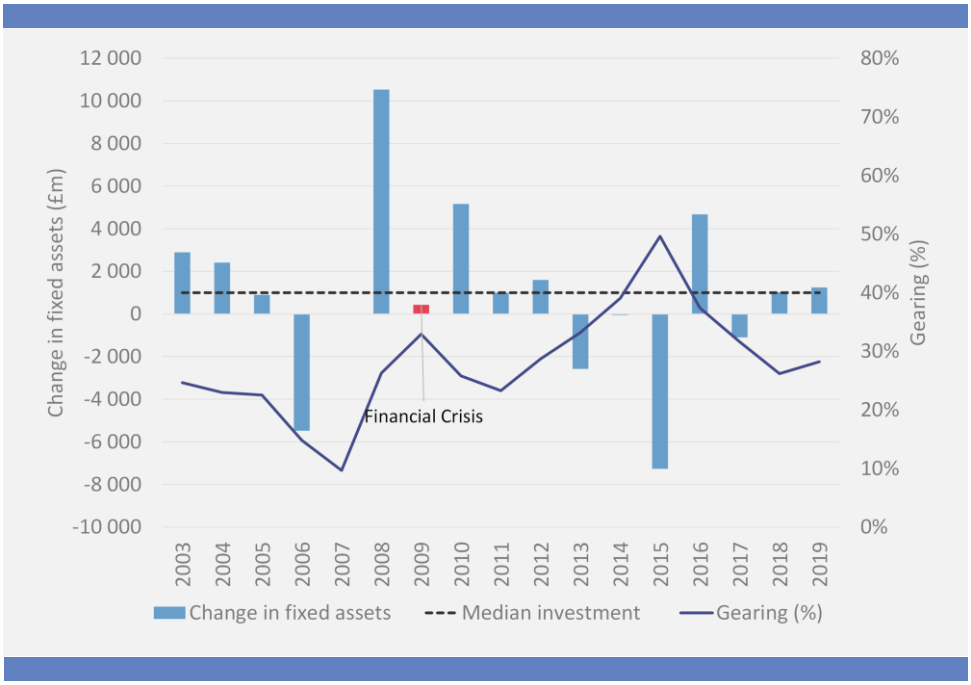
Figure 4 shows the change in fixed assets and gearing ratio for Pennon Group PLC, a utility infrastructure company that owns South West Water Limited and Viridor Limited (Waste Management company). This is a good comparator to HAL since both companies operate in a regulated market. Figure 5 shows the same for Anglo American PLC, a global mining company, which is a suitable comparator to HAL as both the companies fixed assets are within a similar range.

Figure 4: Change in fixed assets and gearing ratio for Pennon Group PLC (2003 to 2019)



Source: Economic Insight analysis of companies' accounts available on FAME.

Figure 5: Change in fixed assets and gearing ratio for Anglo American PLC (2003 to 2019)



Source: Economic Insight analysis of companies' accounts available on FAME.

Figure 4 and Figure 5 illustrate that:

- When gearing is immediately restored to pre-crisis levels, this is accompanied by a strong recovery in investment, shown by the change in fixed assets in 2010 being higher than the median level. This is the case for Anglo American as its pre-crisis gearing ratio was 26.3% (2008) and immediately after the onset of the financial crisis gearing was brought down to 25.8% (2010).

- When gearing is sustained at higher levels after a financial crisis this is seen to be correlated with a delay in investment recovery as seen by Pennon Group in Figure 4. Pennon's gearing ratio was restored to the pre-crisis level in 2011 (one year later than Anglo American). This is shown to be accompanied by a longer lag in the recovery of investment to the median level as this recovery only occurs in 2012, compared to Anglo American who restored their investment to above the median level in 2010.

3.4 Conclusion

In conclusion, the evidence suggests that:

- (i) Notwithstanding the optimal level of gearing, which may vary between companies, companies typically become highly geared during periods of crises but this is not sustainable in the long term as we observe in rapid reductions in gearing post-crises.

- (ii) There is no inherent trade-off between gearing and investment. In fact, in normal economic times, companies often use debt to fund investment, such that gearing and investment increase and decrease at the same time. However, in

times of crisis, the squeeze on revenues limits the ability to borrow, and therefore constrains investment.

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