

The market investigation into the supply of audit services to large companies

Observations on the assessment of audit profitability:

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NON-CONFIDENTIAL VERSION

1 Introduction and summary

- 1.1 In our Submission¹, we described how the largest audit firms have evolved and made investments to ensure that they are able to offer purchasers of large company audits a service appropriate to their needs; we explained that large audit firms compete aggressively to provide audit services to large companies; and we explained that large companies are effective purchasers of such services. We indicated how these characteristics result in efficient and competitive markets, demonstrated in part by levels of profitability that are not excessive and in part by other indicators such as the fact that our recovered hourly rates have been in sharp decline since 2009 with current levels no higher than those of 2007.²
- 1.2 This paper focuses on the issue of audit profitability. The Competition Commission (CC) recognises that the level of profitability is an indicator which can provide evidence as to whether there are any valid theories of harm in relation to a market.³ The level of profitability cannot in and by itself provide conclusive evidence regarding the existence or otherwise of an adverse effect on competition (AEC).⁴ However, the absence of evidence of high profitability, in conjunction with the plentiful evidence provided of fierce competition in the large company audit market, should influence the CC's conclusions on competition in the market and its theories of harm.
- 1.3 We are aware that other parties have made submissions to the CC on approaches to audit profitability⁵, and we presented our high level views on approaches to audit profitability to the CC on 12 July.⁶
- 1.4 As the CC is well aware, the assessment of profitability for the purposes of a competition analysis can be highly complex.⁷ We have identified three key issues that must be addressed if the CC is to make a reliable assessment of the profitability of audits. These are:
- (a) **Key issue 1: Professional services firms have a higher proportion of intangible assets** – which are far harder to value reliably – than is the case for most other businesses. The Draft MIR Guidelines state that “[i]n industries with a relatively low level of tangible assets, such as service and knowledge-based industries, the book value of

¹ See our *Submission and Response to the Issues Statement* (our Submission) of 12 January 2012.

² See Figure 10 of our Submission.

³ We note that the CC's draft *Guidelines for Market Investigations, June 2012* (Draft MIR Guidelines), paragraph 118, state: “Profitability can be a useful indicator of the competitive conditions in a market”. We recognise that these guidelines are not yet final and are subject to consultation. However we refer to them in this paper as the CC has previously indicated that these reflect current CC thinking and practice on market investigations, and they are generally consistent with the current guidelines. See also CC, CC3 *Market Investigation References: Competition Commission Guidelines June 2003* (MIR Guidelines), paragraph 3.82: “in the context of a market reference, the Commission will normally consider profit levels...as a further indicator of competitive conditions.”

⁴ The Draft MIR Guidelines, paragraph 126, state: “While useful, findings that ...profitability is high in a market do not provide conclusive evidence that the market could be more competitive. Such findings are not in themselves causes of competitive harm - i.e. features of the market for the purpose of the AEC test.”

⁵ See Deloitte's submission *Summary of Deloitte's response to the Competition Commission's marketing and financial questionnaire – Non-confidential version*, 6 March 2012, section 7 (Deloitte's submission on profitability) and Oxera's presentation of *Ideas on profitability assessment: statutory audit services market investigation*, 29 May 2012 on behalf of BDO & Grant Thornton (Oxera's presentation of ideas on profitability assessment).

⁶ The slides used at that meeting are available on the CC's website at http://www.competition-commission.org.uk/assets/competitioncommission/docs/2011/statutory-audit-services/pwc_presentation_approaches_to_profitability_analysis.pdf.

⁷ See Draft MIR Guidelines, Annex A, paragraph 11: “Whatever measure of profitability is used, the calculation of profitability for the purposes of competition analysis is often not straightforward.”

capital employed may bear little relationship to the economic value because of the presence of significant intangibles”⁸.

- (b) **Key issue 2: Audit firms are typically structured as partnerships**, where partners are rewarded for dual roles both as: (i) executives; and (ii) owners/investors. Accounting measures of profit do not separate these functions. Since profitability analysis should be concerned only with the returns to owners/investors, the partnership structure necessitates adjustments to operating costs to ensure that the cost of partner labour is captured.
- (c) **Key issue 3: The multidisciplinary nature of services** offered by all the large audit firms, which in the case of PwC means that we do not have a separate audit business with its own designated staff and finances.⁹ We are organised so that the largest audits are delivered by staff drawn from all our Lines of Service (LoS, being Assurance, Advisory and Tax).¹⁰ While separating out audit revenues for PwC is a relatively easy exercise (since we can examine which fees are associated with audit or audit-related project codes on our finance system), assessing audit costs to an appropriate degree of accuracy requires a relatively detailed allocation of the firm’s costs. The CC’s task is complicated in this respect by the fact that each audit firm will have its own structure which may not allow easy comparison across firms.

- 1.5 Key issues 1 and 3 often arise in market investigations, although we consider that they give rise to particular complexities in the context of a multi-disciplinary professional services business. Key issue 2 is specific to a partnership structure and there is no obvious precedent as to how to address the issue from previous CC inquiries.
- 1.6 In this paper we assess three main measures of profitability which broadly represent the range of options available to the CC (profit per partner, return on capital and return on sales) and how far these might successfully address the three key issues. We explain why one of these measures – an adjusted return on sales (which we refer to as the “economic profit margin”) – is less likely to give rise to distortions than the others in the circumstances of audit.
- 1.7 We have applied this preferred economic profit margin approach to our own audit business using data for the five financial years ending 30 June 2011. Our analysis shows that over these five years our audit services earned an economic profit margin of only 1% on average.¹¹ This demonstrates that we did not earn excessive profits from our audit services in this period.
- 1.8 As we operate efficiently and compete vigorously with similar competitors, we believe that this provides evidence that the market outcome in terms of prices and profits is fully consistent with the other evidence we have provided to the CC demonstrating the extent of competition in the large company audit market. Our achieved audit profitability is not consistent with the six theories of harm set out in the CC’s Issues Statement.¹²

⁸ See Draft MIR Guidelines, Annex A, paragraph 11.

⁹ I.e. the parts of PwC that carry out audit work also carry out non-audit work.

¹⁰ Audit services are conducted largely within the Assurance LoS but are delivered in conjunction with partners and staff from other LoS. Furthermore, the Assurance LoS includes services other than audit, and cannot be used reliably to proxy audit – see our Submission, paragraphs 2.1(c) and 6.12(b). Note that as of 1 July 2012, our LoS have been reorganised and now comprise (i) Assurance, (ii) Tax, (iii) Consulting and (iv) Deals.

¹¹ We explain how the observed economic profit margin should be interpreted at paragraphs 4.7 – 4.9 below.

¹² Competition Commission, *Audit market investigation: Issues Statement*, 2011, paragraph 23.

- 1.9 We have submitted this paper for review by Professor Ian Cooper of the London Business School – his review can be found in Annex 1. Professor Cooper recognises the issues we have highlighted as important in analysing audit profitability, due in particular to the difficulties with quantification of intangible assets in the context of professional services firms, and he agrees with our view that an economic profit margin based approach provides a more robust and reliable indicator of audit profitability than a return on capital or profit per partner based approach. He also agrees that our application of the methodology to PwC's audit services shows no evidence of excessive profit.
- 1.10 The remainder of this paper is structured as follows:
- (a) Section 2 summarises our consideration of the potential profitability measures that the CC may wish to examine, in light of the key issues identified above;
 - (b) Section 3 outlines possible approaches to addressing two of the key issues we have outlined above, namely the partnership structure and need for robust cost allocation;
 - (c) Section 4 shows the key findings from our analysis of PwC's audit profitability based on our preferred economic profit margin measure; and
 - (d) Section 5 sets out our conclusions.

2 Our suggested approach to profitability analysis

- 2.1 We have considered three main measures of audit profitability that the CC may wish to examine in its work on audit profitability in the light of the three key issues identified in paragraph 1.4 above. In our view, these approaches broadly represent the range of options available to the CC, and in the discussion below we highlight the relative merits of each approach.
- 2.2 The approaches are:
- (a) **Profit per partner**, which is commonly used by partnerships to measure profitability in their businesses.
 - (b) **Return on capital** based measures, which are examined by the CC in the majority of its cases where profitability is assessed. This includes variants of the Internal Rate of Return (IRR) / Weighted Average Cost of Capital (WACC) framework, on which Oxera's presentation of 29 May 2012¹³ appears to focus.
 - (c) **Return on sales or profit margin** based measures. This is recognised by the Draft MIR Guidelines as an alternative measure of profitability where there are difficulties in reliably establishing the value of capital employed:

"In industries with a relatively low level of tangible assets, such as service and knowledge-based industries, the book value of capital employed may bear little relationship to the economic value because of the presence of significant intangibles...In situations where capital employed cannot be reliably valued the CC may consider alternative measures, such as the return on sales".¹⁴

¹³ Oxera's presentation of ideas on profitability assessment, slide 11.

¹⁴ CC, Draft MIR Guidelines, Annex A, paragraphs 11 and 14. See also MIR Guidelines, paragraph 3.85: "The Commission recognises the difficulty in measuring the cost of capital and its limited applicability to some industries, such as some markets for services and products with a high intellectual property value. In such situations the Commission

- 2.3 We note that Oxera's recent presentation appears to propose other measures that are variants of correlation analysis (similar to Oxera's pricing analysis in 2006). These measures, to the extent that they are reliable, may be useful in identifying and explaining *patterns* in pricing, but are limited in their ability to assess whether the *level* of profitability is that which would be anticipated in a competitive market. In any event, such analysis is not in itself evidence of an AEC and must be viewed together with the broader body of evidence of competition in the sector. We do not consider this separate pricing analysis further in this paper. For completeness, we include in Annex 2 our comments on all of Oxera's suggested measures in the relevant section of their most recent document. We would expect to comment separately on any pricing analysis produced by the CC in the course of its investigation.

Profit per partner

- 2.4 Profit per partner, or more precisely total remuneration per partner (because a distinction is not made between the "salary" and "profit" elements of partner remuneration), is a common measure of financial performance in businesses that are structured as partnerships. It is used by PwC as a key financial performance metric for the overall firm (i.e. not specific to audit) in managing our business, and its level affects our ability to attract and retain the right calibre and number of current and potential partners.
- 2.5 We recognise that the CC will often consider the approach taken within an industry in selecting the appropriate methodology for analysing profitability¹⁵, and while such an approach has some value it needs to be applied with a degree of caution. The profit per partner measure relies on benchmarking to other partnerships to determine whether profits are reasonable. We had difficulty with both data availability for suitable benchmarks, in terms of finding reliable UK profit per partner data, and with comparability e.g. determining whether the businesses of different partnerships and their organisational structures are comparable.¹⁶ Ideally total remuneration should be broken down into the profit and "salary" elements. Further, different firms may have different approaches to who is classified as a "partner", with some firms employing more directors or salaried partners who do not necessarily invest in the business and accept risk in return for a share of profits. In addition, patterns of profit distributions between firms may vary over time with some firms retaining profits for specific purposes in certain years.
- 2.6 Given the importance of profit per partner in PwC's own financial performance metrics, and recognising that the CC may wish to consider this measure in conjunction with others in its profitability analysis, we have included a comparison of our profit per partner (on a firmwide rather than just an audit basis) against UK law firms in Annex 3. We chose law firms for this comparison as we were able to obtain relatively more reliable UK profit per partner data for them

may consider alternative measures, such as the return on sales or other relevant financial ratios." We also note in this respect that Oxera has previously pointed out the challenges of employing the IRR / WACC framework to the specific situation of this investigation, see Oxera, *Methodologies for audit market investigation: lessons from Oxera's 2006 and 2007 studies*, 17 January 2012, slide 10 at http://www.competition-commission.org.uk/assets/competitioncommission/docs/2011/statutory-audit-services/oxera_presentation_17_january_2012.pdf

¹⁵ See Draft MIR Guidelines, Annex A, paragraph 8: "*The manner by which industry participants, including firms, analysts, and investors, assess profitability for the purposes of monitoring and reporting performance may well inform our view as to what is an appropriate measure for the industry in question.*"

¹⁶ Because the CC is conducting an inquiry into the audit sector, it would not be appropriate to benchmark our profit per partner against those of other audit firms to determine whether they are reasonable. We considered as potential benchmarks: management consultancies; actuarial and benefits consultancies; engineering and other consultancies (tax, recruitment, pricing, security, project management etc); media firms; architect and design firms; property / chartered surveyors; and GPs, dentists and other healthcare practices. However, we found it difficult to obtain reliable UK financial data on these potential benchmarks, mainly because: (i) some businesses are partnerships but do not have an LLP structure, so the company does not have to disclose the number of partners; and (ii) partner remuneration is often not disclosed. The one exception to this is law firms, for which there appears to be more publicly available profitability data – see Annex 3 for analysis benchmarking our profit per partner to that for law firms.

than for other partnerships, and they share some similarities with audit firms as they also provide high value-added professional services to a similar UK client base.

- 2.7 This comparison shows that PwC's profit per partner (before adjusting for any partner labour costs) is not high relative to the top ten UK law firms in the past three years (the period for which we have reliable UK data for law firms). PwC's profit per partner has remained consistently below the median profit per partner for these law firms, and thus below that for the top tier (commonly referred to as the "Magic Circle") law firms. We note that Deloitte reached a similar conclusion based on a comparison of its own profit per partner and net profit margins with those of the Magic and Silver Circle law firms.¹⁷
- 2.8 Notwithstanding the caveats associated with such a comparison set out in paragraph 2.5 above, this finding illustrates that PwC's firmwide partner remuneration is in line with those at analogous professional services partnerships in unconcentrated markets.

Return on capital based measures

- 2.9 The CC's usual starting point in profitability analysis, where suitable data is available and the methodology can be considered reliable, is to consider the Return On Capital Employed (ROCE) or (less frequently) the Truncated Internal Rate of Return (TIRR) (and variants of the IRR / WACC framework advocated in Oxera's presentation of 29 May 2012¹⁸). As the CC recognises, these measures require a reliable estimate for the appropriate capital base of a firm.
- 2.10 This is a particular challenge for professional services firms which employ only a relatively small amount of tangible assets, and where a significant proportion of the asset base comprises internally-generated intangible assets that are not reflected on the balance sheet. This includes: intellectual property such as project experience, methodologies and thought leadership; the firms' reputation and brand (which engender the "trust" placed on such firms by clients, and are important trading assets for such firms); the firms' client relationships; and the training and skills that such firms provide to employees. The significance of intangible assets is demonstrated by the almost universal agreement among those who have made representations to the CC in the course of this inquiry that the reputation of an audit firm is a critical factor in winning business.¹⁹ Investment in, and the ongoing development of assets that help formulate reputation (including training, client management processes, building and maintaining relationships, building up and recording credentials, and demonstrating expertise and reliability etc.) are therefore of obvious long term value to the business.
- 2.11 The CC has valued intangible assets for the purposes of profitability analysis for other sectors on previous cases, notably for investigations into the supply of banking services to SMEs and movies on pay TV, and the CC has set out the approach adopted in the SME banking services investigation in the Draft MIR Guidelines as a possible method for valuing intangible assets. In these cases, the CC chose to apply a cost-based approach to valuing intangible assets (to avoid the capitalisation of any possible excess profits associated with capitalising future earnings), applying a set of relatively narrow criteria for identifying which costs to include. The CC's Draft

¹⁷ Deloitte's submission on profitability, paragraph 7.19.

¹⁸ Oxera's presentation of ideas on profitability assessment. As noted above, for completeness we include in Annex 2 our comments on all of Oxera's suggested measures in the relevant section of their most recent document.

¹⁹ There may be disagreement as to the reasons why the largest audit firms have strong reputations (see our response to certain third party comments of 6 July 2012) but there is no disagreement concerning the importance of reputation. In fact the reputation of the largest audit firms is well-founded – see for example the *Response of BDO LLP to the Competition Commission's Audit Market Investigation Issues Statement*, paragraph 3.1.2: "The creation of a strong reputation within the audit sector requires experience, a strong client portfolio, a good track record and advertising. These all take time and significant investment over a long period".

MIR Guidelines state that this narrow approach may be applied in valuing intangibles (presumably where it is deemed appropriate in light of both the nature of the businesses being examined and the reliability of the data available). The criteria used in the SME banking case were:²⁰

- (a) An intangible asset must comprise a cost incurred now, primarily to obtain earnings in the future;
- (b) This cost must be additional to those necessarily incurred at the time in running the business; and
- (c) It must be identifiable as creating such an asset separate from any that arises from the general running of the business.

2.12 However, compared with businesses such as those involved in SME banking and pay TV, professional services firms are far more reliant on intellectual property and other intangible assets as a relative proportion of their asset base to provide their services. This presents a number of substantial challenges in applying the CC's previous methodology, including: agreeing a consistent definition of intangible assets across the audit firms; deciding on how to measure the "replacement cost" of such assets; and determining the "asset life" of various types of intangible assets, some of which may have relatively long asset lives that are difficult to determine (in particular intellectual property, which would be unlike, for example, IT systems for SME banking).

2.13 Particular challenges that arise include:

- (a) **Identifying specific costs associated with intangible assets and intellectual property:** given that developing intellectual property and other intangible assets is such an integral part of a professional services firm's business, identifying the associated specific costs (e.g. developing methodologies, producing thought leadership, developing relationships, marketing by client services staff and partners etc.) within the firm's financial information would be a considerable undertaking. Our systems for recording hours are primarily designed to keep track of billable client work, rather than to distinguish in detail between time spent on different aspects of our non-billable work. This is unlike, for example, the development of IT systems in SME banking, which is likely to have identifiable associated costs.
- (b) **Distinguishing between costs which are necessarily incurred in running the business, and those which are additional:** because professional services firms depend to such a high degree on their expertise and reputation for their operations, trying to distinguish consistently and reliably across a number of firms those intangible asset costs which are additional to those necessarily incurred at the time in running the business would be a significant (and perhaps fruitless) endeavour.
- (c) **Recognising that intangible assets and intellectual property are developed in the normal course of business:** such assets and property are frequently essential to the delivery of future client services. For example, it is usual for professional services firms to be asked when bidding for work to present their past client work credentials and demonstrate a history of delivering similar work successfully. Such credentials and experience (which form part of reputation) are products of previous assignments undertaken in the normal course of business for which the professional services firm was

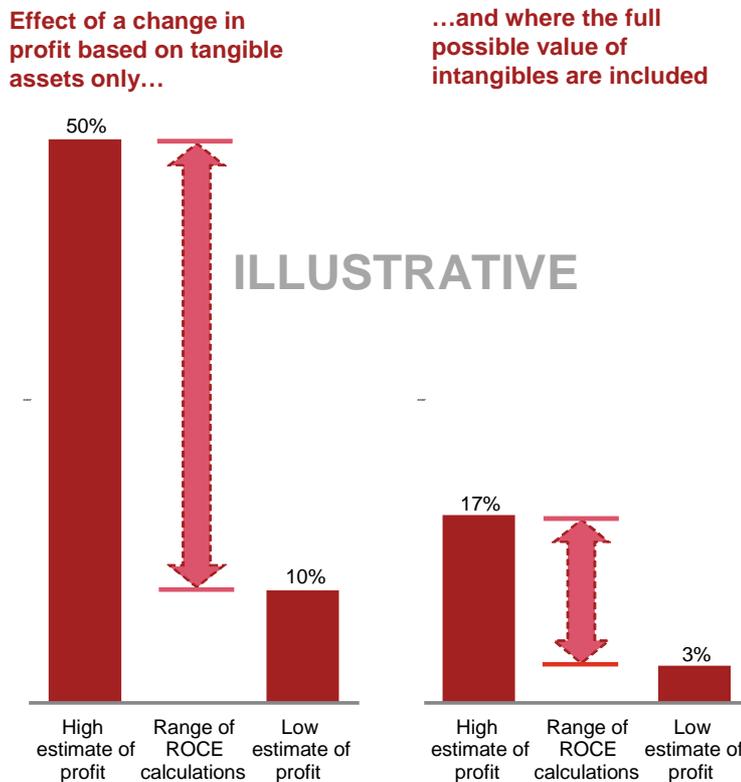
²⁰ CC, *The supply of banking services by clearing banks to small and medium-sized enterprises: A report on the supply of banking services by clearing banks to small and medium-sized enterprises within the UK, 2002*, paragraph 2.271(b).

paid, but are demonstrably of interest and value to future clients, and are therefore an asset of the business.

- 2.14 The relative importance of intangible assets means that the view taken on how to value them may be decisive in the outcome of any profitability assessment that relies on a return on capital. Given the potential difficulties of agreeing intellectual property and other intangible asset valuations, and the very small tangible asset base of professional services firms, any ROCE calculation would be highly sensitive to two factors:
- (a) A missing valuation for intangible assets. Since this forms the denominator in a ROCE calculation, any ROCE analysis is highly sensitive to the potential range in the value of intangible assets; and
 - (b) The precise level of audit profit (the numerator in a ROCE calculation). Regardless of the profitability measure used, an estimation of audit profits should take into account the cost of partner labour and the need for allocating costs between audit and non-audit services (see key issues 2 and 3 in paragraph 1.4). PwC's small tangible asset base would provide a small denominator in a ROCE calculation, exaggerating any uncertainty in estimating audit profit.
- 2.15 As a simple numerical illustration of both of these points, consider a hypothetical business where: profit could be as low as £1 or as high as £5; tangible assets are £10; and internally-generated intangibles could be as high as £20 (i.e. the total asset value could be as high as £30). Given this, ROCE could range from:
- (a) 10% to 50% based only on tangible assets of £10; and
 - (b) 3% to 17% based on assets of £30 including maximum intangible assets.

2.16 This position is illustrated in Figure 1 below.

Figure 1: Illustrative sensitivity of ROCE / IRR measures to changes in the asset base or profitability of a professional services firm



*ROCE is calculated by dividing profit by total assets e.g. 5/10=50%

2.17 This simple numerical illustration shows that ROCE exaggerates the effect of both:

- (a) Missing intangibles, since the upper bound of the ROCE analysis could be as high as 50% based only on tangible assets or just 17% when intangible assets are included in full; and
- (b) Any potential range in profit, where a small denominator (using only tangible assets of £10) gives a much wider range than using a larger denominator (assets, including intangibles, of £30).

2.18 TIRR (and variants of the IRR / WACC framework) suffers similar issues in being sensitive to both the valuation of intangible assets (which should form part of the opening and closing capital base), and the precise level of audit profit (which determines cashflows in the calculation).

2.19 Given the valuation challenges identified above, applying the CC's previous methodology would be likely to understate significantly the value of intangible assets for professional services firms. If such a value were to be used in a ROCE or similar calculation, this would in turn be likely to lead to a significant overstatement of profitability (given that the capital employed denominator would be so understated), and be subject to dramatic variations depending on which intangible assets were recognised and how profitability adjustments (e.g. partner labour costs) were implemented. This would render any analysis, including between firms or against other benchmarks, highly unreliable.

2.20 It may in principle be possible to adapt the CC's methodology for valuing intangible assets to take account of these complexities, and should the CC decide that it does need to value intangible assets for any of its profitability calculations we will present evidence on this. However, we would have substantial concerns if the CC were to rely on measures like ROCE and TIRR that are so highly sensitive to the valuation of intangible assets, and we consider this sector is one that falls squarely within those situations recognised in the CC's Draft MIR Guidelines where capital employed cannot be reliably valued and therefore other measures of profitability should be considered.²¹

Profit margin based measures

2.21 We believe the most reliable approach to assessing audit profitability is a modified return on sales or profit margin based measure that we term "economic profit margin". This is calculated as the operating profit margin for audit, adjusted for economic costs, i.e. the opportunity cost of audit partner labour and a reasonable return on capital²² for audit.

2.22 In our view this economic profit margin measure has significant advantages over both return on capital based measures and benchmarking profit per partner to other partnerships. In particular:

- (a) Margins analysis reduces the need to focus on accurately estimating the value of intangible assets, although the results need to be interpreted in the context that such assets do exist if they have not been taken into account.
- (b) Margins analysis uses revenue as its denominator, which provides more stable results and is less sensitive than both ROCE and TIRR analysis to:
 - (i) A missing valuation for intangible assets; and
 - (ii) The precise level of audit profit (see paragraph 2.14 above for further discussion of these points).
- (c) A key issue in competition analysis is whether the level of profitability is sufficiently large to be indicative of a competition problem. Positive economic profits²³ will frequently be observed in a competitive industry and can be compatible with effective competition or result from measurement error. For a business such as an audit firm, where the amount of tangible capital is small but the size of the business (measured by sales) is large, whether the level of profitability is sufficiently large to be indicative of a competition problem cannot be judged by the yardstick of return on tangible capital. Margins analysis gives a far more reliable indication of the materiality of any identified positive economic profit.
- (d) Compared with profit per partner analysis, margins analysis is not as reliant on benchmarking audit profits against those for other businesses that may or may not operate in sectors that are both comparable and can be regarded as effectively competitive. In applying the economic profit margin methodology to our own audit services, we have also been able to factor in a calculation of notional "partner salary" – one of the main concerns with profit per partner analysis based simply on publicly available data (e.g. from Transparency Reports (TR)).

²¹ See paragraph 2.2(c).

²² Based on estimating the opportunity cost of investing that capital elsewhere.

²³ See paragraphs 4.7 – 4.9 for further discussion of positive economic profit in the context of determining whether profitability is sufficiently large to be indicative of a competition problem.

- 2.23 We outline our approach to estimating audit partner labour costs and carrying out cost allocations between audit and non-audit services in relation to PwC's audit profitability in the sections below (and in Annexes 4, 5 and 6).
- 2.24 Our proposed economic profit margin methodology takes into account investment and risk through adding the estimated cost of a reasonable risk-based return on partners' invested capital.²⁴ Partners' invested capital is easily calculated, unlike the full capital employed which requires valuation of intangible assets.²⁵ Details on our estimate of a reasonable return on audit partners' invested capital can be found in Annex 7.

3 Possible approaches to addressing key issues 2 and 3

- 3.1 Although our preferred economic profit margins approach reduces the need to focus on estimating the value of intangible assets, any analysis of audit profitability (regardless of the measure of profitability chosen) must address: (i) the cost of partner labour; and (ii) the need to carry out cost allocations to estimate audit profitability (key issues 2 and 3 in paragraph 1.4). We outline our approach to addressing these issues below.

Addressing key issue 2: The cost of partner labour

- 3.2 The partner labour costs of delivering services in a professional services firm can be valued as the amount that would be paid to labour of "partner quality" (based on skills, experience etc.) if that labour were employed for its most valuable alternative purpose in the labour market.²⁶
- 3.3 In order to adjust for partner labour costs (which for these purposes we refer to as "partner salaries"), our Human Resources Services (HRS) rewards specialists have estimated the cost of the labour supplied by our audit partners for each partner role by identifying market benchmarks at each level. These benchmarks use the median "partner salary" for each partner role. "Partner salary" includes base pay, bonus, long-term incentives (e.g. share options) and employer pension contributions. Our HRS specialists' approach in this area is established and has been used by many large private and public sector entities to benchmark pay and conditions, including the CC. Further details on how this is carried out – and a review of our specialists' work by Dr Jonathan Trevor²⁷ – can be found in Annexes 5 and 6. Having established "partner salary", we also increase costs by the amount of employer national insurance contributions.

²⁴ Note that we refer to partners' invested capital as "Members' Capital" in our Annual Report.

²⁵ Using partners' invested capital as a proxy for tangible assets implicitly assumes that most of the firm's balance sheet operating tangible assets are funded by the capital that partners have invested. We use a proportion of reserves (i.e. retained earnings) to fund tangible assets and working capital, which should also be considered part of the firm's asset base. However, to prevent any concerns that there may be a degree of circularity in attempting to estimate the reasonableness of profits based on a return on retained profits, we have not included this element of reserves in our calculations. Our measure should therefore be regarded as understating total tangible capital employed. See Annex 7 for further discussion on this. Average partners' invested capital for audit services has been estimated by multiplying average invested capital per partner by our calculated number of audit partner FTEs. PwC audit's cost of equity has been calculated based on the standard and widely used Capital Asset Pricing Model (CAPM). See Annex 7 for further discussion on this.

²⁶ As explained in our initial submission and paragraph 1.4(b), partners serve dual roles in a partnership: (i) as executive employees of the firm, leading the delivery of client services and managing the firm; and (ii) as shareholders of the firm. Unlike PLCs, where these roles are separated, operating costs in partnerships generally do not reflect the costs of partners in role (i) and so they significantly understate the labour costs of the firm.

²⁷ Dr Trevor is a Lecturer in the Organisational Behaviour subject group at Cambridge Judge Business School, University of Cambridge, and Fellow of Downing College, Cambridge.

- 3.4 Other possible indicators of audit “partner salary”, such as the figure used to calculate our internal Client Profitability (CPy) measure²⁸ or the salaries of directors with audit signing powers cannot be reliably used as a proxy for audit “partner salary”. This is because they are likely to underestimate significantly the true value because they do not reflect:
- (a) The full opportunity cost of partner labour (our CPy estimate was only intended to facilitate comparisons across the business. As such, it only indicates what a notional base pay may be for partners, but it is not an appropriate measure of profitability for the purposes of this investigation); and
 - (b) The distribution of partner seniority required to deliver audit services. In particular, while directors and junior partners contribute significantly to the delivery of large audits, undertaking such audits to a sufficient level of quality requires significant time from more senior and experienced audit partners. A single CPy partner cost measure does not reflect the significant differences in the relative labour costs of partners at different partner role levels.
- 3.5 We recognise that the CC will face challenges in estimating the appropriate level of “partner salary” to use in calculating the audit profitability of other firms. However, we are confident that were the CC to engage another specialist consultancy to carry out an equivalent exercise to the one we have conducted in relation to all of the relevant audit firms, such an analysis would come to a similar view of audit “partner salaries” as that carried out for the purposes of our analysis.
- 3.6 An alternative approach would be for the CC to use our HRS specialists’ analysis to benchmark equivalent “partner salaries” for other firms based on a broad understanding of the roles carried out by their partners. Annex 5 provides further detail on the approach we have taken for PwC. Table 7 within that Annex sets out the typical responsibilities of our audit partners within each partner role level, while Table 9 sets out the “partner salary” computed by the HRS team for each role level. This data could be used in principle to assess “partner salaries” for other firms based upon an understanding of their client bases and the roles and responsibilities of their audit partners.
- 3.7 Our expectation from such analysis would be that the firms which compete closely with us would have broadly equivalent levels of “partner salary”, while smaller firms which are generally only competitive with us in relation to the audits of far smaller companies would employ partners with lower “partner salaries”, as the majority of their audit partners would be ranked at the lower partner role levels, or as directors, if they worked in the large firms.

Addressing key issue 3: Cost allocations between audit and non-audit services

- 3.8 As outlined above, in order to assess audit profitability to an appropriate degree of accuracy for a market investigation, a cost allocation exercise needs to be carried out to apportion costs between audit and non-audit services.
- 3.9 In the case of PwC, while most of our audit services are led by partners from, and mainly use staff within, the Assurance LoS, it is not appropriate to assume that Assurance profitability would equate to the profitability of our audit services as:

²⁸ Our CPy measure incorporates a partner cost estimate of £X, as in the X. However, this is intended to provide an indication of approximate base pay for partners, and is mainly used internally to assign a notional cost for partner time when comparing the relative profitability of different projects, rather than to capture the full opportunity cost of partner labour (which in the market would include bonus, pensions, long-term incentives and employer pension contributions). It also does not distinguish between partners at different role levels.

- (a) A material level of non-audit services is provided by our Assurance LoS;
- (b) Audit services require the use of more junior staff than the non-audit services in Assurance;²⁹
- (c) A number of partners deliver both audit and non-audit services as well as spend time on wider firm management roles, and their time needs to be allocated between the different activities;
- (d) There are a number of audit-specific costs (e.g. a large part of practice protection costs and investment in audit-specific tools such as Aura) that should be allocated disproportionately to audit; and
- (e) Costs associated with time spent by relevant specialists in Tax and Advisory to help deliver audits should also be added to audit costs.

3.10 We have examined in some detail what we consider to be the most appropriate method of allocating costs on a fully-allocated cost (FAC) basis in relation to our audit business.³⁰ Since cost allocation by its nature requires a degree of judgement, we considered a possible range of outcomes using different FAC approaches.³¹ The results of our preferred FAC approach (referred to as “the FAC central estimate”), and a comparison with our TR approach³², are presented in section 4 below.

3.11 Given that allocating costs between audit and non-audit services requires a degree of judgment, we have chosen to estimate profit margins for audit as a whole, rather than for the reference market (FTSE 350 audits only). Attempting to allocate costs further to a smaller subset of our services (FTSE 350 audits) would require making more assumptions about how allocated audit costs should be recovered between different types of audits, and this would increase the uncertainty of the profitability estimate.³³

²⁹ For example, in FY11 chargeable hours spent on audit were 30% of chargeable hours in Assurance, but client service staff (CSS) costs for audit were only 10% of those for Assurance.

³⁰ This is based on allocating total firm costs between audit and non-audit services using appropriate cost drivers e.g. the relative chargeable hours worked on audit and non-audit assignments. We chose not to use either the long run incremental or long run avoidable costs approaches (LRIC/LRAC) because we consider that they would give similar results if common costs were allocated across the types of service, and the FAC methodology is simpler to apply and understand.

³¹ Based on the two main drivers that can be used to allocate costs. For more details on this see footnote 38 and Annex 4 below.

³² The publication of a TR on an annual basis has been a statutory obligation since 2008 on all statutory auditors. TRs provide information on the audit firms including structure, governance, the auditor’s internal systems for ensuring audit quality and financial information on statutory audit services. The formal statutory obligations are found in the Statutory Auditors (Transparency) Instrument 2008 (POB 01/2008). However, the only mandated financial information on statutory audit services is item 9 of the Schedule, which asks for financial information “including the showing of the importance of the transparency reporting auditor’s statutory audit work”. PwC (and a small number of other firms) have voluntarily published audit operating profit margins in addition to audit revenues for the purpose of transparency in our TRs. We believe our TR approach represents a fair and reasonable method of allocating PwC’s costs between audit and non-audit services for transparency reporting purposes. It was necessary to consider more detailed FAC cost allocations in the context of this investigation, but this work has indicated that the TR results using a simpler methodology are reasonable – see Annex 4 for more detail.

³³ X

4 Key findings from our analysis

- 4.1 Based on our view that an economic profit margin based analysis is likely to provide the most reliable and robust measure of audit profitability, we have calculated the profitability of our audit business on this basis.
- 4.2 In the table below we provide an overview of the financial performance of our audit business over the last five years, and the various deductions made from revenues to reach an adjusted economic profit margin measure in each year. We also highlight in the table where in this paper further details can be found of the relevant allocations and adjustments that have been made and where the outcomes of this analysis have been presented.

Table 1: Summary financials for PwC audit, FAC central estimate, FY07 - FY11

	PwC Audit (£m)						Reference for further explanation (where relevant)
	FY07	FY08	FY09	FY10	FY11	5 year Av.	
Total Revenue	588.0	576.4	558.0	547.5	546.6	563.3	Footnote 34
<i>Cost of sales disbursements</i>	×	×	×	×	×	×	Table 4
Net revenue	×	×	×	×	×	×	
<i>Client Service Staff (CSS) costs</i>	×	×	×	×	×	×	Table 4
Gross profit	×	×	×	×	×	×	
Gross profit margin	×	×	×	×	×	×	
<i>Direct costs³⁵</i>	×	×	×	×	×	×	Table 4
Direct profit	×	×	×	×	×	×	
Direct margin	×	×	×	×	×	×	
<i>Indirect costs</i>	×	×	×	×	×	×	Table 4
Unadjusted profit	×	×	×	×	×	×	
Unadjusted profit margin	19%	18%	20%	22%	19%	19%	Figure 2
<i>ACA adjustment</i>	×	×	×	×	×	×	A4.21(b)
<i>“Partner salary”</i>	×	×	×	×	×	×	Related to partner FTEs (Table 3) and their “salary” benchmarks (Table 9 and Figure 5)
<i>Return on partners’ invested capital</i>	×	×	×	×	×	×	Table 13
Economic profit	×	×	×	×	×	×	
Economic profit margin	4%	(1%)	0%	1%	(1%)	1%	Figure 3

Source: PwC data and analysis

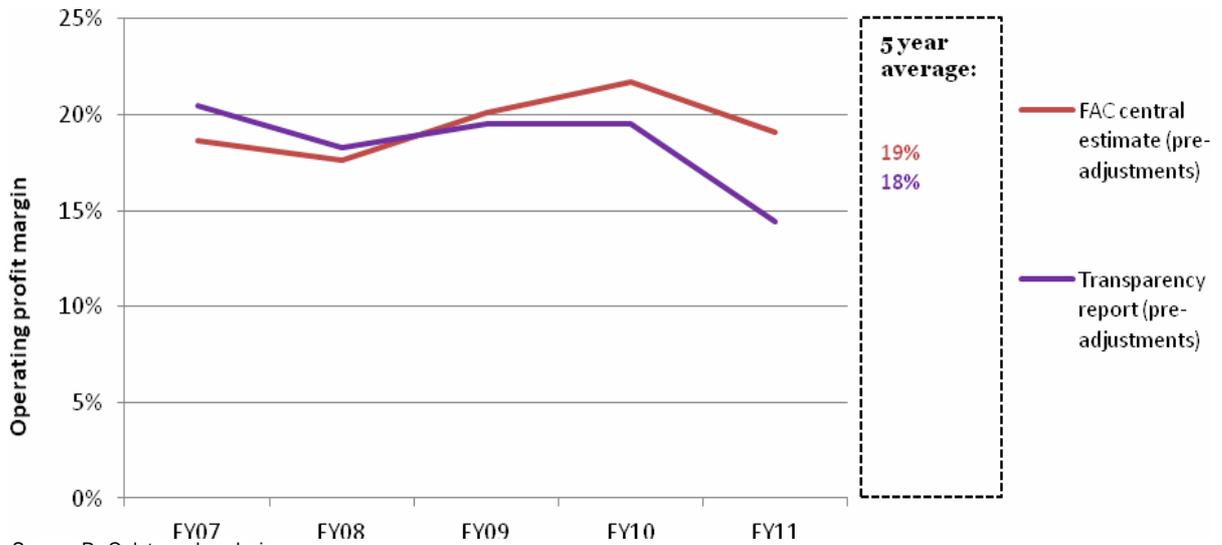
- 4.3 Table 1 above shows that, using our central FAC approach to cost allocation – before any adjustments for “partner salary” and return on partners’ invested capital – PwC achieved a five year average audit profit margin of 19% in FY07 to FY11. This compares to an average of 18% based on our TR approach.³⁶ This is shown in Figure 2 below.

³⁴ PwC’s revenues are allocated to codes specific to the activity being carried out. Audit and audit-related revenues can be identified through the revenues that have been generated through audit codes.

³⁵ Overall, direct costs have decreased and indirect costs have increased over the past five years because the structure and organisation of the firm’s finances have changed over the period, with more costs being moved from being controlled by LoSs to being controlled by the firm centrally. See Table 4 for a breakdown of the cost lines that constitute direct and indirect costs.

³⁶ This is based on our published FY09 to FY11 TR margins, as well as margins for FY07 and FY08 that have been calculated based on the same methodology for the purposes of providing the CC with a five year view. As noted above, we believe our TR approach provides a reasonable basis for allocating PwC’s costs between audit and non-audit

Figure 2: PwC audit profitability, FAC central estimate and TR approach, FY07 - FY11



Source: PwC data and analysis

4.4 The key drivers of the trends in the margins shown in Figure 2 are the movement in audit revenues and costs over the period FY07 to FY11:

(a) ✂³⁷

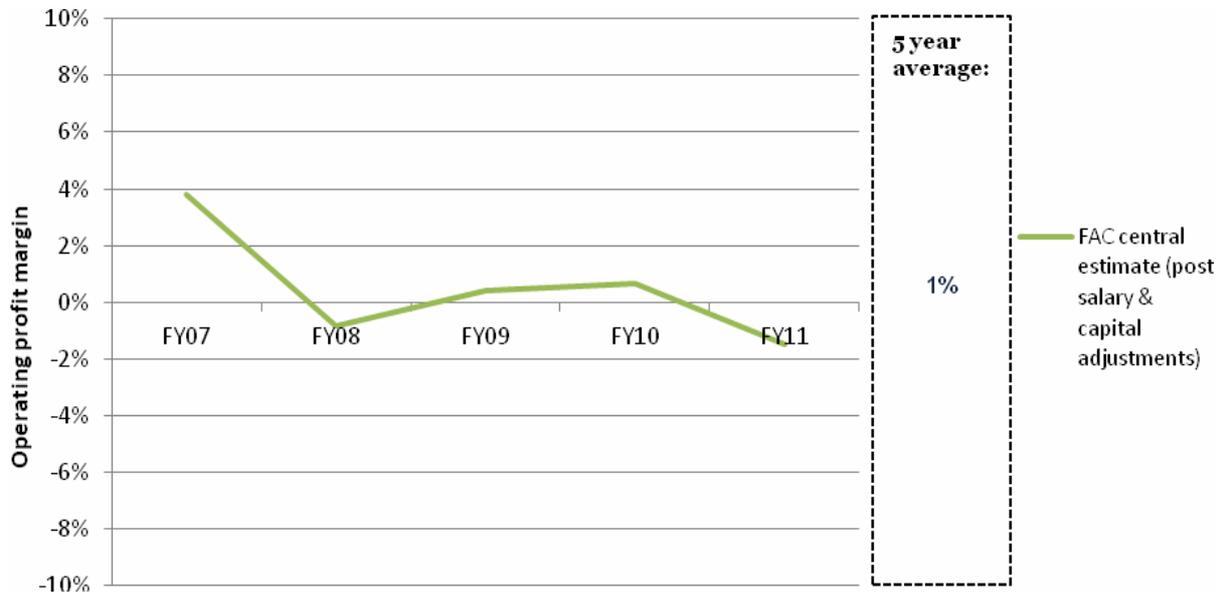
4.5 After adjusting for our HRS estimate of “partner salary” and for a return on invested capital, our audit economic profit margin based on our FAC central estimate is around only 1% on a five year average basis.³⁸

services for the purpose for which it is produced, but in the context of this investigation we wanted to perform the most accurate possible calculation, so our FAC central estimate is calculated using more detailed analysis than that used for our TR approach. Our more detailed FAC central estimate results in a smaller proportion of costs being allocated to audit services than is the case using our TR approach in later years, resulting in a relatively small difference between the five year average margins estimated under the two approaches.

³⁷ ✂

³⁸ For more detail on the estimate of notional “partner salary” see paragraph 3.2 – 3.7 and Annex 5. As explained above, in addition to subtracting “partner salary” we also subtracted employer national insurance contributions. For more detail on the adjustment for invested capital see paragraph 2.24 and Annex 7. We used two main cost drivers for our FAC analysis. If rather than using a mix of those two drivers, depending on which appears to be the more appropriate for each type of cost, we used either one or the other consistently for all costs, we obtain a range of -3% to +3% over the five year period (source: PwC data and analysis), after adjusting for our HRS estimate of notional “partner salary” and a reasonable return on invested capital. In reality, we do not believe these extremes are the most appropriate cost allocations, and the FAC central estimate we show in the figure above reflects our best view of the most appropriate cost driver to apply to each cost line. Nevertheless, the range gives some indication of the sensitivity of the figures to alternative allocations. Further detail on how we have carried out our FAC cost allocations is provided in Annex 4.

Figure 3: PwC audit economic profit margin, FAC central estimate, FY07 - FY11



Source: PwC data and analysis

- 4.6 It can be seen from Figure 3 that there is some divergence in trends compared with Figure 2. In particular, taking into account the “partner salary” deduction has resulted in a flatter profile between FY08 and FY10 in Figure 3, and the calculated economic profit margin is slightly negative in FY11. This trend is mainly associated with the “partner salary” adjustment we have made – the salary benchmarks have increased over the five year period³⁹ – rather than reflecting the trend in the margin generated by our audit business before this adjustment. We believe more emphasis should be placed on the overall result over five years, both because of the direction of our externally-based adjustments, and to give less emphasis to fluctuations across the economic cycle.
- 4.7 Having allocated costs on an FAC basis, and deducted estimates of partner labour and capital costs, in theory the observed economic profit margin might be expected to be close to 0% in a competitive market. This is because in a hypothetical perfectly competitive industry in long run equilibrium, a company would not make any profits in excess of what it needs to pay for its labour, capital and other factors of production.
- 4.8 In practice, economic profit margins in a competitive market are likely to differ from 0% for a number of reasons. These reasons include:
- (a) A return on intangible assets that have not been quantified.
 - (b) Extra risks borne by partners in an audit firm that have not been reflected in the cost of equity estimate, e.g. because they are not as fully diversified investors as is assumed within the CAPM framework (see Annex 7 for further detail).
 - (c) The industry or individual business may not be exactly in long run competitive equilibrium.

³⁹ There have been well publicised concerns recently about excessive growth in executive reward (particularly bonuses) with shareholders arguing that this is unduly squeezing equity returns. If such shareholder concerns are valid, using executive reward benchmarks as a proxy for “partner salaries” also effectively unduly squeezes our calculated audit return. As a partnership, PwC partners focus on total partner remuneration, not the notional split between “salary” and “profit”. See Annex 5 for further commentary on this trend.

- (d) Differing requirements for each business area on how much they are expected to contribute to the firm's overall costs (we have used fully allocated costs for our audit services).
- (e) Some error in measuring audit profitability, given the need to use judgement (for example, in cost allocation).

4.9 A 1% economic profit margin for our audit services over the last five years strongly indicates that profits are not excessive given these factors. In principle, it would be instructive to benchmark this 1% audit economic profit margin against similarly calculated margins for comparable companies in other effectively competitive industries. However, because we have not identified any appropriate comparators, we have not carried out such analysis.

5 Conclusions

- 5.1 Audit services have a number of characteristics which need to be taken into account in performing an assessment of profitability. We have highlighted three of particular importance in this paper.
- 5.2 A return on capital methodology is particularly problematic in this market due to its sensitivity to the calculation of a firm's asset base, and the problems with reliably calculating intangible assets.
- 5.3 When appropriate allowance is made for "partner salaries" and a robust cost allocation is undertaken, the adjusted return on sales (economic profit margin) approach described in this paper is less likely to give rise to distortions than the available alternatives. In particular, return on sales gives a far more reliable indication of the materiality of any identified positive economic profit than would return on capital.
- 5.4 Our central FAC estimate of only a 1% economic profit margin for our own audit services on average over the last five years is close to 0%, the level expected in a hypothetical perfectly competitive industry. This demonstrates that we did not earn excessive profits from our audit services in this period. This small positive margin is entirely consistent with a competitive market.
- 5.5 The analysis in this submission is fully consistent with the other extensive evidence submitted to the CC which demonstrates that PwC faces fierce competitive pressure in the audit market. This evidence on our achieved audit profitability is not consistent with the six theories of harm set out in the CC's issues statement.

Annex 1: Opinion of Professor Ian Cooper

The market investigation into the supply of audit services to large companies: observations on the assessment of audit profitability

Final version of 31 July 2012

Introduction

- A1.1 I have been asked by Norton Rose LLP to review the submission by PwC entitled: "The market investigation into the supply of audit services to large companies: Observations on the assessment of audit profitability" (the Report).
- A1.2 In particular, I have been asked to comment on:
- (a) The three measures of profitability considered: why economic profit margins are chosen as the main approach; and why profit per partner is used as a sense check.
 - (b) The overall approach to measuring economic profit margins and the principles applied i.e. deducting audit "partner salaries" and a reasonable return on audit capital.
 - (c) The approach to calculating the return on audit capital, and in particular, the cost of equity calculation.
- A1.3 This note refers to the final version of the Report dated 31 July 2012.

Qualifications and prior relationship with PwC

- A1.4 I have an MA in Economics (First Class) from Cambridge University, and a Master's in Business Administration (MBA) and PhD (Finance) degrees both from the University of North Carolina at Chapel Hill. I am a Professor of Finance (since 1994) and the former Chair of the Finance Subject Area and Head of the Institute of Finance and Accounting at London Business School. Prior to that, between 1978 and 1994, I held other faculty positions at London Business School. I have also held faculty positions at the University of Chicago and the Australian Graduate School of Management.
- A1.5 I have published more than seventy articles on financial economics, including papers in all four of the leading academic finance journals and several papers in the leading practitioner corporate finance journal. I am a member of the editorial boards of ten international finance journals. I am a former Board member of the European Finance Association (twice) and the European Financial Management Association.
- A1.6 At London Business School I teach corporate finance to executives and an advanced elective course covering corporate finance to MBA students. I also teach other courses on financial economics.
- A1.7 I have thirty years of experience consulting on financial economics for financial institutions, companies, consultancies, governments, regulators, and agencies. I have advised on these matters in many countries and have given expert evidence to High Courts in the UK, Hong Kong, Greece, and an International Tribunal in the Hague.
- A1.8 I have previously advised the consulting businesses of PwC London and PwC Sweden, but not the Audit practice. I have also advised the consulting arms of other UK Audit firms. PwC is the auditor of an investment fund of which I am a Director.

My opinion

- A1.9 I am not an expert on structural analysis of competition or labour market economics. The opinions I express are from the perspective of an expert in financial economics.
- A1.10 In performing my review I have treated my overriding duty as being to assist the Competition Commission in matters within my expertise, and I have treated this duty as overriding any obligation to those instructing me or their clients.

The three measures of profitability considered: why profit margins are chosen as the main approach; and why profit per partner is used as a sense check

- A1.11 The three measures considered are (a) return on capital based measures (accounting return on capital employed "ROCE" or an estimate of internal rate of return "IRR"), (b) profit per partner, and (c) return on sales or profit margin net of the estimated long run cost of labour and capital (an "economic profit margin").
- A1.12 PwC uses the economic profit margin (c) as its primary measure and the profit per partner (b) as its secondary measure.
- A1.13 I agree with this choice, for the reasons given by PwC.
- A1.14 I note also that using an economic profit margin calculated net of the long run cost of labour and capital is consistent with return on capital analysis in the following sense. In a competitive market in long run equilibrium the profit margin net of the long run cost of labour and capital should be approximately zero (as noted in the Report in paragraph 4.7). This condition should indicate an absence of excess profits.
- A1.15 A firm that is not earning excess profits will be earning a return on capital equal to its cost of capital. Therefore, examining the profit margin net of the full cost of labour and capital is similar to comparing the rate of return earned on capital with the cost of capital. A 1% economic profit margin as calculated by PwC reflects a small positive economic profit.
- A1.16 Therefore, I view the approach taken by PwC as attempting to address the same issue for which return on capital analysis is commonly used, by adopting an approach that allows for the practical measurement issues in this instance.

The overall approach to measuring economic profit margins and the principles applied i.e. deducting audit "partner salaries" and a reasonable return on audit capital

- A1.17 I agree with PwC that applying approach (c) economic profit margin net of the estimated long run cost of labour and capital requires the deduction from profit of the estimated full cost of labour and capital.
- A1.18 I am not an expert in labour economics and so cannot comment on the details of how the full cost of partnership labour has been estimated.

The approach to calculating the return on audit capital, and in particular, the cost of equity calculation

- A1.19 The approach taken to calculating the required return on audit capital is in line with standard theory and practice. The impact of the cost of tangible audit capital on calculated audit margins is \times (the Report paragraph A7.28).
- A1.20 The estimate involves some specific choices on which experts disagree, such as the interest rate used, the equity market risk premium, and the formulas used for the leverage and grossing up adjustments. Based on my experience, using different choices for these items would change the

above estimate of the impact of the cost of tangible capital on audit margins by less than 0.2%, and the adjustment could go either way. This appears to be immaterial relative to the range of the final margin calculation shown in Figure 3 of the Report.

- A1.21 In my opinion a more important issue in adjusting the profit for the full cost of capital is that the measure of capital used in the Report is the book value of tangible capital. I agree that this is the only practical measure in this instance.
- A1.22 However, the correct measure to which the required rate of return should be applied is the economic value (market value) of all capital. For many firms where both book value and market value are observable they differ substantially. I agree with the Report paragraph 4.8(a) that this is a factor that should be considered when interpreting the results of the Report.

The overall findings and implications for the CC's theories of harm relating to market power and ineffective competition.

- A1.23 Measurement of positive economic profit is a way of diagnosing ineffective competition. Given the margin for error in the measurement of positive economic profit and the fact that profit levels vary over time for reasons other than lack of competition, the analysis presented in the Report shows no evidence of ineffective competition.

Annex 2: Our comments on Oxera's presentation to the CC (29 May 2012)

- A2.1 For completeness, we include initial comments on Oxera's presentation to the CC (dated 29 May 2012)⁴⁰ here. We have focused on the "indicators of profitability" section as this is the section relevant to this paper, and we provide a brief slide-by-slide commentary below. Given these slides are fairly high-level and some of the text is ambiguous, we can only comment on what we have been able to infer from the presentation. Where we do not comment on points, this does not necessarily indicate that we agree with them.

Slide 11

- A2.2 We agree that an IRR / WACC framework has measurement problems (we regard ROCE analysis as a form of IRR / WACC analysis). An IRR / WACC framework is highly sensitive to a missing valuation for intangible assets (see our discussion of this in paragraph 2.14 in relation to ROCE). Furthermore, we agree a simple Return on Sales (RoS) measure would not take into account investment and risk.
- A2.3 However, a modified RoS or economic profit margin measure of profitability has a key advantage over the IRR / WACC framework, in that it is less sensitive than either ROCE or TIRR to the potential range in the calculation of the value of intangible assets, since this measure uses only the cost of a reasonable return on such assets (i.e. a percentage of such assets).
- A2.4 Furthermore, it also deals with Oxera's criticism of RoS by taking into account investment and risk through adding the estimated cost of a reasonable risk-based return on partners' invested capital (see Annex 7 for further detail).

Slide 12

- A2.5 We agree that any assessment of audit profitability should be assessed based on what Oxera terms the "true return to owners" or "profit to owners" i.e. after the "market rate for partners' labour" has been taken into account. We discuss our estimates for this in paragraph 3.2 and Annex 5; our approach has also been reviewed by Dr Jonathan Trevor in Annex 6.

Slide 13

- A2.6 We have briefly discussed the general relative merits of our profitability measure compared with the IRR / WACC framework above. A further point specific to indicator 1 ("intangible assets valued as capitalised costs, and measured as "balancing factor" in IRR/WACC equation") is that this measure does not provide a conceptual benchmark for whether profits are excessive (the hypothesis is that the asset base required to support IRR in a reasonable range is "comparatively large", but it would be difficult to specify conceptually how large that is). In principle we could benchmark positive returns identified using our economic profit methodology against those of other comparator companies, although we have not been able to find such comparators for audit.
- A2.7 On indicators 2 and 3 ("relative investment (Big Four versus mid-tier) as explanation for current market structure" and "implied equity beta", respectively), we agree that investment and risk should both be taken into account in a profitability measure, and in our economic profit margin measure we have done so with respect to tangible assets (as already referenced above).

⁴⁰ Oxera's presentation of ideas on profitability assessment, 29 May 2012.

Slide 14

- A2.8 We believe indicator 4 (“variations on price-concentration analysis”) forms part of a pricing analysis⁴¹ that is more relevant to understanding the causal factors behind patterns of pricing rather than determining whether the level of prices or profits in the industry is excessive.
- A2.9 Furthermore, it would be misleading to assume that even if high prices were associated with high levels of concentration this would automatically imply that competition is ineffective.⁴² As Sutton (1991)⁴³ shows, in markets where there are endogenous sunk costs, competition between firms leads to both higher levels of quality being supplied and higher levels of market concentration. High prices and high industry concentration may arise either because competition and regulation have driven up the level of quality (and costs), or because market power is being exploited. To distinguish between these two theories we need to assess whether firms are earning excessive economic profits.
- A2.10 We agree that pricing analysis may be an informative separate workstream, following the creation of the new industry database, but it is of limited relevance to profitability analysis. We note that a “profit-concentration” analysis would in any case require an appropriate measure of profits to have been calculated.
- A2.11 We find the text on indicator 5 (“distribution of within-firm remuneration”) in particular too brief to allow a full understanding of the profitability measure proposed, but it appears to imply somehow demonstrating that the distribution of revenue is skewed unreasonably towards rewarding partners i.e. that other factors of production are underpaid. In a professional services firm like PwC, this mainly consists of staff. It seems unlikely in a free labour market that staff would be willing to accept being systematically underpaid.⁴⁴ In any case, assessing whether partner returns are excessive would require some measure of return on capital, which runs into the intangible assets issues outlined above. Another interpretation is that Oxera may have in mind a comparison of fees charged versus reward between partners on the one hand and staff on the other, but this would not be appropriate given partners’ other roles in marketing, business development and managing the business.
- A2.12 Similar to indicator 4, indicator 6 (“profitability in industry sectors where the provision of audit services is concentrated versus in sectors where it is not”) is more relevant to understanding the causal factors behind patterns of pricing / profitability.⁴⁵
- A2.13 Furthermore, we believe obtaining a comparable and meaningful measure of profit for individual audit clients from all relevant parties would be problematic.

⁴¹ If profit-concentration analysis were carried out, this is similar to indicator 6 – see below for our comments on indicator 6.

⁴² This would be a simple application of Bain’s structure-conduct-performance paradigm – for further details see Bain, Joe S. (1950), *Workable competition in oligopoly: theoretical considerations and some empirical evidence*, AER, 40 (May): pages 35-47.

⁴³ This is the insight of the “new industrial organisation” theories – for further details see Sutton, John (1991), *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration*, MIT Press.

⁴⁴ Unless it is argued that all staff are willing to do so for the opportunity to join the partnership, which is unlikely, and in any case would imply that those who become partners would have invested human capital (at risk, since not all staff become partners) into the business as staff.

⁴⁵ Furthermore, the CC can only estimate gross margins from the data it has requested so far i.e. revenue minus CSS costs, which is a very simplistic measure of profitability.

Slide 15

- A2.14 Similar to indicators 4 and 6, indicator 7 (“long-term time-series analysis of Big X premium (price, profit or pay)”) is also more relevant to understanding the causal factors behind patterns of pricing. We agree that any Big 4 premium should take into account the higher costs associated with the extra costs and investments these firms incur to underpin quality, which the OFT itself described in its decision to refer the statutory audit market to the CC:

“Larger auditors possess certain attributes necessary for auditing large companies... An extensive, integrated international network... Greater experience of auditing large and complex businesses... Relevant sector experience... Enhanced familiarity with latest developments in complex regulatory standards... The ability for the Big Four to recruit calibre staff attracted by the audit firm’s reputation and their extensive training programmes”⁴⁶.

- A2.15 Indicator 8 (“partner IRR”) is subject to the general IRR / WACC framework issues identified above in paragraph A2.2, and would need to take “partner salary” into account.

Slide 16

- A2.16 We disagree with Oxera’s second point, which implies that each indicator is independent of the others and should be looked at on a standalone basis. In particular, it appears that indicators 1-3 should be considered together, since:
- (a) Indicators 1 and 2 appear to attempt to measure an audit firm’s full capital base, including economic investment in both tangible and intangible assets. Taking one without the other would underestimate the capital employed; and
 - (b) Indicator 3 appears to look at measuring risk, which is taken when investment in the capital base is made, as measured by indicators 1 and 2 above.
- A2.17 Treating these indicators independently would thus be misleading, as they may each indicate a profitability gap that could be explained by the other indicators (e.g. just considering tangible assets may indicate a profitability gap that intangible assets and the required return for investing in both could explain). In simple terms, if each of indicators 1-3 separately could explain one third of any excess profitability using a ROCE approach, then using them separately would lead to a consistent conclusion that there were excess profits of two thirds of the ROCE approach, whereas in fact – when properly taken together – they indicate no excess profits.

⁴⁶ OFT, *Statutory audit: Market investigation reference to the Competition Commission of the supply of statutory audit services to large companies in the UK*, 21 October 2011, paragraph 5.34.

Annex 3: Law firm benchmarking

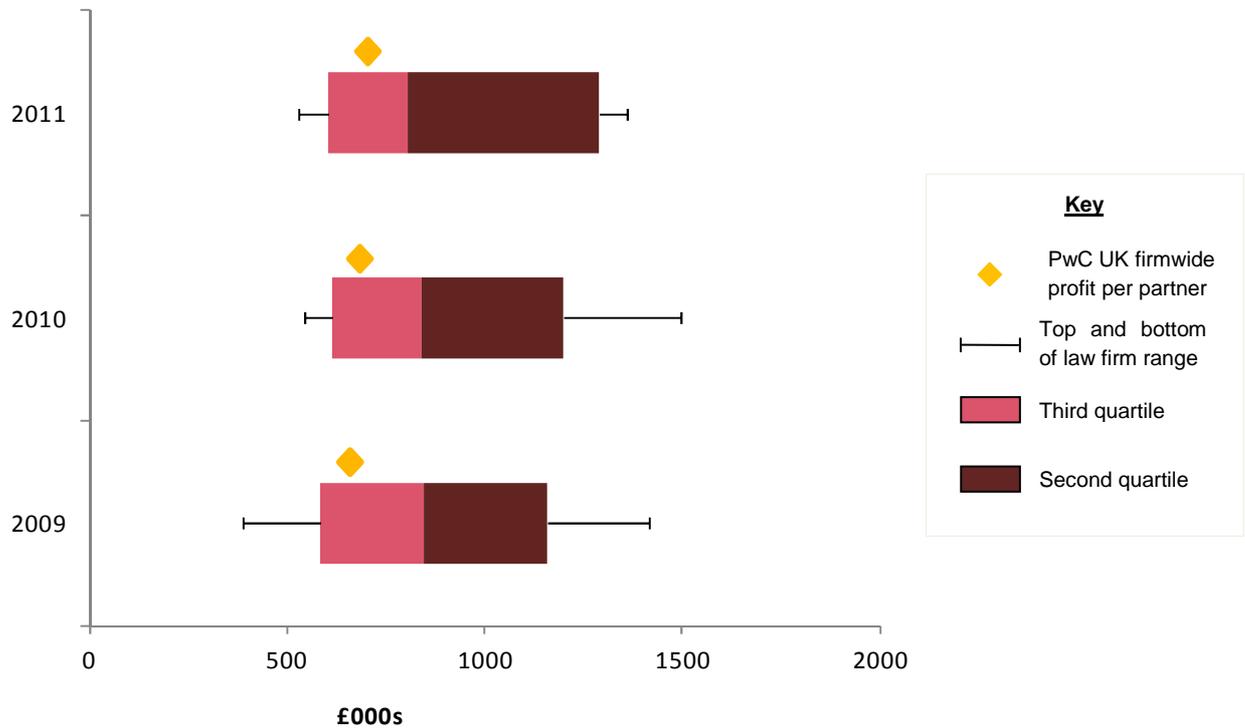
- A3.1 We understand the CC will want to consider the relative performance and profitability of the various audit firms in this investigation. However, in the absence of a benchmark external to the market under review, it is not possible to assess our profit per partner (or those of the other audit firms) to determine whether they are reasonable. Given this, we considered as potential partnership benchmarks: management consultancies; actuarial and benefits consultancies; engineering and other consultancies (tax, recruitment, pricing, security, project management etc); media firms; architect and design firms; property / chartered surveyors; and GPs, dentists and other healthcare practices.
- A3.2 However, we found it difficult to obtain reliable UK financial data on these potential benchmarks, mainly because: (i) some businesses are partnerships but do not have an LLP structure, so the company does not have to disclose the number of partners; and (ii) partner remuneration is often not disclosed.
- A3.3 The one exception to this is law firms, for which there appears to be more publicly available profitability data.
- A3.4 We consider top UK law firms to be sufficiently comparable to PwC (on a firmwide rather than an audit basis) to provide a sense check of the profitability findings of our economic profit margins analysis.⁴⁷ This is because they:
- (a) Are generally organised in partnerships;
 - (b) Rely heavily on intellectual property, brand, reputation and other intangible assets in the provision of their services;
 - (c) Serve broadly the same UK client base as the large audit firms, and provide similarly high value-added professional services; and
 - (d) Have a mix of client and project tenures.
- A3.5 Furthermore, UK law firms operate in unconcentrated markets.
- A3.6 PwC conducts an annual UK law firm survey which provides public UK profitability per partner for the top 10 law firms.⁴⁸
- A3.7 Our analysis on benchmarking PwC's UK firmwide distributed profit per partner⁴⁹ against that of law firms is summarised in the figure below, covering the past 3 years for which we have reliable UK data for law firms.

⁴⁷ Note there are limitations on the usefulness of the profit per partner measure as a result of which we are using it as a sense check rather than as a primary means of comparison. Further detail of these can be found at paragraph 2.5.

⁴⁸ This data is published in an aggregated form to ensure the anonymity of participants.

⁴⁹ This is average distributed profit per partner for PwC, including partner benefits such as the partner car scheme, which is comparable to the Law Firms' Survey numbers.

Figure 4: Profit per equity partner – top 10 UK law firms and PwC UK, 2009 - 2011



Source: PwC Law Firms' Survey 2009 – 2011, PwC data and analysis

- A3.8 In the above chart the full range shows the highest and lowest values found in the PwC law firm survey for the top 10 UK law firms. The third quartile shows the range of results covered by the 50th-75th percentiles and the second quartile the range of results covered by the 25th-50th percentiles of the top 10 law firms surveyed.
- A3.9 This analysis shows that PwC's profit per partner (on a UK firmwide basis – without making any adjustment to reflect the audit business alone) has remained consistently within the third quartile (the 50th to 75th percentile) of the benchmark group of the top 10 UK law firms.
- A3.10 Comparison of profit per partner is not a fully reliable profitability methodology, most importantly because it involves partner total remuneration which includes “partner salary” as well as actual profit. However, the comparison with law firms provides evidence that PwC's UK firmwide partner rewards are in line with those at analogous UK professional services partnerships operating in unconcentrated markets. Based on published profit per partner data, PwC's profit per partner is also comparable to that of the other three largest audit firms.

Annex 4: Further detail on FAC cost allocation

- A4.1 In this annex, we outline in more detail the fully allocated cost (FAC) cost allocation approach we have adopted in analysing PwC's audit profitability in more detail, in particular the approach behind our "FAC central estimate", which we present as our main cost allocation approach in this submission. This annex only deals with cost allocation – Table 1 in the main body of the paper gives summary financials for PwC's audit services. This FAC exercise provides a far more reliable basis for considering the overall costs attributable to our audit business than is available from the data which we provided to the CC in response to its data request. A similar exercise could be undertaken for other firms.⁵⁰
- A4.2 It is worth noting that while our FAC central estimate has been calculated in far greater detail than our Transparency Report (TR) approach, we nevertheless believe our TR approach represents a reasonable method of allocating PwC's costs between audit and non-audit services for the purpose for which it is produced. Our TR approach follows the voluntary industry code set out by the Consultative Committee of Accountancy Bodies (CCAB) on how auditors should report audit margins on a comparable basis. These guidelines were produced in consultation with KPMG, Deloitte, E&Y, BDO, Grant Thornton, PKF and Baker Tilly, as well as ourselves.
- A4.3 For the purposes of the CC's investigation we sought to perform the most accurate possible calculation, so our FAC central estimate is calculated using more detailed analysis than that used for our TR approach. Our FAC central estimate allocates a smaller proportion of costs to audit services than our TR approach in later years, producing a relatively small difference between the five year average margins estimated under the two approaches (see Figure 2). We consider the approach to calculating the FAC central estimate disproportionately complex as a basis for annual transparency reporting.
- A4.4 In the remainder of this annex, we set out:
- (a) The firm's operating cost base and the level of the business at which costs are allocated – i.e. whether the cost allocations between audit and non-audit services are carried out at a cost centre, business level⁵¹, Line of Service (LoS)⁵² level or firm level;
 - (b) The main cost drivers used to allocate costs;
 - (c) Our use and treatment of partner time; and
 - (d) A summary of cost drivers used, and cost allocation results for, our FAC central estimate.

Firm's operating cost base and level at which costs are allocated

- A4.5 Our starting point is PwC UK's operating costs (i.e. all costs before interest expense and taxes), excluding our Channel Islands and Middle East operations, for FY07 to FY11. These operating costs are summarised below.

⁵⁰ However, the CC is likely to need to request further data from relevant parties, or specify a common methodology for how such a cost allocation exercise should be undertaken.

⁵¹ This level refers to business divisions within each Line of Service, an example being Core Assurance, which forms part of the Assurance Line of Service.

⁵² I.e. Assurance, Advisory and Tax. Note that as of 1 July 2012, our LoS have been reorganised and now comprise (i) Assurance, (ii) Tax, (iii) Consulting and (iv) Deals.

Table 2: PwC UK operating costs

	FY07	FY08	FY09	FY10	FY11	5 year average
PwC UK operating costs (£m)	✂	✂	✂	✂	✂	✂

Source: PwC. Notes: These do not match to costs in our annual reports or other management accounts, since they exclude Channel Islands and Middle East operations to be consistent with the definition of UK firm and audit services used in our TRs. These costs are prior to any adjustments ✂.

A4.6 We have based our cost allocations on the cost line breakdown found in our management information system. We allocate costs at three main levels, depending on the type of cost and how it is typically incurred:

- (a) Certain costs are incurred and recorded at a **business and cost centre⁵³ level** (e.g. client service staff (CSS) costs and travel costs). Given this, we believe it is most appropriate to allocate these between audit and non-audit services using allocation proportions calculated at a business level (i.e. we use hours and salaries calculated for each business)⁵⁴, which are:
 - (i) Assurance businesses i.e. Core Assurance, Public Services (PS), Risk Assurance Services (RAS), Business Advisory Services (BAS), Capital Markets Assurance Services (CMAS) and Actuarial and Insurance Management Solutions (AIMS),⁵⁵
 - (ii) Tax; and
 - (iii) Advisory.
- (b) Some costs are “recharged” from the firm’s support functions to businesses based on usage e.g. continuing education charges for firmwide courses are based on numbers of attendees. For Assurance, most costs are recharged to “Assurance National” because these costs are common to Assurance as a LoS.⁵⁶ As such, these recharges are allocated between audit and non-audit services using allocation bases calculated mainly at the LoS level (i.e. the calculations use hours and salaries calculated for each LoS); and
- (c) The remaining costs are incurred centrally by the firm, and thus are allocated between audit and non-audit services using allocation drivers calculated at a firmwide level.

A4.7 This is summarised and explained in more detail in Table 4 below.

Main cost drivers used to allocate costs

A4.8 As mentioned in footnote 38 of the main body of this submission, we allocate costs between audit and non-audit services using two main cost drivers – chargeable hours and salary data for both

⁵³ Where cost centres are one level lower than “business level”.

⁵⁴ We allocate Tax as a whole and Advisory as a whole rather than splitting these LoS out into their individual business units, since the time and resources spent on audit services by these LoS are relatively small, and so would not merit analysing to the same level of detail as costs incurred at the Assurance business level.

⁵⁵ As we have previously stated on page 7 paragraph 1.4 of our Market and Financial Questionnaire response (24 February 2012). Of these businesses within Assurance, statutory audit work is primarily carried out by the Core Assurance business.

⁵⁶ We allocate these Assurance National costs based on cost drivers calculated for Assurance as a whole (excluding hours worked in Assurance National itself, which is an internal unit within Assurance rather than a business with client-facing operations).

staff and partners⁵⁷ – calculated at the appropriate level of the firm at the business, LoS or firmwide levels depending on the type of cost being allocated, as described in the previous section. The two main cost driver measures are:

- (a) An “hours measure”, where a simple average of each individual’s proportion of chargeable hours spent working on audit is used to allocate costs to audit; and
- (b) A “salary measure”, where each individual’s salary⁵⁸ is multiplied by the proportion of chargeable hours spent on audit, and the salaries allocated to audit are aggregated and expressed as a proportion of total salaries to allocate costs to audit. Because this measure takes into account the seniority of staff and partners (through the salary component), allocating costs between audit and non-audit on this basis takes into account the fact that PwC’s audit services are delivered with proportionally more junior staff than our non-audit services, and thus this measure allocates less costs to audit than the “hours measure” cost driver above.

- A4.9 Because we do not have a “ring fenced” audit business with dedicated audit partners, we have needed to estimate the number of audit partner FTEs that generate our audit revenues by apportioning our partners’ time, based on timesheet records, between audit and non-audit services, and estimating the notional “partner salary” associated with these FTEs.
- A4.10 However, compared with apportioning staff time and salaries, this exercise has the additional complication that partners incur general management time i.e. non-client facing roles that can have LoS-wide and/or firmwide benefits – for example being a Risk & Quality partner for Assurance or an industry leader for the firm. Given this additional complication, we describe in further detail how we have treated partner hours and “partner salary” below.

Our use and treatment of partner time

- A4.11 We use an allocation of our partners’ time between audit and non-audit services in several aspects of our audit profitability analysis:
- (a) An estimate of audit partner FTEs is used to determine our:
 - (i) Notional “partner salary” adjustment – see Annexes 5 and 6 on how our HRS estimate of “salary” per partner is estimated;
 - (ii) Return on capital adjustment – see Annex 7 for further detail on how this adjustment is estimated; and
 - (b) Allocations of partner hours and “partner salaries” are used in the calculation of the main cost drivers described above.
- A4.12 Given this, we outline how we have:

⁵⁷ Excludes individuals with zero chargeable hours. The partner time and “partner salary” cost associated with management roles are also not included in the calculation of the cost drivers, but are captured separately in our “partner salary” adjustment through our audit partner FTEs estimate – see below for further detail on how we have estimated the number of audit partner FTEs in the firm and how we have allocated partner hours to calculate our cost drivers. It should also be noted that measures based on hours charged are dependent on people charging their time accurately, and are therefore subject to human error and omission, although given both management and client scrutiny of charged hours, we would expect such errors and omissions to be minimal.

⁵⁸ Actual staff salaries include base pay, bonus, benefits and employer national insurance contributions. A notional “partner salary” is also attributed to each partner – see next section in this annex for further detail on how partners are treated.

- (a) Estimated the number of audit partner FTEs in the firm; and
- (b) Allocated partner hours to calculate our “hours measure” and our “salary measure”.

A4.13 We have estimated the number of audit partner FTEs by:

- (a) Considering the number of audit partner FTEs in the firm based on hours charged to audit clients; and
- (b) Attributing to audit services a share of partner time spent on general Assurance LoS and firmwide management, in proportion to how much of our other Assurance costs and firm costs respectively have been allocated to audit services.

A4.14 The resulting number of audit partner FTEs⁵⁹ we have estimated is shown in the table below.

Table 3: Estimated number of audit partner FTEs

	FY07	FY08	FY09	FY10	FY11	5 year average
Number of audit partner FTEs	⌘	⌘	⌘	⌘	⌘	⌘
Audit partner FTEs as a proportion of all partner FTEs (%)	⌘	⌘	⌘	⌘	⌘	⌘

Source: PwC Analysis

A4.15 In order to calculate our main cost drivers for cost allocations, we have:

- (a) For our “hours measure”, taken a simple average across partners of the proportion of each individual’s chargeable hours spent on audit and non-audit assignments, in line with how staff hours are treated; and
- (b) For our “salary measure”, attributed our HRS specialists’ estimate of “partner salary” to each partner based on their role level (uplifting this for employer national insurance contributions), and then excluded the “salary” associated with the share of each partner’s time spent on management roles⁶⁰, before calculating the “salary measure” as described above. This is so that management time, which itself requires an allocation, is not used in allocating costs when applying our “salary measure” cost driver. The operating cost of this management time is captured separately in our “partner salary” adjustment.

A4.16 In calculating our “salary measure”, we have assumed that, for any given role level, audit “partner salaries” are equal to those for non-audit partners. We have made this assumption because it would be difficult to estimate accurately a “salary” for non-audit partners as a group, where “non-audit partners” encompasses partners leading a wide variety of service offerings within all three LoS.⁶¹ Altering this assumption could lead to different cost allocations (since this would change the relative weighting between partner time spent on audit and that spent on non-audit in our “salary measure”).

⁵⁹ ⌘ We needed to estimate audit partner FTEs in FY07 to FY09 based on extrapolating backwards the average ratio of audit partner FTEs to Core Assurance partner FTEs in FY10 and FY11.

⁶⁰ For example, if a partner has worked the full year (i.e. is 1 partner FTE), and spent 0.3 FTE in a management role, we would exclude 30% of their “partner salary” in calculating our “salary measure”.

⁶¹ As a consequence, accurately estimating the “partner salary” for “non-audit” partners would be likely to require a separate benchmarking exercise for partners in each individual business within each LoS, which would be a disproportionate amount of effort for the purposes of an investigation into audit services.

Summary of cost drivers used and cost allocation results for our FAC central estimate

- A4.17 For our FAC central estimate, we have chosen for each cost line what we consider to be the most appropriate of the two main cost drivers – see Table 4 for more details. Unless otherwise specified, in general we have allocated costs based on:
- (a) The “hours measure” if we consider that a particular cost line is more likely to vary with the *number* of staff and partners rather than their seniority, e.g. computer costs, where each staff member and partner receives only one computer, regardless of their seniority; and
 - (b) The “salary measure” if a particular cost line is more likely to be affected by staff and partner seniority, e.g. travel costs, where senior staff and partners are more likely to travel for business development purposes than junior staff.
- A4.18 There are also other particular cost items which we have allocated using other approaches:
- (a) Client Service Staff (CSS) costs are allocated based on staff chargeable hours, i.e. the total salary of each individual member of client facing staff is allocated based on their individual split of chargeable hours between audit and non-audit, based on timesheet records.
 - (b) Costs of Aura (technology developed for the delivery of audits) and Accounting Technical Specialists (ACS) costs have been allocated 100% to audit, since these are specific to the delivery of audit services only.
 - (c) \propto of the firm’s practice protection costs have been allocated to audit, based on the ratio of the value of previous claims against the firm which have been audit-related.
 - (d) Occupancy recharges and infrastructure costs have been first allocated to each LoS based on square footage occupied, and then allocated within each LoS based on the “hours measure”. Using actual square footage occupied as the first cost driver takes into account the fact that Assurance staff on average tend to occupy less office space, since they work more frequently at client sites relative to Tax and Advisory staff, as well as there being a considerable proportion of junior staff attending ACA training off-site.
- A4.19 To illustrate our methodology, Table 4 below summarises the cost drivers applied to each cost line in FY11 for the purposes of allocating total firm costs⁶² between audit and non-audit services for our FAC central estimate.⁶³

⁶² Please note that “Total firm costs” may not match to previous breakdowns of total firm costs that the CC has seen because: (i) this table excludes our Channel Islands and Middle East operations (which are excluded to be consistent with the definition of our UK operations used in our Transparency Reports); and (ii) for each cost line, we have taken as our total firm costs the sum of Assurance, Tax and Advisory costs in our management information. These totals do not include costs recorded to support services functions (e.g. Finance and Procurement), since such costs are all eventually “recharged” to LoSs across various cost lines in the management accounts. However, this does mean that the totals of some cost lines may not match to previous information the CC may have seen.

⁶³ It should be noted that this is not how costs are allocated in our management accounts.

Table 4: Summary of level of analysis and cost driver applied to each cost line, FY11 costs shown for reference

	Total firm costs (£m)	Allocation to audit (%)	Audit allocation (£m)	Cost driver	Level at which costs are allocated	Brief description
Cost of sales disbursements	✗	✗	✗	Costs charged directly to audit (or non audit) specific project codes		✗
Client service staff (CSS) costs	✗	✗	✗	Salary measure (Staff only)	Based on individuals	✗
Total direct costs ⁶⁴	✗	✗	✗			
Practice protection costs	✗	✗	✗	Based on previous claims	Firmwide level	✗
Practice support staff (PSS)	✗	✗	✗	Salary measure	Business level	✗
Continuing education	✗	✗	✗	Salary measure	Business level	✗
Benefit costs	✗	✗	✗	Salary measure	Business level	✗
Recruiting	✗	✗	✗	Salary measure	Business level	✗
Staff entertaining	✗	✗	✗	Salary measure	Business level	✗
Relocation, gifts & other	✗	✗	✗	Salary measure	Business level	✗
Other people related costs	✗	✗	✗			
Occupancy - own costs only	✗	✗	✗	Hours measure	Business level	✗
Communications	✗	✗	✗	Hours measure	Business level	✗
Technology - own costs only	✗	✗	✗	Hours measure	Business level	✗
Occupancy & infrastructure - own costs only	✗	✗	✗			

⁶⁴ Note that within direct costs (across the cost lines shown above), there are two types of audit-specific costs that have been separately allocated. These are:

Accounting technical specialists	✗	✗	✗	✗		✗
Aura	✗	✗	✗	✗		✗

	Total firm costs (£m)	Allocation to audit (%)	Audit allocation (£m)	Cost driver	Level at which costs are allocated	Brief description
Travel and subsistence costs	✂	✂	✂	Salary measure	Business level	✂
Marketing, BD and knowledge	✂	✂	✂	Salary measure	Business level	✂
PwC meetings	✂	✂	✂	Salary measure	Business level	✂
Professional advisory fees	✂	✂	✂	Salary measure	Business level	✂
Professional subscriptions	✂	✂	✂	Hours measure	Business level	✂
Other income and expenses	✂		✂ ⁶⁵	Hours measure	Business level	✂
General - own costs only	✂	✂	✂			
Continuing education recharges	✂	✂	✂	Salary measure	LoS level	✂
Recruiting recharges	✂	✂	✂	Salary measure	LoS level	✂
All other people related recharges	✂	✂	✂	Salary measure	LoS level	✂
Communications recharges	✂	✂	✂	Hours measure	LoS level	✂
Technology recharges ⁶⁶	✂	✂	✂	Hours measure	LoS level	✂
Marketing and business development recharges	✂	✂	✂	Salary measure	LoS level	✂
Other income and expenses recharges	✂	✂	✂	Hours measure	LoS level	✂
OFSS Secretarial services	✂	✂	✂	Salary measure	LoS level	✂
One firm support services recharge	✂	✂	✂			
Internal projects imports / (exports)	✂	✂	✂	Hours measure		✂
A/R provisions and write-offs	✂	✂	✂	Salary measure		✂

⁶⁵ ✂
⁶⁶ ✂

	Total firm costs (£m)	Allocation to audit (%)	Audit allocation (£m)	Cost driver	Level at which costs are allocated	Brief description
Total indirect costs	✗	✗	✗			
Firmwide management	✗	✗	✗	Salary measure	Firmwide level	✗
Finance and information	✗	✗	✗	Salary measure	Firmwide level	✗
Human capital	✗	✗	✗	Salary measure	Firmwide level	✗
Central IT	✗	✗	✗	Hours measure	Firmwide level	✗
Marketing and communication	✗	✗	✗	Salary measure	Firmwide level	✗
Other national costs	✗	✗	✗	Salary measure	Firmwide level	✗
Infrastructure	✗	✗	✗	Hours measure	Firmwide level	✗
Technology expenses - recharges	✗	✗	✗	Hours measure	Firmwide level	✗
OFSS staff costs recharges	✗	✗	✗	Salary measure	Firmwide level	✗
Global recharges	✗	✗	✗	Salary measure	LoS level	✗
Occupancy allocations and recharges	✗	✗	✗	Hours measure	LoS level	✗
Recharges	✗	✗	✗			
Other costs / (credits)	✗		✗	Hours Measure ⁶⁷	Firmwide level	✗

Source: PwC data and analysis

A4.20 The results of our cost allocations for the FAC central estimate are summarised below. This table corresponds to the costs implied in the “unadjusted profit” row of Table 1 (or the total of the “cost of sales disbursements”, “CSS costs”, “Direct costs” and “Indirect costs” in that table).

Table 5: Summary of audit costs under FAC central estimate

	FY07	FY08	FY09	FY10	FY11	5 year average	
Audit operating costs, (unadjusted for “partner salary” costs) (£m)	✂	✂	✂	✂	✂	✂	✂

Source: PwC Analysis

A4.21 We then made an adjustment to costs incurred in training staff to gain the ACA qualification (i.e. to qualify as a chartered accountant). The ACA qualification is a significant investment for PwC, and each year a number of ACA trained individuals move within PwC from audit to non-audit work. We have thus estimated the costs that our Tax and Advisory businesses (our proxy for non-audit services for this purpose) would have incurred to train their own ACA qualified staff if they were no longer able to recruit such qualified staff through transfers from Core Assurance (our proxy for audit services):

- (a) This involved calculating the average cost of exam materials per student⁶⁸ over the past five years plus the salary cost of the training time per student⁶⁹, multiplied by the annual number of graduates who need to be trained to secure the historical number of internal transfers at each grade, based on Core Assurance attrition rates and the estimated average number of years Core Assurance staff tend to spend at each grade.
- (b) This has resulted in reallocating around £✂ of ACA training costs each year from audit to non-audit.

A4.22 This ACA adjustment is shown in the “ACA adjustment” row of Table 1. The “partner salary” and cost of equity costs in Table 1 are explained in the following annexes.

A4.23 For our FAC sensitivities, we have allocated nearly all costs based on:

- (a) Our “salary measure” cost driver for our “FAC max” sensitivity. As outlined in paragraph A4.8, this measure takes into account the fact that PwC’s audit services are delivered with proportionally more junior staff than does our non-audit services, and so allocates less costs to audit than our “hours measure”. Using this cost driver to allocate nearly all costs represents the minimum audit costs (and thus maximum audit profit) that could be estimated based on the two cost drivers we have calculated.
- (b) Our “hours measure” cost driver for our “FAC min” sensitivity. Since our “hours measure” allocates more costs to audit than our “salary measure”, using this cost driver to allocate nearly all costs represents the maximum costs (and thus minimum audit profit) that could be estimated based on the two cost drivers we have calculated.

A4.24 As mentioned in footnote 38, these two FAC sensitivities result in a range in our audit economic profit margin (after all adjustments) of -3% to +3%. In reality, we do not believe these extremes

⁶⁸ This includes tuition, materials, exam entry, student membership and professional body membership joining fee at the end of students’ third year.

⁶⁹ We estimated this by taking the average salaries of associates and unqualified SAs, and multiplying by the proportion of time spent in training in each year of study.

are the most appropriate cost allocations, and the FAC central estimate is based on our best view of the most appropriate cost driver to apply to each cost line. Nevertheless, the range gives some indication of the sensitivity of the figures to alternative allocations.

Annex 5: Further detail on the HRS “partner salary” estimate

Overview of approach

- A5.1 An integral part of our profitability analysis is a detailed benchmarking exercise led by a team of PwC reward specialists. This has been used to estimate the amount that would be paid to PwC partners in their capacity as employees (executives and managers) of the firm. We benchmarked what we refer to as “partner salary”, which actually covers the full reward costs to the firm of the labour supplied by partners. We benchmarked this by considering equivalent labour reward costs in the wider UK economy, taking into account base pay, bonus, long-term incentives and employer pension contributions.⁷⁰ To do this we sought to identify equivalent roles in terms of job size, mainly in the UK listed environment,⁷¹ and then examined the costs associated with employing people in such roles.
- A5.2 The following approach was taken for the purpose of generating these estimates:
- (a) Partner job evaluation: an evaluation of partners who are responsible for audits (“audit partners”) – using a sample role within each level – was performed using the PwC Monks Job Evaluation System (“PwC JE System”). This is a well known job evaluation system that is widely used, particularly with clients where directly equivalent benchmarks are difficult to identify, which evaluates the competencies required to perform a role effectively.
 - (b) Development of appropriate peer groups: this drew on the job evaluation results and was supplemented with anecdotal information gathered on PwC partners, in order to establish roles in the wider UK economy which draw on a similar range of skills and competencies. The peer groups used have been restricted to industry roles (rather than other professional services firms, private equity or banks). Table 8 contains further information on these matches.
 - (c) Remuneration benchmarking: analysis of total remuneration information for the selected peers was performed using the PwC total remuneration database.
- A5.3 The analysis was conducted by the PwC HRS reward team who specialise in job evaluation and benchmarking. The team conduct independent evaluations using the system referred to above and then use the resulting scores to assign broad pay ranges based on market data in order to advise organisations on appropriate reward levels.

Partner job evaluation

i. Overview of the PwC JE System

- A5.4 The PwC JE System is a proven competency-based job evaluation system which has been widely used in both the public and the private sectors.
- A5.5 As a competency-based system, it uses a set of generic competencies and skills (Factors) that are required to perform the role. These are the “inputs” required to carry out the job. The

⁷⁰ For the treatment of employer national insurance contributions see footnote 72 below.

⁷¹ We have focused mainly on the UK listed environment primarily due to better information disclosure and availability for these companies. The information we have used for this analysis also includes some larger private companies.

approach contrasts with many traditional job evaluation systems which seek to measure specific tasks and responsibilities, or “outputs” such as revenue, headcount or direct reports.

- A5.6 The system is particularly well-suited to knowledge-based organisations where outputs are less straightforward to measure. It has been used with major organisations including the CC, leading FTSE 350 companies and a number of public sector organisations.
- A5.7 In the table below we set out the levels under each of the six factors in the PwC JE System into which each of the audit partner roles has been placed and give a brief explanation for these assessments.

Table 6: Six factors of the Monks JES

Factor	Description of factor	Range of levels
Knowledge	This factor measures the breadth and depth of knowledge required to do a job.	1 to 27
Specialist skills	Specialist skills are acquired through natural ability, training, experience or practice. They include basic skills such as driving a car, and more advanced skills such as those of an airline pilot or a professional advisor.	1 to 21
People skills	These are the skills required in getting things done with and through people. These skills are used when working within organisations, for example, in line management, team working and communicating with colleagues. They are also used in working with suppliers, with other colleagues and peers, and with the media and general public.	1 to 17
Customer service/external impact	This is the extent to which the jobholder has an impact on customers, suppliers or others outside the organisation, distinguishing between jobholders who have a direct and an indirect external impact.	1 to 13
Decision making	The complexity of decision making, including the range of factors to be taken into account and the extent to which information is likely to be ambiguous or conflicting.	1 to 21
Creative thinking	Thinking ahead, seeing the big picture and developing and implementing new ideas. This factor measures the extent to which the jobholder is required to be creative, rather than making choices within existing customs, rules and procedures.	1 to 11

ii. Results of partner job evaluation

- A5.8 The formal evaluations which were carried out were made on the basis of information gathered on the responsibilities of eight audit partners. These were selected as typical of those of the wider population of partners in each of the four main role levels. Data was gathered through interviews with individuals familiar with the roles and then used to evaluate them under each factor.
- A5.9 This process is detailed below:

(a) Identify typical PwC audit partner roles:

- (i) PwC partners are allocated to 15 responsibility levels within the partner income system across four levels (“role levels”) of partners.
- (ii) We chose to evaluate and benchmark a partner from each role level. For Role Level 1 (the highest partner role level), however, we evaluated two partners at different ends of the scale because of its wide span.

(b) Determine partner responsibilities:

- (i) The distinctions between the four main roles are not clearly defined, so to enable us to perform the job evaluations, Partner Affairs identified two audit partners in each of the four roles and provided us with details of their activities and day to day roles.

(c) Carry out formal job evaluations:

- (i) We then formally evaluated the roles on the basis of this information to assess the size of the roles.
- (ii) This resulted in five evaluation scores, one for each level and an additional one for Role Level 1.

Table 7: Role description and Monks score for each audit partner role level (max score = 110)

Role level	Role description	Monks score
1	<ul style="list-style-type: none"> • Client facing audit partners will lead a portfolio of significant clients, typically FTSE 100 companies with significant international operations as Global Relationship and/or Lead Audit Partner or Quality Reviewing Partner. This will probably be in addition to an important business development or functional role at group or senior business unit level. • Some of the most senior roles at level 1 (i.e. Role 1.1) will have a management role only. • Will oversee activities of other partners on client teams (globally where appropriate) or in leadership roles. • Deep knowledge of a broad range of business issues outside of their sector or business focus and significant external profile. • Holds relationships with CEOs and CFOs of major organisations (FTSE 100 or other high profile entities). Has ability to operate comfortably in board rooms of such organisations. • An exceptional ability to communicate, including the ability to influence large numbers of people through the media or through a leadership team. • May also have firm-wide responsibility for developing strategy and policy for the audit practice. • May also sit on the leadership team for business area. • Will have responsibility for developing the direction and implementing changes that will impact on others within all or a significant part of the audit practice. • May also coach, performance appraise or mentor other partners. 	Role 1.1: 104 Role 1.5: 95

Role level	Role description	Monks score
2	<ul style="list-style-type: none"> Responsible for a range of clients including some high profile or complex audit relationships. At the top end of level 2 (e.g. Role 2.1 or 2.2) this would include large inbound clients, smaller or less complex FTSE 100 clients or FTSE 250 clients. At the lower end of level 2 (e.g. Role 2.4 or 2.5) is likely to have a mixed portfolio of listed and private companies, inbound clients or could have second partner responsibilities on the largest complex clients, responsible for subsidiaries and divisions of international FTSE 100 clients. May also have significant additional internal responsibilities at business unit level or other leadership role such as market leader for a sector or geography. May also have significant additional internal responsibilities at business unit level or other leadership role such as market leader for a sector or geography. Acknowledged expert in a particular discipline or area with sizeable external relationships and networks. May also form part of the leadership team within a geography or sector – with responsibility for people, risk or office with strategic and decision making responsibility. A very strong ability to communicate, with the skills to influence large numbers of people at business unit level and influence external debate on specific topics. May also coach, performance appraise or mentor other partners. 	88
3	<ul style="list-style-type: none"> Engagement leader on a portfolio of small and medium sized listed and private sector clients (typically below FTSE 350) or second partner on larger clients with responsibilities at head office, divisions and subsidiaries of large listed companies May also have some additional internal responsibilities. Likely to be a specialist in a particular area or sector. A very strong ability to communicate, including the skills to influence a small leadership team at business unit level. Localised decision making and creative thinking for particular areas of business team within a well defined group framework. Mentoring role for directors and below. 	83
4	<ul style="list-style-type: none"> Responsible for a portfolio of smaller clients holding relationships with key individuals at clients (e.g. finance directors at larger clients, CEOs and finance directors at smaller clients) or may take a support role on the audits of major listed clients. A very strong ability to communicate, including the skills to lead teams within the business unit. Some localised decision making and creative thinking within a well defined group framework. This role is generally used for newly admitted partners in their first two years to ensure that they are stepping up to the role of partner and developing well. 	80

Source: PwC analysis

A5.10 While we recognise that the CC will have to consider the most appropriate way to benchmark salaries for other audit firms, we would expect that the other large firms would have a mix of partners across roles broadly similar to PwC (reflecting the similar nature of their clients). We would expect smaller firms to have fewer audit partners in role levels equivalent to PwC’s Role Levels 1 and 2, with almost all their audit partners being in equivalent Role Levels to 3, 4 and a level below this (i.e. dealing predominantly with small and medium sized clients below the FTSE 350).

Development of appropriate peer groups

A5.11 The scores above provided the level of each partner role. Based on our understanding of audit partner roles and the nature of their skills and experience, we believe that audit partners are best benchmarked against individuals within the finance function of external UK companies. The roles were benchmarked using PwC’s reward database to provide a “partner salary” (which reflects total reward for the external benchmarks) figure, against similar sized roles in the market,

restricted to the finance function jobs. Details of these peer groups can be seen in the table below.

Table 8: Audit partner peer groups by role level

Partner role	Monks points	Pay levels	Proportion of partners	Market comparisons	Sample size (of market comparators)
Role 4	80	4.2 to 4.1	✂	Listed and private companies	67
					<ul style="list-style-type: none"> • Heads of Internal Audit, revenues £1.25-5bn • Financial Controllers , revenues £1.25-5bn • Divisional Financial Directors, revenues < £500m, >25% UK source
Role 3	83	3.3 to 3.1			51
Role 2	88	2.5 to 2.1	✂	<ul style="list-style-type: none"> • Finance Director jobs in listed companies in the FTSE small-cap index and private companies with revenues of less than £1,000 million 	150
Role 1	95	1.5	✂	<ul style="list-style-type: none"> • Group Finance Director jobs in listed companies in the FTSE 250, but with less than 25% of annual revenue from outside the UK 	68
	104	1.1		<ul style="list-style-type: none"> • Group Finance Directors jobs in listed companies with market capitalisation of between £1,000 million and £3,000 million 	73

Source: PwC analysis

“Partner salary” benchmarking

A5.12 For each peer group, the PwC system enables the benchmarking of total reward⁷² based on:

- (a) Salary;
- (b) Actual bonus paid;
- (c) Expected value of long-term incentives; and

⁷² As the PwC system benchmarks are for total reward of PwC audit partner peers employed in the wider UK economy, they exclude employer national insurance contributions which are an additional cost to businesses of employing labour. The figures in this annex show total reward only, but in making adjustments to operating costs we have uplifted the rewards figures for the impact of employer national insurance contributions in order to make the correct adjustment to our operating profit.

(d) Employer pension contributions.

A5.13 The expected value of long-term incentives is based on a valuation of the awards using the share price as at the date of the grant and incorporating a discount for the likelihood of achieving performance conditions. This methodology provides an estimate of the accounting charge that organisations would face for this aspect of the employment cost for senior executives. The actual pay-outs from long-term incentive plans may be higher or lower than their expected value depending on performance and share price movement between grant and final vesting of the shares.

A5.14 The table below shows “partner salary” benchmarking results for the selected audit partner levels. In addition, a Role level 1.4 was identified (representing the median Partner Role 1) and benchmarked between Role level 1.5 and 1.1.

Table 9: External benchmarks for the “partner salary” component of total audit partner remuneration by role level

Market		Role 4	Role 3	Role 2	Role 1.5	Role 1.4	Role 1.1
“Partner salary” (£k)	Lower quartile	152	204	365	509	745	781
	Median	214	314	487	762	876	1,002
	Upper Quartile	317	404	619	1,052	1,095	1,308

Source: PwC data and analysis

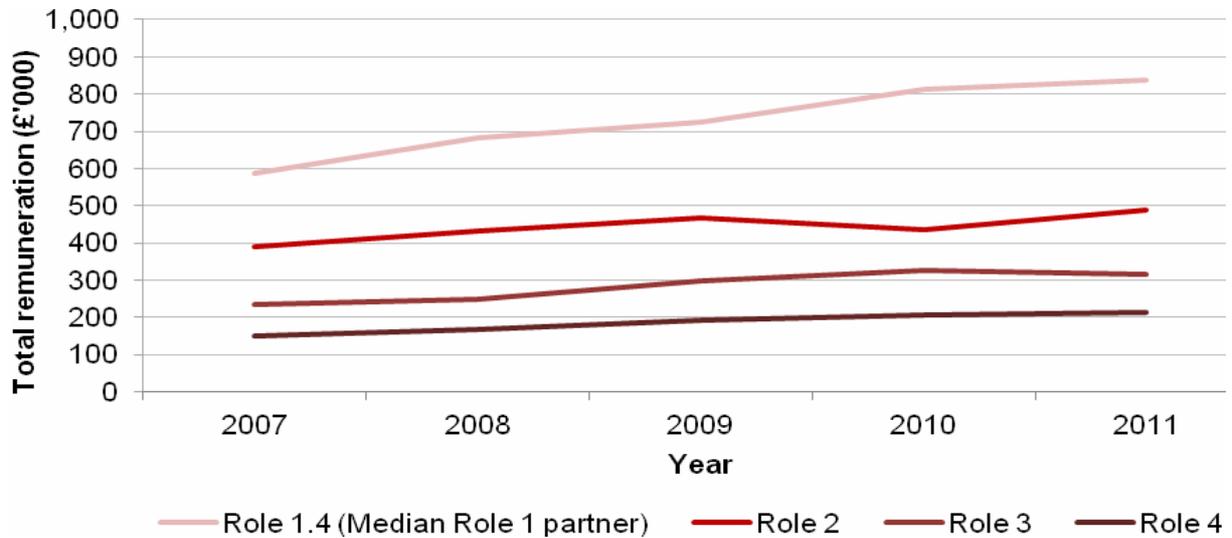
A5.15 A further sense check on the “partner salary” benchmarking results is the fact that there is comparability of the lower quartile Role 4 “partner salary” with Core Assurance director salaries (directors are the highest non-partner positions at PwC, with Core Assurance being used in this case as a proxy for audit). The average Core Assurance director salary was £30 in FY11⁷³ and there is overlap in the range for directors and the lower quartile of “partner salary” for a Role level 4 partner. This shows a continuum in average salaries from director to the most junior partners, but reward at this level would significantly underestimate the “partner salary” for more senior partners.

Five year data

A5.16 The graph below shows market comparator group “partner salary” estimates over time for the audit partner benchmarks. This is provided in order to show how total pay and conditions levels have changed over the past five years based on current and historic samples in the PwC database.

⁷³ We are using the term “director salary” to emphasise the comparability with our “partner salary” figure, but both reflect total reward including benefits and bonuses as well as base pay. The figure in our response to the CC’s data request was 30, but this included employer national insurance contributions. To make the figure comparable to the “partner salaries” presented in Table 9 and Figure 5, we have adjusted the figure downwards to exclude employer national insurance contributions.

Figure 5: HRS external benchmarks for the “partner salary” component of total partner remuneration by role level, FY07-FY11



Source: PwC data and analysis

A5.17 The lines show that the five year period has included a period of steady growth in our benchmarked “partner salaries”, followed by a general slowing down in growth in the overall package for most levels of our “partner salary” benchmarks. This has been primarily driven by bonus awards for our “partner salary” benchmarks, which have increased over time, particularly until 2011, and steady increases in base pay. Long-term incentive and pension awards have remained broadly flat since 2008. The increase has been more marked at executive levels (shown by Role 1.4 on the chart) where there have been increases in bonus opportunity and outcomes in the first four years.

Annex 6: Dr Jonathan Trevor's review of our HRS "partner salary" estimate, July 2012

Biography of Dr Jonathan Trevor

- A6.1 Dr Trevor (PhD, University of Cambridge, 2007) is Co-Director of the Centre for International Human Resource Management and Lecturer in Human Resources & Organisations at Cambridge Judge Business School, University of Cambridge, and Fellow of Downing College, Cambridge. Jonathan's principal areas of research include strategic capabilities, human capital, strategic human resource management, reward management and leadership. Jonathan has been a visiting scholar at the MIT Sloan School of Management and the Darden Graduate School of Business, University of Virginia. He has been published in FT ranked peer reviewed journals including *MIT Sloan Management Review* and *Human Resource Management*. He is the author of a number of book chapters and working papers, and a recent book on compensation strategies published by *Palgrave Macmillan*. Jonathan teaches widely on the subjects of organizational behaviour, strategic human resource management and leadership on the Cambridge MBA, Executive MBA and international executive education courses. Jonathan is the Director of ConsultCambridge Ltd., a research led consultancy advising top teams on strategy and organisational capability, human capital management and business transformation. Jonathan was formerly a management consultant at Mercer Human Resource Consulting and has over twelve years of consulting experience.

Background

- A6.2 My company, ConsultCambridge Ltd., has been engaged by Norton Rose LLP acting on behalf of PricewaterhouseCoopers (PwC) to conduct an evaluation of the methodology underlying the PwC Partner Reward Benchmarking (PRB) exercise. The PRB is one activity of the audit profitability analysis being prepared by PwC for submission to the Competition Commission.
- A6.3 In conducting my evaluation, I have treated my overriding duty as being to assist the Competition Commission in matters within my expertise. The opinions expressed within my evaluation are from the perspective of an expert in reward management.

Summary of Partner reward benchmarking approach, methodology and results

- A6.4 The PRB exercise is intended to provide an estimate of the amount that would be paid ("partner reward"⁷⁴) to audit partners in the capacity of employees in the listed environment.
- A6.5 The PRB exercise follows a three-stage process from which results are derived:
- (a) Stage 1: Evaluation of Audit Partner role levels performed using PwC Monks job evaluation system.
 - (b) Stage 2: Development of appropriate peer groups drawing upon job evaluation results supplemented by additional information.

⁷⁴ "Partner reward" is referred to in the PwC report as "partner salary". These terms are both used to describe partner labour cost, which include base pay, bonus, long-term incentives (e.g. share options) and employer pension contributions.

- (c) Stage 3: Analysis of partner total reward against selected industry benchmarks using PwC total remuneration database.

A6.6 Fifteen responsibility levels have been compressed into four roles (role 1, 2, 3 and 4), which have been further differentiated incrementally within roles (within role 1, for example there are roles 1.1, 1.4, 1.5 etc). Benchmarking is against senior finance roles within varying samples of UK listed and private companies. The average size (defined by revenue) of the companies in each sample varies according to the size of the role being evaluated. Samples are selected according to role, with, for example, junior partner roles (e.g. role 4) equivalent to junior finance roles in UK-only smaller firms, and very senior partner roles (e.g. role 1) equivalent to senior finance roles in large-multinationals with significant offshore revenues.

Evaluation of the methodology

A6.7 The job evaluation and benchmarking methodologies used in the PRB exercise are robust and represent industry standard practice. I highlight below some methodological considerations regarding stage 2 (*the development of appropriate peer groups drawing upon job evaluation results supplemented by additional information*), but do not see these as compromising the robustness of the benchmarking exercise:

- (a) The benchmarking exercise uses general industry listed and private companies as peer comparators. As an alternative, or additionally, professional services or appropriate financial services peer comparators might also have been considered.
- (b) Necessarily, given the choice of benchmarking methodology (i.e. job matching and not a dedicated salary survey), each role is benchmarked against a different sample of firms within the PwC Monks database. As an alternative, a dedicated survey of the same sample of peer comparators might be considered, thus ensuring like for like comparison between roles within the one sample. However, it is recognised that this represents a significant undertaking in terms of time and expense.
- (c) The stated methodology considers cash and equity elements of reward, incentives and pension. It excludes aspects of benefit provision, details of which would otherwise normally be included in total remuneration analysis e.g. open market value of private medical care, company car provision and flexible benefits. Typical total remuneration analysis provides a comprehensive breakdown of these individual elements as part of an overall total remuneration package measured against “street value” (i.e. the cost if the incumbent were to purchase the same benefits / level of benefit on the open market).
- (d) One source of salary data (the PwC Monks database) was used for the benchmarking exercise. Alternative approaches to salary benchmarking use potentially multiple datasets for the purpose of providing a representative overall industry median. However, this is not accepted industry standard practice when performing market benchmarking and the absence of additional datasets does not compromise the validity of the PRB exercise results.

Overall evaluation

A6.8 Mindful of the considerations raised, I conclude as an overall evaluation that the PRB exercise approach and methodology is reasonable and robust and the benchmarking results are valid.

Annex 7: Reasonable return on tangible assets allocated to audit

- A7.1 This annex provides details on how we have estimated a reasonable return on the tangible assets allocated to audit in our analysis of PwC's audit profitability. Two estimates are needed for this calculation:
- (a) The value of tangible assets employed by our audit business; and
 - (b) The reasonable return on capital for our audit business.
- A7.2 The CC can in principle obtain estimates for other firms⁷⁵.

Estimating the tangible assets employed by our audit business

- A7.3 As outlined in the main body of this paper, we believe that attempting to quantify PwC's internally-generated intangible assets would require a substantial degree of judgement, resulting in a potentially wide range of valuations. It would be difficult to produce an agreed value for use in a competition investigation. We have therefore not attempted at this stage to carry out a valuation of PwC's intangible assets.
- A7.4 However, we believe that the tangible assets employed by PwC can be estimated with a greater degree of certainty, using our partners' invested capital as recorded on our balance sheet, i.e. the balance sheet value of capital invested in the firm by PwC partners.⁷⁶
- A7.5 This implicitly assumes that most of the firm's balance sheet operating tangible assets are funded by the capital that partners have invested.⁷⁷ We also use a proportion of reserves (i.e. retained earnings) to fund tangible assets and working capital, which should also be considered part of the firm's equity base.
- A7.6 However, to prevent any concerns that there may be a degree of circularity in attempting to estimate profits based on a return on retained profits, we have not included this element of reserves in our calculations. Our measure should therefore be regarded as understating total tangible capital employed.
- A7.7 Because the firm does not have a "ring-fenced" audit business with dedicated audit partners, an allocation of the firm's total partners' invested capital between the audit and non-audit parts of the business is required. We have made the simplifying assumption that the audit and non-audit parts of the business have invested capital in line with the relative numbers of partner FTEs devoted to each business (and that, on average, each partner invests the same amount of capital).⁷⁸ We thus calculate total audit partners' invested capital by multiplying the firmwide

⁷⁵ However, to obtain tangible asset values employed in the audit business that are comparable with those we have used in our calculations, the CC would need to obtain accurate estimates of audit partner FTEs as a proportion of total partner FTEs.

⁷⁶ Although members' capital is recorded as a liability in our accounts based on IFRS, this is the capital invested in the business and in essence is part of the business's equity, which is used to fund the assets on our balance sheet.

⁷⁷ ✕ See our response to question 4 of the CC's Market and Financial Questionnaire.

⁷⁸ An alternative would have been to analyse the apportionment of partners' invested capital in more detail between audit and non-audit, for example breaking down the invested capital contributed by individual partners and attempting to apportion these between audit and non-audit, but this would have been complex and we do not think this would make a material difference to our results.

average invested capital per partner FTE by our estimated number of audit partner FTEs.⁷⁹ This results in an estimate of partners' invested capital of £X for our audit business on average over the period FY07 to FY11. The table below shows total partners' invested capital and the amount allocated to audit for FY07 to FY11.

Table 10: PwC's partners' invested capital

	FY07	FY08	FY09	FY10	FY11	5 year average
Total partners' invested capital (£m)	X	X	X	X	X	X
Audit partner FTEs as a proportion of all partner FTEs (%)	X	X	X	X	X	X
Partners' invested capital allocated to audit (£m)	X	X	X	X	X	X

Source: PwC Annual Reports, PwC Analysis

Estimating a reasonable return on capital for our audit business

- A7.8 The approach we have taken to estimating a reasonable return on capital for our audit business is based on the cost of equity which is the **minimum return on capital equity investors would expect or require** in a competitive market.
- A7.9 The standard framework for calculating the cost of equity is the CAPM. It has strong theoretical underpinnings and many regulators and competition authorities (including the CC) use this framework in their analyses. This framework assumes that equity investors require their investment to yield at least the return available on risk-free instruments (e.g. UK government bonds). Added to this risk-free rate of return, equity investors expect a premium for the risk involved in an equity investment.
- A7.10 This premium is defined as the general equity market risk premium (EMRP) multiplied by the beta. The EMRP is the additional average return compared to the risk-free return needed to compensate an average investor for investing in equities of average risk. The beta is a measure of the risk of a particular equity investment relative to the average equity investment. In particular, it is a measure of the relative degree of systematic risk for a particular investment.
- A7.11 According to the CAPM, the post-tax cost of equity is calculated as follows:

$$r = RFR + (\beta_e * EMRP)$$

Where:

r denotes the cost of equity;

RFR denotes the risk-free rate;

β_e denotes the equity beta; and

EMRP denotes the equity market risk premium

⁷⁹ For more details on our allocation of partner FTEs between audit and non-audit see Annex 4.

- A7.12 A key aspect of the CAPM framework is that it distinguishes between specific risks and systematic risks, as follows:
- (a) Specific risks are those risks which are specific to a company or project, which the CAPM framework assumes can be “diversified away” by holding a portfolio of investments. That is, by holding a diversified portfolio of equity investments, an equity investor is not exposed to such risks since poor returns on those investments which perform badly due to specific risk factors can be expected to be offset by high returns on investments which perform well for specific risk reasons. An uplift from exposure to specific risks is therefore not captured in the standard calculation of the cost of equity.
 - (b) Systematic risk refers to risk factors which affect all equity investments simultaneously in the same direction to a greater or lesser extent, and hence cannot be diversified away by holding a portfolio. Movements in economy wide factors such as changes in the GDP growth rate and interest rates contribute to systematic risk. Standard equity betas provide a measure of the relative size of this risk (i.e. the systematic risk associated with a particular equity investment, relative to the average risk of investing in the equity market). If a particular investment is of average risk, beta equals 1; beta is greater than 1 for a more than averagely risky investment and less than 1 for a less risky investment. The higher the beta, the higher is the exposure to systematic risk, and hence the higher is the cost of equity.
- A7.13 As such, the CAPM framework only compensates investors for systematic risks rather than specific risks. However, PwC partners:
- (a) May not typically be fully diversified with respect to their equity investment in PwC, which has not been taken into account in calculating the cost of equity;
 - (b) Face a higher risk profile with respect to audit work, where PwC faces unlimited liability that cannot be fully covered by insurance. This is a specific risk of a large company audit practice which should be reflected in audit prices, but is not included as a cost in either our return on equity calculation or our audit cost base; and
 - (c) Have their entire reward at risk, not just the element relating to return on capital i.e. the part of reward which is “partner salary”, including notional base pay, is at risk depending on business performance.
- A7.14 Partners may therefore be exposed to specific as well as systematic risk, and if a higher return was justified by the exposure to specific as well as systematic risk then our cost of equity would be too low, and our estimate of margins too high.
- A7.15 The application of the CAPM requires the identification of listed businesses which are comparable to the business being analysed. It is important that the comparators are similar businesses so that the factors that drive beta (e.g. cyclical demand, and cost structure including the proportion of fixed costs) are comparable to the target business.
- A7.16 Ideally, to measure the risk of the provision of audit services we would examine the returns of comparable listed companies that exclusively provide these services. In practice, no such companies exist in the UK so it was necessary to look for comparators in developed European markets and North America. Even internationally, we have not been able to identify any listed comparators that exclusively provide audit services.
- A7.17 As a next best alternative, we have identified listed companies with an industrial classification that includes accounting, auditing and taxation services or comparable consulting services (management consulting services and agriculture and economic consulting services). From this

group of comparators, we reviewed company descriptions and excluded any that had a focus in the defence, engineering or real estate sectors.

A7.18 Using this approach we identified nine comparators in FY11, which are listed in the table below.⁸⁰

A7.19 We acknowledge that the comparators identified are not perfect. However we believe that they provide a reasonable representation of the level of risk inherent in the audit services business.

⁸⁰ We rejected: a) companies with less than two years of daily observations which is what we consider to be the minimum number of data points required to estimate a reliable beta; and b) companies with a market capitalisation of less than £100m which we consider too small to be comparable to PwC.

Table 11: Companies comparable to PwC, 30/06/2011

Company	Country	Description	Market cap (£m) ⁸¹	Equity beta (A) ⁸²	5 yr. D/E (B)	Asset beta (C)
Accenture	Ireland	Management consulting, technology services, and outsourcing company	24,243.5	0.8	0.0%	0.8
Begbies Traynor Group	UK	Independent professional advice and solutions in the areas of recovery, specialist taxation advice, corporate finance, investigations and risk management in the UK and internationally	39.6	0.5	44.9%	0.3
CRA International	US	Consulting firm that provides economic, financial, and business management consulting expertise worldwide	183.0	1.3	11.9%	1.2
FTI Consulting	US	Worldwide business advisory company; focussing on: corporate finance/restructuring, forensic and litigation consulting, economic consulting, technology, and strategic communications	1063.0	0.6	34.7%	0.5
ICF International	US	Management, technology, and policy consulting and implementation services	310.7	0.9	22.9%	0.7
Management Consulting Group	UK	Provides various professional services in the UK and internationally. Alexander Proudfoot unit identifies and implements operational improvements. Kurt Salmon unit operates as a full service consultancy	188.3	0.5	121.0%	0.2
Navigant Consulting	US	Specialty consulting firm, provides dispute, investigative, economic, operational, risk management, and financial and risk advisory solutions to governmental agencies, legal counsels, and large companies in the USA, the UK, and internationally	336.9	1.1	37.2%	0.8
Resources Connection	US	Provides professional services in finance, accounting, risk management and internal audit, corporate advisory, strategic communications and restructuring, information management, human capital, supply chain management, actuarial, and legal and regulatory services	347.5	1.0	0.0%	1.0
RSM Tenon Group	UK	Provides a range of professional and business services in the UK. It offers accounts and audit, business continuity, business integrity and investigation, consultancy services, corporate finance, corporate recovery, financial, forensic, governance and risk management, outsourcing, personal insolvency, IT solutions and human resource consultancy services	79.8	0.5	61.9%	0.3
Median				0.8	23.0%	0.5

Source: Capital IQ

⁸¹ For Begbies Traynor Group and RSM Tenon Group, while market cap is now less than £100m these companies have had market caps of over £100m in two and three of the last five years respectively.

⁸² Equity betas are calculated using two years of daily observations. We use two year betas as these reflect a more current view of systematic risk, whereas a longer measure of equity betas, such as five year betas, contain data that reflects market conditions that are no longer relevant in the calculation of the cost of equity.

- A7.20 The betas calculated from historical market data are equity betas. They reflect the risk that equity providers bore by investing in the companies examined given that the companies had a particular level of gearing historically. The existence of debt finance in companies increases the risk to equity investors as debt has first call on available cash for investors. Equity betas are thus higher than the underlying “asset” betas (which are the betas that would reflect the risk borne by equity investors were the company financed by equity only, and there was no additional financial risk to equity providers associated with the inclusion of debt).
- A7.21 Asset betas have been derived from the observable equity betas by employing an appropriate adjustment formula:
- $$\beta_e = \beta_a * (1 + D/E)$$
- Where:
- β_e denotes the equity beta;
- β_a denotes the asset beta; and
- D/E denotes the debt / equity ratio.
- A7.22 The comparator asset betas have been calculated by taking the equity beta and de-levering them by the corresponding two year average debt / equity ratio, using the above formula. As shown in Table 11, the median asset beta for the comparator set is 0.5 for FY11.
- A7.23 Re-levering the average asset beta estimate using the average D/E ratio of 37.2% gives an equity beta estimate of 0.9 for FY11.⁸³
- A7.24 The resulting equity betas for FY07 to FY11 are shown below in Table 12.
- A7.25 In the calculation of PwC’s cost of equity we have calculated the risk-free rate by taking an average of the midpoint of 10 and 20 year UK government bonds over the previous two years.⁸⁴
- A7.26 There are a number of ways to estimate EMRP; it can be calculated on an ex-post basis, based on historic data; or on an ex-ante basis, based on forward-looking data such as surveys of investor expectations. The duration of the time period in question also matters to the EMRP used as it can be influenced by the economic cycle. In our analysis, we have used an EMRP estimate of 4.5% from FY07 to FY09 and 5.0% from FY10 to FY11. This is consistent with PwC’s in-house

⁸³ It is common practice to re-lever the asset beta using the average D/E ratio as this is considered to provide a reasonable estimate of the long term D/E ratio for the business that is being assessed. We know that PwC’s actual gearing is currently much lower. Therefore an alternative approach would be to re-lever the asset beta using PwC’s actual D/E ratio, resulting in an equity beta slightly greater than 0.5. However, we also know that there is a relationship between the asset beta of a company and its D/E ratio because companies with lower asset betas are able to take on more debt resulting in higher D/E ratios than those with higher asset betas. This is demonstrated by our list of comparators, where the companies with 0% (or close to 0%) D/E ratios, have the highest asset betas. We therefore believe that an equity beta of 0.5 is likely to underestimate the true equity beta for our audit services. As a result we consider an equity beta of 0.9 to provide a better estimate.

⁸⁴ We have taken a two year average of the 10 and 20 year UK government bond yields in order reduce the influence of any sudden market fluctuations that could have occurred for bonds at a particular date. This is particularly important given the recent Quantitative Easing (QE) policies.

view of the EMRP in each year and was derived from a detailed review of recent and historic economic literature.⁸⁵

A7.27 Based on the above risk-free rate, equity betas and an EMRP assumption of 4.5% from FY07 to FY09 and 5.0% from FY10 to FY11, we estimated the post-tax cost of equity for PwC for FY07 to FY11, which we then converted into pre-tax cost of equity figures using UK corporate tax rates⁸⁶ (as shown in Table 12 below). This is consistent with our operating profit margins (which are also pre-tax) and reflects the return to investors before tax has been deducted.

Table 12: Key components to the calculation of PwC's cost of equity

	FY07	FY08	FY09	FY10	FY11	5 year average
Risk-free rate	4.5%	4.7%	4.5%	4.1%	3.9%	4.4%
Equity beta	1.0	0.9	0.8	0.8	0.7	0.8
EMRP	4.5%	4.5%	4.5%	5.0%	5.0%	4.7%
Post-tax cost of equity (%)	8.8%	8.6%	7.9%	8.0%	8.4%	8.3%
Average UK corporate tax rate (%)	30.0%	29.5%	28.0%	28.0%	27.5%	28.6%
Pre-tax cost of equity (%)	11.5%	11.1%	10.1%	10.3%	10.7%	10.7%

Source: PwC analysis, Datastream, Capital IQ, HMRC

A7.28 We then applied the pre-tax cost of equity (as shown in Table 12) to the partners' invested capital allocated to our audit business (as shown in Table 10) to calculate a monetary return. This calculation and the resulting return on partners' invested capital allocated to audit is shown in Table 13 below.

Table 13: PwC's return on partners' invested capital allocated to audit

		FY07	FY08	FY09	FY10	FY11	5 year average
Pre-tax cost of equity (%)	A	11.5%	11.1%	10.1%	10.3%	10.7%	10.7%
Audit partners' invested capital (£m)	B	⌘	⌘	⌘	⌘	⌘	⌘
Return on audit partners' invested capital (£m)	C = A*B	⌘	⌘	⌘	⌘	⌘	⌘
Impact on audit margins (%)		⌘	⌘	⌘	⌘	⌘	⌘

Source: PwC analysis, Capital IQ, Datastream

⁸⁵ Based on a PwC Economics review of EMRP studies, which were: *Equity Risk Premium: Expectations Great and Small*, Richard A. Derrig and Elisha D. Orr, January 2004; *An analysis of the equity risk premium*, R Bali and H Guiguis, Journal of Asset Management, Feb 2004, 4,5, p348; *The Risk Premia Over Time Report*, Ibbotson Associates, 2006; *Equity Premium: Historical, Expected, Required and Implied*, P. Fernandez IESE Business School Working Paper, no. 661.; *The Worldwide Equity Premium: A Smaller Puzzle*: E Dimson, P Marsh, M Staunton, LBS, 2006; *The equity risk premium across European markets: an analysis using the Implied Cost of Capital*, C Jackel & K Muhlhauser, working paper, 2011; *Mid 2011 Risk-free Rate and ERP update*, Grabowski, Duff & Phelps, 2011; *Equity premia around the world*, Dimson, Marsh and Staunton, LBS 2011; *Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2011 Edition*, Damodaran (2011); *CFO survey* (Duke University Fuqua Business School, 2011); *The equity risk premium in 2010*, Graham & Henry (2010); *Market risk premium used in 56 countries in 2011: A survey with 6,014 answers*, Fernandez (2011).

⁸⁶ Where there has been a change in the tax rate from one tax year to another, we have taken a weighted average of the two tax rates because PwC's fiscal year spans two tax years. The weightings reflect the proportion of PwC's fiscal year in each of the two tax years.