

# Comments on PwC document: 'Observations on the assessment of audit profitability'

## Note prepared for the Competition Commission

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### 1 Introduction

- 1.1 This note refers to a document by PwC, 'Observations on the assessment of audit profitability'.<sup>1</sup> As Oxera is referenced several times in the paper, it may be helpful to the CC to have comments from Oxera on the PwC approach. This note therefore sets out our main comments in brief—there are more detailed points that would need to be addressed if the CC were to rely on PwC's suggested method to measure the profitability of audit firms.
- 1.2 PwC's main points appear to be as follows.
- An adjusted return on sales (referred to as the 'economic profit margin') is the most robust or useful measure of profitability available in the circumstances of audit. This measure is calculated by deducting from accounting profit the estimated cost of labour of partners and capital. A firm that earns 0% economic profit is said to be earning its cost of capital and no more.
  - Using this measure, PwC calculates that it did not earn excessive profits in the auditing arm of its business, and had an economic profit margin of 1% on average over five years, representing a small positive economic profit (in excess of the cost of capital). The 1% appears to be measured as 1% of total turnover of the relevant part of PwC (the audit business as a whole). PwC does not report profitability results for the non-audit part of its business.<sup>2</sup>

<sup>1</sup> PricewaterhouseCoopers LLP (2012), 'Observations on the assessment of audit profitability', Non-confidential version, August 7th. Henceforth referred to in this note as the PwC note.

<sup>2</sup> This could be useful as a cross-check on whether PwC's cost allocation between audit and non-audit is appropriate, assuming that other parts of PwC operate in competitive markets and would earn normal returns over the long run.

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## 2 Oxera comments on the PwC approach

- 2.1 As a preliminary remark, Oxera considers that the measure of ‘economic profit margin’, if achieved accurately, could be helpful and appropriate in the context of the market investigation. However, the measurement issues that cause problems with other profitability indicators (IRR, ROCE), and lead PwC to reject these indicators, also apply to the ‘economic profit margin’, as explored below.

### Measurement of profitability in the reference market

- 2.2 Para 3.11 of the PwC paper says:

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).

- 2.3 It is difficult to see why allocating profits between audits (FTSE 350 versus other) would be affected by the same problems of allocating costs between audit and non-audit. Indeed, unless PwC would contend that it cannot measure the profitability of an individual PwC audit, the problem of allocating profits between FTSE 350 and other audits does not seem insurmountable. It is understandable that greater difficulties may arise when allocating shared costs between audit and non-audit, but this potentially more difficult problem is exactly the one that PwC notes in its paper that it has solved.
- 2.4 Since there is no claim of excess profits outside the reference market, it would be more helpful to the current inquiry if PwC had calculated the profitability for the part of PwC relevant to the CC’s investigation. Profits inside the reference market could be excessive, while at the same time profits outside were normal or even negative. In such a case, PwC’s result of a 1% positive ‘economic profit margin’ in aggregate could be consistent with the existence of excess profits in the reference market.<sup>3</sup> PwC’s calculation therefore does not permit the testing of the core profitability hypothesis relevant to this investigation—namely, that excess profits are being earned in the reference market (or one or more sub-segments of that market).

### Asset base in the ‘economic profit margin’

- 2.5 The PwC paper says that:

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 2012). 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.

- 2.6 This statement recognises that the capital base of an audit firm is measured erroneously if the measure accounts for only tangible, and not intangible, assets.

<sup>3</sup> The potential effect would be more substantial if non-FTSE 350 revenues are large relative to FTSE 350 revenues. In this respect, it is noted that Deloitte reports that of £510m audit revenue, only £137m relates to FTSE 350 companies (27%). This suggests that the measurement problem could be very significant, if PwC’s split of FTSE 350 vs other audit revenue is similar to that of Deloitte. See page 3 of: <http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/About%20Deloitte/uk-about-cc-initial-submission.pdf>

2.7 The PwC paper goes on to say:

A7.3...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.

2.8 PwC uses partners' invested capital as the measure of capital for its 'economic profit margin' approach. At table A7.28 PwC explains that it calculates a return on partners' invested capital allocated to audit, multiplying a pre-tax cost of equity by this amount of capital to arrive at an annual capital cost. It deducts estimated capital cost, together with estimated labour cost, from the profit margin to arrive at the 'economic profit margin'.

2.9 It follows that PwC has used a capital cost that is based on an erroneous estimate of the appropriate capital base—there appears to be no attempt to account for intangible assets (unless these are implicitly included in the partners' invested capital). This is the precise issue that PwC raised in relation to calculating a measure of ROCE or IRR, causing PwC to reject these as too difficult to calculate reliably. As a result PwC's 'economic profit measure' is affected by exactly the same measurement problem that led PwC to reject the alternative measures of profitability.

2.10 Therefore the CC, if not estimating intangible assets, could rely no more on PwC's 'economic profit measure' than it could on a ROCE or IRR calculation also based only on a measure of partners' invested capital or tangible assets. Put another way, if the use of partners' invested capital solves the problem of the unknown quantity of intangible assets for the methodology proposed by PwC, it would also appear to solve this problem for the IRR/WACC calculations. Oxera considers that, if any of the IRR/ROCE/economic profit margin measures are to be used, it would be worthwhile attempting to estimate accurately the intangible assets.

### Cost of equity

2.11 At para A7.15 the PwC paper says:

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. cyclicity of demand, and cost structure including the proportion of fixed costs) are comparable to the target business.

2.12 As the purchase of an audit is a statutory requirement for listed companies, the cyclicity of demand for audit will be low (as recognised by the CC in its revised paper on theories of harm).<sup>4</sup> However, PwC obtains an equity beta for its cost of equity calculation by using comparators (mainly consultancies) whose businesses do not have this characteristic. In this regard PwC may have overestimated the equity beta, and hence the cost of equity, applicable to audit. It follows that the 'economic profit margin' could be underestimated by PwC's approach.<sup>5</sup>

2.13 A related point at para A7.23 is that PwC uses a debt-to-equity (DE) ratio drawn from the comparator set, rather than its own DE ratio, resulting in an equity beta of 0.9. If PwC's own

<sup>4</sup> Competition Commission (2012), 'The framework for the CC's assessment and revised theories of harm', August 10th, para 54.

<sup>5</sup> It is not clear what legal form PwC would take in the hypothetical situation where partners are salaried. If, which seems a contradiction, the business were still a partnership, the cost of equity should also take account of a premium for non-diversification (since partners are not fully diversified investors as in the CAPM framework). Oxera (2007) discusses the impact on cost of capital of the partnership structure versus other forms of ownership, and concludes that alternative forms of ownership could lower the cost of capital for audit firms. Oxera (2007), 'Ownership rules of audit firms and their consequences for audit market concentration', prepared for DG Internal Market and Services, October.

DE ratio is used, an equity beta of 0.5 is obtained. Since there are known problems with the comparator set, it is difficult to see the justification for using the comparator set's DE, and therefore it seems doubtful that the higher equity beta is appropriate. Indeed, an equity beta of 1 would be appropriate for an activity that is exactly average in terms of cyclicity, and thus finding an equity beta of 0.9 for statutory audit seems a rather implausible result, given the inelastic demand for statutory audits.

## Sensitivity to inputs: labour cost adjustment

2.14 The calculations undertaken by PwC cannot be reproduced because of the level of redaction in the PwC paper. However, it is possible to undertake a sensitivity analysis of the results to changes in the inputs when the material presented in the PwC paper is combined with information available in the public domain.

2.15 This sensitivity analysis is necessarily tentative, and is presented here only to indicate to the CC where the conclusion relating to the economic profit margin is likely to be sensitive to assumptions and/or the methodology used to develop the required inputs. Oxera's understanding is that the basic methodology used by PwC is the following. A normal rate of return is earned when:

$$\text{revenue} - (\text{operational expenditure}) - (\text{partner salary adjustment}) - (\text{partners' invested capital} * \text{cost of capital}) = 0$$

This formula can be populated using PwC-wide information from PwC's 2011 annual report and material from the non-confidential version of the PwC paper. For 2011 the formula would be populated as follows (using approximate values):<sup>6</sup>

- revenue = ~£2.4 billion (PwC Annual report page 35);
- operating expenditure = ~£1.7 billion (PwC Annual report page 35);
- partners' invested capital = ~£150m (PwC Annual report page 36);
- cost of capital = 10.7% (Table 13 of the PwC paper).

2.16 Populating the formula with these numbers produces an adjustment for the labour costs of partners of around £685m, and an implied cost of the capital employed by partners of around £16m per annum. This provides an indication of the sensitivity of this calculation to errors in the relevant terms. The table below shows the sensitivity of the economic profit margin to a 10% change in the input variable of the cost of capital, the capital employed and the labour cost adjustment:

### Sensitivity to inputs

Factor adjusted	Original value	Plus 10%	New 'economic profit margin'
Cost of capital	10.7%	11.8%	-0.07%
Partners' invested capital £m	150	165	-0.07%
Labour cost adjustment £m	684	752	-2.8%

Source: Oxera.

2.17 As can be seen in the table, the economic profit margin is highly sensitive to errors in the labour cost adjustment, and much less sensitive to the other two factors.

<sup>6</sup> Since this calculation is purely illustrative, and since certain data specific to PwC audit is redacted from the PwC paper, here approximate figures are used rather than actual. This is to avoid the impression that Oxera is trying to replicate PwC's calculations, when the intention is only to show the general sensitivity of model results to inputs.

2.18 From the material presented in the PwC paper, it is not possible to make any meaningful comments on the robustness or otherwise of the labour cost adjustment. However, it appears that any errors in the calculation of the labour cost adjustment have the potential to change the profitability result in a way that could change any conclusion on whether profits were excessive or otherwise. Moreover, the exercise of estimating what partners would earn if they were salaried is complex, and an exercise that would need to be carried out transparently if relied upon by the CC.

### Other points

2.19 Without the data that has been redacted from the PwC paper, it is not possible to verify PwC's calculations. However, on the basis of publicly available data, Oxera considers that:

- an 'economic profit margin' of 1%, which seems small, could actually translate into a ROE or IRR considerably in excess of the cost of equity (in particular, if the measure of capital in ROE or IRR were taken to be the partners' invested capital);
- applying PwC's methodology to other audit firms might help determine whether the 'economic profit margin' is a useful metric. If this metric is robust, we would expect to see values around 0 in those partnership organisations where there are no concerns relating to market power. However, the difficulty of measuring partner labour cost would make this quite a complex exercise;
- the PwC methodology (see para 3.3 of the PwC paper) includes employer National Insurance (NI) contributions when calculating the notional labour cost of partners. As NI contributions are not paid in relation to partners, this could be seen to inflate the labour cost inappropriately, and by a material amount. Whether the NI adjustment is appropriate depends on what PwC is assuming about its own ownership structure in the hypothetical scenario where partners are salaried, and the ownership structure of competing audit firms (which bears on whether an employer cost increase, such as a liability to pay employer NI contributions, would be passed on through price increases, as would be expected in a competitive market);
- similarly, depending on the counterfactual ownership structure, there might need to be an adjustment for any interest currently paid to partners on their invested capital. If that capital is to be equivalent to shareholders' equity, the interest payment would first need to be removed from expenditure before calculating the rate of return to equity in the capital base.