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Measuring large UK accounting firm profit margins, mergers and concentration

A political economy of the accounting firm

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mergers and
concentration

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Abstract This paper examines the relationship between UK accounting firm mergers and increases in profit margins enjoyed by large UK accounting firms. Cowling's monopoly capitalism model provides the theoretical framework. The empirical parts of this paper draw on a number of quantitative sources, including the fees and staff numbers disclosed by UK accounting firms, official salary data and salary survey data. Correlation is used to show that the accounting firm data is a reliable source of evidence. The data are then used to construct an indicator of concentration, merger impact on concentration, and an indicator of big firm profit margins. Regression is used to estimate the close positive relationship between concentration and profit margins. The results confirm Cowling's hypothesis that mergers lead to increases in profits. This paper complements Hanlon's "commercialisation of accounting" thesis by providing an alternative theoretical framework for examining accounting firms and by bringing quantitative sources of evidence to bear.

Introduction

This paper examines the relationship between accounting firm mergers and the profit margins enjoyed by large UK accounting firms. This is achieved by using the data on fees and staff numbers disclosed by accounting firms, combined with data relating to accounting salaries. These sources are used to construct two key indicators. The first is an indicator of concentration and merger activity, the second, an indicator of industry profit margins. Both of these indicators are of interest in their own right. The effect of mergers on accounting industry concentration has been little explored. This paper offers a short cut approach to measuring the effect and an alternative source of data for measuring concentration. Because accounting firms are partnerships, not limited companies, they are under no obligation to disclose profits. However, during the period 1986-1995 accounting firms did make regular disclosures of fees and staff numbers. Some firms have continued to make disclosures, but,

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after 1995 not all the big firms disclosed, which spoils the data set. Some accounting firms make more detailed disclosures e.g. www.kpmg.co.uk[1], but, that is an isolated case. This paper suggests an approach to estimating increases in accounting profit margins in the 1986-1995 period.

This paper goes on to reveal a close relationship between concentration and profit margins. This relationship is interpreted within political economy, an established basis for the study of modern accounting (Tinker, 1980; Neimark and Tinker, 1986; Armstrong, 1987; Bryer 1993, 1994, 1999). Most contributors to political economy of accounting employ Marxist concepts and frameworks. This paper suggests an alternative and complimentary approach, springing from the work of Ricardo (1951) and Kalecki (1939), Cowling's (1982) monopoly capitalism model, which is particularly well suited to the interpretation of quantitative data.

The monopoly capitalism model (Cowling, 1982) suggests a positive relationship between, amongst other things, industry profit margins and the level of industry concentration. Further, it argues that firms actively increase the level of concentration e.g. by takeovers and mergers, in order to achieve higher profit margins. Interpreted within the monopoly capitalism model, the close relationship between the concentration indicator and the profit margins indicator is a matter of cause and affect. Cowling's (1982) approach suggests that accounting firm mergers have been engineered for the purpose of increasing profit margins. This interpretation also suggests that the behaviour of accounting firms, and the present structure of the accounting industry, may be against the public interest.

The empirical parts of this paper involve measuring the fees and staff numbers of accounting firms, as suggested by Tomczyk and Read (1989). Remarkably, since Tomczyk and Read (1989), no further work on "direct measurement", as they termed it, has been published. This lack of published work is difficult to explain. It may reflect the view that accounting scholars consider the accounting firm data to be unreliable. To deal with this possibility, the issue of the accuracy of the accounting firm data is examined early in this paper.

The argument of this paper is developed and structured as follows. A literature review examines existing work relevant to accounting mergers, concentration and profit margins, identifying gaps in existing knowledge. Next, the monopoly capitalism model, and its relevance to the research question, is explained. Then a method section describes and justifies the statistical techniques employed and highlights some of their limitations.

The empirical sections are set out as follows. The sources of the data, and the periods of time for which they were available, are described. This will assist other scholars in replication. The issue of the accuracy of the data is examined, using correlation. The consistent and logical pattern observed in the data suggests that it is reliable. A number of industry concentration measures are calculated and the results compared to those obtained in previous studies. The short cut method for the calculation of merger impact on concentration is

explained and the results of applying that method are presented. The results are compared to those obtained in previous studies. The effect of mergers on industry structure is then examined, using grouped data. That completes the work on concentration and mergers.

The work on the second indicator, profit margins, begins by applying the monopoly capitalism model to the accounting industry. This involves identifying what constitutes profit margin in the accounting context: the difference between the wages paid to accountants and the fees earned from the work of those accountants. The big firm average fees per employee is calculated, using the accounting firm disclosures. The average salary per employee is calculated, using salary survey data. An index of the fees per employee and the salary per employee is calculated, which highlights the rate of change in the two variables. Finally, the rate of change of the average profit margin earned by a large accounting firm is calculated. That completes the work on profit margins.

Having derived an indicator of concentration and an indicator of profits, the relationship between the two indicators is then examined, using simple linear regression. This shows a close relationship between merger activity and increased profit margins, as predicted by the monopoly capitalism model. The limitations of the data, method and theoretical apparatus are re-examined, in order to put the results in a balanced perspective. Finally, the concluding section sets the argument in the broader context of political economy of accounting and suggests avenues for further research.

Literature review

Several literatures are relevant to the relationship between mergers and profit margins. Within critical accounting, Hanlon's (1994) work on the "commercialization of accounting" examines the behaviour of accounting firms. Within mainstream scholarship, there has been some work on accounting industry concentration and, although there has been no work on accounting firm profits, there is a considerable amount of work on related issues, such as audit fee determination. This section highlights some of the gaps in this literature. Only the existing UK results are reviewed because the focus of this paper is on UK data. Methodologically the review is broader, taking into account approaches adopted in the USA.

Hanlon's (1994) "commercialization" hypothesis, argued that accounting was:

Undergoing a process of transformation. Among other things this ... entails a shift from social service professionalism to a commercialized professionalism (Hanlon, 1997 p. 843).

Hanlon's work developed from a sociological perspective, making particular use of the distinction between Fordist and flexible regimes of accumulation. In common with Johnson (1972) and Armstrong (1987), Hanlon's (1994, 1997) work was in the Marxist tradition. Although it was not presented as a political economy of accounting, it dealt with issues of class and social relations of production.

A number of criticisms of Hanlon's ideas emerged. These included inadequate empirical evidence (Dezalay, 1997, p. 826), inadequate attention to the social construction of accounting knowledge (Dezalay, 1997, p. 827), excessive concentration on audit (Willmott and Sikka, 1997, p. 832) and confusion regarding the relationship between accounting and capital (Willmott and Sikka, 1997, p. 836). These criticisms were not fatal to Hanlon's hypothesis, but indicated a need to deepen and broaden the theoretical and empirical scope of the work. This paper suggests alternative theoretical tools and empirical sources, which develop Hanlon's (1994) themes.

Work on accounting industry concentration in the UK started with Moizer and Turley (1989). Their data is based on audit fee disclosures in *Financial Times* Top 500 company annual report and accounts, 1972 and 1982. They calculated Herfindahl Index (H) and Concentration Ratio (CR) (see below) measures and concluded that concentration had significantly increased in the period. In particular, the nine-firm Concentration Ratio increased by 19 per cent over the ten-year period to 0.822 and H increased by 32 per cent to 0.094. The results showed that merger was the single most important cause of concentration, but the extent of that relationship was not measured. No relationship between concentration and audit fees was identified.

Beattie and Fearnley (1994) worked with the entire population of UK quoted companies, some 2,078 observations, and recorded the auditor for each company between 1987 to 1991. They calculated a range of Concentration Ratios and identified a continued increase in concentration. In particular, the eight-firm concentration ratio increased by 23 per cent over the five-year period to 0.793. Of that 23 per cent increase, 14 per cent was attributable to merger.

Peel (1997) worked with an even greater population, right down to private limited companies, a cross section of 189,423 in 1994/95 period. This enabled the level of concentration at the smaller company end of the spectrum to be observed. Only a six-firm concentration ratio (CR6) was calculated. In the listed market this was 81.1 per cent, but across all firms was only 29.7 per cent.

In the USA, Tomczyk and Read (1989) took a different approach to concentration. They measured audit fees using the disclosures made by accounting firms and showed that these disclosures could be used to calculate concentration. Surprisingly, no further work using this approach has appeared. In summary, the trend towards concentration in the UK is well documented and there is some evidence that mergers are the biggest cause of concentration. The link between mergers and concentration and the potential of the direct measurement approach (Tomczyk and Read, 1989) need further investigation and development.

A gap in mainstream research is the fact that no attention has been paid to accounting firm profits. Mainstream accounting researchers e.g. Simunic (1980), have focused their attention on issues such as audit fee determination, which are relevant to profit margin, but tend to ignore the costs of the accounting firm. A starting point for understanding this approach is the survey paper prepared by Yardley *et al.* (1992), which reviewed the literature relating

to US accounting firms. In the introductory part of their review, Yardley *et al.* (1992) presented a theoretical model from industrial economics. The main elements of the model were behavior (e.g. collusion), structure (e.g. concentration), performance (i.e. profits) and determinants (e.g. elasticity of demand).

In their introduction, Yardley *et al.* (1992) outline the argument that structure (concentration) can determine performance (profit), as well as the alternative hypothesis that performance determines structure. However, it becomes apparent in their substantive review that there were no papers exploring the impact of structure on performance. Despite the huge literature, the relationship between merger, concentration and profit had not been examined. The main papers cited in the section of the review concerning performance are Dopuch and Simunic (1980), which concerns collusion rather than concentration, and Simunic (1980), which uses the cost of auditors liability as a surrogate for audit costs.

Much of the quantitative work in the UK has also avoided exploring profits, restricting itself to audit fees. Taylor and Baker (1981) make the first contribution, finding that audit fees are closely related to company size and complexity variables. A more detailed UK study was undertaken by Chan *et al.* (1993). This study used interviews to provide a richer context for empirical work and introduced a number of new independent variables into the determination of log-transformed audit fees. The population, extracted in 1989, was of all UK quoted companies, a cross section of some 985 observations, on which they performed multiple regression. One of the results that emerged from the study was that the size of the auditor was a significant variable in determining the size of the audit fee. This can be interpreted as a link between concentration and profits, but the link is not strong, because no account is taken of accounting firm costs.

Pong and Whittington (1994) extracted a sample of 577 UK listed companies from *The Times* top 1,000 companies in the period 1981-1988. The authors paid particular attention to correct specification of the model. Taking into account the identification problem, they pointed out that audit fee determination models are only meaningful under the assumption that the supply curve is fixed while the demand curve shifts between different auditees. They also pointed out that the commonly used logarithmic transformation of audit fees restricted the usefulness of the results. They found evidence of a big firm fee premium. However, they also found that larger accounting firms were more efficient at dealing with complex audits. There was evidence of low-balling, but not when a large audit firm was the incumbent. In summary, the UK evidence does show some link between the size of audit fees and the size of the auditor. This suggests that large accounting firms may charge more for their services than other accounting firms.

In summary, mainstream scholarship has not explored the issue of accounting firm profits and, therefore, it has not begun to look at the relationship between mergers, concentration and profits. The impact of

Political economy and the monopoly capitalism model

Political economy is a scholarly tradition that has developed from the work of Smith (1980), Ricardo (1951) and Marx (1954). The tradition emphasizes the struggle between different classes in society and, as such, combines the disciplines of economics, politics, sociology and history. Much of the recent work in this tradition has had an international flavour e.g. Landes (1998). The political economy tradition does not have a unified theoretical framework. Marxist ideas and concepts, which are influenced by dialectics, compete with Ricardian ones, which are more deterministic. The distinction between the two approaches is illustrated in two alternative interpretations of the labour theory of value: the abstract labour theory of value (Marx) and the concrete or embodied labour theory of value (Ricardo) (Steedman, 1977; Mohun, 1994).

The political economy of accounting (PEA) interprets accounting reports, techniques and practices in the light of class struggle. Scholars in the Marxist tradition have dominated the scene. Contributors have used concepts such as the social relations of production in conjunction with case study evidence (Tinker, 1980), historical analysis (Armstrong, 1987; Bryer, 1993) and investigations of accounting practice (Bryer, 1999). Scholars in the Ricardian tradition have not yet contributed to the political economy of accounting.

This paper presents quantitative sources of data, which are often used by scholars to identify patterns, relationships and trends. Deterministic patterns of thought can usefully be employed to interpret quantitative data, because they are predisposed towards relationships and trends. Consequently, this paper presents an opportunity to bring the Ricardian tradition into PEA. Cowling's (1982) monopoly capitalism model springs from the work of Ricardo (1951) and Kalecki (1939). It incorporates profit margins and concentration and is, therefore, well suited to the interpretation of the data as well as providing an alternative and complimentary theoretical perspective.

The monopoly capitalism model uses industry profit margins to measure the degree of monopoly. The model suggests that concentration, collusion and elasticity of demand determine the degree of monopoly. Cowling (1982) argues that capitalist firms actively manipulate these three variables in order to achieve higher profits e.g. mergers increase concentration, which in turn increases margins. Cowling's (1982) model is less comprehensive than the Yardley *et al.* (1992) model, covering fewer strategic variables. That disadvantage, however, is outweighed by the fact that the model offers a critical approach to the relationships between strategic variables.

The data presented in this paper are relevant to profit margins and concentration. The other two variables in the monopoly capitalism model, elasticity of demand and collusion, will be assumed constant, because no data relevant to those variables is presented. This imposes a limit on the relevance of the conclusions drawn in this paper. However, future work can relax those

assumptions by presenting evidence relevant to collusion and elasticity of demand. Future work can also interpret the conclusions drawn in this paper in the light of the Marxist tradition of political economy of accounting. The conclusions section of this paper suggests how this might be achieved.

Profit margins,
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Method

This paper combines data relevant to the accounting firm with a theoretical proposition drawn from the monopoly capitalism model, a predicted positive relationship between concentration and profit. Data is collated from a variety of sources, detailed below, and indicators for both variables are calculated. Regression analysis is used to measure the strength and sign of the relationship between the two indicators.

The successful application of this method relies on solving a practical problem. Two variables are key, concentration and profit margins, yet the data available does not correspond directly to either of these variables. The difficulty lies in manipulating the available data to reflect changes in the two variables being examined. The detail about how these difficulties are resolved is presented in the appropriate sections below.

From an econometric point of view, the accounting firm data has a particular character. Regression analysis relies on certain assumptions. One of these is that the error term is truly random (Stewart and Wallis, 1981, p. 111). The accounting firm data includes firms of different sizes. The errors tend to be related to the size of the firm. This is because the larger firms display a wide divergence from trend while the small firms adhere more closely to trend. As a result, the error terms are not truly random. The simple regression model and tests of significance are not fully applicable. If regression analysis were to be performed on the accounting firm data, it would have to take a two step approach (Stewart and Wallis, 1981, p. 254) which is far more complex than a simple regression approach and difficult to make accessible to a wide audience. In this paper, correlation is the main technique employed, as this avoids the cumbersome two step regression technique.

Because of confidentiality, exact measurement of accounting firm profits is impossible. However, it is possible to derive an indicator of profit margins, approximate to the true position. It will be for other scholars to decide the adequacy of the evidence presented. At the very least, the evidence is consistent with the hypothesis that mergers have increased profits.

Sources of data

All the data used in this paper is in the public domain. Accounting firms started making voluntary disclosures about their fees and staff numbers in 1986. The data was published in varying degrees of detail in *Accountancy Magazine* and *The Accountant*[2].

The detail was disclosed for as many as 60 firms, but never less than 40 firms. As a result, the top 40 firms are taken as the population for the purposes of this paper. In addition to the fees charged by each firm and the number of

staff employed, the number of partners in the firms was also disclosed, as well as the product mix. This paper concentrates on the fees and staff numbers data, and on the 1986 to 1995 period. In the period since 1995, some, but not all, firms have continued to make disclosures. Because of the omissions, a complete 40 firm array of data is not in the public domain after 1995.

Two sources of information relating to salary costs are available: the government publication *New Earnings Survey* and the accounting salary survey data. The *New Earnings Survey* is a systematic and comprehensive annual report on earnings. Part D of the survey analyses pay by occupation. The occupational classifications used in the *New Earnings Survey* (Part D) were changed in the middle of the period under review. Up to 1990 the classification "Business and Financial Professional" was used. After 1990 a new classification "Chartered and Certified Accountant" was introduced.

Within the *New Earnings Survey* (Part D), data relating to "males in full time employment" is shown separately from that relating to "females in full time employment". As a result, the survey can be used to explore gender issues in a range of occupations. This paper does not raise the gender issue. Purely for convenience, the data relating to "males in full time employment" has been used.

Accounting salary surveys are commercial publications organised by recruitment agencies. Because they deal exclusively with accounting recruitment, these agencies are in a position to monitor the salaries paid to accountants. A range of different salary surveys are conducted, but the accountancy personnel survey was the first to appear. The results of the surveys are often reported in the trade press, such as *Accountancy Magazine*.

Staff employed in accounting firms are at different levels of seniority, such as new students, newly qualified accountants, managers and partners (Hanlon, 1994, p. 72). The accounting salary surveys attempt to cover all the different levels of seniority in different regions of the UK. In order to sample the results over the period in question, this paper restricts attention to newly qualified accountants working in London. In this paper, results from *New Earnings Survey* are cross-checked against results from the accountancy personnel salary survey to ensure consistency.

Accuracy of the accounting firm data

There are some difficulties in using the accounting firm data. Despite the fact that 1986-1995 was a period during which there was systematic disclosure of accounting firm fees and staff numbers, not all firms published their data. For example, Halpern and Wolf make their first appearance in the data in 1990 (fees £9.3 million). This firm was in existence before 1990 and, therefore, the 1986-1989 figures are distorted by the omission of this firm. Another example is Smith Williamson appearing in 1993. The affect of the possible omission of these two firms is not material to the results because of the low value of their fees and the fact that the total number of observations is 40.

Another distortion in the data is that, prior to merger, some firms fail to disclose their figures. Baker Rook disappear from the 1987 figures (fees approximately £6.4 million) and are merged in 1988. Rothman Pantel and Menzies also disappear from the top 40 figures in the year prior to merger. These failures to disclose may reflect a desire not to upset delicate merger negotiations by announcing disappointing results. In relation to the populations as a whole, these omissions are not material.

There is a specific omission from the data that affects two of the larger firms. In the 1988 disclosures, Arthur Young and Grant Thornton fail to distinguish between administrative and other chargeable staff. The total number of staff is disclosed (Arthur Young 3,221), as well as the number of partners (209). In this case, the number of administrative staff has been estimated by looking at the number of administrative staff employed in firms of a comparative size. The firm nearest to Arthur Young in the ranking is Arthur Andersen. This firm had 656 administrative staff. This figure has been used to calculate the number of chargeable staff for Arthur Young. The same process is used on the Grant Thornton figures in 1988. This specific omission did not affect any other firms in any other year.

One way to check the reliability of the data is to examine a simple relationship between the variables. If the data is subject to error in measurement, simple relationships between variables can get distorted or breakdown completely. The commercial aspect of accounting firms is easy to understand. It involves the purchase of accounting labour, which takes the form of the employment of a number of accountants, and the sale of accounting labour to clients, which is normally invoiced on the completion of each project e.g. audit. As a result, there should be a simple linear relationship between fees and staff numbers.

Correlation captures the relationship between fees and staff numbers. Because of the necessarily close relationship between the fees charged and the number of accountants employed, a high correlation coefficient would be expected. However, if the figures were subject to measurement error, a lower correlation would result. The correlation between the two figures is very high. The average correlation over the ten-year period is over 99 per cent. The minimum correlation in any single year is 98.5 per cent and the maximum is 99.3 per cent. The high correlation is consistent with the accuracy of the accounting firm data.

Measuring industry concentration 1986-1995

Having established the accuracy of the data, this paper now progresses to measure concentration using the accounting firm data. Once that is complete, the data is used to measure the merger impact on concentration. The literature review identified two measures of concentration, the Concentration Ratio (CR) and the Herfindahl Index (H). The CR is calculated as follows:

$$CR_x = \text{total fees of the largest } x \text{ firms} / \text{total fees of all the firms.}$$

This delivers a statistic that is easy to interpret e.g. the total fees of the largest eight firms in comparison to the total fees might be 0.5, which can be interpreted as 50 per cent.

H is more generalized and does not, normally, produce a statistic that is capable of common sense interpretation. A H of 0.10 does not correspond to 10 per cent of the total market. It is calculated as follows:

$$H = \sum (F_i)^2 / (\sum F_i)^2$$

Where F_i represents the fees of the i th accounting firm, which is squared and divided by total fees of all the firms, squared.

The weakness of CR is that it picks up movements around a particular point in industry data e.g. the CR 8 focuses on the value of fees charged by the largest eight firms. Changes in the ninth or tenth firms are ignored. H is sensitive to changes right through the range: it is not based on one particular point. In order to give a balanced view, this paper presents two CR's as well as H. In this way movements around two specific points can be observed, as well as changes right through the range. To ease comparison with CR, H results are also converted and indexed on the basis that 1986 = 100.

At different times within the accounting community, certain terminology has evolved to describe the top firms in the industry. At one time they might have been described as the top eight, later the top six and later still the top five. As a result, in the literature CR has been calculated on the top eight firms (CR8) or the top six firms (CR6). In this paper CR is specified on a logical interval, rather than intervals drawn from casual empiricism. Two CRs are calculated, CR5 and CR10. These will provide points from which to observe the emergence of large firms. The accounting firm data incorporates both fees and staff numbers. In this paper both are initially used as a basis for measuring concentration.

The CR5 results are shown in Table I. This represents an increase in concentration of 58 per cent over the period, on the fees basis (54 per cent on the staff basis).

| Year | Fees basis | Staff basis |
|------|------------|-------------|
| 1986 | 0.428 | 0.394 |
| 1987 | 0.474 | 0.447 |
| 1988 | 0.483 | 0.464 |
| 1989 | 0.486 | 0.466 |
| 1990 | 0.625 | 0.571 |
| 1991 | 0.644 | 0.618 |
| 1992 | 0.647 | 0.608 |
| 1993 | 0.639 | 0.589 |
| 1994 | 0.649 | 0.595 |
| 1995 | 0.675 | 0.608 |

Table I.
Five firm
concentration ratio

The CR10 results are shown in Table II. This represents an increase of 24 per cent over the period, on the fees basis (28 per cent on the staff basis). The results, so far, on the fees basis are similar to those on a staff basis. For H, only results on the fees basis are presented, because those on a staff basis are similar.

The H results are shown in Table III. This represents an increase of 84 per cent over the period.

In summary of these results, the tendency towards higher levels of concentration, identified in the existing literature, has continued. Between 1986 and 1992 there was an uninterrupted trend towards concentration, temporarily halted in 1993, an important turning point in the data. The year 1990 saw a significant jump in all concentration measures. The H shows the biggest percentage increase. Of the concentration ratios, the CR5 shows a bigger increase than the CR10. This tends to confirm the wide spread view in the accounting industry about the importance of the big five or six firms. In comparison to the results obtained elsewhere, the CRs are broadly consistent with those calculated by Beattie and Fearnley (1994) and Moizer and Turley (1989). However, the H results are greater than those previously obtained and the rate of increase in H is particularly high: 84 per cent over ten years compared to Moizer and Turley's (1989) 32 per cent. The persistence of the

| Year | Fees basis | Staff basis |
|------|------------|-------------|
| 1986 | 0.697 | 0.653 |
| 1987 | 0.744 | 0.709 |
| 1988 | 0.747 | 0.707 |
| 1989 | 0.751 | 0.720 |
| 1990 | 0.819 | 0.785 |
| 1991 | 0.846 | 0.818 |
| 1992 | 0.856 | 0.822 |
| 1993 | 0.850 | 0.814 |
| 1994 | 0.854 | 0.817 |
| 1995 | 0.865 | 0.838 |

Table II.
Ten firm
concentration ratio

| Year | Herfindahl | Index 1986 = 100 |
|------|------------|------------------|
| 1986 | 0.0573 | 100.00 |
| 1987 | 0.0668 | 116.57 |
| 1988 | 0.0686 | 119.72 |
| 1989 | 0.0691 | 120.59 |
| 1990 | 0.0961 | 167.71 |
| 1991 | 0.0999 | 174.34 |
| 1992 | 0.1005 | 175.39 |
| 1993 | 0.0982 | 171.37 |
| 1994 | 0.1000 | 174.52 |
| 1995 | 0.1056 | 184.29 |

Table III.
Herfindahl measure of
concentration

increase in concentration and its reflection across a wide range of concentration measures illustrates that it is a well established phenomenon.

Mergers impact on concentration

The greatest increase in concentration took place in 1990. During that year some very large mergers took place. This section calculates the merger impact on H. If two firms merge, the effect of the merger on H can be calculated by a shortcut method (Martin, 1988, p. 282) which can be adapted to the accounting firm data. In order to calculate the merger impact on H, first consider a statistic ΔH which is given by the increase in H in any year t:

$$\Delta H = H_t - H_{t+1}$$

The existing literature shows that mergers play a role in increases in H. ΔH can, therefore, be thought of as comprising two components, the part caused by merger activity ΔH_m and the part caused by other more competitive activity ΔH_c . Consequently, ΔH can be presented as:

$$\Delta H = \Delta H_m + \Delta H_c$$

ΔH is already known from the data presented above. The next step is to calculate the extent to which ΔH is caused by merger activity, the ΔH_m variable. H in any year is given by:

$$H = \sum (F_i)^2 / (\sum F_i)^2$$

Let us write Z to shorten the denominator. Consider two firms x and y merging to form a larger firm. Before the merger, H could be written as follows:

$$H = (\sum (F_{i-x-y})^2 + F_y^2 + F_x^2) / Z$$

where the F_{i-x-y} term separates out the firms which are not merged, from the firms which are merged. After the merger:

$$H = (\sum (F_{i-x-y})^2 + (F_y + F_x)^2) / Z$$

The impact of the merger on H is felt in two ways. First, and mainly, through the conversion of F_x and F_y into $(F_x + F_y)$. Second, through the change in Z, as what was previously the 41st firm now becomes the 40th. However, the change in Z is very small because, in a 40 firm array of data, the 40th firm is very small compared to the total fees. To illustrate, in 1995, the 40th firm had fees of £5.2 million. The total fees for the top 40 firms was £3,596 million. So let us assume that Z is the same before and after the merger.

The ΔH_m statistic is given by the difference between the pre and post merger H described above. However, the pre and post merger H have a term in common, the $\sum (F_{i-x-y})^2$ term, which drops out when the change in H is calculated. The impact of the merger is, therefore, given by:

$$\Delta H_m = F_y^2 + F_x^2 - (F_y + F_x)^2 / Z$$

This, in turn, reconciles to:

$$\Delta H_m = 2(F_x \times F_y) / Z$$

This is the short cut method for calculating the merger impact on H, ΔH_m . To illustrate this method, consider the following example. Peat Marwick merged with KPMG during 1987. The final fees figures disclosed by these two firms were £114.4 and £52.5. The affect on H is given by:

$$2(114.4 \times 52.5) / (1224.5)(1224.5) = 12,012 / 1,499,400 = 0.0080112$$

One characteristic of the merger impact measure is that it can be greater than the ΔH statistic itself. This covers the situation where competitive behavior counteracts the mergers.

Table IV shows which mergers took place during the period in question. This indicates the levels of merger activity in each of the years under review. The results of calculating the merger impact on H are presented in Table V.

Of the 0.0483 increase in H, 0.041851 was accounted for by merger activity. This represents 86 per cent of the increase in H. Beattie and Fearnley (1994) found a much lower merger impact on concentration. Of the 23 per cent increase in concentration they observed, 14 per cent was attributable to merger. This represents 60 per cent of the increase in concentration compared to 86 per

| Year | Firms | Fees (£ m) |
|------|--------------------------------------------|------------|
| 1986 | None | 0 |
| 1987 | Peat Marwick with KPMG | 166.9 |
| | Binder Hamlyn with Dearden Farrow | 55.9 |
| | Total | 222.8 |
| 1988 | Baker Rook with Howard Tilley | 13.4 |
| 1989 | Pannell Kerr Forster with Ball Baker Leake | 52.1 |
| | Chantry Wood King with Hill Vellacot | 10.0 |
| | Total | 62.10 |
| 1990 | Coopers with Deloitte | 413.8 |
| | Ernst and Whinney with Arthur Young | 283.9 |
| | Kidsons with Hodgson Impey | 49.4 |
| | Total | 747.1 |
| 1991 | None | 0 |
| 1992 | None | 0 |
| 1993 | Baker Tilley with Milne Ross | 33.7 |
| | Stoy Hayward with Finnies | 82.5 |
| | Total | 116.2 |
| 1994 | Grant Thornton and Cape Dalgleish | 122.8 |
| 1995 | Halpern Woolf and Casson Beckman | 20.13 |
| | Binder Hamlyn and Andersons | 539.8 |
| | Total | 559.93 |

Table IV.
Merger activity:
top 40 firms

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16,2

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Table V.
Merger impact on
Herfindahl

| Year | ΔH | ΔH_m | ΔH_c |
|-------|------------|--------------|--------------|
| 1986 | 0 | 0 | 0 |
| 1987 | 0.0095 | 0.008962 | 0.000538 |
| 1988 | 0.0018 | 3.99E-05 | 0.00176 |
| 1989 | 0.0005 | 0.000158 | 0.000342 |
| 1990 | 0.0270 | 0.024779 | 0.002221 |
| 1991 | 0.0038 | 0 | 0.0038 |
| 1992 | 0.0006 | 0 | 0.0006 |
| 1993 | -0.0023 | 0.0002 | -0.0025 |
| 1994 | 0.0018 | 9.55E-05 | 0.001705 |
| 1995 | 0.0056 | 0.007616 | -0.00202 |
| Total | 0.0483 | 0.041851 | 0.006449 |

cent here. Therefore, not only is the increase in concentration well established, the extent to which mergers have caused this increase is also now established. The importance of this point is that the increase in concentration is more the result of conscious merger dealing, rather than the result of competition in the market place.

Segmentation: the impact of concentration on structure

In this section, the impact of mergers on the structure of the accounting industry is examined. Naturally, an increase in concentration will be associated with fewer but larger firms. In order to get a more accurate picture, the accounting firm data is now grouped (see Table VI). The staff numbers data is used here because, unlike the fees data, it does not reflect the impact of inflation. Also, the number of firms is restricted to 25, because the smallest 15 firms all fall into the smallest group.

These figures show that by 1995, the concentration of the market had produced some very large accounting firms, compared to those that existed in 1986. Also, within the top 40 firms, the smallest firms had become more numerous.

Significantly, the firm size profile was continuous in 1986. By 1995 a discontinuity had emerged: a distinct gap between the larger firms and the rest. The capacity of medium sized firms in 1986 was comparable to that of the larger firms. However, by 1995 the capacity of medium sized firms was no

Table VI.
Accounting firm staff
numbers: grouped data

| Staff Nos | 1995 | 1986 |
|-----------|------|------|
| 0-999 | 15 | 11 |
| 1000-1999 | 4 | 6 |
| 2000-2999 | 0 | 5 |
| 3000-3999 | 1 | 3 |
| 4000-4999 | 3 | 0 |
| 5000-5999 | 1 | 0 |
| 6000-6999 | 1 | 0 |

longer comparable. This gap in the profile suggests that the market may be breaking into two segments. Another interpretation is that the gap represents a "barrier to entry". If this barrier were effective, it would allow the larger accounting firms to charge a premium for their work and earn higher profits. Having completed the work on the concentration and mergers, the profits earned by accounting firms is the subject to which we now turn.

Estimating profit margins 1986-1995: the model

Cowling's (1982) model usefully narrows the concept of profit down to an industry level profit margin, defined as selling price less marginal cost. Accounting firms operate job-costing systems, where the time spent on a certain client is charged directly to that client, at a predetermined charge-out rate. As a result, the costs of an accounting firm can be split between direct costs and overheads. These correspond to the economist's notion of marginal costs and fixed costs. Salaries and travel expenses make up the direct costs. Office space, stationery, computers, telephones, marketing, professional indemnity insurance etc. make up the overheads. For convenience, this paper treats salaries as the only direct cost, since travel expenses are small compared to salaries. As a result, profit margin can be stated as fees minus salaries.

Direct costs and profit margins always relate to a unit of output. At the accounting firm level, a unit of output is a chargeable hour or a member of staff. Therefore, partners in accounting firms might speak of profit margin per hour or profit margin per employee. At industry level, the profit margins of the individual firms can be totaled to achieve industry profit margin. This, in turn, can be divided by the total number of employees in the industry, to achieve an average profit margin per employee. Therefore, in the accounting context, Cowling's (1982) industry profit margin translates into an industry level profit margin per employee. This is given by average fees per employee, less average salary cost per employee.

The data available allows the calculation of average fees per employee, but accounting firms do not disclose salary costs. Therefore, it is not possible to calculate average salaries per employee. However, some data on accounting firm salaries is available from other sources. This can be used to index the rate of change of accounting salaries. As a result, the rate of change of profit margins is estimable, although the absolute profit margin is not.

The approach adopted in this paper is to transform the available fee data into an indicator of the rate of change of average fees charged per employee. Then, the available salary data is transformed into an indicator of the rate of change in average salaries paid to employees. The salary indicator is subtracted from the fee indicator to achieve an indicator of the rate of change of profit margins in the industry. This paper does not claim to measure the actual profits of an individual accounting firm. Nor does it claim to measure the industry profit or industry profit margin. Rather, it claims to measure the rate of change of the profit margin in the industry as a whole.

It is helpful to restate the argument slightly more formally. Let t be the average profit margin per employee for the accounting industry. This is given by the difference between the average cost of employing a member of staff and the average fees charged per employee. Let F represent the average fees charged per employee (FPE). Let S represent the average salary cost per employee (SPE). The industry average profit margin per member of staff is therefore given by:

$$M_t = F_t - S_t$$

Let ΔM represent the rate of change of industry profit margin per employee.

$$\Delta M = M_t - M_{t-1} = \Delta F - \Delta S$$

Accounting firm fees data can be used to calculate an index of FPE. *New Earnings Survey* and accounting salary survey data can be used to calculate an index of SPE. The difference between the two indexes yields an estimator of the increase in industry profit margins.

This method of calculating industry profit margins is not affected by inflation. Inflation impacts both the fees charged and the salaries paid to employees. Because the change in salary cost per employee, ΔS , is subtracted from the change in fees per employee, ΔF , the effect of inflation on the change in profit margins, ΔM , is cancelled out.

Big firm fees per employee 1986-1995

The evidence above suggested that mergers had resulted in a gap between the larger firms and the rest. As a result, this paper concentrates on calculating the profit margins of the largest accounting firms. This means the top eight firms up to and including 1989 and the top six firms thereafter. To assist other scholars in replication, the full 40 firms data are given in Table VII.

The data relating to the big firms are given in Table VIII. Recall that the approach in this paper is to calculate the increase in FPE, rather than the absolute value. To capture the increase in FPE an index (1986 = 100) has been calculated (see the right hand column).

| | Total fees (£m) | Total staff | FPE (£ 000's) |
|------|-----------------|-------------|---------------|
| 1986 | 1,224.5 | 41,237 | 29,694 |
| 1987 | 1,499.0 | 39,610 | 37,844 |
| 1988 | 1,831.3 | 41,819 | 43,791 |
| 1989 | 2,258.5 | 45,658 | 49,465 |
| 1990 | 2,811.5 | 49,879 | 56,366 |
| 1991 | 3,237.5 | 49,728 | 65,104 |
| 1992 | 3,429.8 | 46,099 | 74,401 |
| 1993 | 3,452.0 | 43,583 | 79,205 |
| 1994 | 3,485.3 | 41,607 | 83,767 |
| 1995 | 3,596.0 | 41,715 | 86,204 |

Table VII.
Top 40 accounting
firms data

| | Big firm fees (£m) | Big firm staff | Big firm FPE (£m) | Index big firm (FPE) |
|------|--------------------|----------------|-------------------|----------------------|
| 1986 | 743.5 | 22,610 | 32,884 | 100 |
| 1987 | 986.5 | 24,106 | 40,923 | 124.45 |
| 1988 | 1,223.0 | 26,346 | 46,421 | 141.17 |
| 1989 | 1,521.2 | 28,972 | 52,506 | 159.68 |
| 1990 | 1,927.4 | 31,336 | 61,508 | 187.04 |
| 1991 | 2,354.5 | 33,668 | 69,933 | 212.67 |
| 1992 | 2,551.6 | 31,626 | 80,680 | 245.35 |
| 1993 | 2,554.1 | 29,601 | 86,284 | 262.39 |
| 1994 | 2,606.4 | 28,616 | 91,082 | 276.98 |
| 1995 | 2,764.1 | 29,667 | 93,171 | 283.33 |

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Table VIII.
Big firm data

This data show that the big firm FPE increased by 183 per cent in the period, increasing from about £33,000 to £93,000 per member of staff. The index (in the right hand column) captures the ΔF variable defined in the model. All that is now required is the ΔS variable.

Accounting salaries per employee 1986-1995

As described in the sources of data section, two sources of salary data are available, accountancy personnel salary survey data and "New earnings survey". In their spring 1986 report, *Accountancy* personnel reported that newly qualified accountants with the larger firms in London earned between £13,000 and £14,000 (page 18, right hand column). They commented:

Demand high, supply poor. Firms are still paying the penalty of under recruitment of trainees in previous years . . .

By early 1991, newly qualified accountants in central London working for a top 20 firm were quoted in the range £20,000-£25,000, typically £22,000 (page 10). This represents an increase of 63 per cent over 5 years. However, by 1991 the balance of supply and demand had moved decisively against accountants. Accountancy personnel commented:

Much lower demand from top practices. Salaries static.

By 1994 the worst of the recession was over. *Accountancy Magazine* (p. 54) commented:

Prospects in Practice improve . . . redundancies have dwindled virtually to zero . . .

During 1995 *Accountancy Magazine* reported two sets of figures for newly qualified accountants in London. The first was in the range £20,000-£30,000 (June, p. 60) and the second in the range £20,000-£29,000 (December, p. 62). Therefore, £25,000 would represent a midpoint. In summary of the accounting salary survey data, the salaries paid to newly qualified accountants in London rose from £13,500 to £25,000. This represents an increase of 85 per cent over the whole period, most of which took place before 1991.

That gives an informal view of the direct cost base of large accounting firms. A more systematic source of data is the "New earnings survey", Part D. The data relating to qualified accountants is set out in Table IX.

These figures show an increase in accountants' earnings of 88 per cent in the period. This is slightly more than the accounting salary survey data which showed 85 per cent. Like the salary survey data, the largest increases took place before 1991. The fact that both sources of data give similar results suggests that the index calculated above is a robust reflection of accounting firms' direct costs. The increase in direct costs is substantial, but not as large as the increase in FPE.

Increases in profit margin 1986-1995

The accounting firm data provides the basis for estimating ΔF . The "New Earnings Survey" (checked against the accounting salary survey data) provides the basis for estimating ΔS . Therefore, it is now possible to calculate the change in industry profit margins, ΔM . Table X presents the results.

The average profit margin per employee increased by 95 per cent during the period. Whatever profit margin was being earned per employee in 1986, nearly double was being earned in 1995: a substantial increase. The FPE index increases by much more than the SPE index. The result obtained is not, therefore, sensitive to the slight difference in salary increases between the "New Earning Survey" and the accounting salary surveys.

Concentration and profit margins

Having calculated an indicator of both concentration and profit margins, attention can now turn to the link between profits and mergers. The Herfindahl index has already been calculated on the top 40 accounting firm data (see Table III). The increase in profit margins earned by the largest accounting firms has also been calculated (see Table X). It is, therefore, a simple matter to estimate the parameters of a model of the form:

$$\text{Profit Margins Indicator} = a + b(\text{Concentration Indicator})$$

| Year | Weekly earnings (£) | Index SPE |
|------|---------------------|-----------|
| 1986 | 268.7 | 100 |
| 1987 | 294.4 | 109.56 |
| 1988 | 323.6 | 120.43 |
| 1989 | 368.9 | 137.29 |
| 1990 | 402.7 | 149.86 |
| 1991 | 445.5 | 165.79 |
| 1992 | 469.4 | 174.69 |
| 1993 | 489.3 | 182.10 |
| 1994 | 505.4 | 188.09 |
| 1995 | 506.3 | 188.43 |

Table IX.
Accountants' earnings

using ordinary least squares. The heteroscedasticity problem, mentioned in the method section above, does not affect this data because it represents a time series rather than a cross section. As both indicators are indexes, the value of the parameters estimated do not have a straight forward economic interpretation. The values of the two indicators, the parameters, with their t statistics in parenthesis, and the R Squared is shown in Table XI.

The explanatory power of this simple model, captured by the R Squared statistic, is high and the value of the gradient is positive and statistically significant. The changes in H are capable of explaining 80 per cent of the increase in industry margins. This suggests that 80 per cent of the increase in profit margins is caused by increases in H, which themselves are overwhelmingly caused by merger activity.

The close relationship between the increases in the two indicators can be interpreted within Cowling's (1982) model. The model suggests that capitalist firms actively manage concentration to increase profits. The data presented here shows that mergers are the major factor behind increases in concentration.

| | Index FPE ΔF | Index SPE ΔS | Index margin ΔM |
|------|----------------------|----------------------|-------------------------|
| 1986 | 100 | 100 | 0 |
| 1987 | 124.45 | 109.56 | 14.89 |
| 1988 | 141.17 | 120.43 | 20.74 |
| 1989 | 159.68 | 137.29 | 22.39 |
| 1990 | 187.04 | 149.86 | 37.18 |
| 1991 | 212.67 | 165.79 | 46.88 |
| 1992 | 245.35 | 174.69 | 70.66 |
| 1993 | 262.39 | 182.10 | 80.29 |
| 1994 | 276.98 | 188.09 | 88.89 |
| 1995 | 283.33 | 188.43 | 94.90 |

Table X.
Increase in average
profit margin per
employee

| Year | Profit margin index ΔM | Herfindahl index |
|------|--------------------------------|-------------------|
| 1986 | 0 | 100.00 |
| 1987 | 14.89 | 116.57 |
| 1988 | 20.74 | 119.72 |
| 1989 | 22.39 | 120.59 |
| 1990 | 37.18 | 167.71 |
| 1991 | 46.88 | 174.34 |
| 1992 | 70.66 | 175.39 |
| 1993 | 80.29 | 171.37 |
| 1994 | 88.89 | 174.52 |
| 1995 | 94.91 | 184.29 |
| | Intercept | -95.6 (-3.758) |
| | Gradient | +0.95 (5.746) |
| | R Squared | 0.80 |

Table XI.
Concentration and
profit margins

Mergers, in contrast to other types of free market machinations, represent a conscious and planned strategy to concentrate the market. The active manipulation of industry concentration is just what the Cowling (1982) model predicts. The effect of increases in concentration is also exactly what the model predicts. The increase in concentration is closely matched by increases in industry profit margins.

Limitations

The 80 per cent R Squared between the big firm margins indicator and the concentration indicator strongly suggests that the mergers have been used to increase profits. However, because this paper is based on calculating indicators, rather than measuring variables under experimental conditions, it is important not to overstate the robustness of the conclusions, or to make exaggerated inferences from the data.

As detailed earlier, there are some omissions from the accounting firm data, but they are not material in the context of a 40-firm cross section. The salary index from the *New Earnings Survey* has only been cross-checked against the salary survey data for newly qualified accountants in London. However, if there were an underestimation of salary rises in the *New Earnings Survey*, the London salaries are the most likely to pick it up. Benefits in kind, such as company cars, are not included in the salary index. However, that would only affect the salary indicator if they had become a lot more common during the period. There is no evidence that this is the case. Only the influence of mergers on profit margins has been considered. No account has been taken of the possible effect of elasticity of demand or collusion.

Because accounting firms provide a range of services (including consulting), it is possible that the increase in profit margins could be caused by a change in the product mix away from core business. However, the core services of audit, taxation and insolvency still dominate. In 1986 the top eight firms derived an average 15.3 per cent of their fees from consulting. Arthur Anderson had the largest share of consulting work with 28 per cent. By 1995 consulting accounted for 27.6 per cent of the top six firms fees and Arthur Anderson had risen to 52.6 per cent. This represents a considerable increase, but not so large that it could explain the 95 per cent increase in industry profit margins revealed in this paper.

It is possible to argue that because the larger accounting firms do different types of work, their cost base is different. For example, the larger firms may pay higher salaries, or they employ more non-accountants on higher salaries. If this were the case, the salaries index might underestimate the costs of the larger firms. In reply to that, the large firms are cost conscious. There is no reason why they would pay above the market rate for labour. Further, the accounting salary survey data was London based. As Hanlon (1994) has pointed out, London is weighted towards the larger accounting firms. As a result, the large firms cost-base is well reflected in the data.

The effect of the employment of non-accountants is restricted by the dominance of core business. As argued above, because audit, tax and insolvency still dominate, the salaries of non-accountants cannot affect the salary index to any great extent. Also, because accounting firms are cost-conscious, they are unlikely to pay high salaries to non-accounting staff. The indicators calculated here should not be mistaken for experimental data. However, within their own limits the indicators are well founded.

Conclusions

The evidence presented here suggests that Cowling's (1982) "monopoly capitalism" model can usefully be applied to accounting. It suggests that mergers have been used to substantially increase concentration in the market for accounting services. Further, it suggests that mergers have been closely associated with increases in the profit margins of large accounting firms. These results confirm Hanlon's (1994) "commercialisation" hypothesis, because the types of behavior exhibited by accounting firms are no different from the behaviors exhibited by other firms. The aggressive tactics employed by large accounting firms, evidenced here, suggests that the shift to a "commercialized profession" may be more pronounced than Hanlon (1994) imagines.

The findings presented here are controversial, but they only represent a "moment" in the development of political economy of accounting. It is hoped that other scholars will explore the relationships between accounting mergers and profits, as well as the relationship between accounting, senior management and capital markets. The limitations of this study suggest the avenues of development that may prove fruitful. A two step regression technique could be used to re-interpret the data. The approach could be replicated in different countries or on a worldwide basis. Complimentary data on collusion or elasticity of demand could be introduced to allow for the effects of those variables. Tests for the impact of other variables, such as the trade cycle, would also be valuable.

In addition to quantitative approaches, work on the public interest implications of accounting firm profits may be needed, as well as exploration of alternative regimes of accounting regulation. Re-interpretation of the result presented here in the light of Marxist concepts could bring new possibilities to light. An exploration of the implications for Armstrong's (1987) Interdisciplinary Competition model and Bryer's (1993) Accounting for Investor Capitalism model would seem logical and necessary.

Notes

1. The full Web site address is www.kpmg.co.uk/kpmg/uk/about/annual99/kpmggar99.pdf
2. Sources (1986-1995) not cited were: *Accountancy Magazine* 1995, page 18; 1994, page 14; 1993, page 12; 1992, page 16; 1991, page 14; 1990, page 12. *The Accountant* 1989, page 10; 1988, page 14; 1987, page 7; 1986, page 14. *New Earnings Survey* Part D. Accountancy Personnel Salary Surveys.

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