Appendix E: Profitability analysis

Introduction

E.1 In this appendix we examine the profitability of providers of public cloud infrastructure services.

E.2 We have examined profitability to inform our understanding of competition in the cloud services markets. We consider that the outcomes of the competitive process in their different forms in a market, including prices and profitability, product quality and range, and levels of innovation, can provide evidence about its functioning.[1]

E.3 We discuss our approach to assessing the profitability of cloud services markets and set out the analysis done to support our assessment, having considered responses to our working paper,[2] together with Ofcom's and our financial information requests, and publicly available financial information. We have assessed return on capital employed for AWS and Microsoft's cloud businesses. We have also analysed the margins for identified relevant cloud providers.

Our approach to profitability analysis

E.4 This section sets out the approach we have taken to our profitability analysis, including the scope of the analysis and our overarching conceptual approach for measuring profitability.

Scope of our analysis

E.5 This section sets out the scope of our profitability assessment, highlighting which business activities we consider to be relevant, which firms we will analyse and the time periods over which we will assess profitability.

Business activities and relevant firms

E.6 We examine the global profitability of cloud services for the largest providers of public cloud infrastructure services in the UK. Where possible, we assess the profitability of public cloud services specifically. Where this is not possible, for example where a provider is unable to provide data on its public cloud services separately to its private or hybrid cloud services, we have assessed the narrowest relevant business units which include public cloud services for which it has been possible to undertake the analysis.

[1] CC3 (Revised), Guidelines for market investigations: Their role, procedures, assessment and remedies, paragraph 103.
[2] See chapter 6 of Competitive landscape working paper. Note, confidential versions of the supporting profitability appendix were shared with each party included in our assessment.

E.7 We have included AWS, Microsoft, Google, Oracle, IBM and OVHcloud in our analysis as we have identified these firms as relevant providers of public cloud infrastructure services in the UK.

E.8 The two largest suppliers of cloud services in the UK are AWS and Microsoft. They are present at all levels of the cloud stack and provide a wide range of cloud services across multiple product categories at scale. As set out in the market shares section of this report, these two cloud providers collectively account for [60-70]% of IaaS and PaaS cloud services revenues in the UK in 2023. We consider these two providers to represent a substantial part of the markets.[3]

E.9 Google is the third largest provider of cloud services in the UK markets and has a significantly lower share of cloud services revenues, accounting for [5-10]% of IaaS and PaaS revenues in the UK in 2023.[4]

E.10 We also present financial information on smaller cloud providers who have been identified as global and UK competitors to AWS, Microsoft and Google, and for which we have been able to obtain cloud services profit margin figures. These include IBM, Oracle and OVHcloud. IBM and Oracle are the next largest providers in the UK based on cloud services revenues.[5] We include OVHcloud in our analysis as it publicly reports its cloud services performance and is Europe-focussed.

E.11 We assess return on capital employed for AWS and Microsoft's cloud businesses as we are primarily interested in assessing the profitability of the largest incumbent providers in the public cloud infrastructure services markets,[6] and due to limitations on data available for other providers.

E.12 While Google is the third largest provider in the markets, we note that Google's cloud business has only recently (in 2023) reported profits[7] and its market share in the UK is substantially less than AWS and Microsoft.[8] We include Google's cloud business in our margin benchmarking, but we do not calculate its return on capital employed, as its returns would historically be negative and it could at most have achieved returns in excess of the cost of capital for 18 months only and we do not have enough information to determine if Google's profitability improvement will persist in the future.

E.13 We discuss some of the data challenges for the other smaller cloud providers below.

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[3] CC3 (Revised), paragraph 116.
[4] See the shares of supply by revenue section of this report.
[5] See the shares of supply by revenue section of this report.
[6] CC3 (Revised), paragraph 114.
[7] Alphabet 2023 Form 10-K, page 87.
[8] See the shares of supply by revenue section of this report.

E.14 We examine profitability at a global level for the providers due to (i) the global nature of the cloud services they provide, and (ii) the global nature of their financial reporting, asset base and capital investment.

Time period under consideration

E.15 We seek to examine profitability over a time period that is sufficiently long to provide a representative picture of profitability and that is not unduly distorted by unusual macroeconomic conditions or one-off events. We recognise that the appropriate time period may vary depending on the specific market, and that the pattern of investment and nature of sources of competitive advantage may affect the CMA's view of the relevant timescales over which it would expect to see competition playing out in the market.[9]

E.16 Where large and risky investments have been made, we would expect to see a normal level of profitability restored over a relatively long timescale.[10] Our guidelines note that:

> 'Where investment is characterized by large one-off expenditure, or the industry has experienced a period of growth, it may be desirable to consider profitability over a relatively long period of time or on a project appraisal basis.'[11]

E.17 We seek to balance this aim with the constraints faced by the cloud providers in providing us with reliable and consistent financial information, which may be challenging given past acquisitions and divestments, as well as changes in financial reporting systems and cost allocation approaches, for example.

E.18 Of the cloud providers included in our profitability assessment, AWS was the first provider to start providing cloud services in 2006. Microsoft, Google and IBM all started providing cloud services in 2008, whilst OVHcloud entered the markets in 2010 and Oracle entered the markets in 2016.[12] These cloud providers all started by offering one element of the cloud stack and gradually expanded their cloud services offerings over time.

E.19 To take a view on current market trends in profitability we have generally focussed on the last five years (financial years covering the years from 2019 to 2023/24). Where data allows, we have also considered a longer (up to 10 years) period from 2013 to 2023/24, including for our return on capital employed (ROCE) analysis. We also consider the profitability of cloud providers beyond 2023/24, to the extent that our review of internal documents suggests that this may be meaningful.

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[9] CC3 (Revised), paragraph 121.
[10] CC3 (Revised), paragraph 121.
[11] CC3 (Revised), Annex A, paragraph 10.
[12] See Chapter 2; OVHcloud Corporate - History & Facts.

Overarching conceptual approach

Return on capital employed versus cost of capital

E.20 The analysis of profitability as a means of understanding competitive conditions in a market is based on the premise that in a competitive market firms would generally earn no more than a 'normal' rate of profit. Our guidelines define a 'normal' level of profit as:[13]

> 'the minimum level of profits required to keep the factors of production in their current use in the long run, i.e. the rate of return on capital employed for a particular business activity would be equal to the opportunity cost of capital for that activity.'

E.21 The rationale for benchmarking return on capital with the opportunity cost of capital is that, in a competitive market, if firms persistently earned in excess of the return required to compensate investors for the risks taken, we would expect these profits to attract entry and/or expansion.[14] This entry/expansion would serve to compete away profits in excess of the cost of capital up until the point where firms cover their total costs, including a market-based cost of capital, and no more. Where firms persistently earn in excess of a normal return, this signals that there may be limitations in the competitive process.

E.22 Our guidelines, therefore, refer to the rate of return on capital as a means of measuring profitability. Return on capital can be based on cash flows (internal rate of return (IRR)) or profits (ROCE). These approaches are very similar in substance, with the choice between them determined in part by industry characteristics and in part by data availability.

E.23 We have considered different approaches to assessing cloud providers' profitability and have taken the approach of comparing cloud providers' ROCE with the cost of capital. Use of ROCE allows us to calculate annual profitability and thus provides insights into trends over time and the drivers of profits which may exist above the 'normal' level.

E.24 We observe that cloud services are business segments within most of the cloud providers'[15] overall operations for which reliable profitability data is more readily

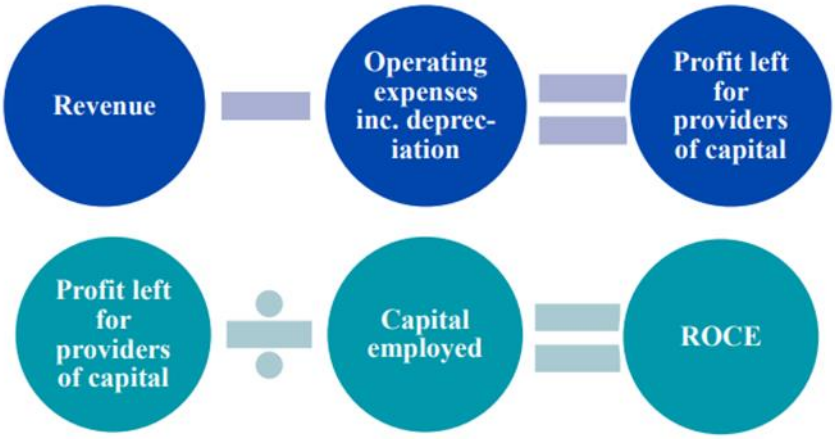
[13] CC3 (Revised), paragraph 116.
[14] The time period over which this process may take place may differ between different sectors due to the time taken for entry and/or expansion of capacity.
[15] AWS, Microsoft, Google, Oracle and IBM.

available than cash flow data,[16] making these segments better suited to the ROCE approach.[17]

E.25 We also consider that the pattern of ongoing variable capital investments in the market (as opposed to large one-off investments) and the lack of any obvious time period to use as investment entry and exit assumptions means that ROCE is more suitable than IRR for measuring profitability. We would not expect an IRR assessment to produce materially different results to a ROCE assessment.[18]

E.26 The figure below illustrates how ROCE is calculated.

Figure E.1: The components of ROCE



Source: CMA analysis. Note, profit left for providers of capital can be distributed or reinvested in the business.

E.27 The ROCE is benchmarked against the opportunity cost of capital, which is the weighted average cost of capital (WACC), over the relevant period(s) of analysis. The WACC is the return on investment that providers of capital – both debt and equity – expect, given the risks associated with the relevant activity.[19]

Economic versus accounting profitability

E.28 When estimating ROCE, our approach is to start with accounting figures from the income statement and balance sheet of the relevant activities, and then make adjustments to arrive at an economically meaningful measure of profitability.

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[16] [✂]. Microsoft was not able to provide balance sheet accounts or cash flow data for its for Cloud & Enterprise or Azure business units. Our understanding is that Microsoft, [✂] and [✂]. Responses to the CMA's information requests [✂].
[17] Where the market of interest is a division or segment of a company it may not be possible to obtain reliable cash flow data at this level and we may therefore adopt a return on capital approach for this reason. CC3 (Revised), Annex A, paragraph 11.
[18] Provided that analysis is undertaken carefully, with various adjustments made, ROCE assessment is equivalent to an IRR assessment and is also, therefore, conceptually robust. See The Economic Analysis of Accounting Profitability (1987), Jeremy Edwards, J A Kay, Colin P Mayer, for a fuller discussion of the conditions under which the ROCE and IRR approaches are equivalent.
[19] WACC is therefore expected return on equity and expected return on debt, weighted by gearing – the relevant proportions of debt and equity.

E.29 An important factor to consider when selecting an appropriate measure is the availability of good quality data. Where possible, the CMA will base its calculations on financial data that can be reconciled to audited financial statements, albeit with appropriate adjustments.[20]

E.30 There is also the need to obtain an appropriate value for capital employed. Obtaining a value for capital employed can present difficulties irrespective of the choice of profitability measurement method; a return on capital approach requires an economically meaningful value for the capital base, which may not necessarily accord with the value ascribed in the financial records.[21]

E.31 We may consider adjustments to accounting data produced in line with standard accounting practices relating to the difference between historical cost and replacement cost, and relating to the inclusion of certain intangible assets where certain criteria are met.[22] We may also consider adjustments to cost or asset allocations on a case-specific basis[23] to account for the activities which are the subject of the investigation, where a firm undertakes other business activities and/or where there are material intercompany transactions.

Additional analysis

E.32 We recognise that profitability analysis, based on a ROCE versus WACC framework, requires certain assumptions to be made. The results from profitability analysis can be sensitive to ranges around these assumptions, particularly with regard to asset valuations. Where appropriate, therefore, we have undertaken sensitivity analysis.

E.33 We also critically review both the historical financial information and the forecasts provided by cloud providers and the assumptions underlying them.

E.34 As described below, we undertake additional analysis into margin benchmarking to further inform our economic profitability assessment.

Margin benchmarking

E.35 We consider that margin benchmarking provides useful context and insight into the comparative profitability of cloud providers, as well as trends in profitability over time. Margin benchmarking can also be less impacted by issues of data availability.

[20] CC3 (Revised), Annex A, paragraph 11.
[21] CC3 (Revised), Annex A, paragraph 13.
[22] CC3 (Revised), Annex A, paragraph 14.
[23] CC3 (Revised), Annex A, paragraph 14.

E.36 However, we do not typically consider margins by themselves to be a suitable benchmark for determining excess profits, if we can determine other measures such as ROCE. Margin benchmarking may also have some limitations, where the firms included may provide different services, have different cost bases, face different risks, and have differing reporting requirements and/or accounting policies.

Determining profits and capital base

E.37 In this section, we summarise how cloud providers track and assess the profitability of their cloud businesses. We then set out how we have determined the relevant segmental earnings and capital base to use for the purposes of our margin and ROCE analysis. We also comment on any issues we noted when determining these inputs.

The cloud providers' approaches to assessing the profitability of cloud services

E.38 As noted in the guidelines, we consider that the manner in which firms assess profitability for the purposes of monitoring and reporting performance may inform our view as to what is an appropriate measure for the markets under consideration.[24]

E.39 Ideally, we would assess the profitability of cloud providers' public cloud infrastructure services business specifically, taking into account all relevant costs and an appropriate capital base. In assessing the viability of doing this, it is important to consider how the firms are organised and how the firms monitor and report performance, both externally and internally.

E.40 Most of the cloud providers that we identify for profitability analysis are integrated global firms, providing a range of services in addition to cloud services. Only Amazon is structured to have a separate corporate entity providing cloud services (AWS) with full income statement reporting and reporting of balance sheet items. Even so, AWS is still part of the wider Amazon group and some balance sheet items are not allocated to AWS (eg corporate assets).[25]

E.41 In general, other cloud providers (Microsoft, Google, Oracle, IBM and OVHcloud) track the revenue generated by their cloud businesses (though not always specifically public cloud).[26] In some cases (as discussed below) they track margin data.

[24] CC3 (Revised), annex A, paragraph 9.
[25] Amazon public accounts report AWS total assets excluding corporate assets, such as cash and cash equivalents, marketable securities, other long-term investments, corporate facilities, goodwill and other acquired intangible assets, and tax assets (see for example, Amazon 2023 10-K page 70).
[26] CMA analysis of Form 10-Ks for Amazon, Microsoft, Alphabet, Oracle and IBM and OVHcloud Consolidated Accounts.

E.42 However, in some cases, cloud providers' businesses are structured so that cloud infrastructure services form part of broader 'cloud' or 'infrastructure' reporting segments, which may also include: private or hybrid cloud services, cloud SaaS products, on-premises infrastructure licenses and/or support services and other ancillary cloud services.

E.43 We asked cloud providers how they track financial performance and profitability for their cloud service business.[27] We summarise their responses below:

(a) Amazon reports global profitability for AWS in its public accounts. AWS said that it also [✂] as well as various other reports for its cloud infrastructure services business, and that it monitors performance [✂].[28] AWS said it measures profitability for AWS using profit margins [✂].[29]

(b) Microsoft said that its Azure Standalone Services (Azure) reporting unit is the business that offers public cloud infrastructure services, but that [✂] so does not have operating profit data for Azure.[30]

(c) Microsoft said that it does not in the ordinary course measure profitability at the Azure level or [✂] Cloud & Enterprise (which is part of Microsoft's publicly reported Intelligent Cloud segment).[31] Microsoft noted that Cloud & Enterprise includes Azure but also other businesses, including GitHub, Nuance, Intune, Power BI, Active Directory and some on-premises products such as Windows Server and SQL Server.[32]

(d) Microsoft said the financial performance of its global cloud business is reported in quarterly management reports and that it tracks Azure revenue performance [✂].[33]

(e) Google said it monitors profitability of cloud products on a global basis, with both operating profit and gross profit used to assess profitability.[34] Google Cloud includes Google Cloud Platform (GCP) as well as Google Workspace (a SaaS product) and other enterprise services.[35]

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[27] We note that OVHcloud publicly reports its 'Public Cloud' business segment, along with its other business segments of 'Private Cloud' and 'Web Cloud and Other', to an earnings before interest, tax, depreciation and amortisation (EBITDA) level, as well as reporting segment capex. OVHcloud consolidated financial statements, eg Consolidated financial statements FY2023.
[28] AWS' response to the CMA's information request [✂].
[29] AWS' response to the CMA's information request [✂].
[30] Microsoft's response to the CMA's information request [✂].
[31] Microsoft's response to the CMA's information request [✂].
[32] Microsoft's response to the CMA's information request [✂].
[33] Microsoft's response to the CMA's information request [✂].
[34] Google's response to the CMA's information request [✂].
[35] Alphabet Form 10-K 2023, page 87

(f) Google said that it does not track and manage operating profits by geographic region [✂].[36]

(g) IBM said its IaaS and PaaS businesses are included as part of its 'Infrastructure' segment and 'Software' segment respectively. As such, the performance of IBM's IaaS and PaaS businesses is a subset of those segments and gets reviewed within those segments, [✂].[37]

(h) IBM [✂].[38] IBM was able to provide some [✂] management reporting for [✂] and gross margins for [✂].[39]

(i) Oracle said it is currently piloting new methods to measure profitability at a service level and/or data centre level. Oracle said it could only provide financial data from [✂] using this new method of reporting.[40] Oracle's publicly reported segment which includes its cloud business, 'Cloud and license', includes cloud services and on-premises licences together.[41]

Inputs in assessing the profitability of cloud services

Identifying the relevant segments

E.44 The cloud providers that we have identified for profitability analysis are mostly global firms which offer cloud infrastructure services (both public and private) as well as providing other services and products. To assess the profitability of their public cloud infrastructure services businesses, it is necessary to identify the relevant reporting segment within each firm (or the closest relevant segment).

AWS

E.45 We consider AWS' public cloud reporting segment to be the most relevant to public cloud infrastructure services.[42]

Microsoft

E.46 As noted above, we asked the cloud providers how they monitor and assess the profitability of their public cloud businesses. Based on Microsoft's response and our review of Microsoft's financial statements and internal management accounts,

[36] Google's response to the CMA's information request [✂].
[37] IBM's responses to the CMA's information requests [✂].
[38] IBM's response to the CMA's information request [✂].
[39] IBM's response to the CMA's information requests [✂].
[40] Oracle's response to the CMA's information request [✂].
[41] Oracle FY23 10-K, page 101.
[42] AWS submissions indicate it does not provide private cloud services. AWS' response to the CMA's information request [✂].

we have identified the two most relevant segments for our profitability analysis to be:

(a) Microsoft's Azure product business, which offers its main public cloud infrastructure services. However, Microsoft reports more limited financial information for this segment ([✂]); and

(b) Microsoft's wider Cloud & Enterprise segment, which includes Azure[43] as well as other products and services, for which the company reports revenue, gross margin and operating income.

E.47 We recognise that the Cloud & Enterprise segment includes other products, such as Cloud & Enterprise licensing and Cloud & Enterprise SaaS, which could impact the profitability of the segment. However, we consider it to be a relevant segment as these products are similar and complementary to Azure services and may be purchased as part of multiple licenses that include cloud-based services, for which judgement is exercised by Microsoft in determining revenue recognition.[44]

E.48 Therefore, we consider Cloud & Enterprise to provide a relevant view of cloud profitability for Microsoft as Azure is a substantial and growing proportion of the segment ([✂] of Cloud & Enterprise revenues in financial year 2023);[45] it is the closest level to Azure at which operating income is tracked; and it may potentially capture some revenues (and associated costs) for products and services that are related to cloud services, but potentially are not included in Azure due to the nature of customer agreements and Microsoft's accounting practices.

E.49 We also include the Microsoft Cloud segment in our gross margins analysis as it represents a collection of cloud-focused services from across Microsoft's reported operating segments.[46] However, we consider it less relevant as it is a collection of services from across Microsoft's segment reporting, some of which do not appear as relevant to public cloud infrastructure services eg the commercial portion of LinkedIn and Dynamics 365, and as only revenues and gross profit are tracked for Microsoft Cloud, it does not provide a greater level of financial reporting than Azure or Cloud & Enterprise.

[43] As noted in Ofcom Final report – Annexes, paragraph A2.33.
[44] Microsoft's public accounts also note that Microsoft offers customers the ability to acquire multiple licenses of software products and services, including cloud-based services, in its customer agreements and that significant judgement is exercised by Microsoft in determining revenue recognition for these customer agreements (including determining standalone selling prices and whether products and services are considered distinct performance obligations that should be accounted for separately versus together, such as software licenses and related services that are sold with cloud-based services). Microsoft FY23 10-K page 97.
[45] CMA analysis of Microsoft's response to the CMA's information request [✂].
[46] Microsoft 10-K reports.

Google

E.50 We have identified two relevant segments for our profitability analysis:

(a) Google Cloud Platform appears to be Google's most relevant reporting segment for public cloud infrastructure services. However, Google reports revenues and gross margins for Google Cloud Platform but does not report operating margins.[47]

(b) Google Cloud has operating margin data available but includes some other services (such as Google Workspace) that we do not consider relevant to assessing the profitability of Google's cloud services.

E.51 Google Cloud Platform contributes [✂] Google Cloud revenues and gross profits. We include both Google Cloud and Google Cloud Platform in our assessment of gross margins and Google Cloud in our assessment of operating margins.

IBM

E.52 We consider IBM's [✂] to be more relevant to include in our assessment of gross and operating margins than IBM's publicly reported Hybrid Cloud. Our reasoning for this is that Hybrid Cloud includes private and hybrid cloud/on-premises services, which are [✂].[48]

Oracle

E.53 We consider Oracle's publicly reported cloud and license segment to be of limited relevance as it is likely to include a substantial portion of on-premises services, which may have substantially different margins to cloud services.[49] We consider the 'Cloud services' portion of Oracle's reported cloud and license segment and, more recently, Oracle's reporting for its cloud infrastructure business to be most relevant. However, Oracle only has data available for its cloud infrastructure business from [✂]. Oracle reports revenues for the 'Cloud services' portion of its cloud and license segment and has been able to provide a breakdown of cloud services and license support costs, but does not track the profitability of the 'Cloud services' portion of the reported cloud and license segment.

[47] As noted in Ofcom Final report – Annexes, Table A2.2.
[48] Based on CMA analysis of IBM UK cloud revenue breakdown. IBM's response to the CMA's information request [✂].
[49] CMA analysis of Oracle public accounts indicates that cloud services have comprised between 25% to 40% of Oracle's Cloud and License segment revenues for financial years 2021 to 2023.

OVHcloud

E.54 We consider OVHcloud's public cloud reporting segment to be the most relevant to public cloud infrastructure services because this reporting segment is focussed on these services.

Cost allocation

E.55 We note that none of the cloud providers included in our profitability assessment only offer public cloud services, and all except OVHcloud provide a much broader range of products and services beyond cloud services.

E.56 As a consequence, there are costs which are directly incurred by the relevant cloud businesses, and also shared common costs incurred by the firm.

E.57 Our understanding is that the operating profit (also known as earnings before interest and tax (EBIT)) figures used in our margins and ROCE analysis include allocations for shared and common costs such as sales and marketing costs, as well as internal recharges for the use of cloud services by other businesses within the wider firm.

E.58 We acknowledge that there is potentially a proportion of cloud providers' costs which are allocated or recharged from shared and common usage, and that there are challenges in accurately allocating and recharging these costs on a meaningful basis. As the cloud providers included in our EBIT margins and ROCE analysis have allocated and recharged costs in the ordinary course of business and use this financial data to track and assess performance, we consider it reasonable to use this EBIT data in our profitability analysis.

Capital base

E.59 We consider the capital bases for AWS' and Microsoft's cloud businesses, because a measure of capital employed is required for our ROCE analysis.

Balance sheet as a starting point

E.60 Amazon and Microsoft publicly report consolidated balance sheets. Amazon's public accounts also include reporting of AWS' asset balances for total assets excluding corporate assets, net property and equipment and goodwill. Microsoft's public accounts do not include balances for Azure or Cloud & Enterprise but include unearned revenue balances for the Intelligent Cloud segment (which Azure and Cloud & Enterprise are part of).[50]

[50] As noted in Ofcom Final report – Annexes, paragraph A2.33.

E.61 In addition, AWS provided accounts payable and accounts receivable balances from their internal management accounts for 2018 to 2023.[51]

E.62 Microsoft does not prepare separate balance sheets for Azure, Cloud & Enterprise or Intelligent Cloud in the ordinary course of business.[52] However Microsoft provided the carrying values for what it identified as 'all-cloud related assets' used in its public cloud infrastructure business. Microsoft noted that these assets are not exclusively Azure assets and also [✂]. Microsoft also said that these fixed assets do not include [✂].[53]

E.63 We consider it reasonable to use the balance sheet data that is available for AWS and Microsoft in our profitability analysis.

Working capital and tangible assets

E.64 We would expect the capital employed for cloud businesses to include working capital and tangible assets such as buildings, servers and network equipment.

E.65 AWS has submitted that we should account for liquid assets like cash holdings and marketable securities when computing capital employed.[54]

E.66 Our analysis seeks to reflect the operational capital employed by the businesses. We would generally consider relevant tangible and intangible assets, including working capital (which we consider in our estimates of capital employed for our ROCE analysis) to determine this. However, any cash balances or marketable securities represent means of funding the capital employed by the business, rather than an operational balance. We note we are not aware of any legal or regulatory requirements for cloud businesses to hold amounts of cash or marketable securities.

E.67 We therefore do not consider cash holdings and marketable securities to be relevant assets to include when estimating capital employed for businesses in the public cloud infrastructure services markets.

Intangible assets

E.68 We have considered whether we should include intangible assets in our estimate of the capital base. Intangible assets are assets such as goodwill, brand value and in-process research and development assets.

[51] AWS' responses to the CMA's information requests [✂].
[52] Microsoft's response to Ofcom's information request [✂].
[53] Microsoft's response to the CMA's information request [✂].
[54] AWS' submission to the CMA [✂].

E.69 Our guidelines set out criteria that intangible assets should meet to be considered for inclusion in capital employed:

(a) it must comprise a cost that has been incurred primarily to obtain earnings in the future;

(b) this cost must be additional to costs necessarily incurred at the time in running the business; and

(c) it must be identifiable as creating such an asset separate from any arising from the general running of the business.[55]

E.70 AWS has submitted that there are relevant intangible assets which we should include in our estimate of AWS' capital employed.[56] AWS submitted that estimates for AWS' goodwill, brand value and other intangible assets (including both finite-lived and indefinite-lived intangible assets) should be included as these contribute to AWS' revenues and profits.[57]

E.71 We have considered below whether AWS and/or Microsoft have relevant intangible assets which should be included in capital employed, based on these criteria.

Goodwill

E.72 Goodwill can be acquired in a business combination. Acquired goodwill is not a separately identified asset but rather is a balancing figure. It is the remaining, unallocated element of an acquisition price once all tangible assets and certain (although not necessarily all) intangible assts have been fair-valued and set against the price paid.

E.73 In principle, we agree that, when purchasing a business, goodwill may represent the value of intangible assets not capitalised on the businesses' balance sheets. The approach that we have taken is to recognise those intangible assets that meet our criteria for recognition, regardless of whether they have been separately identified in the companies' balance sheets or are included in a balancing goodwill figure, but to exclude any remaining goodwill, in line with the criteria set out in our Guidelines. This approach ensures that only intangible assets that meet our criteria for recognition are included in the estimate of the capital employed by AWS and Microsoft. It also avoids the risk of capitalising any economic profit.

E.74 Microsoft's Cloud & Enterprise business includes GitHub and Nuance (separate to Azure).[58] Microsoft recorded acquired intangible assets and goodwill (along with

[55] CC3 (Revised), Annex A, paragraph 14.
[56] AWS' submissions to the CMA [✂].
[57] AWS' submission to the CMA [✂].
[58] Microsoft's response to the CMA's information request [✂].

other assets and liabilities) for GitHub and Nuance when they were acquired in 2018 and 2022 respectively.[59] We do not consider the recorded goodwill for GitHub and Nuance to meet the criteria of creating a separately identifiable asset, given that it represents the balancing figure between price paid and assets acquired. It is also unlikely to meet the criteria of cost additional to costs necessarily incurred at the time in running the business. We therefore do not include this in our estimate of capital employed.[60]

E.75 AWS [✂] has proposed that we should allocate a share of Amazon's intangible assets to AWS.[61]

E.76 AWS submitted that an estimate of goodwill between [✂] and [✂] should be included in AWS' capital employed between 2020 and 2023.[62] For goodwill, we note that Amazon reports its goodwill assets by segment, so an AWS goodwill balance is available. As such, we do not consider it suitable to use AWS' submitted approach of allocating AWS a share of Amazon's goodwill proportional to AWS' share of Amazon's revenues.[63] Also, we consider it highly unlikely that AWS' goodwill would meet the criteria for inclusion in capital employed. Whether AWS' goodwill represents capitalised future excess profit (in the form of the balancing figure between price paid and assets acquired for acquisitions) or reflects [✂] as submitted by AWS,[64] this does not create a separately identifiable asset (separate from any arising from the general running of the business). The goodwill is also unlikely to meet the criteria of a cost additional to costs necessarily incurred at the time in running the business.

Brand value

E.77 Microsoft did not submit, and we did not identify, any brand value asset for its cloud businesses.

E.78 AWS submitted that an estimate of brand value between [✂] and [✂] should be included in AWS' capital employed, [✂].[65] Amazon does not record an intangible asset that relates to AWS' brand value in public accounts, presumably on the

[59] Microsoft FY22 Form 10-K and FY19 Form 10-K.
[60] Microsoft's Form 10-Ks note that the Nuance goodwill was primarily attributed to increased synergies that are expected to be achieved from the integration of Nuance, and the GitHub goodwill was primarily attributable to anticipated synergies from future growth. FY23 Form 10-K, page 70; FY19 Form 10-K, page 73.
[61] AWS' submission to the CMA [✂].
[62] AWS' submission to the CMA [✂].
[63] AWS' submission to the CMA [✂]. We note that under AWS' submitted approach, estimated goodwill for AWS is between [✂] whereas Amazon's reported accounts have had a goodwill balance for AWS of between $1.2 billion-$1.3 billion for the last five years. Amazon Form 10-Ks.
[64] AWS' submission to the CMA [✂].
[65] AWS' submission to the CMA [✂].

basis that any potential asset relating to brand value does not meet the recognition criteria for an intangible asset under applicable accounting standards.[66]

E.79 We recognise that brand value, whether acquired or developed in house, could meet the criteria of comprising a cost that has been incurred primarily to obtain earnings in the future. An acquired brand appears more likely to meet the criteria of being additional to costs necessarily incurred at the time in running the business, whereas operating costs that contribute to developing brand value would be less likely to meet this criteria. We have therefore considered whether there is evidence of an AWS brand value asset, and how that may have arisen.

E.80 Given that (i) Amazon does not record an intangible asset relating to brand value in its public accounts; (ii) the cloud-related acquisitions data provided by AWS does not include an identifiable brand asset; and (iii) AWS has not provided any evidence of costs incurred relating to brand value and/or acquired brand value, we do not consider there to be sufficient evidence of AWS acquired brand value or an AWS brand value asset in general. Our provisional view is that this fails both the criteria of being costs in addition to the costs it has necessarily incurred in running its business and of creating a separately identifiable asset.

Other intangible assets

E.81 In response to our request for information on its investments, Microsoft noted its investment in research and development (R&D).[67] Microsoft capitalises relevant R&D costs once technological feasibility has been established for a product,[68] so we consider any assets related to R&D to already be accounted for on Microsoft's balance sheet.

E.82 We have limited information on Microsoft's GitHub and Nuance acquired intangible assets (exclusive of goodwill), but were able to identify that the majority of the recorded intangible assets for each were allocated to customer-related assets, and the rest mostly allocated to technology-based assets.[69] The primarily customer-related nature of the assets suggests they are likely to have been incurred primarily to obtain earnings in the future. As these are separately recorded intangible assets from acquisitions which are directly identifiable as having become part of the Cloud & Enterprise business, we also consider them to be assets separate from any arising from the general running of the Cloud & Enterprise business. We do not have enough information to determine whether the GitHub and Nuance intangible assets were costs additional to costs necessarily

[66] We also note that if Amazon did record a separate identifiable brand value asset relating to AWS, we would expect it to be included in the AWS total assets balance, which we use to calculate AWS' capital employed.
[67] Microsoft's response to the CMA's information request [✂].
[68] Microsoft FY23 Form 10-K, page 54.
[69] Customer-related assets comprise 51% and 60% of the recorded intangible assets for GitHub and Nuance respectively. CMA analysis of FY23 Form 10-K, page 71; FY19 Form 10-K, page 73.

incurred at the time in running the business. However, given that GitHub and Nuance have remained as separate specialised services within Coud & Enterprise,[70] it is possible that their costs reflect investment outside of Cloud & Enterprise's normal business operations.

E.83 Therefore, we do not consider it unreasonable to provisionally include estimates for the acquired intangible asset values for GitHub and Nuance[71] over the period of our ROCE analysis, but also have performed sensitivity testing that excludes these intangible asset values.

E.84 Our review of Microsoft's public accounts indicates that a large proportion of Microsoft's intangible assets appear to relate to other acquired intangible assets (ie relating to acquisitions that are not GitHub or Nuance).[72] We have assessed the information that Microsoft submitted on its cloud-related acquisitions.[73] We note that we do not have sufficient information on Microsoft's other acquisitions to ascertain if they meet the intangible asset criteria above. Therefore, we have not included these other acquired intangible assets in our 'base' calculation of Microsoft's capital employed. However, we have performed sensitivity testing that includes these other acquired intangible assets and we present our base calculations and sensitivity analysis in our profitability analysis.

E.85 AWS [✂] but has proposed that we should include an allocation of Amazon's finite-lived and infinite-lived intangible assets in the estimate of AWS' capital employed.[74] However, our understanding is that an allocation of some of these intangible assets may already be included in AWS' total assets balance that we use to calculate AWS' capital employed.[75]

E.86 Given the lack of specificity in AWS' submission, we have reviewed Amazon's and AWS' intangible assets to understand if there are any identifiable other intangible assets that meet the criteria set out above.

E.87 Amazon's public accounts indicate that its main intangible assets categorised as 'Other assets' are acquired intangible assets relating to video and music content.[76] We do not consider video and music content to be relevant to assessing the profitability of AWS.

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[70] Nuance provides healthcare and enterprise AI solutions. GitHub provides a collaboration platform and code hosting service for developers. FY23 Form 10-K, page 11.
[71] Note, we have not included goodwill in our estimate of acquired intangible asset values.
[72] For example, Microsoft recognised $4.4 billion of acquired intangible assets for Nuance in financial year 2022, and had net intangible assets of $11.3 billion as at 30 June 2022. Microsoft FY23 Form 10-K.
[73] Submitted to Ofcom, see Cloud services market study - Final report – Annexes, page 40.
[74] AWS' submission to the CMA [✂]; AWS' response to the CMA's information request [✂].
[75] AWS Form 10-Ks note 'goodwill and other acquired intangible assets' as the only intangible assets excluded from total segment assets, and that Technology infrastructure assets (which could include intangible assets) are allocated among Amazon's segments based on usage, with the majority allocated to the AWS segment.
[76] Amazon FY23 Form 10-K, page 49.

E.88 We consider it highly unlikely that AWS has incurred costs relating to other intangible assets (such as in-process research and development) that are in addition to the costs it has necessarily incurred in running its business.

E.89 Similar to Microsoft, we have assessed the information that AWS submitted on its cloud-related acquisitions[77] but we do not have sufficient information on AWS' acquisitions to ascertain if they meet the intangible asset criteria above. Therefore, we have not included AWS' acquisitions in our 'base' calculation of AWS' capital employed. However, we have performed sensitivity testing that includes these acquired intangible assets and we present our base calculations and our sensitivity analysis in our profitability analysis.

Summary

E.90 We have considered whether it is relevant to includes estimates for goodwill, brand value and other intangible assets (finite-lived and indefinite-lived intangible assets) in Microsoft's and AWS' capital employed for their cloud businesses. Apart from Microsoft Cloud & Enterprise's acquired intangible assets (excluding goodwill) for GitHub and Nuance, we consider it highly unlikely that Microsoft's and AWS' cloud businesses have goodwill, brand value or other intangible assets that meet the intangible asset criteria set out above.

[77] Submitted to Ofcom, see Cloud services market study - Final report – Annexes, page 36.

Cost of capital

E.91 This section sets out how we have estimated WACC for AWS and Microsoft's cloud business for the purposes of this market investigation. We made our own estimations of WACC which we cross-checked against internal WACC estimates provided by cloud providers.

E.92 All WACC figures presented in this Annex are nominal except where indicated.

E.93 The approach taken reflects the circumstances of this case – it should not be taken as an illustration of how the CMA might consider the cost of capital in other cases.

Our approach to estimating the WACC

E.94 There are several factors we have considered in estimating an appropriate benchmark cost of capital for large cloud providers. These include:

(a) How to estimate the cost of capital;

(b) Specification of the cost of capital; and

(c) The time period over which the cost of capital should be measured.

How to estimate the cost of capital

E.95 As set out in our guidelines, we generally look to the Capital Asset Pricing Model (CAPM) when calculating the cost of capital since this is a widely understood technique with strong theoretical foundations.[78] We have adopted the CAPM approach in estimating the cost of capital for large cloud providers.

E.96 The CAPM relates the cost of equity (Ke) to the risk-free rate (Rf), the expected return on the market portfolio overall (total market return or Rm), and a firm-specific measure of investors' exposure to systematic risk (beta or β) as follows:

$$Ke = Rf + \beta(Rm - Rf)$$

E.97 The difference between the total market return (Rm) and the risk-free rate (Rf) is the equity risk premium (ERP), which captures the additional returns investors require for investing in the stock market overall.

E.98 If a business was entirely funded by equity, the expected return on equity could be considered to be its 'cost of capital'. For the purposes of this analysis, we treat

[78] CC3 (Revised), paragraph 116 and annex A, paragraph 16.

WACC as equal to cost of equity for AWS and Microsoft's cloud business due to both businesses' low levels of long-term debt financing. [79]

E.99 The cost of capital must reflect the effects of tax on returns to capital providers. We have measured profitability on an operating basis (ie using EBIT), thereby excluding the impact of interest and tax. As a result, profitability was assessed independently of the choice of capital structure of individual firms and pre-tax.

E.100 The returns to equity holders are made after corporation tax has been deducted. Hence, the cost of equity reflects the fact that the actual return to shareholders has been reduced by the rate of tax. To ensure comparability between our cost of capital and profitability measure we have therefore estimated the cost of capital (which we treat as equivalent to cost of equity for large cloud providers) on a nominal pre-tax basis, by making this adjustment:[80]

$$\text{Pre-tax WACC} = (1/(1-t)) \times Ke$$

Specification of the basis of the cost of capital

E.101 In keeping with the theoretical basis of the CAPM, our approach seeks to estimate the WACC of the large cloud providers themselves. To calculate this we used market data, such as inflation, the risk-free rate, the tax rate, and the total market return. We also estimate beta using market data for the large cloud providers and their competitors. We note that this data is only available for the cloud providers at the total company (ie group) level rather than at the cloud segment level. We cross-check our WACC estimate against cloud provider internal estimates (in particular, AWS' and Microsoft's cloud-related WACC estimates), as a way of considering any cloud segment-specific WACC variances.

Relevant time period

E.102 We have generally focussed on the last 5 years (2019 to 2023) for our analysis of the profitability of large cloud providers, with an extended ROCE analysis over a 10-year historical period (covering 2014 to 2023) for AWS where data allowed it. We have estimated the WACC in line with this.

E.103 We note that some inputs into the CAPM calculation, notably the risk-free rate and inflation, have increased substantially during the last 10 years. In this context, we have considered data for the last 10 years, but given somewhat more weight to more recent data.

[79] Long-term debt financing for Amazon and Microsoft is 3% or less of capital and we consider the applicable debt levels for their cloud businesses may be even lower. We note that Microsoft's internal WACC for the Cloud and Enterprise segment, produced for annual goodwill impairment testing, shows that Microsoft [✂]. Source: Microsoft's response to the CMA's information request [✂].
[80] This avoids the need to adjust nominal financial information to remove the effects of inflation.

Our estimate of the cost of capital

E.104 This section sets out the analysis that we undertook to estimate the components of the WACC calculation, which includes both generic and industry-specific components. The former comprises the real risk-free rate (RFR), inflation and the total market return (TMR); the latter comprises beta and the tax rate.

Risk-free rate

E.105 In order to estimate the RFR applicable over the period considered, we analysed the yields on inflation-linked UK government bonds of 10-year maturity.[81] We consider these securities to have negligible default risk and to be a reasonable proxy for the RFR.

E.106 We have calculated the average Daily Treasury Par Real Yield curve rates for 10-year securities over the last 5 years (2019 to 2023) and 10 years (2014 to 2023) to estimate a range of 0.20% to 0.34% for the RFR. We note real yields have increased substantially since late 2022 (average yields in 2023 were 1.68%), however we consider it appropriate to use the average rates over the period of our analysis to approximate the prevailing rate on average over this period. Based on our analysis, using more recent real yield curve rates also has minimal impact on the WACC estimate.

TMR and ERP

E.107 The ERP is the additional return that investors require to compensate them for assuming the risk associated with investing in equities rather than in risk-free assets. One approach to estimate the ERP is to first estimate the returns which investors expected to make on the market (the TMR) and then deduct the relevant RFR (as estimated above).

E.108 There are two types of approaches that can be used to estimate the TMR. Historical methods seek to derive the TMR from a long run of data on realised returns on equities. Forward-looking approaches seek to estimate the expected TMR based on either the reported expectations of market participants or the TMR implied in asset prices at the start of the period.

E.109 There is no universally accepted method for deriving the TMR or the ERP. Both concepts are concerned with investors' ex-ante expectations of returns, which are largely unobservable. The academic literature on the subject is large and can be categorised into three types:[82]

[81] Daily Treasury Par Real Yield curve rates, Resource Centre - US Department of the Treasury.
[82] Housebuilding market study final report - Appendix B: Cost of capital dated 26 February 2024, paragraphs B24-B25.

(a) Studies that assume that historical realised returns are equal to investors' expectations ('historical ex-post approaches').

(b) Studies that fit models of stock returns to historical data to separate out ex-ante expectations from ex-post good or bad fortune ('historical ex-ante approaches').

(c) Studies that use current market prices and surveys of market participants to derive current forward-looking expectations ('forward-looking approaches').

E.110 Each of the above methods have a large degree of uncertainty associated with them, and any results from these analyses require a large number of assumptions and significant amounts of judgement.

E.111 The CMA assessed the evidence on TMR in detail in its Ofwat PR19 price redeterminations,[83] and placed limited weight on the forward-looking approaches. It concluded that a real TMR range of 6.2% to 7.5% was appropriate, with a midpoint of 6.8%. In that decision, the CMA considered in detail whether an assumption of a broadly constant TMR in the long run was appropriate and concluded that it was. We take the same approach here.[84]

Inflation

E.112 Since the RFR and TMR are expressed in real terms, we need an estimate of inflation to convert our estimated real cost of equity into a nominal cost of equity. We analysed Consumer Price Index (CPI) data from the US Bureau of Labor Statistics. Average annual CPI over the last 10 years (2014 to 2023) has been 2.7%.[85] This 10-year average includes a relatively atypical period when inflation has risen significantly above the long-term target (annual inflation of 4.7%, 8.0% and 4.1% in 2021, 2022 and 2023 respectively).[86] We assume that equities have long investment horizons, as reflected in our estimates of the TMR and the RFR. Therefore, we also consider the Federal Reserve's longer-term inflation target of 2%. The Federal Reserve targets inflation that averages 2% over time and for many years inflation in the United States has run below this target.[87] Given that part of our analysis covers a longer 10-year period, we consider an inflation range of 2.0% to 2.7% to be appropriate.

[83] CMA PR19 Redetermination - Final Report 17 March 2021, pages 796 to 838. While this analysis was in the context of estimating a cost of capital for UK companies, we consider it to be broadly applicable here.
[84] We note that the TMR from the Ofwat PR19 price redeterminations was for the UK market. We consider this to be a reasonable proxy for a global TMR.
[85] Consumer Price Index for All Urban Consumers (CPI-U) Bureau of Labor Statistics Data.
[86] Consumer Price Index for All Urban Consumers (CPI-U), Annual CPI-U data Bureau of Labor Statistics Data.
[87] The Fed - Why does the Federal Reserve aim for inflation of 2 percent over the longer run?

Tax rate

E.113 We calculated the effective tax rates for Amazon and Microsoft over the last ten years from their public accounts resulting in a tax rate range of 15% to 20% for the purposes of our WACC calculation. The average effective tax rate for Amazon and Microsoft over the last 5 financial years (FY19 to FY23) was 15.1% and 14.5% respectively, and over the last ten financial years (FY14 to FY23) was 23.5% and 20.5% respectively.[88]

Equity betas

E.114 The beta of an asset measures the correlation between the volatility of the returns on the asset and the returns on the market as a whole, or the exposure of the firm to systematic or 'non-diversifiable' risk. It is in return for assuming this (market) risk that investors require an (equity risk) premium over the risk-free return.

E.115 The beta value of a listed firm can be directly estimated as the covariance between the stock's returns and the market's returns, divided by the variance of market returns. However, when estimated in this way, the beta value reflects the full range of activities undertaken by a listed business and, as a result, may differ from the beta of the relevant activities for the purposes of our investigation. As noted, we compare our WACC estimate to AWS' and Microsoft's internal cloud-related WACC estimates as a cross-check for such differences.

E.116 We have calculated the betas for Amazon, Microsoft, Alphabet, Oracle and IBM on a monthly basis over the last 5 years and 10 years.[89] The average equity beta for this sample of firms is 0.96 for the last 5 years, and 1.03 for the last 10 years. The average for Microsoft and Amazon is 1.00 and 1.11 for the last 5 and 10 years respectively.[90]

E.117 We have also cross-checked these averages against the betas used in the internal WACC calculations provided by Microsoft and Google.[91] Based on our analysis, we consider a beta range of 1.0 to 1.1 to be appropriate over the period covered in our analysis.

Our WACC estimates

E.118 Table E.1 below shows the WACC calculations using the approach and inputs set out above:

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[88] CMA analysis of Amazon and Microsoft 10-K filings.
[89] Calculated using data from Bloomberg, and S&P 500 as reference market.
[90] For Microsoft the average beta for the last 5 and 10 years is 0.86 and 0.96 respectively; for Amazon it is 1.14 and 1.26 respectively.
[91] Microsoft's response to the CMA's information requests [✂]; Microsoft's response to Ofcom's information request [✂]; Google's response to the CMA's information request [✂].

Table E.1: CMA estimates of WACC

	Low	*High*
RFR	0.2%	0.3%
TMR	6.2%	7.5%
ERP	6.0%	7.2%
Equity beta	1.0	1.1
Real CoE (post-tax)	6.2%	8.1%
CPI	2.0%	2.7%
Effective tax rate	15.0%	20.0%
Cost of equity (nominal, pre-tax)	**9.8%**	**13.9%**

Source: CMA analysis

E.119 We have also compared our WACC estimates against internal WACC estimates provided by Microsoft, AWS, Google and [✂]:

(a) Microsoft's internal documents indicate that they have used a WACC of [✂] on a real, pre-tax basis ([✂] using our estimates for inflation set out above) for their goodwill impairment testing for the Cloud and Enterprise segment over the last 6 financial years.[92]

(b) The quarterly WACC calculations for Alphabet group, which were provided by Google indicate that the Alphabet group's pre-tax nominal WACC has ranged from [✂] over the period Q4 2018 to Q4 2023.[93]

(c) [✂].[94]

(d) [✂] provided its internal annual WACC estimate for [✂].[95] [✂].

E.120 On this basis, we currently consider a WACC range of 10% to 14% to be a reasonable benchmark for comparing to ROCE (pre-tax, as calculated) for AWS and Microsoft's cloud business over the period covered in our analysis.

[92] CMA analysis of Microsoft's response to the CMA's information request [✂]; and Microsoft's response to Ofcom's information request [✂].
[93] CMA analysis of Google's response to the CMA's information request [✂].
[94] [✂] response to the CMA's information request [✂].
[95] [✂] response to the CMA's information request [✂].

Our profitability analysis

Margins analysis

Gross margins

E.121 We consider gross profit expressed as a percentage of revenue (ie gross margin),[96] as a potentially relevant measure of financial performance for cloud providers, as set out in paragraph E.356.[97]

E.122 Gross margin is publicly reported for Microsoft Cloud. We have estimated OVHcloud Public Cloud gross margin on a comparable basis using public accounts.[98] In addition, the evidence that we have gathered includes gross margins for Microsoft Cloud & Enterprise, Microsoft Azure, Google Cloud, Google Cloud Platform and IBM's [✂]. We have also estimated AWS' gross margins using cost breakdowns in AWS' internal management accounts,[99] and Oracle's Cloud services gross margin using reported revenues and [✂].[100]

E.123 Table E.2 below shows the gross margins for the relevant business segments of AWS, Microsoft, Google, IBM and OVHcloud for the last five financial years.

Table E.2: Gross margins by cloud provider segment, financial years (FY) 2020 to 2024[101]

	FY20	*FY21*	*FY22*	*FY23*	*FY24*
AWS (estimated)	[✂]	[✂]	[✂]	[✂]	[✂]
Microsoft Cloud	[✂]	[✂]	[✂]	[✂]	[✂]
Microsoft Cloud & Enterprise	[✂]	[✂]	[✂]	[✂]	[✂]
Microsoft Azure	[✂]	[✂]	[✂]	[✂]	[✂]
Google Cloud	[✂]	[✂]	[✂]	[✂]	[✂]
Google Cloud Platform	[✂]	[✂]	[✂]	[✂]	[✂]
Oracle Cloud services (estimated)	[✂]	[✂]	[✂]	[✂]	[✂]
IBM [✂]	[✂]	[✂]	[✂]	[✂]	[✂]
IBM [✂]	[✂]	[✂]	[✂]	[✂]	[✂]
OVHcloud Public Cloud (estimated)	25%	31%	52%	48%	n/a

Note: We have indicated n/a where we did not have data available to calculate gross margin. Google and AWS FY23 data is for January to September 2023. The Microsoft Cloud segment was previously reported as 'commercial cloud' in financial years 2020 and 2021.
Source: CMA analysis of Microsoft Form 10-Ks; Oracle Form 10-Ks; OVHcloud Consolidated Financial Statements; Responses to the CMA's information requests [✂].

[96] Gross profit is typically calculated as revenue less cost of goods sold (COGS). Gross profit is most commonly defined by the cloud providers in our analysis as revenue less direct costs, including infrastructure costs, and excluding sales and marketing costs, research and development costs, general and administrative costs, non-infrastructure depreciation and amortisation, and interest and tax. Where cloud providers' gross profit measures have varied from this definition we have sought to make adjustments to analyse gross margins on a comparable basis.
[97] See also chapter 3, paragraph 3.243.
[98] OVHcloud publicly reports gross margin for its Public Cloud segment exclusive of depreciation and amortisation related to its cloud infrastructure. We have estimated OVHcloud Public Cloud gross margin inclusive of infrastructure depreciation and amortisation using OVHcloud's total annual depreciation and impairment expense for property, plant and equipment, allocated based on the Public Cloud segment's proportion of annual capex. Note, OVHcloud may include some R&D expenses in its reported gross profit which other cloud providers do not include in gross profit.
[99] We estimate gross margin for AWS on a comparable basis to other cloud providers by including AWS cost reporting categories of [✂].
[100] [✂].
[101] Financial years vary between cloud providers. AWS, Google and IBM have financial years ending in December; Microsoft's financial year end is June; Oracle's financial year end is May; and OVHcloud's financial year end is August.

E.124 Table E.2 shows:

(a) AWS and Microsoft's broader cloud businesses (Microsoft Cloud and Cloud & Enterprise) have consistently achieved the highest gross margins, in excess of [✂] for AWS and of [✂] for both Microsoft segments over the last five years.

(b) The gross margins for Google Cloud, Google Cloud Platform and Microsoft Azure have increased over time.

(c) AWS, Microsoft, Google and Oracle[102] have generated gross margins for their cloud businesses which are higher than other providers.

EBIT and EBIT margins

E.125 We consider earnings before interest and taxation (EBIT),[103] expressed both in US dollar (USD) value and as a percentage of revenue, as a potentially relevant measure of financial performance for cloud providers, as set out in paragraph E.356.

E.126 AWS and Google Cloud have publicly reported operating profit (equivalent to EBIT). We have been provided with internal management accounts that include operating profit for Microsoft's Cloud & Enterprise reporting segment, and we have estimated the operating profit for Azure from gross profit (see the previous section for an explanation of our approach). We have also estimated the operating profit for Oracle cloud services using our estimated gross profit (see the previous section for an explanation of our approach) and an estimated allocation of Oracle group opex.[104]

E.127 Table E.3 below sets out the EBIT for the cloud segments of AWS, Microsoft and Google for the last five financial years.

Table E.3: EBIT (USD billions) for financial years (FY) 2020 to 2024

	FY20	*FY21*	*FY22*	*FY23*	*FY24*
AWS	14	19	23	25	n/a
Microsoft Cloud & Enterprise	[✂]	[✂]	[✂]	[✂]	[✂]
Microsoft Azure (estimated)	[✂]	[✂]	[✂]	[✂]	[✂]
Google Cloud (restated for 2023 useful life change)	[✂]	(2)	(2)	2	n/a
Google Cloud (pre 2023 useful life change)	(6)	(3)	(3)	n/a	n/a
Oracle Cloud services (estimated)	[✂]	[✂]	[✂]	[✂]	[✂]

[102] This is also consistent with Oracle's new financial tracking, which indicates its global Cloud Infrastructure business had a gross margin of [✂] for FY24, and its UK gross margins [✂] for FY24 [✂]. Oracle's response to the CMA's information request [✂].
[103] EBIT is calculated as gross profit less indirect costs such as sales and marketing costs, research and development costs, and general and administrative costs. It excludes interest and tax.
[104] We estimate sales and marketing opex by allocating a portion of Oracle's Cloud and license sales and marketing costs, using Oracle Cloud services' proportional share of total Cloud and license revenue, and estimate research & development, general & administrative and intangible asset amortisation opex using Oracle Cloud services' proportional share of total Oracle revenue.

Note: In January 2023 Google changed the estimated useful life of its servers from four to six years, and the estimated useful life of certain network equipment from five to six years.[105] We show Google Cloud EBIT both on the current reporting basis (restated for 2023 useful life change) and on a pre-2023 useful life change basis due to the impact of this change on profitability. We note that AWS and Microsoft have also made changes to their useful life policies for servers and networking equipment: AWS in financial years 2020 and 2022[106]; Microsoft in financial years 2020 and 2023.[107]
Source: CMA analysis of AWS Form 10-Ks; Microsoft Form 10-Ks; Alphabet Form 10-Ks; Oracle Form 10-Ks; Responses to the CMA's information requests [✂].

E.128 Table E.3 shows:

(a) AWS and Microsoft have reported higher EBIT for their cloud businesses than Google Cloud and other cloud providers.

(b) Google Cloud EBIT is positive in FY23. Prior to FY23 Google Cloud was loss-making.

(c) [✂].

E.129 Table E.4 below sets out the EBIT margins for the cloud segments of AWS, Microsoft and Google, over a longer eight-year period.

Table E.4: EBIT margins for financial years 2017 to 2024

	FY17	*FY18*	*FY19*	*FY20*	*FY21*	*FY22*	*FY23*	*FY24*
AWS	25%	28%	26%	30%	30%	29%	27%	37%*
Microsoft Cloud & Enterprise	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Microsoft Azure (estimated)	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Google Cloud (restated for 2023 useful life change)				[✂]	(12)%	(7)%	5%	13%*
Google Cloud (pre 2023 useful life change)		(74)%	(52)%	(43)%	(16)%	(11)%		
Oracle Cloud services (estimated)				[✂]	[✂]	[✂]	[✂]	[✂]

**AWS and Google Cloud FY24 EBIT margins are for the year to date (January to September 2024).*
Source: CMA analysis of AWS Form 10-Ks; Microsoft Form 10-Ks; Alphabet Form 10-Ks; Oracle Form 10-Ks; Responses to the CMA's information requests [✂].

E.130 Table E.4 shows:

(a) The EBIT margins for AWS have consistently been between 25% and 30% for 2017 to 2023.

(b) The EBIT margins for Microsoft's Cloud & Enterprise business segment have consistently been between [40-50]% and [50-60]% [✂] for the last eight financial years, though are on an upward trajectory.

(c) We estimate that Microsoft Azure [✂] and has consistently had EBIT margins between [20-30%] and [30-40%] for the last four years, with margins on an upward trajectory.

[105] Alphabet Q3 2023 earnings release, 24 October 2023, page 3.
[106] Amazon 2022 From 10-K, page 41; Amazon 2020 Form 10-K, page 43.
[107] Microsoft FY23 Form 10-K, page 63; Microsoft FY20 Form 10-K, page 52.

(d) Google Cloud became profitable in FY23 and is reporting growing EBIT margin, albeit the EBIT margins for Google Cloud are currently significantly lower than AWS and Azure and Microsoft's Cloud & Enterprise business segment.

(e) Our estimated EBIT margins for Oracle's Cloud services have consistently been between [10-20]% and [20-30]%.

E.131 [✂].[108]

E.132 Reported financial results for the year to date to September 2024 for AWS and Google Cloud also show EBIT margins have increased to 37% and 13% respectively.[109] AWS, Microsoft cloud businesses, Google Cloud and Oracle Cloud services have all had EBIT margin improvement in their most recently reported financial periods.

ROCE analysis

E.133 We have calculated ROCE for AWS and Microsoft's Cloud & Enterprise and Azure businesses. The basis for doing this analysis for AWS and Microsoft's cloud businesses is set out earlier in the 'Scope of our analysis' section. As set out in that section, we are primarily interested in assessing the profitability of AWS and Microsoft's cloud businesses as they are the two largest providers in the UK markets with [60%-70%] share of combined IaaS and PaaS revenues. The third largest provider in the UK, Google's cloud business, has only recently become profitable in 2023 as well as having a substantially smaller share of the UK markets. We set out our ROCE analysis and compare it to our estimated WACC in the section below.

E.134 We estimate a WACC in the range of 10% to 14% to be appropriate for our profitability assessment for AWS and Microsoft's Cloud & Enterprise and Azure businesses.

E.135 We also test the sensitivity of our ROCE analysis using different measures of capital employed for AWS and Microsoft's Cloud & Enterprise and Azure businesses.

AWS

E.136 We have considered AWS' ROCE, measured as EBIT divided by capital employed. Our baseline estimate of capital employed is calculated as AWS total

[108] [✂] response to the CMA's information request [✂].
[109] CMA analysis of Amazon and Alphabet Form 10-Qs

assets[110] (from public accounts) less AWS accounts payable (from AWS internal accounts)[111] and an estimate of AWS unearned revenue.

E.137 Amazon's accounts indicate that prepayments of AWS services comprise a substantial portion of Amazon's unearned revenue balances.[112] Therefore we consider it appropriate to include an estimate of AWS unearned revenue. We estimate AWS unearned revenue for each year by allocating a portion of Amazon's total unearned revenue balance, using AWS' proportional share of Amazon total revenue. We consider revenue-based allocation to be reasonable in the context of the limitations on available data, particularly as unearned revenue balances are likely to be closely linked to revenue generation.

E.138 We have also tested the sensitivity of our AWS ROCE analysis using different measures of capital employed:

(a) Sensitivity 1: AWS total assets less an estimate of AWS current liabilities. This sensitivity takes into account that there may be additional AWS current liabilities not captured in our baseline estimate, such as accrued expenses. We estimate AWS current liabilities for each year by allocating a portion of Amazon's total current liabilities balance, using AWS' proportional share of Amazon total operating expenses.[113]

(b) Sensitivity 2: AWS total assets less AWS accounts payable. We consider this sensitivity to overstate AWS capital employed as it does not include AWS unearned revenue. However, we include this sensitivity as a cross-check as it does not rely on estimates for account balances.

(c) Sensitivity 3: AWS total assets only. We consider this sensitivity to overstate AWS capital employed as it does not include any current liabilities. We include it as a conservative lower bound for the ROCE figure, but do not consider it to be an appropriate measure of ROCE, compared to the measures set out above.

E.139 We also tested the sensitivity of our AWS ROCE analysis to the inclusion of estimates for acquired intangible assets. We found that the inclusion of acquired intangible asset estimates resulted in no material changes to our ROCE analysis for AWS (less than 10 basis points difference in ROCE in all scenarios with

[110] AWS accounts state that AWS total assets exclude corporate assets (such as cash and cash equivalents, marketable securities, other long-term investments, corporate facilities, goodwill and other acquired intangible assets, and tax assets), and primarily consist of property and equipment, accounts receivable and operating leases. AWS 2023 Form 10-K page 70.
[111] AWS' response to the CMA's information request [✂].
[112] For example, AWS 2023 Form 10-K page 51.
[113] Given Amazon's largest current liability account has consistently been accounts payable over the last 10 years and we would expect accounts payable to be closely linked with the level of operating expenditure, we consider this to be a reasonable allocation approach.

acquired intangible assets) and so have omitted these from our ROCE analysis below.

E.140 Table E.5 sets out the results of our ROCE analysis for AWS for the last five years.

Table E.5: AWS ROCE under baseline and sensitivity scenarios for capital employed

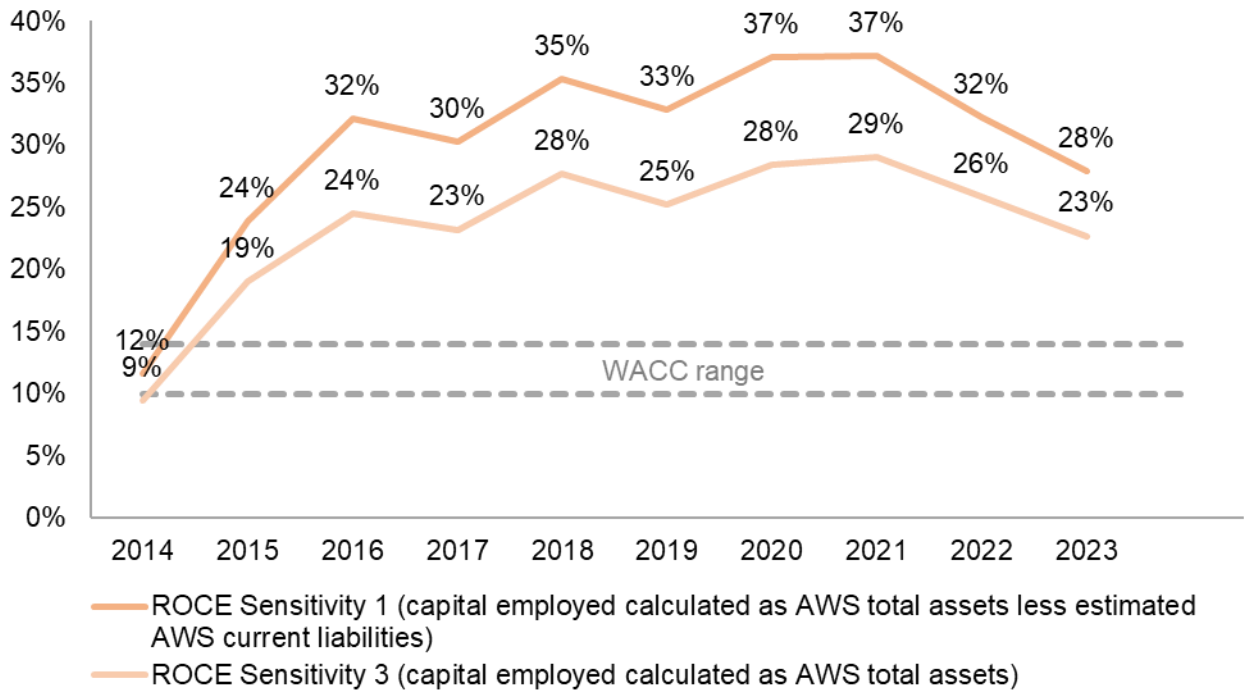
	FY19	*FY20*	*FY21*	*FY22*	*FY23*
Baseline ROCE	[≫]	[≫]	[≫]	[≫]	[≫]
ROCE sensitivity 1 (using total assets less estimated current liabilities)	33%	37%	37%	32%	28%
ROCE sensitivity 2 (using total assets less accounts payable)	[≫]	[≫]	[≫]	[≫]	[≫]
ROCE sensitivity 3 (using total assets)	25%	28%	29%	26%	23%

Source: CMA analysis of Amazon Form 10-Ks; AWS' response to the CMA's information requests [≫].

E.141 The table above shows that our baseline ROCE and all ROCE sensitivities for AWS have been above our range for WACC of 10% to 14% over the last five years, and consistently in excess of 20%.

E.142 We have also considered AWS ROCE over a longer time period of 10 years. Although we only have data available to calculate baseline ROCE for 2018 to 2022, we were able to extend our analysis to a 10-year period using the data from ROCE sensitivity 1 (which we consider to be the next best approximation for capital employed) and sensitivity 3. This is shown in Figure E.2 below.

Figure E.2: AWS ROCE under sensitivity 1 and 3, financial years 2014 to 2023



Source: CMA analysis of Amazon Form 10-Ks.

E.143 Figure E.22 shows that since 2015 AWS' ROCE has consistently been above WACC and since 2016 has been in excess of 20%.

E.144 We have also considered AWS future ROCE using AWS' internal forecasts. [✂].[114]Our calculation indicates that [✂] to [✂] in 2024.[115]

Impact of AI investment on ROCE

E.145 We have also considered the impact of AWS' investment in AI cloud services on AWS' ROCE. Whilst the data that we have available does not contain a detailed breakdown of financial data available that would allow us to calculate AWS ROCE excluding AI, our analysis finds that:

(a) AWS' main AI cloud services ('Gen AI' and 'AI/ML') have [✂] in each year from 2021 to 2023;[116] and

(b) AWS' external server capex on Gen AI has [✂].[117]

E.146 An AWS internal document states that [✂].[118]

E.147 Our analysis indicates that [✂], thereby having a positive impact on ROCE in the period from 2021 to 2023. However, we do not have sufficient data to calculate AWS' ROCE excluding the impact of AI.

Microsoft Cloud & Enterprise and Azure

E.148 As explained above, we consider it relevant to assess the profitability of both Azure and Microsoft's Cloud & Enterprise reporting segment, as reflected in internal financial reports. We set out our approach to calculating ROCE for each below.

Microsoft Azure

E.149 Azure is one of the products included in Microsoft's Cloud & Enterprise business unit. Azure is reported to [✂] while the broader Cloud & Enterprise business is reported to [✂]. We have therefore calculated an estimate of Azure EBIT as an input to our analysis of EBIT margins and ROCE.

E.150 To estimate Azure EBIT, we allocate a portion of the non-infrastructure operating costs[119] which are attributed to Cloud & Enterprise. We considered whether to allocate non-infrastructure operating costs to Azure based on Azure's proportion of

[114] We are able to estimate forecast ROCE under sensitivity 3 by estimating AWS total assets for 2024 using AWS' total assets as at 31 December 2023, forecast capex for the year, and an estimate of annual depreciation based on prior year depreciation expenses. We have not extended our ROCE forecast for AWS beyond 2024 as [✂]. AWS' response to the CMA's information request [✂].
[115] CMA analysis of Amazon Form 10-Ks and AWS' response to the CMA's information request [✂].
[116] Note, this does not cover all of AWS' AI-related services. AWS' response to the CMA's information request [✂].
[117] AWS' response to the CMA's information requests [✂].
[118] AWS' response to the CMA's information request [✂].
[119] This includes expenses related to sales and marketing, research and development and general and administrative expenses. Microsoft's response to the CMA's information request [✂].

Cloud & Enterprise revenue or based on Azure's proportion of Cloud & Enterprise cost of goods sold (COGS). We currently consider revenue-based allocation to be more appropriate, as we consider that the level of expenditure on sales and marketing, research and development and/or general and administrative expenses will be more closely linked to revenue generation and growth than COGS expenditure.

E.151 We have considered Microsoft Azure's ROCE, measured as estimated EBIT divided by capital employed. Our baseline estimate of capital employed is calculated as Microsoft public cloud fixed assets (provided to us by Microsoft)[120] plus estimated Azure current assets, less estimated Azure unearned revenue. We note that this only includes unearned revenue as a current liability for Azure, however it is likely that Azure incurs other current liabilities such as accounts payable. As a result, this estimate may overstate capital employed (and understate ROCE), and we consider a broader estimate of current liabilities in our sensitivity testing.

E.152 We estimate Azure current assets for each year by allocating a portion of Microsoft's total current assets balance excluding cash and cash equivalents, using Azure's proportional share of Microsoft total revenue. We consider revenue-based allocation to be appropriate as accounts receivable (which are closely linked to revenue generation) have consistently comprised the majority of Microsoft's current assets excluding cash and cash equivalents.[121]

E.153 Microsoft publicly reports its unearned revenue balance for the Intelligent Cloud segment (which Azure and Cloud & Enterprise are part of). The value of Microsoft's Intelligent Cloud unearned revenue liability as of 30 June for the last five financial years has ranged between $17.0 billion and $21.6 billion.[122]

E.154 We consider it likely that a substantial portion of this balance will relate to Azure and Cloud & Enterprise.[123] We therefore consider it to be appropriate to include an estimate of unearned revenue for Azure and Cloud & Enterprise. We estimate Azure unearned revenue for each year by allocating a portion of the Intelligent Cloud unearned revenue balance, using Azure's proportional share of Intelligent Cloud revenue. As above, we consider revenue-based allocation to be appropriate as unearned revenue balances are closely linked to revenue generation.

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[120] Microsoft's response to the CMA's information requests [✂].
[121] For example, as at 30 June 2023 accounts receivable comprised 67% of Microsoft's current assets excluding cash, cash equivalents, and short-term investments. Microsoft FY23 Form 10-K, page 60.
[122] Microsoft 10-K reports.
[123] The Cloud & Enterprise segment has comprised between [✂] of Intelligent Cloud's net revenue between FY20 to FY24; Azure has comprised [✂] of Intelligent Cloud's net revenue between FY20 to FY24. Additionally, Microsoft's public accounts note that certain cloud services depend on a significant level of integration, interdependency, and interrelation between the desktop applications and cloud services, and are accounted for together as one performance obligation. The revenue that Microsoft allocates to remaining performance obligations includes unearned revenue and future obligations which Microsoft does not recognise on its balance sheet. See for example Microsoft FY23 Form 10-K, pages 64 and 86.

E.155 We note that Microsoft's reported Intelligent Cloud unearned revenue balance does not split out the current and non-current portions of this balance. We would not typically include non-current unearned revenue in our calculation of unearned revenue. Our estimate of baseline capital employed could be somewhat understated by inclusion of non-current unearned revenue in our estimate, however we note that the non-current portion of Microsoft's total unearned revenue balance has been consistently low.[124] Given this, we consider the inclusion of any non-current unearned revenue in our capital employed estimate likely to have a minimal impact.

E.156 We have also tested the sensitivity of our Azure ROCE analysis using different measures of capital employed:

(a) Sensitivity 1: Microsoft public cloud fixed assets plus an estimate of Azure net working capital. This sensitivity takes into account that there may be additional Azure current liabilities not captured in our baseline estimate, such as accounts payable. We estimate Azure net working capital for each year by allocating a portion of Microsoft total net working capital (current assets less current liabilities excluding cash, cash equivalents and current debt), using Azure's proportional share of Microsoft total revenue. We consider revenue-based allocation to be appropriate as accounts receivable and unearned revenue are the two largest balances in Microsoft's net working capital.

(b) Sensitivity 2: Microsoft public cloud fixed assets only. This sensitivity may overstate or understate capital employed as it does not include any current assets or liabilities. However, we include this sensitivity as a cross-check as it does not rely on estimates for account balances.

E.157 We also tested the sensitivity of our Azure ROCE analysis to the inclusion of estimates for acquired intangible assets. We found the inclusion of acquired intangible asset estimates resulted in no material changes to our ROCE analysis for Azure (less than 30 basis points difference in all scenarios) and have omitted these from our ROCE analysis below.

E.158 Figure E.3 sets out the results of our ROCE analysis for Azure for the last five years.

Figure E.3: Azure ROCE under baseline and sensitivities, financial years 2020 to 2024

[✂]

[124] Microsoft's 10-K reports show long-term (non-current) unearned revenue was 12% of Microsoft's total unearned revenue balance as at 30 June 2019, and for financial years 2020 to 2023 the proportion as at 30 June has ranged between 5% to 8%.

E.159 Figure E.3 shows our baseline Azure ROCE has ranged from [✂] over the last five financial years, whilst ROCE Sensitivity 1 has ranged between [✂] and Sensitivity 2 has ranged between [✂].

E.160 It also shows that our baseline ROCE and all ROCE sensitivities for Azure have been above our estimated WACC since financial year 2021, and are trending upwards. Microsoft Azure ROCE has been in excess of 20% under all sensitivities used in our analysis for the last three years

E.161 We have also considered Azure ROCE over a longer time period. Microsoft was only able to provide public cloud fixed asset balances as far back as financial year 2018,[125] so we were not able to analyse Azure ROCE over a 10-year period. However, our analysis of Azure ROCE over the seven-year period of financial years 2018 to 2024 shows that Azure ROCE was [✂], under baseline ROCE and all ROCE sensitivities.

Microsoft Cloud & Enterprise

E.162 We have considered Microsoft Cloud & Enterprise's ROCE, measured as estimated EBIT divided by capital employed. Our baseline estimate of capital employed is calculated as Microsoft public cloud fixed assets (submitted by Microsoft) plus estimated Cloud & Enterprise current assets and estimated acquired intangible assets for GitHub and Nuance, less estimated Cloud & Enterprise unearned revenue. We note that this only includes unearned revenue as a current liability for Azure, however it is likely that Azure incurs other current liabilities such as accounts payable. As such, this estimate may overstate capital employed, and we consider a broader estimate of current liabilities in our sensitivity testing.

E.163 Consistent with our calculations for Azure, we estimate Cloud & Enterprise current assets by allocating a portion of Microsoft's total current assets balance excluding cash and cash equivalents, using Cloud & Enterprise's proportional share of Microsoft total revenue.

E.164 Also consistent with our calculations for Azure, we estimate Cloud & Enterprise unearned revenue for each year by allocating a portion of the Intelligent Cloud unearned revenue balance, using Cloud & Enterprise's proportional share of Intelligent Cloud revenue.

E.165 Microsoft's Cloud & Enterprise business includes GitHub and Nuance (separately to Azure, hence we have not included in our Azure ROCE analysis). As discussed

[125] Microsoft's response to the CMA's information request [✂].

in the 'Intangible assets' section, we consider it relevant to include an estimate of GitHub and Nuance acquired intangible assets for Cloud & Enterprise.

E.166 We note however, that while we have provisionally included an estimate in this initial analysis as they may meet the criteria set out in the 'Intangible assets' section, our estimates may overstate capital employed, and hence artificially understate ROCE. The Nuance business provides professional services which are reported in [✂] (in 'Enterprise Services' within the Intelligent Cloud segment).[126] The acquired intangible assets for GitHub and Nuance also include a substantial proportion of customer- and marketing-related assets, which are less clearly relevant assets for the provision of cloud services. We use the total acquired intangible assets in our estimate of Cloud & Enterprise capital employed, however given these factors, this is likely to overstate capital employed to some degree which again would result in an understatement of ROCE.

E.167 We estimate the carrying value of GitHub and Nuance acquired intangible assets over the period of our ROCE analysis using Microsoft's reported total acquired intangible assets in the year of acquisition and weighted average useful life for these assets.[127]

E.168 We have also tested the sensitivity of our Cloud & Enterprise ROCE analysis using different measures of capital employed:

(a) Sensitivity 1: Microsoft public cloud fixed assets plus an estimate of Cloud & Enterprise net working capital and estimated acquired intangible assets for GitHub and Nuance. This sensitivity takes into account that there may be additional Cloud & Enterprise current liabilities not captured in our baseline estimate, such as accounts payable. As for Azure, we estimate Cloud & Enterprise net working capital by allocating a portion of Microsoft total net working capital (current assets less current liabilities excluding cash, cash equivalents and current debt), using Cloud & Enterprise's proportional share of Microsoft total revenue.

(b) Sensitivity 2: Microsoft public cloud fixed assets plus estimated acquired intangible assets for GitHub and Nuance. This sensitivity may overstate or understate capital employed as it does not include any current assets or liabilities. However, we include this sensitivity as a cross-check as it does not rely on estimates for account balances.

(c) Sensitivity 3: Microsoft public cloud fixed assets plus estimated Cloud & Enterprise current assets, less estimated Cloud & Enterprise unearned revenue (ie excluding GitHub and Nuance acquired intangible assets). This sensitivity takes into account that the intangible asset balances for GitHub

[126] Microsoft FY23 Form 10-K, page 93; Microsoft's response to the CMA's information request [✂].
[127] Microsoft FY23 Form 10-K, page 78; Microsoft FY19 Form 10-K, page 73.

and Nuance may potentially fail to meet the criteria in paragraph E.68, which means their inclusion could overstate capital employed.

E.169 Figure E.4 sets out the results of our ROCE analysis for Cloud & Enterprise for the last five years.

Figure E.4: Cloud & Enterprise ROCE under baseline and sensitivities, financial years 2020 to 2024

[✂]

E.170 Figure E.4 shows that our baseline ROCE and all ROCE sensitivities for Microsoft Cloud & Enterprise have been above WACC for the last five years, and consistently in excess of 50%.

E.171 We also tested the sensitivity of our Cloud & Enterprise ROCE analysis to the inclusion of estimates for acquired intangible assets for other cloud-related acquisitions that we have assessed as relevant to Cloud & Enterprise.[128]

E.172 We found the inclusion of estimates for acquired intangible assets for other cloud-related acquisitions (in addition to GitHub and Nuance which have been included in baseline) has a limited impact on Cloud & Enterprise ROCE, which remains in excess of 50% in all years. We found the difference to be less than 150 basis points in all scenarios and have omitted these from our ROCE analysis above.

E.173 We have also considered Cloud & Enterprise ROCE over a longer time period. Microsoft was only able to provide public cloud fixed asset balances as far back as financial year 2018, so we were not able to analyse Cloud & Enterprise ROCE over a 10 year period. However, our analysis of Cloud & Enterprise ROCE over the seven year period of financial years 2018 to 2024 shows that Cloud & Enterprise ROCE was consistently in excess of 50% in all years over this longer time period.

Impact of AI investment on ROCE

E.174 We have also considered the impact of Microsoft's investment in AI cloud services on Azure and Cloud & Enterprise ROCE. Whilst the data that we have available does not contain a detailed breakdown of financial data to allow us calculate Azure or Cloud & Enterprise ROCE excluding AI, our analysis finds that Microsoft's AI-

[128] [✂]. We assume a weighted average life of 7 years and that 20% of acquisition deal value will be recognised as acquired intangible assets (excluding goodwill) based on GitHub and Nuance accounts, in order to estimate the carrying value of acquired intangible assets for other relevant cloud-related acquisitions. Source: Microsoft FY22 Form 10-K, pages 77-78 ; Microsoft FY19 Form 10-K, page 73; Microsoft's response to the CMA's information request [✂]; Microsoft's response to Ofcom's information request [✂].

related cloud capex on Server GPUs is increasing significantly, at a [✂] CAGR[129] from [✂] in financial year 2023 to forecast [✂] in financial year 2027.[130]

E.175 Microsoft also provided the following data on Azure AI:[131]

(a) Estimated Azure AI revenue as a proportion of total Azure revenue is [✂] for FY24 and [✂] for FY25; and

(b) Forecast gross margins for AI-related cloud services for FY24 and FY25 are [✂] and [✂], respectively.

E.176 Given that the total Azure gross margin for FY24 was [✂] (and previous years have been [✂], as shown in Table E.2), this indicates that Azure's gross margin (and potentially EBIT margin) excluding AI would be higher. Given that Azure is a substantial portion of the Cloud & Enterprise segment, this could also apply to Cloud & Enterprise.

E.177 These margins and Microsoft's increasing AI-related cloud capex suggest that if cloud AI services were removed from Microsoft data for financial years 2023 and 2024, we would expect ROCE to be higher.

[129] Compound Annual Growth Rate
[130] Microsoft's response to the CMA's information requests [✂].
[131] Microsoft's response to the CMA's information request [✂].