Updated Dividend Discount Model analysis for PR19

A note prepared for Ofwat

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Contents

Introduction

1. In this note, we provide an update of the Dividend Discount Model (DDM) analysis provided in Section 4 of our December 2017 cost of equity paper for PR19[1].

2. This analysis is supported by two annexes:

   – The first provides additional information on the assumptions used in our DDM model and presentation of how these assumptions have evolved in recent years; and
   – The second annex provides an analysis of the recent trends in share buybacks by companies in the FTSE All-Share index and the implications of these trends for DDM modelling and, in turn, estimates of the cost of equity.

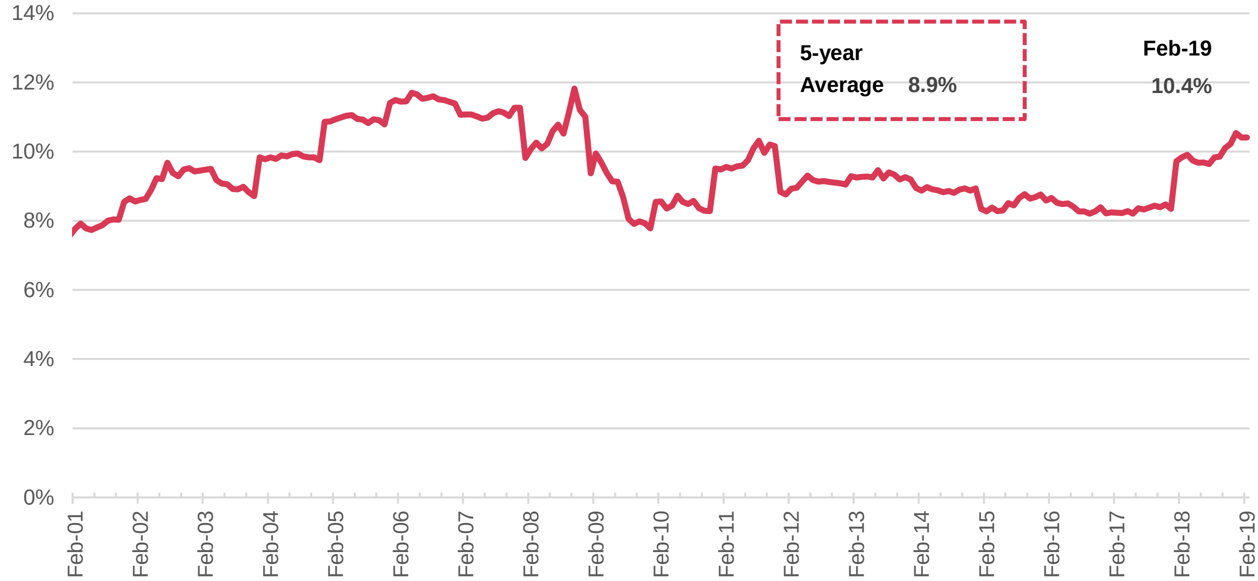
[1] PwC (2017), 'Updated analysis on cost of equity for PR19'

Updated DDM analysis for PR19

3. In our 2017 report we set out the methodology we use in our Dividend Discount Model. This note provides an update, using more recent data.

4. The outputs from our monthly Dividend Discount Model analysis are shown in Figure 1 below. Our approach uses FTSE All-Share dividend and share buyback yields. The implied total market return (TMR) at the end of February 2019 is 10.4% (in nominal terms), while the five-year monthly average of our DDM outputs is 8.9%. The rise in DDM output since January of 2018 was primarily driven by an increase in the share buyback yield, which has increased again in 2019.

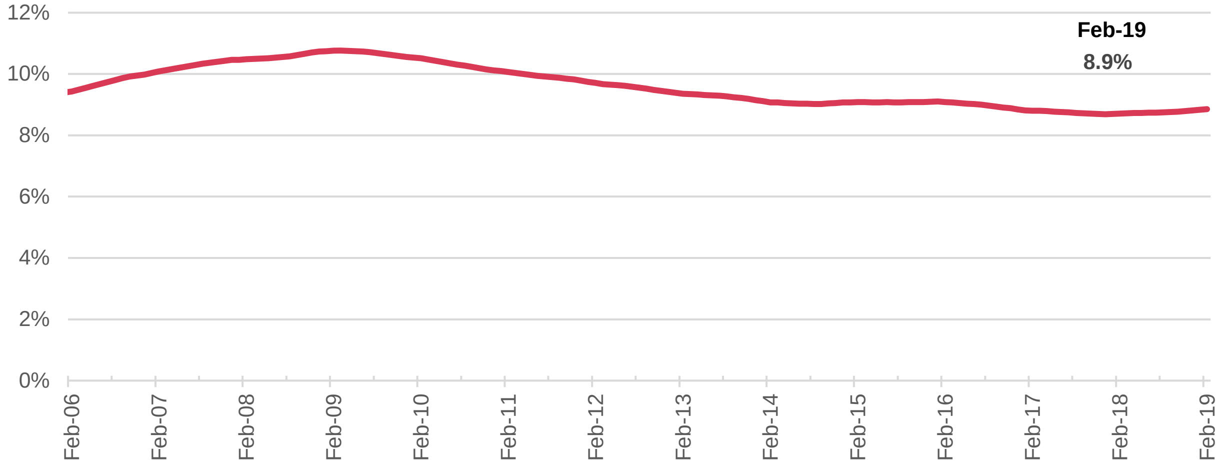
Figure 1: Monthly DDM outputs, 2001 to 2019



Source: PwC analysis, Refinitiv, Consensus Economics, Bank of England, Capital IQ

5. We also calculate the five-year trailing average TMR in Figure 2. This approach smooths out the volatility across months. We observe that the recent rise in monthly outputs has produced a slight increase in the five-year average; however, it has not significantly changed the five-year trailing average TMR value.

Figure 2: Five-year trailing average of monthly DDM outputs, 2006 to 2019



Source: PwC analysis, Refinitiv, Consensus Economics, Bank of England, Capital IQ

6. The table below presents the updated evidence of DDM outputs compared to our earlier analysis using the DDM model.

7. The February 2019 update of the PwC DDM model shows a 0.2 percentage points increase in TMR in the 5-year average compared to the estimates from our October 2017 update, from 8.7% to 8.9%. The rate at February 2019 has increased by 2 percentage points from 8.4% to 10.4%

8. We also provide a sensitivity check for our February 2019 update using FTSE 100 assumptions. Under this approach, our February 2019 estimate increases to 10.6%, while the 5-year average is marginally lower than the FTSE All-share figure at 8.6%. This is driven by a lower buyback yield in 2018 relative to the FTSE All-Share, but then a marginally higher buyback yield in the FTSE 100 in 2019.

9. Regardless of the model used for this analysis, there has been a relatively large rise in the monthly TMR value over the last 18 months due to higher share buybacks. However, when taking a five-year view, we find that this elevated buyback yield has a relatively small impact on five-year average TMR value.

Table 1: TMR returns based on PwC DDM model

	Dividend Discount Model – FTSE All-Share		
Measure	**Spot Return**	**Average since January 2014**	**5 year average**
Original Estimate Balance of Incentives (Dec-16)	8.3%	Not provided	8.8%
October 2017 update (as at 31/10/2017)	8.4%	8.6%	8.7%
October 2018 update	10.1%	8.9%	8.8%
Feb 2019 update (as at 28/02/2019)	10.4%	8.9%	8.9%
Feb 2019 DDM range	8.9% - 10.4%		
	Dividend Discount Model – FTSE 100		
October 2018 update	9.4%	8.5%	8.5%
Feb 2019 update (as at 28/02/2019)	10.6%	8.6%	8.6%

Source: PwC analysis, Capital IQ, Refinitiv, Consensus Economics, Bank of England

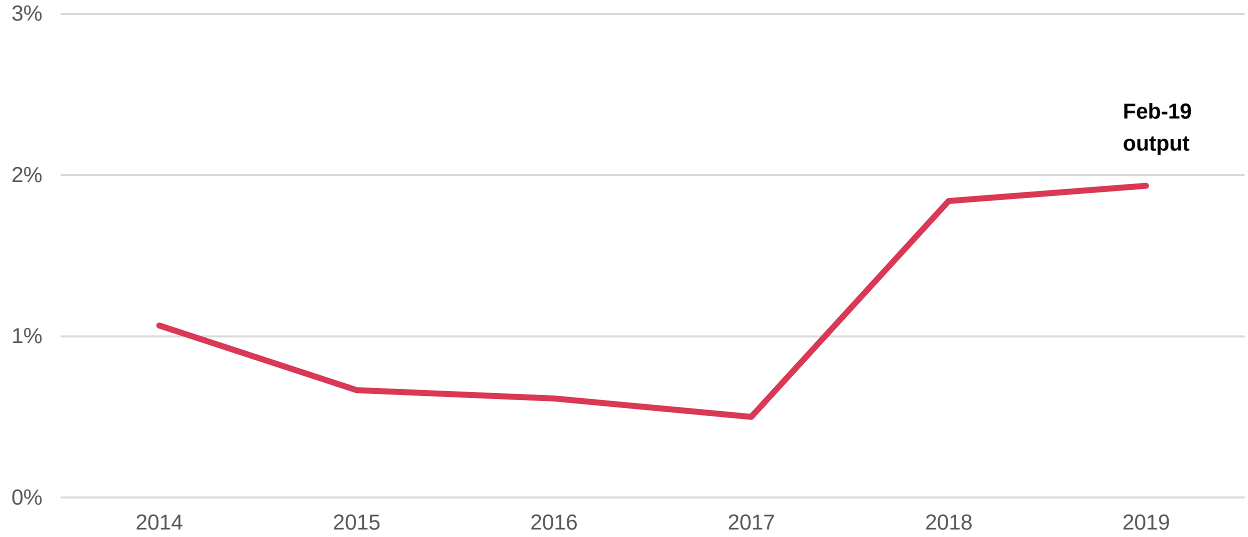
Annex A: DDM model assumptions

10. In this annex, we set out the underlying sources of data used to generate assumptions that are used in our DDM model.

11. Figure A1 shows our annual buyback yield assumptions. They are calculated on an annual basis using total repurchased common stock (for latest twelve months) divided by average market capitalisation for each firm in the year under consideration.

12. Figure A1 shows there has been a significant increase in buyback yields over the last two years as firms have increasingly returned value to investors through buybacks. Figure A1 relates to firms in the FTSE All-Share index.

Figure A1: Buyback yield assumptions, 2014 to 2019



Source: PwC analysis, Capital IQ

13. We also reviewed the top 5 companies in terms of total buybacks in the FTSE for 2016, 2017 and 2018. As shown in the tables below, share repurchases by the top 5 companies in the index have increased substantially from 2016 to 2018. This has evidently played a large role in driving up the buyback yield assumption used in our DDM model.

Table A1: Top 5 FTSE All-share companies by total share repurchases in 2016

Rank	Name	Repurchase of common stock (£m)
1	Melrose Industries	2,388.5
2	HSBC Holding	2,032.9
3	Carnival	1,874.1
4	Barclays PLC	1727.0
5	The Royal Bank of Scotland Group plc	1337.0

Source: PwC analysis, Capital IQ

Table A2: Top 5 FTSE All-share companies by total share repurchases in 2017

Rank	Name	Repurchase of common stock (£m)
1	Unilever	4,635.6
2	HSBC Holdings	2,273.0
3	Rio Tinto	1,541.1
4	Alliance Trust	1,008.5
5	Royal Bank of Scotland Group	779.0

Source: PwC analysis, Capital IQ

Table A3: Top 5 FTSE All-share companies by total share repurchases in 2018

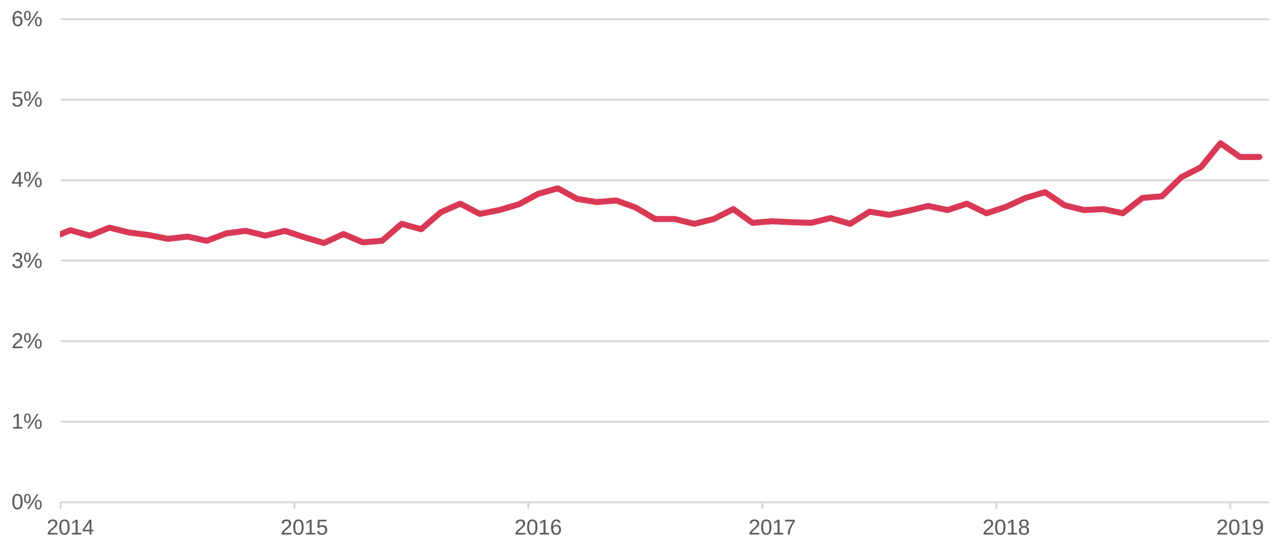
Rank	Name	Repurchase of common stock (£m)
1	Unilever	5,638.9
2	Rio Tinto	4,225.9
3	Barclays	4,068.0
4	Royal Dutch Shell	3,971.7
5	Royal Bank of Scotland Group	2,826.0

Source: PwC analysis, Capital IQ

14. Figure A2, below, shows the dividend yield for the FTSE All-Share. This is calculated using the sum of annual dividend payments divided by the sum of latest market capitalisation.

15. Figure A2 shows a rise in dividend yield from the second half of 2018 onwards. Yields are approximately one percentage point higher than when the previous TMR analysis was conducted for Ofwat in 2017. This is, in part, driven by weak equity valuations at the end of 2018, persisting into the beginning of 2019.

Figure A2: Dividend yield assumptions, FTSE All-share companies (2014 to 2019)

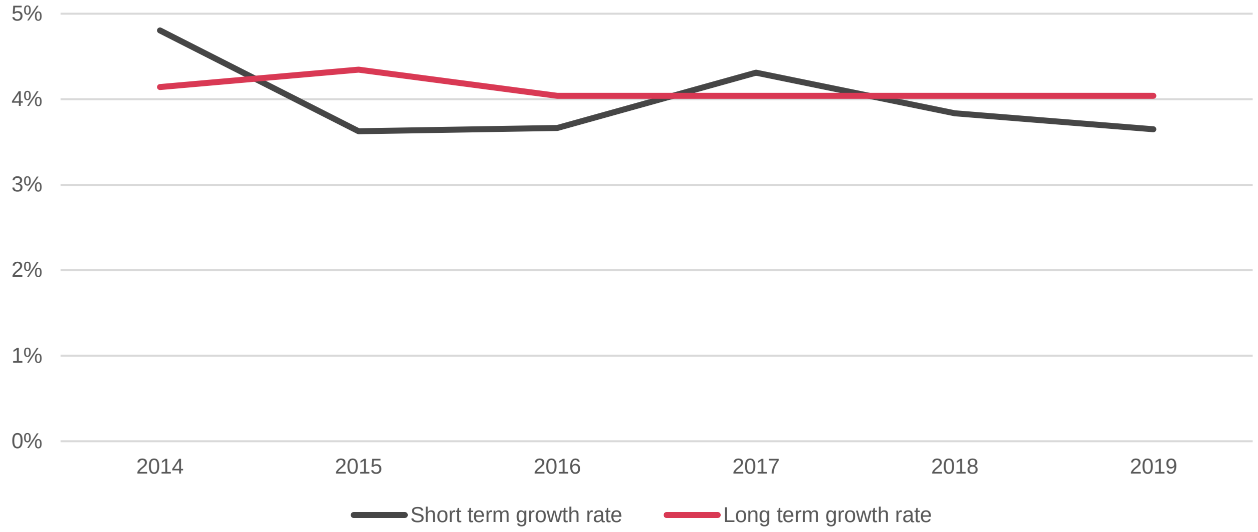


Source: PwC analysis, Refinitiv

16. The GDP growth assumptions used in our model are from the PwC Global Economy Watch Publication with various other sources used as cross checks[2]. The short-term GDP growth rate assumption is for the next five years, whereas the long-term GDP growth rate assumption is for each year after the fifth year.

17. Figure A3 shows that the long-term growth rate assumption has remained stable from 2017 to 2019, whereas the short-term growth rate assumption has declined slightly over 2018 and 2019.

Figure A3: GDP annual growth forecast in nominal terms, 2014 to 2019



Source: PwC analysis

[2] We use Real GDP growth and inflation figures from Consensus Economics, Office of Budget Responsibility, Bank of England, UK Government pre-budget reports as cross-checks.

Annex B: Analysis of the recent buybacks trends

18. In recent years there has been growing focus on the motivation for, and purpose of, share buybacks both domestically and internationally as firms have increasingly used them as a means of returning excess cash to shareholders. In the United States, share buybacks reached over $1 trillion in 2018[3], representing one of the largest sources of demand for shares.

19. Share buybacks have also increased sharply in the UK, with the FTSE All-share buyback yield increasing from 0.5% in 2017 to 1.8% in 2018. This elevated buyback yield assumption within our DDM model has been an important factor contributing to higher total market return estimates over the last two years.

20. To assess the factors underpinning this trend in share buybacks, this annex provides some additional analysis on the share buyback decisions over the last two financial years of major corporations listed in the UK. We also assess whether or not these trends are likely to persist going forward.

21. This annex consists of four sections:

    a. Why do companies use share buybacks?
    b. What has driven the increase in buybacks by UK listed firms over the last two years?
    c. Will this elevated level of buybacks persist over the coming years?
    d. Conclusions and implications for DDM modelling

Why do companies use share buybacks?

22. There are a number of reasons for engaging in share buybacks with motivations varying across firms and geographies. Proponents of buybacks argue that they create long-term value for the company, whereas critics often argue that they are instead used to deliver short-term returns to shareholders at the expense of investment and longer-term growth. There is a comprehensive body of academic literature that explores the motivations behind buybacks, but for the purpose of this note, we provide a short summary of the main factors identified in the literature.

23. A primary motivation for buybacks is to distribute excess cash to shareholders in the absence of positive net present value investment opportunities. In this instance companies return cash to (selling) shareholders, which enables investors to re-allocate this ‘excess’ capital to other companies that require it for expansion.

24. A second motivation is to repurchase stock that is trading at a discount to its intrinsic value. When company management consider the company’s share price is greater than its current market price, then buying can create value for continuing shareholders (at the expense of selling shareholders). This can be a positive signal from management to investors. Empirical evidence of the success of management to discern when their company share price is ‘undervalued’ is mixed.

25. A third motivation is to maintain a target capital structure or target financial ratios. For instance, a company could be required to, or may simply choose to, maintain a specific debt to equity ratio. So, it may need to repurchase stock if the ratio moves outside of the specified thresholds.

26. Other motivations include tax efficiency (particularly in the United States where capital gains taxes are lower for private shareholders and there is a wider dispersion of share ownership across smaller private shareholders); and managing the overall number of shares (a share buyback can reverse the impact of scrip issues).

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[3] According to investment research firm, TrimTabs.

27. While motivations for share buybacks vary across companies, the academic literature[4] generally finds that repurchases are followed by positive long run returns. These findings indicate that either the share prices of firms undertaking share buybacks were undervalued, which creates value for remaining shareholders once they have been repurchased, or that the firms had already maximised positive NPV investment opportunities, and therefore returning cash to shareholders is the most efficient use of surplus cash.

28. It is difficult to discern whether share buybacks are a form of return on capital (excess profits being returned to shareholders) or a return of capital (in the case of a sale of an asset or business and from which proceeds are returned to shareholders). In calculating the expected TMR we need to capture returns on capital, but not returns of capital. This means using the whole buyback yield in a DDM will provide an upper limit of a reasonable estimate of expected returns.

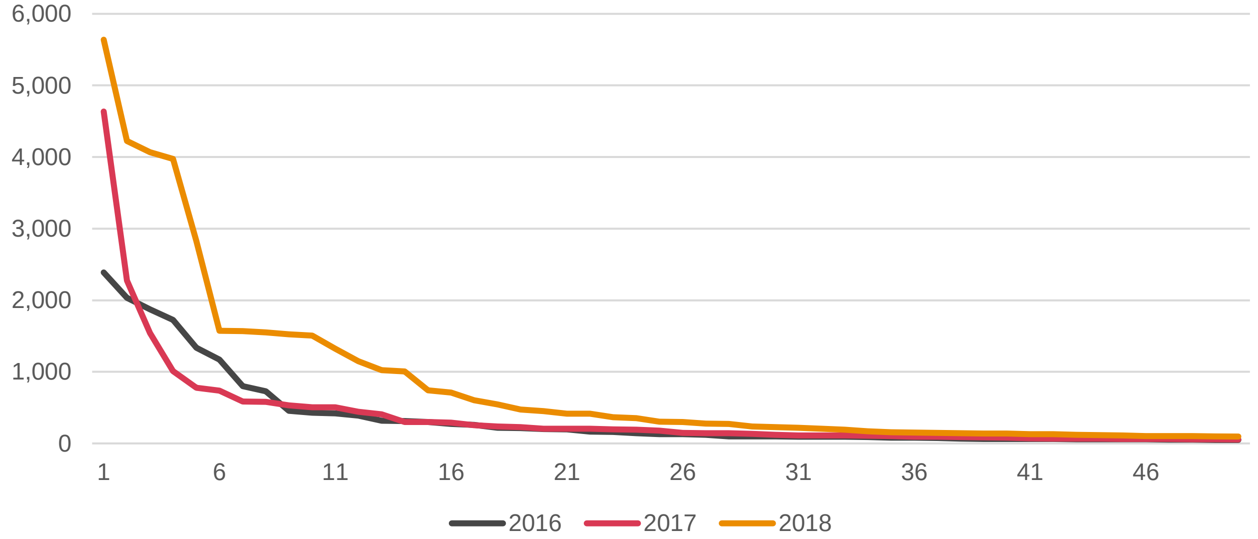
What has driven the increase in buybacks by UK listed firms over the last two years?

29. To examine the elevated buyback yield in recent years, we analyse: the distribution of companies undertaking buybacks in recent years; the sectors that have driven the increase; and, the specific decisions that companies have given for share repurchases.

30. Figure B1 below shows the top 50[5] companies in the FTSE All-Share with highest amount of share buybacks in FY16, FY17 and FY18. The left hand side of the chart shows the companies that have returned the most to shareholders through share buybacks in each year.

31. Figure B1 shows that while the amount of share buybacks generally shift upwards from FY16 to FY18, the majority of the increase have been driven by growth at large companies, as share buybacks from the top 15 companies are markedly higher for FY18 relative to FY16 and FY17.

Figure B1: Repurchases of common stock by the top 50 companies in the FTSE All-Share for FY16 to FY18, £ millions



Source: Capital IQ, PwC analysis

[4] Manconi, Peyer, and Vermaelen (2018) find positive long-run returns to repurchases in the UK, and the results hold for a variety of methodologies.

[5] We consider the top 50 companies because after approximately 30 companies, the level of share buybacks is immaterial to this analysis.

32. Table B1 below shows the top 10 FTSE All-Share companies in terms of total share buybacks across FY16-18. We also calculate the average market capitalisation across the financial year and the buyback yield specific to each company.

Table B1: Top 10 FTSE All-Share companies by total share repurchases in FY2016-18

	Company, FY16	Industry	Annual repurchase of common stock £m	Annual average Market cap £m	Buyback yield %
1	Melrose Industries plc	Electrical Equipment	2,389	1,799	132.8%[6]
2	HSBC Holdings plc	Banks	2,033	102,067	2.0%
3	Carnival plc	Hotels, Restaurants and Leisure	1,874	27,039	6.9%
4	Barclays plc	Banks	1,727	29,543	5.8%
5	The Royal Bank of Scotland Group plc	Banks	1,337	25,007	5.3%
6	SSE plc	Electric Utilities	1,173	14,967	7.8%
7	Reckitt Benckiser Group plc	Household Products	802	48,480	1.7%
8	RELX plc	Professional Services	729	27,324	2.7%
9	CYBG plc	Banks	457	2,082	22.0%
10	WPP plc	Media	427	20,962	2.0%
	Total		**12,947**	**299,269**	**4.3%**

	Company, FY17	Industry	Annual repurchase of common stock £m	Annual average Market cap £m	Buyback yield %
1	Unilever plc	Personal Products	4,636	114,616	4.0%
2	HSBC Holdings plc	Banks	2,273	140,939	1.6%
3	Rio Tinto Group	Metals and Mining	1,541	60,970	2.5%
4	Alliance Trust plc	Capital Markets	1,009	2,645	38.1%
5	The Royal Bank of Scotland Group plc	Banks	779	30,187	2.6%
6	RELX plc	Professional Services	739	32,674	2.3%
7	Hansteen Holdings plc[7]	Equity Real Estate Investment Trusts (REITs)	584	914	63.9%
8	Barclays plc	Banks	580	35,312	1.6%
9	Royal Dutch Shell plc	Oil, Gas and Consumable Fuels	531	181,653	0.3%
10	WPP plc	Media	504	20,070	2.5%
	Total		**13,175**	**619,980**	**2.1%**

[6] We observe that the buyback yield for Melrose Industries in FY16 appears high. This is due to the significant changes made to the company's capital structure in the financial year resulting from the sale of the Elster businesses.

[7] The Company announced its intention to return approximately £580 million to shareholders following the sale of the German and Dutch Portfolio https://www.hansteen.co.uk/~/media/Files/H/Hansteen/documents/confidential/4-oct-2017.pdf

	Company, FY18	Industry	Annual repurchase of common stock £m	Annual average Market cap £m	Buyback yield %
1	Unilever PLC	Personal Products	5,639	110,117	5.1%
2	Rio Tinto Group	Metals and Mining	4,226	66,965	6.3%
3	Barclays PLC	Banks	4,068	32,306	12.6%
4	Royal Dutch Shell plc	Oil, Gas and Consumable Fuels	3,972	206,904	1.9%
5	The Royal Bank of Scotland Group plc	Banks	2,826	30,730	9.2%
6	Glencore plc	Metals and Mining	1,573	48,721	3.2%
7	HSBC Holdings plc	Banks	1,568	139,152	1.1%
8	Vodafone Group Plc	Wireless Telecommunication Services	1,550	49,474	3.1%
9	SSE plc	Electric Utilities	1,524	12,654	12.0%
10	Diageo plc	Beverages	1,507	65,154	2.3%
	Total		**28,452**	**762,176**	**3.7%**

Source: PwC analysis, Capital IQ

33. We observe from Table B1 that a number of companies appear in the top 10 across multiple years - for example, Barclays, HSBC, RBS, Rio Tinto – as well as companies that appear in just one year, for example, Melrose Industries and Carnival plc. Consequently, we have conducted further review on the top 10 companies across the last three financial years to identify the rationale for their decisions to repurchase shares.

34. Table B2 below shows the top 10 companies in the FTSE All-Share in terms of total share buybacks across FY2016-18. It also provides motivations for these share buyback programmes. Some of the motivations have been stated publically, but where the motivation not stated, we have drawn conclusions from market commentary, although we recognise that these stated motivations may not necessarily be accurate.

35. We also observe that seven of the top 10 companies in Table B2 increased their total buybacks from FY16 to FY18. In particular, Unilever increased buybacks substantially, from £220m to £5.6bn, which was the largest increase by companies listed on the FTSE All-Share. Overall, total share buybacks by the top ten companies increased by around 120% across this time, thereby making a substantial contribution to the higher buyback yield assumption

Table B2: Top 10 FTSE All-Share companies by total share repurchases in FY2016-18, £m

	Name	FY16	FY17	FY18	FY16-18	Summary
1	Unilever PLC	220	4,636	5,639	10,494	**No superior opportunities to reinvest excess capital and maintaining target financial ratios** Unilever has undertaken two significant share buyback programmes in the last two years, repurchasing around £10bn common stock in total. According to Unilever, the objective is to return the additional cash generated by the sale of its Spreads business to investment firm KKR (Kohlberg Kravis Roberts) for €6.825 bn, as well as to target a net debt to earnings before interest, taxes, depreciation and amortisation of 2.0 times. Interestingly, Unilever announced they would pursue the buybacks unless "more value-creating acquisition alternatives arise".[8] The 2018 programme ended on the 30th November 2018 and there has been no further announcement on future programmes.
2	Barclays PLC	1,727	580	4,068	6,375	**Return of strong capital generation** Barclays' share buyback programmes have been supported by the strong capital generation of the bank, which has allowed the bank to return a greater proportion of earnings to investors by means of dividend and also share buybacks. Going forward, CEO James Staley suggested that the bank will continue returning future earnings to shareholders as well as investing to grow the business. [9]
3	HSBC Holdings plc	2,033	2,273	1,568	5,874	**No superior opportunities to reinvest excess capital and aiming to boost the share price** HSBC has built up a strong cash position as a result of a significant restructuring programme which has seen the company exit many businesses and markets in recent years. According to HSBC Chief Executive, John Flint, strong performances in capital, liquidity and robust balance sheet has supported revenue growth, enabling them to engage in buybacks. The company has not specifically stated the reason for engaging in buybacks. Market commentators have suggested it is due to a combination of aiming to boost the share price, which was at a three-year low in March 16, and a lack of profitable investment opportunities.

[8] https://www.unilever.com/news/press-releases/2018/share-buy-back-programme-second-tranche.html

[9] https://home.barclays/content/dam/home-barclays/documents/investor-relations/ResultAnnouncements/2018FYResults/20190221-FY-2018-Results-Announcement.pdf

						The Q4 2018 equity market downturn reduced HSBC's global revenues although John Flint commented that the bank is committed to its policy of returning capital to shareholders. However, HSBC stopped short of announcing a new buyback program[10].
4	Rio Tinto Group	-	1,541	4,226	5,767	**Boost shareholder returns and limited profitable opportunities to reinvest capital** Rio Tinto's share buyback programme was enabled by the Coal & Allied Industries Ltd sale proceeds. Rio Tinto Chief Executive Jean-Sebastien Jacques commented, "Returning $3.2 billion of coal disposal proceeds demonstrates our commitment to capital discipline and providing sector-leading shareholder returns.[11]" Rio's share price has risen by almost 50% since the first programme launched. The company announced on 20th September 2018 that it intends to return approximately $3.2 billion back to investors no later than February 2020.
5	Royal Bank of Scotland Group plc	1,337	779	2,826	4,942	**Speed up re-privatisation** RBS has repurchased shares in the last three years, while the Government has also started to reduce its stake in the bank. Going forward, the bank is expected to repurchase more stock directly from the government as it looks to re-privatise. The Treasury has set a target date of March 2024 by which to fully re-privatise the bank, which suggests that buybacks will continue over the next couple of years[12].
6	Royal Dutch Shell plc	259	531	3,972	4,761	**Changing the capital structure** According to Shell, the purpose of these three tranches was to fully offset the number of shares issued under the Scrip Dividend Programme which started in 2015[13]. Shares issued under this programme paid out dividends in the form of shares/stakes of the company instead of cash. Once the repurchases are complete, all future dividends will be paid in cash instead of share-based alternatives. The buybacks are underpinned by free cash flow and a strong balance sheet after the company's combination with BG Group (British multinational oil and gas company). In January 2019, Shell announced the start of the third tranche of its share buyback programme.
7	Carnival plc	1,874	409	1,150	3,433	**Boost shareholder returns** The purpose of Carnival's buyback programmes were to increase shareholder returns. Carnival's CEO, Arnold Donald, stated in 2018, "Strong execution delivered the highest quarterly performance in our company's history…

[10] https://www.bloomberg.com/news/articles/2019-02-19/hsbc-reports-full-year-profit-below-analyst-estimates

[11] https://uk.reuters.com/article/us-rio-tinto-buyback/rio-tinto-announces-new-3-2-billion-share-buyback-stock-rises-idUKKCN1LZ2Z9

[12] https://www.bloomberg.com/news/articles/2019-02-06/rbs-investors-approve-share-buyback-as-bank-eyes-private-future

[13] https://www.shell.com/media/news-and-media-releases/2019/shell-announces-third-tranche-share-buyback-programme.html

						our strong cash flow and balance sheet enabled us to accelerate our opportunistic share repurchase program, investing almost $750 million in Carnival stock since the beginning of the third quarter." The company also announced a new buyback programme for 2019. This aims to reduce share capital as part of their commitment to increasing shareholder returns through the repurchase of both Carnival Corporation common stock and Carnival plc ordinary shares.[14]
8	SSE plc	1,173	144	1,524	2,840	**Distribute excess cash and limited profitable opportunities to reinvest capital** SSE's repurchasing programme was enabled by the sale of its 16.7% stake in Scotia Gas Networks in Oct 2016 and two Highland wind farms for £635m. SSE plc plans to continue its buyback programme in 2019.[15]
9	Melrose Industries PLC	2,389	-	-	2,389	**Distribute excess cash and limited profitable opportunities to reinvest capital** Melrose repurchased £2.3bn of shares in 2016 following the sale of the Elster Group in 2015 for £3.3 bn. Melrose suggest that buybacks are the most efficient means of returning capital to shareholders under the company's model[16]. However, there have been no further share buybacks since FY16.
10	RELX PLC	729	739	743	2,211	**Boost shareholder returns** The company has announced plans to repurchase ordinary shares up to the value of £150m between 21st February 2019 and 24th April 2019[17]. Therefore, we expect to see more buybacks in the short run[18].

Source: PwC analysis, Capital IQ, Company annual reports

[14] http://phx.corporate-ir.net/phoenix.zhtml?c=140690&p=irol-newsArticle&ID=2333406

[15] https://sse.com/investors/share-repurchase-programme/

[16] https://www.melroseplc.net/media/1030/melrose-nevada-circular.pdf

[17] RELX PLC Chairman said they intend to deploy a total of £600m in 2019. https://www.relx.com/~/media/Files/R/RELX-Group/documents/reports/annual-reports/2018-annual-report.pdf

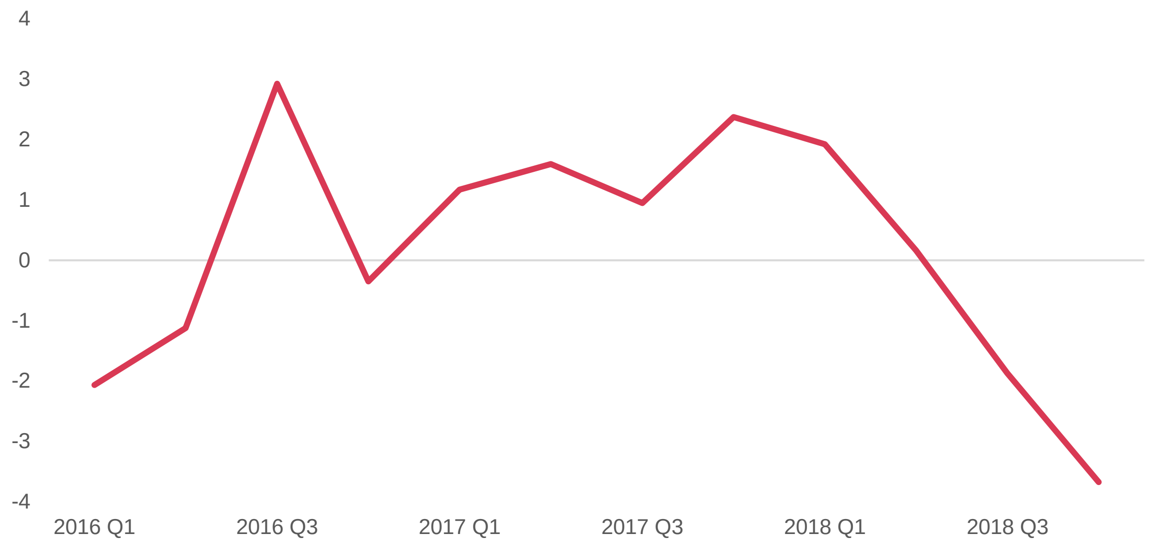
[18] https://otp.tools.investis.com/clients/uk/relx_group_plc/rns/regulatory-story.aspx?cid=1436&newsid=1235011

36. Table B2 shows that the top 10 companies in terms of total share buybacks across FY16 – FY18 account for a significant share of total buybacks in the FTSE All-Share across those years. The reasons for conducting share buyback programmes vary across companies, with some companies purchasing stock for company-specific reasons e.g. returning excess cash to shareholders following a disposal. However, the buyback programmes are generally driven the desire to provide (continuing) shareholder returns or because of limited investment opportunities. In most instances, it is a combination of both factors (e.g. Unilever, HSBC and Rio Tinto Group). Many share buyback programmes appear to be redistributing excess returns, but some are motivated by altering capital structure (e.g. Shell), or returning disposal proceeds (e.g. SSE). In such cases, the share buyback is returning capital to shareholders (rather than returning excess returns).

37. The trend of businesses listed in the UK forgoing investment in order to pursue repurchases appears to be consistent with the latest trends in business investment. Figure B2 shows that since Q4 2017 (the same period as the October 2017 DDM estimate for Ofwat) investment from UK businesses has slowed, with year-on-year investment actually declining in the second half of 2018.

38. While there could be a number of reasons behind this downward trend, the factor most frequently cited by businesses is the uncertainty around what form the UK's future relationship with the European Union will take. This has contributed to businesses delaying large investment or capital expenditure projects until there is greater clarity on what form Brexit will take.

Figure B2: Year-on-year percentage change in UK business investment



Source: ONS, PwC analysis

39. Another motivation cited in Table B2 is that firms are aiming to boost returns to continuing shareholders. Figure B3 below shows the price to equity (P/E) ratio, a relative valuation measure, for the FTSE 350 from January 2016 to March 2019. It shows that since September 2016 there has been a substantial decline in the P/E ratio, which means that UK stocks are now comparatively cheaper when compared with 2016 and 2017.

40. This trend supports the view that firms are repurchasing their shares when they appear comparatively cheaper, in comparison to recent history.

Figure B3: Price to equity ratio for the FTSE 350, Jan 2016 to Apr 2019

Source: Refinitiv, PwC analysis

41. Some companies did indicate that they engaged in share buybacks to target financial ratios, for example, HSBC. However, our review indicates that this reason is less important than repurchasing due to returning excess capital and/or a lack of profitable opportunities.

Will this elevated level of buybacks persist over the coming years?

42. It is difficult to make accurate predictions of how firms will behave in the future. Looking at the top 10 companies, in relation to their buyback behaviour, a number have indicated that they are committed to future buybacks, for example, Rio Tinto and Barclays have proposed buyback programmes for FY19. This suggest elevated share buyback yields will continue in the short term.

43. In our view, much will depend on how quickly the UK's future relationship with the EU is determined and what form it takes. If businesses have greater certainty on the future relationship then they may have more confidence to use excess cash to make investments in the UK, instead of returning cash to investors via buybacks.

44. Further, we the UK stock market could become more attractive to investors once there is more certainty on the future UK-EU relationship (again, depending on what form it takes). This could lead to an increase in the P/E ratio, meaning stocks would become more expensive relative to current valuations. If shares are more expensive then they will become less attractive to repurchase and companies may find that they can earn higher long-term returns from investing in projects.

45. Alternatively, if UK-EU negotiations continue to stall, or the UK opts for a Brexit that is perceived to be less favourable for business (the Confederation of British Industry (CBI) have regularly argued that a 'No Deal' Brexit would be bad for UK businesses[19]), then the current level of buybacks could be maintained, providing economic growth and earnings are also maintained at current levels. If Brexit uncertainty continues to weigh on UK share prices, firms are likely to use this as an opportunity to repurchase stock at what they perceive to be a discount relative to the intrinsic value.

[19] https://www.cbi.org.uk/policy-focus/brexit-and-eu-negotiations/articles/no-deal-the-facts/

Conclusions and implications for DDM modelling

46. The increase in share buybacks over the last two years has increased the TMR output from DDM models. Our review of market evidence indicates that this increase has been primarily driven by large corporates returning value to shareholders from either disposal/restructuring proceeds and/or a lack of profitable investment opportunities.

47. We have not found any demonstrably one-off or anomalous share buybacks in the recent data (so there is no reason to adjust our TMR DDM estimate).

48. Our data indicates that some companies have continued their buyback programmes in 2019 and we would expect the buyback yield to be maintained around its current level at least in the short term. However, it is difficult to know whether this elevated yield will persist going forward.

49. In our view, it is dependent to some extent on how UK-EU Brexit negotiations progress. A 'deal' that is favourable for UK businesses could see a decline in the buyback yield as firms increase business investment at the expense of buybacks, particularly if the UK stock market rebounds. On the other hand, continued uncertainty around future UK-EU relations could result in firms maintaining buybacks due to the elevated investment risk.

50. We expect the buyback yield to return to historic norms in the medium term and the current increase is therefore a cyclical effect. This analysis highlights that 'spot' TMR estimates from DDM models should be treated with caution and cross-checks should be made using other data points. We also recommend focussing on the five-year rolling average version of the DDM, which removes some of the short-term volatility in the share buyback (and to a lesser extent dividend) yield, but still provides a figure for the TMR which is relevant to current market and economic conditions.