Organisation for Economic Co-operation and Development

DAF/COMP/WD(2017)92

Unclassified **English - Or. English**

23 November 2017

DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS
COMPETITION COMMITTEE

Common ownership by institutional investors and its impact on competition - Note by the United Kingdom

6 December 2017

This document reproduces a written contribution from the United Kingdom submitted for Item 6 of the 128th OECD Competition committee meeting on 5-6 December 2017.

More documents related to this discussion can be found at www.oecd.org/daf/competition/common-ownership-and-its-impact-on-competition.htm

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JT03423516

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1. Executive Summary

1. This UK submission explores the potential effects on competition that may arise from common shareholdings, that is, holdings by large institutional investors in downstream competitors.

2. The emerging literature identifies the potential effect of common shareholdings on competition, either through affecting unilateral horizontal incentives to compete or through incentivising collusive behaviour. Some studies have shown that common shareholdings, as measured by the modified Herfindahl-Hirschman Index (MHHI), is associated with higher prices in certain sectors in the US. If this result is found to hold, it would raise interesting questions for competition authorities.

3. In this submission, we provide a brief overview of the studies and identify some areas where further work is required, including the need to test the robustness of the quantitative indicators used in the studies and, crucially, work to explore the mechanism through which any competitive harm might arise. We conclude with evidence on the extent of common ownership in the UK in two key financial sectors – retail banking and insurance.

2. Common ownership: the framework

4. In this section we set out the framework for understanding the potential impact of common ownership by institutional investors on competition and review the existing studies.

2.1. Introduction

5. Institutional investors (usually large financial institutions) often own stakes in many or all competitors in 'concentrated' or oligopolistic markets or industries. This is known as 'common ownership'. In this paper, common ownership is distinguished from cross-ownership; whereby market participants directly own shares in their competitors.

6. There is evidence of significant common-ownership across a range of US industries. Indeed, BlackRock, Vanguard and State Street (collectively, 'The Big Three') combined constitute the single largest shareholder in at least 40% of all listed companies in the US. [1] When restricted to the S&P 500 stock index, The Big Three combined constitute the largest owner in 438 of the 500 member firms (or 88%). This encompasses sectors as diverse as tech companies, soft drinks, airlines and kitchen appliances. As such, markets are likely to be more concentrated than traditional measures of concentration often imply.

7. Recent literature exploring the issue of common ownership purports to show that even relatively small fully diversified holdings of mutual funds and index funds (usually

[1] Hidden power of the Big Three? Passive index funds, re-concentration of corporate ownership, and new financial risk. Fichtner,J., Heemskerk, E., and Garcia-Bernardo, J., June 2017.

passively held[2]) can be highly problematic, particularly in the absence of a concentrated shareholder in a firm.

2.2. Unilateral effects

8. Economic theory suggests that unilateral horizontal effects may arise under common ownership. The benefits accrued through more aggressive competition by one firm, eg growth in market shares, are likely to come at a cost to its competitors; that is, to firms that are part of the same investors' portfolio. This reduces the total portfolio value, thus dampening incentives of investors, and ultimately firms, to compete effectively and pushing markets toward monopolistic outcomes.[3] Investors must weigh up potentially lower profits (and therefore dividends/other payoffs) in one firm against maintaining profits in its competitors. All else equal, one should expect less competition in a market characterised by common ownership compared to the 'standard model', in which firms are independently owned.

9. The extent of any lessening of competition will be highly dependent upon the degree to which shareholdings are diversified across competitors, and the degree of control or influence those shareholders have on the way firms behave. Crucially, partial ownership consists of two components: (i) financial interest, and (ii) control/ influence rights.[4] Common ownership by investors holding minority shareholdings of, for example, between 1 and 5% in each firm, is only likely to raise competition concerns where owners have a degree of 'effective control'. An investor's ability to affect the decisions and competitive incentives of a firm will depend, amongst other things, upon:

- The size of its shareholding relative to other investors and the composition of the remainder of investors; and
- The governance structure of the firm, the investor's voting abilities and its relationship with management.

10. These are likely to be interrelated. For example, shareholders' voting rights, which allow investors to vote on specific strategic decisions and to influence a firm's governance, may be understated where an investor's shareholding is used as a proxy for control. Many with the right to vote fail to exercise it, particularly where their share is relatively small, or vote in predictable patterns. This means that those who do actively vote have a much greater 'effective share' than is implied by their individual shareholding.[5] Consequently, minority shareholders' influence in major decisions regarding executive pay and the appointment of board members, for example, may provide sufficient incentive for firms to act in the interests of those shareholders. Thus,

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[2] Passive funds replicate existing stock indices by purchasing shares of the member firms of the particular index, or representative sample of stocks. It is understood that they may have more control than implied by their shareholdings.

[3] Anti-competitive effects of Common Ownership, by Azar, J., Schmalz, M., and Tecu, I.., 2017.

[4] Competitive Effects of Partial Ownership: Financial Interest and Corporate Control, O'Brien, D., and Salop, S., 2001.

[5] For example, see Ryanair/Aer Lingus merger inquiry, Competition Commission.

through exercising their right to vote, institutional investors that hold stocks passively may still be able to achieve a reduction in competition within a market.[6]

11. Investors may also meet management directly to express opinions on business strategy. By way of example, Vanguard's website states: "We believe that our active engagement demonstrates that passive investors don't need to be passive owners [and] our involvement in hundreds of direct discussions every year has taught us that we can accomplish as much—if not more—through dialogue than through voting alone".[7]

12. While competition authorities have considered the impact of minority shareholdings by rivals in a limited number of merger cases in recent years (eg Ryanair/Aer Lingus, BSkyB/ITV), the impact of common-ownership in cases in which the 'owners' are not direct downstream competitors (as in the case of cross-ownership) has been considered to a much lesser extent.[8]

2.3. Coordinated effects

13. Coordinated effects may arise where common ownership facilitates communication between firms and incentivises coordination at the profit-maximising equilibrium.[9] In practice the mechanism through which this equilibrium is achieved may be more subtle. The firm that receives a recommendation from a key shareholder to, for example, raise prices, might reasonably assume that its competitor – in which the investor is also a key shareholder – is probably receiving the same recommendation.[10]

14. Gilo and Spiegel's observations about tacit collusion in markets characterised by cross-ownership may have applications to common ownership models. They posit four conditions that are necessary for partial cross-ownership among firms to facilitate tacit collusion; (i) that these investments are multilateral among the largest firms, (ii) firms invest in other incumbents, not maverick firms, (iii) cross-ownership shares are equal among firms, and (iv) the most efficient firm in the industry invests in its most efficient rivals.[11] When these conditions are met, the authors argue that the structural factors that facilitate tacit collusion are more easily controlled by the incumbent firms - with a stable number of firms of equal size, cross-ownership increases the frequency and transparency of interactions among firms such that collusion becomes more sustainable.

[6] Proxy voting, whereby firms outsource their right to vote to a third-party firm, is discussed in the section below on further work.

[7] https://about.vanguard.com/investment-stewardship/

[8] In the recent Dow/Dupont merger the European Commission noted that market shares tend to underestimate concentration and considered that common shareholding is likely to result in the appreciation of any significant impediment to effective competition raised in the Decision.

[9] See, for example, Partial Cross Ownership and Tacit Collusion, Gilo, D. and Spiegel, Y., 2003.

[10] Overlapping ownership by Institutional Investors: a legal perspective, Grunes, A., and Meyer, D., 2015.

[11] Partial Cross Ownership and Tacit Collusion, Gilo, D. and Spiegel, Y., 2003.

2.4. Conclusion on framework

15. The theoretical framework above gives rise to a number of questions; not least, to what extent does common ownership in practice give investors the incentive and the ability to reduce competition between firms in an oligopolistic setting? If there is a credible argument for both conditions being satisfied, competition authorities may need to consider the possible implications for competition policy.

3. Common Ownership: Empirical Studies

16. A number of empirical studies examining the relationship between common ownership and prices (or compensation) have recently been published. These studies each use a modified version of the Herfindahl-Hirschman Index (MHHI) as a proxy for common ownership.[12] The banking and airlines industries were used as case studies for this work due to the high levels of common ownership observed in these sectors in the US.

17. Two of these papers regressed the MHHI against prices/other performance measures and found that, under common ownership, prices are higher than would be the case under separate ownership despite investors' financial interests being relatively small.[13] Another study looked at the relationship between common ownership and executive pay.[14] The authors found that higher levels of common ownership are associated with (i) lower sensitivity of pay to own-performance; (ii) higher sensitivity of pay to rival performance; and (iii) higher unconditional CEO pay.

18. A proposed policy solution has been published in response to these findings.[15] The authors put forward that investors in firms in oligopolistic industries must choose either to limit their holdings of an industry to a small stake (no more than 1% of the total size of the industry) or to hold the shares of only a single 'effective firm'[16] per industry. The paper recognises that a major criticism of the proposed policy is that it would limit the diversification benefits available to investors. However, the authors purport that the benefits from cross-industry diversification are as great or greater than within-industry diversification.

[12] Anti-competitive effects of Common Ownership, by Azar, J., Schmalz, M., and Tecu, I. uses the 'generalised MHHI' (GHHI) accounts for cross-ownership by direct competitors in addition to common ownership by institutional shareholders

[13] See Ultimate Ownership and Bank competition. Azar, J., Raina, S., and Schmalz,M., and Anti-competitive effects of Common Ownership, Azar, J., Schmalz, M., and Tecu, I., 2017.

[14] Common Ownership, Competition, and Top Management Incentives. Anton et al, 2017.

[15] A proposal to limit the anti-competitive power of institutional investors, Posner, E., Scott Morton, F. and Weyl, G., 2017.

[16] The paper defines an institutional investor as being invested in more than a single effective firm if it is invested in more than one firm, and the total market share of all firms it holds any stake in is greater than $HHI/10000$ in the oligopoly (ie the average market share).

4. Limitations of the quantitative indicators

19. While the recently published empirical studies have importantly identified the potential implications of common-ownership by institutional firms, they have been met by some criticism from academics and institutional investors (namely, Blackrock) alike.[17] Some of these concerns are set out below.

20. The three empirical papers summarised above have in common their use of the MHHI (or in the case of the banking paper, the GHHI) to measure the effect of common ownership (and common ownership of rival firms) on competition in oligopolistic markets.

21. This approach has been criticised for the following reasons:

1. **Endogeneity** – MHHI is an endogenous measure of concentration that depends on common ownership and on market shares. Price and market shares are likely to be driven by the same underlying factors and thus the relationship between price and MHHI need not reflect a causal link between MHHI and price. For example, a cost reduction by one oligopolistic firm is likely to increase its market share (and thus increase HHI) but reduce prices.
   Additionally, there may exist some reverse causality. That is, common shareholdings could be a result of oligopoly pricing rather than the driver of it. As firms' profits rise and they are added to indexes (such as the S&P 500), index funds are more likely to invest in them.[18]
   In the airline paper, Azar, Schmalz and Tecu exploit BlackRock's acquisition of Barclays Global Investors (BGI) in 2009 to test the validity of their regression specification by removing an element of the endogeneity of ownership and market shares. A difference-in-difference approach is employed to test the hypothesis that markets more affected by the acquisition – ie those with a higher implied change in MHHI delta – experience higher price changes compared to less affected markets. This analysis supports the finding that common ownership is correlated with higher prices and estimates the resulting uplift in prices to be 10-12%. However, this analysis has also been criticised for removing only the endogeneity bias from the MHHI delta and not the HHI.[19]
   In the compensation paper, Antón et al use market share-free measure of common ownership to test the sensitivity of their model to the endogeneity of MHHI. They use the ratio of one divided by the number of firms in the industry in place of actual market shares and, though some drop a level of significance, the coefficients retain their direction.
2. **Ownership does not necessarily imply control** – The MHHI measure of concentration developed by Salop & O'Brien uses investors' share of voting and non-voting rights as a proxy for control. However, this may not necessarily reflect 'effective' control and could lead to an under- or over-estimation of the effect of common ownership on prices. For example, a single concentrated owner might

[17] See, for example, The competitive effects of common ownership: we know less than we think, O'Brien, D. and Waehrer, K., 2017.

[18] Is oligopoly pricing a symptom or the disease?

[19] A proposal to limit the anti-competitive power of institutional investors. Posner, E., Scott-Morton, F., and Weyl, G., 2017.

nullify, or at least reduce, minority shareholders' influence and control over a firm's management.

Rock and Rubinfeld's critique of the Airlines paper[20] notes that its authors rely heavily upon causal mechanisms that are unlikely to effectively change the behaviour of managers without a controlling position in the firm. They assert that the empirical analysis presented in the Airlines paper assumes that managers will take into account the holdings of shareholders in competing airlines, such that the potential anticompetitive effects of the HHI maps without any adjustment to MHHI framework.

3. **Reduced form measure** – Related to 2) above, using the reduced form MHHI (delta) as a measure of lowered incentives to compete due to common ownership means that the mechanism generating influence/ control remains unexplained. As yet, there is no evidence (other than anecdotal) of institutional investors having the ability to influence management decisions on strategy and pricing in the firms they own.
4. **Unfavourable changes in HHI and MHHI do not necessarily imply unilateral effects** – HHIs do not take product substitutability into account. Such measures can overstate concentration in differentiated product markets and thus the effect of common ownership on competition. Cross-price elasticities or diversion ratios are more relevant tools for assessing potential unilateral effects of a merger situation in differentiated markets.
5. **Definition of oligopolistic market** – Related to 4) above, the HHI and MHHI require markets to be defined for the calculation of market shares. This is often not straightforward nor conclusive and mis-specification has the potential to significantly skew any result.

22. In addition to the above criticisms of the MHHI measure of concentration, observers note that the following may limit the reliability and applicability of results found in the literature:

- **Risk of omitted variable bias** – the models estimated in the airline and banking papers do not include all factors that could reasonably affect prices and demand, even with some being controlled for through the fixed effects operator. For example, seasonal demand changes are excluded meaning that market shares (and therefore MHHI) are affected through the error term pointing to correlation where there may be none.
- **Have only measured prices and not quality** – The airline and banking papers focus on the impact of common ownership (through the MHHI) on prices but do not consider other potential outcomes such as quality or service improvements. Higher prices may be reflective of higher investment in these other important parameters of competition.
- **Application to other industries** – To determine the appropriate policy response (if any) to the findings, broader application to other industries would need to be established. Publication bias might exist, or the banking and airline industries may have been chosen because of the availability of large and granular datasets. The authors have also focused on particular sub-markets (eg specific airline routes) and the wider applicability is untested.

[20] Defusing the Antitrust Threat to Institutional Investor Involvement in Corporate Governance, Rock, E. and Rubinfeld, D., 2017.

5. Potential robustness checks

23. The existing literature provides some evidence that the incentives created by common ownership may negatively impact on competition in oligopolistic markets. However, commentators and industry participants have highlighted a number of potential drawbacks to the quantitative indicators used in the literature. This suggests that further work is required to test the robustness of these indicators, most notably MHHI, on which all the current literature relies for measuring unilateral effects.

24. This work can be grouped into two areas; an analysis of the mechanisms through which investors may influence decision making by firms, and then the effects of such influence on market outcomes.

5.1. Analysis of mechanisms

25. **Influence:** The current literature does not explore in any detail firms' decision-making processes, most likely due to the lack of publicly available information. As such, the HHI and MHHI have been defined as reduced-form measures of concentration and do not explain the mechanism through which common-ownership may lead to anti-competitive outcomes. Further work could examine how large corporates make decisions, and specifically, the influence that minority shareholders have. It may be interesting to examine how this differs by:

- Institutional owner (and whether they have shares in multiple downstream competitors)
- A firm's ownership structure (and whether there are other concentrated owners)
- Industry (investors may have greater influence in some sectors than others – see c) below)
- Fund (does each fund have voting/non-voting rights, or does any influencing take place at the family fund level?)

Quantitative work that analysed voting patterns, decisions taken, and outcomes could also be undertaken.[21] In particular, the effect of the use of proxy voting, whereby institutional investors seek advice from, or even outsource their rights to vote to, third party firms (or 'proxy advisors', such as the Institutional Shareholder Services) could be explored. These firms give investors advice on how to vote on everything from management to corporate pay packages.[22]

26. **Management compensation:** The structure of executive pay may be indicative of the degree to which a firm's owners have the power to influence strategy. If executive pay is comprised of a fixed salary and benefits in the form of stock options in the firm, for example, management will have a greater incentive to maximise own firm profits without taking into account industry-wide profits and therefore owners' financial returns.

[21] See, for example: https://www.competitionpolicyinternational.com/wp-content/uploads/2017/06/CPI-Elhauge.pdf

[22] FT Article, 11 February 2017, 'Investors pass the buck on governance'.

5.2. Analysis of effects

27. **Application to other sectors:** Current analysis of the effect of common ownership has been limited to the banking and airlines sectors in the US. Further work could be undertaken to look at other sectors and other countries. The theoretical framework implies that common ownership will have a greater anticompetitive effect in markets that are less contestable (a less credible threat of entry renders price rises more profitable and therefore likely). If harm results from common ownership, it may be more likely in homogeneous markets where recoupment of profits in commonly-owned firms is more likely.

28. **Diversification benefits of cross-industry shareholdings:** the potential impact on within- and cross-industry diversification should be considered. This would be an important consideration for any policy proposals, particularly where large corporates operate across several industries. While Posner et al argue that diversification benefits are not lost in their policy paper, there is little evidence to support the suggestion that diversification across industries is sufficient to outweigh any harm. The welfare benefits of reduced common ownership may be outweighed by the diversification benefits of common-ownership.

6. Common ownership in the UK

29. The current literature has focused on examining the relationship between common ownership and prices (or executive pay) in different sectors in the US - most notably, airlines and banking - and we are not aware of published studies on the extent of common-ownership in the UK. The CMA compiled data from a third-party financial data provider (Bloomberg Professional Services[23]) to examine current levels of common-ownership in two key financial sectors - retail banking and insurance. These are discussed in turn below.

6.1. Retail banking

30. The five largest retail banks in Great Britain are Lloyds Banking Group, (Lloyds), Royal Bank of Scotland (RBS), HSBC Group (HSBC), Barclays and Santander. In addition to these, there are a number of smaller banks which are more limited in geographical coverage or focus on particular products, customer segments, and/or distribution channels.[24] These include Clydesdale Bank, Metro Bank, Virgin Money and Aldermore.

31. Table 1 lists the equity holders of the UK's main banks which are within the top 20 shareholders of at least three banks in the set of competitors examined. Each investor's position within in a firm's ownership structure (in terms of shareholdings) is presented in parentheses. With the exception of RBS and Virgin Money, which each has one large

[23] The Bloomberg Professional Service is a financial information platform provided by Bloomberg L.P. This note uses information on the current equity ownership of firms that Bloomberg has taken from several sources, including; national regulatory filings, the Quarterly Reports of large investors and publicly owned firms, information provided by local stock exchanges and Bloomberg's own research.

[24] Retail Banking Market Investigation, CMA.

concentrated shareholder, the firms presented in Table 1 are owned by a series of minority shareholders who often hold atomistic stakes.

Table 1. Reported equity holders in UK retail banks

% Share	HSBC	Barclays	Lloyds	RBS	Santander	Clydesdale	Metro	Virgin	Aldermore
Barclays		3.12 (5)	0.98 (19)						1.35 (18)
Blackrock	7.53 (1)	7.29 (2)	7.44 (1)	1.71 (4)	3.41 (2)	3.08 (7)	3.26 (9)	2.67 (5)	2.54 (9)
Capital Group	1.16 (9)	10.26 (1)			3.21 (4)	0.97 (12)			
Dodge & Cox		3.53 (4)	1.44 (10)		0.93 (8)				
Fidelity					0.50 (13)		8.73 (2)	0.79 (20)	
HSBC	0.93 (12)	1.41 (13)	1.30 (11)			0.45 (14)			
JP Morgan					0.37 (19)		3.53 (8)		7.79 (3)
Legal & General Group	2.53 (5)	2.50 (8)	2.66 (5)	0.62 (12)		2.30 (9)	2.31 (15)	1.73 (10)	1.69 (15)
Norges Bank	3.79 (3)	2.98 (6)	2.96 (3)	1.32 (5)	3.23 (3)	1.53 (11)	1.66 (19)	2.86 (4)	3.37 (4)
Schroders	0.57 (16)	0.84 (19)	1.11 (14)	1.04 (7)		5.42 (3)		1.99 (8)	
Standard Life Aberdeen	1.88 (7)	0.95 (17)	1.65 (8)					13.63 (2)	10.23 (2)
State Street	2.28 (6)	1.08 (15)	1.21 (13)		11.36 (1)	0.52 (13)			
Total	20.67	33.96	20.75	4.69	23.01	22.68	14.45	23.67	26.97

Note: (1) RBS is majority owned by UK government (70.5%). (2) This table differs from the US literature, which presents evidence of common shareholding amongst the top five investors in banks and airlines. Here we present common ownership within the top 20 shareholders given the more diluted nature of shareholdings in the UK banking sector.
Source: Bloomberg L.P., as at 13 November 2017. Investors' shares presented where they appear in the top 20 shareholders (by value of shareholding) across three or more companies.

32. The data provides some evidence of common ownership in the UK; Blackrock, for example, is within the top ten investors of each of the UK's largest nine banks, and is the largest shareholder in the three biggest banks: HSBC, Barclays and Lloyds.

33. However, ownership appears somewhat more diluted than indicated by the data presented in the US literature (which shows high levels of overlap between the top five shareholders in US banks). This may be due, in part, to the presence of large investors without a shareholding in other banks (as is the case for RBS, Aldermore and Virgin Money).

34. There are also significant differences in the structure of holdings by some institutional investors across competing firms. As recognised in Rock and Rubinfeld's critique of the recent literature[25] this is likely to result in asymmetric incentives on the part of institutional investors. Specifically, investors are likely to have a greater incentive to encourage the managers of firms in which they own a larger share to compete more vigorously with its competitors (assuming such a strategy is in the unilateral incentives of the firm in question).

35. An assessment of the top ten investors in the UK's largest banks indicates that while there is some movement in the positions of these investors within the top ten, the top positions are occupied by the same few investors over a five-year period from 2012 to 2017.[26]

[25] Defusing the Antitrust Threat to Institutional Investor

[26] Annual observations from Q4 2012 to the current holdings of investors.

36. To illustrate more clearly the extent of common ownership, Table 2 below sets out the equity share that the top twenty reported holders in one company have in each of their competitors. For example, the top twenty reported shareholders of HSBC also collectively own 25% of Santander and 24% of Virgin Money.

Table 2. Collective share of reported equity holders of each of the retail banks, in their competitors

% Share	HSBC	Barclays	Lloyds	RBS*	Santander	Clydesdale	Metro	Virgin	Aldermore
Reported holders of HSBC hold	35.60	34.19	23.01	5.80	25.28	16.01	12.67	24.49	30.56
Reported holders of Barclays hold	25.62	52.92	25.43	6.39	25.84	16.01	9.14	26.81	24.12
Reported holders of Lloyds hold	23.11	28.08	40.42	10.34	21.85	15.04	9.14	31.06	24.12
Reported holders of RBS hold	18.02	18.98	25.97	86.92	9.56	14.42	9.14	14.38	15.77
Reported holders of Santander hold	23.21	30.28	17.73	4.14	35.39	8.14	19.09	7.93	21.29
Reported holders of Clydesdale hold	21.39	28.96	19.36	5.70	24.11	50.60	9.14	13.75	9.49
Reported holders of Metro hold	20.56	15.37	15.74	4.13	10.00	8.65	74.06	9.66	17.28
Reported holders of Virgin hold	18.90	19.40	19.50	6.02	9.63	14.81	17.87	82.75	22.95
Reported holders of Aldermore hold	23.44	21.22	20.37	5.08	11.93	8.65	12.67	24.20	79.07

Source: CMA analysis of Bloomberg L.P. data, as at 13th November 2017.

6.2. Insurance

37. Around 500 insurance companies operate in the UK, the majority of which provide general insurance to UK customers. The largest by market capitalisation are Admiral, Aviva, Direct Line, Legal & General, Old Mutual, Prudential and RSA, which are all included in the FTSE 100 Index of companies listed on the London Stock Exchange.

38. Table 3 below sets out the top shareholders of the seven largest insurance firms. Again, a degree of common shareholding can be observed; Blackrock, Legal and General (one of the largest seven insurance companies), Vanguard and Standard Life Aberdeen each hold shares in a significant number of their competitors.

Table 3. Reported equity holders in UK insurance companies

% Share	Admiral	Aviva	Direct Line	Legal & General	Old Mutual	Prudential	RSA
Artemis Investment		1.49 (14)	5.78 (3)	1.31 (12)			3.18 (7)
Aviva Group			0.88 (18)	1.46 (10)		0.96 (15)	
Bank of Nova Scotia			1.16 (14)			0.73 (18)	1.15 (18)
Blackrock	5.79 (3)	6.89 (1)	11.26 (1)	7.39 (2)	6.74 (2)	7.52 (1)	8.17 (2)
Capital Group		1.07 (20)		9.97 (1)			1.33 (15)
Invesco		4.92 (2)		2.13 (8)			2.80 (8)
Legal and General	1.86 (13)	2.76 (7)	2.54 (8)	1.54 (9)	2.45 (8)	2.70 (3)	2.50 (10)
Norges Bank	2.72 (8)	4.57 (3)	3.81 (4)	2.53 (6)	3.00 (6)	3.99 (2)	3.66 (6)
Schroders PLC		2.37 (8)	0.84 (20)	2.80 (4)	0.68 (18)		
Standard Life Aberdeen	1.29 (20)	2.97 (5)	7.97 (2)	2.21 (7)	0.72 (17)	2.06 (7)	1.29 (16)
State Street		1.28 (16)	1.53 (12)	1.00 (15)	1.49 (11)	1.15 (10)	1.79 (12)
T Rowe Price			3.61 (5)			1.12 (12)	5.24 (4)
UBS	2.46 (11)	1.30 (15)	1.66 (11)		0.73 (15)	1.06 (13)	1.74 (13)
Vanguard	1.71 (15)	2.76 (6)	2.72 (7)	2.70 (5)	2.62 (7)	2.59 (4)	2.77 (9)
Total	15.83	32.38	43.76	35.04	18.43	23.88	35.62

Note: This table differs from the US literature, which presents evidence of common shareholding amongst the top five investors in banks and airlines. Here we present common ownership within the top 20 shareholders given the more diluted nature of shareholdings in the UK insurance sector.
Source: Bloomberg L.P., as at 13 November 2017. Investors' shares presented where they appear in the top 20 shareholders (by value of shareholding) across three or more companies.

39. Table 4 lists the equity share that the top twenty reported holders in one company have in each of their competitors for the UK insurance sector. For example, 46% of Direct Line equities are held by the top twenty reported shareholders of RSA.

Table 4. Collective share of reported equity holders of each insurance company, in their competitors

% Share	Admiral	Aviva	Direct Line	Legal and General	Old Mutual	Prudential	RSA
Reported holders of Admiral hold	68.22	23.06	29.96	17.17	16.26	22.39	21.11
Reported holders of Aviva hold	17.67	49.10	38.11	36.49	19.83	22.31	29.23
Reported holders of Direct Line hold	15.84	26.39	56.51	24.48	18.43	25.60	37.97
Reported holders of Legal and General hold	15.84	34.59	40.01	45.80	18.43	23.84	36.14
Reported holders of Old Mutual hold	15.84	26.73	32.33	20.97	49.90	22.21	21.92
Reported holders of Prudential hold	18.38	23.69	40.24	21.43	18.47	36.29	28.31
Reported holders of RSA hold	17.13	30.01	46.49	35.95	17.75	22.92	66.39

Source: CMA analysis of Bloomberg L.P. data, as at 13th November 2017.

7. Conclusion

40. The recent studies of common ownership by institutional investors and the impact on competition raise interesting questions for competition authorities. In this submission, we have identified limitations of the studies and areas that may merit further work. The data collected on the UK retail banking and insurance sectors provides evidence of common ownership, albeit to a lesser extent to that found in the studies from the US.