School Performance: How Headteachers Respond to Measurement

The published league tables of school performance include a range of indicators – but which ones really matter to headteachers? New research by ***Deborah Wilson, Bronwyn Croxson*** *and* ***Adele Atkinson*** *asks a group of secondary school heads how they respond to the incentives provided by the different measures.*

Heads face potential conflict between their dual roles as educationalists and marketers for their schools

Performance tables have been published annually for all schools in England since the early 1990s. These feature a range of indicators, including information on students' performance in national tests. For secondary schools, the percentage of students achieving five or more GCSE passes at grade C or above (%5A*-C) is the headline figure most commonly quoted in the press. Since 2002, there are also measures of schools' average 'value added' between the Key Stage tests at the ages of 7 (KS1), 11 (KS2), 14 (KS3), and 16 (KS4).

We interviewed 21 secondary school headteachers to examine their perceptions of the incentives created by publication of these different performance measures and their responses to them. As pivotal decision-makers in schools, heads' responses to these incentives will ultimately determine the relationship between the measurement of school performance and actual improvements.

In England, parental choice between schools relies on two kinds of information: Ofsted reports on individual schools, and annual performance tables. The league tables, as they are popularly known, provide a basis for comparing different schools. The government's hope is that publishing them will give schools an incentive to improve their performance in order to attract more students.

Three types of summary measure are currently used to try and capture movement towards the goal of improving performance:

- *levels*, the raw test scores of a cohort of students at a specific point in time – these often take the form of a target, such as %5A*-C;
- *changes*, which aim to capture improvements between successive cohorts;
- and *gains*, which provide a measure of the progress of one cohort between two points in time. Such measures of value added incorporate prior student attainment to try and isolate the impact of school environment on progress. Two value added measures are currently published for each secondary school: between KS2 and KS3, and between KS3 and KS4.

Two points are worth noting here. First, given the complexity of the education process, any performance measure will be imperfect, only capturing part of that process. Second, while publishing a greater range of measures helps to provide a more complete picture, this may be at the cost of creating too much complexity, a consequence of which is that attention may focus on just one indicator, as has happened with %5A*-C.

In these circumstances, headteachers have an incentive to improve school performance *as measured by this indicator*. This may have unintended consequences. Of particular interest is whether heads focus resources on students on the borderline between grade C and grade D, which may boost the %5A*-C indicator, but possibly at the expense of non-borderline students. This illustrates the potential conflict for headteachers in their dual roles as educationalists (wanting to do the best for each student) and marketers (wanting to attract the maximum number of students).

We asked the headteachers questions around three themes:

- their own views of the league tables and their perception of the views of other stakeholders, such as parents, staff, governors and the local education authority;

- their responses to the key target indicator, %5A*-C;
- and their view of the likely impact of value added performance measures.

The responses reveal that headteachers are aware of their school's position in the league tables almost exclusively as measured by the %5A*-C indicator and usually relative to other local schools. The need to focus on this measure arises from its position as the headline figure, not because heads believe it provides an accurate measure of school performance. As one respondent put it:

> 'Although it's the stupidest measure . . . it's totally engrained on the public psyche, isn't it?'

When we asked which group of stakeholders' views was most important to them as headteachers, two thirds identified parents. The most common reason for taking parents' views particularly seriously is summed up in this response:

> 'The parents. Because the school actually exists, as you know, it's funded in the main by the number of kids who come through the door.'

Most heads are very aware of their role as marketers and believe that a successful marketing strategy relies on taking account of parental views, which in turn are influenced by the %5A*-C indicator. But they do not use %5A*-C within the school: instead, they employ a range of measures of changes and gains to help improve student outcomes.

So do headteachers target resources to improve their league table position? Two kinds of strategy emerged: strategies targeting underachieving students generally, regardless of the league tables; and strategies aimed at improving their league table position. For the latter, the overwhelming focus is targeting students on the C/D borderline:

> 'By choosing five or more A to Cs and making such a big issue out of it, it's no surprise that most schools put a huge amount of energy and resources into those students who are on the C/D borderline.'

Eight of our respondents said they do target resources at these borderline students; two said they had done so in the past; one tries, but fails, to avoid doing so; and two have no spare resources to target in such a way. Only six respondents said they deliberately don't follow such a strategy. The methods used to raise borderline students from a D to a C include entering them for GNVQ exams (worth four GCSEs); identifying them early and placing them all in one form; and holding self-esteem workshops and mentoring sessions.

While headteachers' efforts to boost the performance of underachieving students is partly independent of the presence of league tables, the centrality of the %5A*-C indicator does seem to dictate what is perceived as 'underachieving', leading to a focus on students on the C/D border. But the incentive to target resources in this way is not straightforward. The heads feel some conflict between this objective and their desire to ensure all students have access to the best possible education:

> 'It is successful; as an educationalist, I'm not entirely happy with it . . . The bright kids still prosper . . . I don't think they miss out at all. But I think the lower ability ones potentially do.'

So headteachers recognise the flaws in the current key performance measure, and respond to it in ways that may not be beneficial to all their students. Does the introduction of the value added measures alleviate either or both of these issues?

Our respondents are generally – if cautiously – positive about the principle of moving towards value added as the basis for measuring and comparing school performance; the measures are certainly seen as better than %5A*-C. But there is less agreement about whether publication of these new performance measures will actually affect headteachers' behaviour.

Two reasons emerged for this. The first is that value added measures are already established within most schools as part of their *internal* performance management processes. The second is that the heads do not think the new measures will replace the %5A*-C indicator in the minds of parents, at least not in the short to medium term. The measures are seen as a complex addition to an already crowded league table, dominated by %5A*-C:

> 'I don't think the public understand where these [value added] indices come from . . . and the more complicated that the government makes the statistics, the more it will confuse and put off the

Heads are aware of their school's league table position almost exclusively as measured by the %5A-C indicator*

Value added measures allow more accurate comparisons of schools' performance but have little impact on heads' behaviour

parents from even bothering to look because they're old hat.'

'I think the problem is that the population as a whole and newspapers and the media and everyone else will still go on the raw results.'

So while the published value added measures provide a more accurate basis for comparing school performance, our research suggests that they currently do not have an impact on headteachers, either as educationalists or marketers. But the study also suggests that headteachers do respond to the incentives provided by the publication of performance measures.

The design and implementation of the whole performance measurement system are therefore crucial. The potential for value added measures to inform parental choice is currently not being exploited. There needs to be a shift in focus, away from the %5A*-C indicator and towards value added measures.

This is likely to require both simplification of the existing league tables and a process of learning for parents about how to interpret the results. Consultation with headteachers about these changes will help them to execute their central role in the link between measurement of, and improvement in, student performance.

This article summarises, "What Gets Measured Gets Done": Headteachers' responses to the English secondary school performance management system', by Deborah Wilson, Bronwyn Croxson and Adele Atkinson, CMPO Discussion Paper 04/107. For the full paper, see: http://www.bris.ac.uk/Depts/CMPO/workingpapers/workingpapers.htm

Competition Law and Commercial Radio Consolidation

Two of the UK's biggest commercial radio groups – GWR and Capital Radio – have agreed to merge. CMPO's competition policy expert ***Paul Grout*** *and* ***Phillipa Marks*** *(of consultants Indepen) explain what's driving consolidation in the industry and why the competition authorities should approve the merger.*

Commercial radio needs to consolidate to become more profitable and to compete effectively with the BBC

New media like digital TV and the internet are having a big impact on consumers' choice of entertainment. At the same time, commercial advertisers have a greater choice of outlets. These changes have had significant effects on advertising on TV and in the press. For example, in the ten years to 2002, TV's share of all advertising revenue dropped by 8.5% while the share of press advertising fell by a staggering 24%.

In contrast, over the same period, commercial radio has maintained its audiences and advertising revenue has grown at 12% a year, doubling in real terms. It is estimated that 65% of the population listen to commercial radio every week with the average individual listening for 15-16 hours a week. Radio has benefited from new technologies and is increasingly listened to over new media platforms. What's more, commercial radio is extremely popular among young people, a particularly valuable market for advertisers. Since 1991, an average of 13 new stations have been added each year, increasing the total from 107 to 263 stations.

Yet despite this success story, there are several reasons why consolidation is likely to be a feature of the industry in the coming years:

- First, unlike TV, the industry is very fragmented. Radio licences were initially assigned to areas that did not have a local commercial radio station and once these gaps were filled, the Radio Authority sought to license services that would broaden choice in regions and major metropolitan areas or would provide a smaller scale, localised service. In addition, three new national services were licensed between 1992 and 1995. The overall effect is that there are currently 263 commercial radio stations owned by 72 different operators.
- Second, commercial radio's share of advertising is still very small. Although

it has grown rapidly in the 1990s, these 263 stations still account for only 4% of all UK advertising revenues compared with TV's 28%. Of the UK's top 100 advertisers, 40 devote less than 2% of their total media budgets to radio, 21 spend more than 6.6% and only five of those spend more than 10%. In broad terms, advertisers tend to use other media, disregarding or substituting for radio.

- Third, commercial radio has to work hard to compete with the BBC's national and local stations. Audiences generally dislike ads and the BBC's funding structure gives it a strong advantage. Indeed, the BBC has now increased its share of listeners to over 50%. Future commercial radio advertising revenues are expected to increase at rates closer to 5% a year than the 12% a year of the 1990s.

Despite the recent rapid growth of commercial radio, many of the stations are still not profitable and may not be so in the future. To compete effectively with the BBC and to become more profitable and stable overall, the industry is likely to seek to consolidate significantly in the coming decade. But even putting these direct financial aspects to one side, there are strong reasons why this consolidation may bring some benefits.

For example, since audiences prefer stations with fewer ads, commercial stations must offer better and more innovative products than the BBC. Frequently, these innovations are easily copied by the BBC, which is then able to bring the successful ones to a larger audience, thereby providing large public benefits relative to the scale of the innovating commercial sector. One example is football phone-ins, originally pioneered by Radio Clyde. Another is Asian networks: the first commercial station of this kind started in 1989 in London and was followed by services in Bradford, Birmingham, Leicester and Manchester; in the mid-1990s, the BBC started its own Asian services.

Copying and disseminating new ideas is beneficial for the public precisely because the BBC has such a large audience base. But only strong private companies are well placed to innovate in such a highly competitive market since innovations are costly – in terms of finance, employee time commitment and the potential risk to market share.

Digital innovation is also likely to depend on the scale and strength of the stations. Digital radio currently has very few listeners: despite considerable investment in services and transmission, the sector is currently unprofitable and likely to remain so for some time. The ability of companies to invest in digital radio depends on their analogue services being profitable.

Mergers assist in this respect by providing the opportunity to exploit scale and scope economies and to grow audiences and hence revenues. Small or unprofitable radio stations are less likely to provide digital radio services because they cannot afford the costs of transmission or developing new services. Mergers with larger companies can therefore provide the funding required for the provision of digital services.

Indeed, mergers may actually increase the variety of stations on offer. US evidence indicates that the increased concentration of radio markets that followed the deregulation of radio ownership controls under the 1996 Telecommunications Act has generally been associated with greater diversity in radio station formats.

Mergers will produce larger, stronger radio companies, which can innovate and develop digital services

But under the new Enterprise Act, the Office of Fair Trading (OFT) and the Competition Commission assess mergers in terms of whether they have resulted or are likely to result in a 'substantial lessening of competition' in the market in question. This contrasts with the traditional test: whether mergers were against the public interest. If a merger leads to a substantial lessening of competition, then it will generally be prevented unless there are benefits to customers that outweigh the adverse effects on competition. This shift should help to reduce uncertainty for businesses contemplating mergers, but what will be the effect on commercial radio?

There are two issues here – the definition of the market; and whether consolidation is likely to lead to a substantial lessening of competition. A key issue in considering the relevant market is whether radio advertising is part of a wider advertising market, including ads in other local media such as press, TV, cinema and roadside posters. If radio is part of a wider market, then consolidation (particularly between companies that own radio stations in a given local market) is less likely to give rise to competition concerns because the companies will still face competition from other media.

The proposed GWR/Capital Radio is akin to the Carlton/ Granada TV merger and should be approved

In the past, the Competition Commission has tended to adopt narrow market definitions so that radio, local newspapers, cinema advertising, roadside posters and classified directories have each been regarded as separate markets. The suggestion has been that a lack of price transparency and difficulties in comparing the effectiveness of different media mean that radio and other media are not really substitutes.

But the situation in the markets is changing rapidly and it is unlikely that this is still the case. This is particularly true for national advertising since national advertisers – which account for 70% of all radio advertising revenue – are well informed about prices and the relative effectiveness of different media, and can readily substitute between media and between different geographic markets.

If the competition authorities take a narrow view of markets, then what problems might stand in the way of consolidation? For one thing, while we do not know how the concept of 'substantial' will be interpreted, the current guidelines give it insufficient weight and this could be a problem. At times, the guidelines are written as if appropriate for a mere lessening of competition test rather than a substantial lessening of competition. We would argue that the 'substantial' concept is important and care is needed not to 'airbrush' this away in the implementation of the Enterprise Act.

What's more, concentration should be less of a concern in the context of commercial radio consolidation because of sector-specific regulation and the role of the BBC (as was acknowledged in the Carlton/Granada TV merger enquiry), both of which have the effect of increasing industry concentration. In particular, the interpretation of traditional concentration measures is unlikely to be useful in assessing commercial radio mergers since all local markets are likely to fail the OFT definition of a highly concentrated market.

The way the Competition Commission has approached price discrimination in media markets is also unlikely to be appropriate under the Enterprise Act. A company's ability to discriminate to meet market pressure, even if is judged to be against the public interest, does not imply that there will be a substantial lessening of competition following a merger. Discrimination can only be a potential barrier to a merger under the Enterprise Act if the probable outcome of the merger is that prices will rise for a material number of customers without falling for others and that the net effect in terms of competition is substantial. It is this test that should apply and not, as the Commission has often used in the past, a test of the potential for price discrimination.

In 2003, the Competition Commission surprisingly stopped the most recent attempt at a radio merger – between GWR and Vibe – even though it was extremely small. The same year, it waved through a huge TV merger – Carlton and Granada. The distinction in the treatment of radio and TV mergers then was all about the difference between national and local advertising.

The current consolidation before the authorities – the merger of GWR and Capital Radio – is more akin to the Carlton/Granada merger – all about national markets. For this reason, the merger is likely to be approved. But even if it is not approved without strings, it is unlikely that the drive towards radio consolidation will go away.

Work from the CMPO due to be launched on Wednesday 9th March 2005.

"The Impact of Extending Choice in Education and Health Care: The Evidence from Economic Research"

To be sent a copy email:
H.Andrews@bristol.ac.uk

Sorting Matters: Choice and Selection in English Schools

*Parents naturally care about the peer groups their children have at school. New research by **Simon Burgess** and CMPO colleagues examines the different ways in which pupils are sorted into secondary schools in different parts of the country – by selection, by choice and by the neighbourhood they live in.*

'Sorting' – how pupils get assigned to schools – is a central part of the current debate on choice in education. In a few places in England, there is a clear 'neighbourhood' secondary school and alternatives are difficult to get to; elsewhere, there might be a dozen or more schools from which to choose. At the same time, some local education authorities (LEAs) still run the selective system of grammar schools and secondary moderns; the majority have long been comprehensive. How does school sorting respond to these differences in choice and selection?

Our research shows that the degree of choice has a powerful impact on school sorting over and above differences in residential sorting. We also find that sorting is much higher in selective LEAs than in the rest of the country. The well-known grouping of parents near good schools is not strong enough to bring back selective system levels of segregation by the back door.

In principle, we can distinguish three ways of assigning children to secondary schools: elite schooling, neighbourhood schooling and choice-based schooling. In England, elite schooling means selection into grammars or secondary moderns. In non-selective LEAs, the *de facto* system is a mix of neighbourhood schooling – children go to the nearest school – and choice-based schooling – children go to the school chosen by their parents.

Elite schooling was explicitly designed to sort pupils by their ability at age 11. This necessarily produced a system very highly segregated by pupil test scores and – because of its correlation with test scores – segregated by family background. Part of the drive for comprehensive schools was precisely to end this segregation. There would no longer be a two-tier system, but all pupils would attend their local secondary school.

But many have argued that segregation has been maintained through the operation of housing markets. Neighbourhood schooling means that proximity to a school matters, thus raising house prices around good schools. This in turn means that only the richer parents can live there, and school segregation re-emerges.

The fact that a small number of LEAs have kept selective education means that we can compare sorting outcomes between areas. It turns out that the degree of sorting is much higher in selective LEAs, which we define as those where more than 10% of pupils attend grammar schools.

Sorting of pupils by ability is much higher in selective LEAs than in the rest of the country

Table 1 presents some results on different dimensions of sorting: high ability pupils, low ability pupils and disadvantage. The ability measures are based on the Key Stage 2 (KS2) tests that pupils take at age 11, when they go to secondary school. We define a high ability pupil as being in the top 20% nationally; a low ability pupil is in the bottom 20%. Our disadvantage measure is the standard one, based on qualification for free school meals.

We measure sorting using a standard index of segregation, between 0 and 1, where a higher number means greater segregation. The index can be interpreted, for example, as the fraction of pupils on free school meals that would have to move schools to create an even spread of such pupils across schools. The table shows higher levels of sorting in the selective LEAs for all these measures, but particularly for high ability students. For disadvantage, the index is 24% higher in selective LEAs than non-selective LEAs.

House price differences have not re-introduced the levels of sorting seen in selective schooling

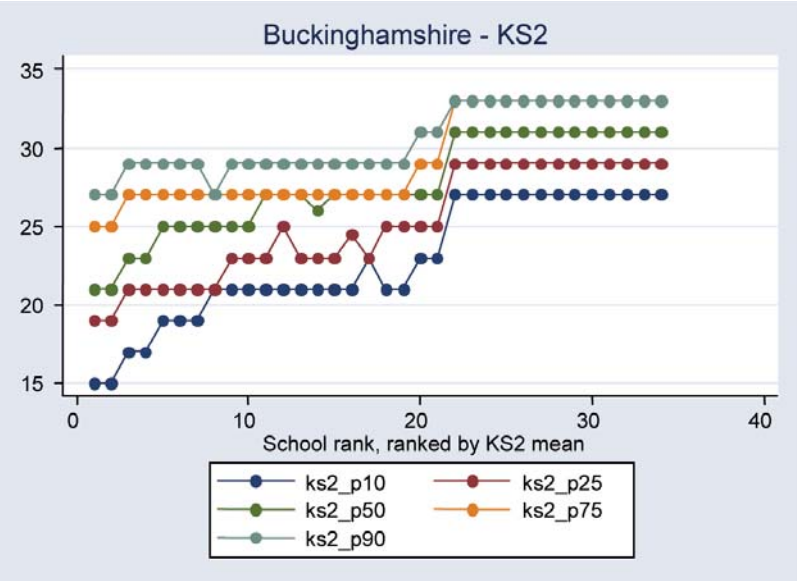
Table 1: Sorting in selective and non-selective LEAs

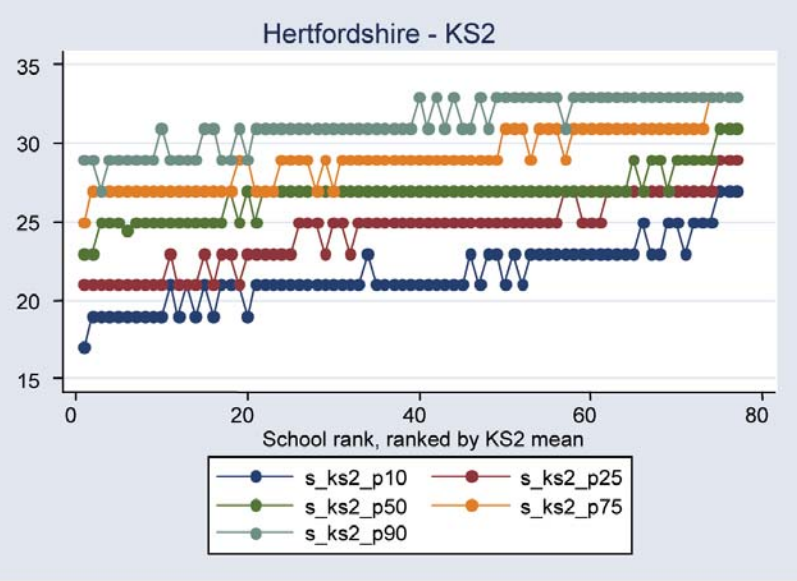
	High ability	Low ability	Disadvantage	Number
Selective LEAs	0.582	0.364	0.348	19
Non-selective LEAs	0.252	0.236	0.281	128

Numbers are mean D index across LEAs.

We can get a more detailed picture of sorting by ability using data on all the pupils in LEAs. Figure 1 shows the distribution of KS2 scores in all schools in Buckinghamshire, a selective LEA, and Hertfordshire, an otherwise similar non-selective LEA. Each vertical slice gives the distribution of all pupils' KS2 scores within a particular school. The lines give some detail of this distribution – specifically, the KS2 score for the child at the 90th percentile in each school (with only 10% of pupils scoring higher), the 75th percentile (with only 25% of pupils scoring higher), the 50th, 25th and 10th percentiles. The schools are ordered by their average KS2 score, reading from left to right.

Figure 1: Pupil sorting in a selective LEA and a non-selective LEA Distribution of Key Stage 2 scores across schools





The analysis shows a dramatic difference between the selective and non-selective LEAs. In the former, there is a very clear difference in scores between the top set of schools, which have few scores below 27, and the bottom schools, which have few scores above 29. In the latter, while there are differences between schools, they are far less marked. So there are important differences in the degree of pupil sorting between areas that have retained selection by ability and areas with comprehensive schooling. Segregation has not simply been re-introduced through house price differences.

Turning to the role of choice, since the Education Reform Act of 1988, English schooling has had some elements of a choice-based system. There are currently proposals to increase the scope for choice. We investigate the relationship between the degree of choice and the degree of sorting. This is a complex issue. On the one hand, increased choice might be expected to reduce pupil sorting. If all pupils in an area have the same chance to go to any school, then on average each school would have a mix of different children.

On the other hand, it might be that an area with more choice might produce a more finely segmented outcome. Parents' demand for high quality schooling can translate into a demand for good peer groups, and choice allows some to achieve this. But popular schools cannot take all pupils that apply (indeed, some may be put off applying by the low chance of success) and have to assign scarce places. So 'choice' becomes choice by both parents and schools, and the overall outcome depends on the admissions process. In this context, choice by one has effects on others – one child going to a particular school reduces the chance of others going.

School sorting might simply reflect neighbourhood sorting, which might arise for a number of different reasons. To examine the potential role of school choice, we compare the sorting of pupils in their neighbourhoods – residential segregation – with the sorting of the same pupils in their schools. We use the same segregation index as before for schools, compute a similar index for residential segregation and then look at the ratio of the two. We interpret higher school segregation relative to neighbourhood segregation as indicative of the 're-sorting' process involved in school choice.

We measure the degree of choice as the number of schools within easy reach. Overlaying school locations with a road network, we construct 10-minute drive-time zones around schools. We simply count the number of schools within this area and use this as our measure of the extent of choice in a local area.

Greater school choice allows more dispersion of where people live at the potential cost of more segregated schools

Table 2: Post-residential sorting and the degree of choice
Numbers are the mean of the ratio of school sorting to residential sorting across LEAs in the three categories.

Non-selective LEAs:				
	High ability	Low ability	Disadvantage	Number
No. of nearby schools > 8	1.33	1.28	1.16	47
No. of nearby schools ≤ 8 & > 3	1.05	1.02	0.91	50
No. of nearby schools ≤ 3	0.82	0.82	0.77	31
Selective LEAs:				
	High ability	Low ability	Disadvantage	Number
No. of nearby schools > 10	3.01	1.87	1.17	6
No. of nearby schools ≤ 10 & > 6	2.74	1.54	1.11	6
No. of nearby schools ≤ 6	2.45	1.54	1.02	7

Table 2 presents some of the results of analysis of the relationship between the degree of choice and post-residential re-sorting for non-selective LEAs. It is clear that a greater degree of choice is associated with greater sorting by both ability and disadvantage and the effect is strong. Differences in choice lead to substantial differences in each of the three measures of segregation.

This can be understood in two ways. First, more choice means that parents can select from a greater number of schools and hence find one close to their ideal, conditional on where they live. Or second, more choice means that given the desired school, parents have greater scope to live where they choose, not necessarily right next to the school.

This is not just being careful with language. It is clear that school assignment rules have implications for residential segregation as well as school segregation. Greater school choice allows more dispersion of where people choose to live, and thereby potentially more heterogeneous communities, at the potential cost of more segregated school communities.

This article summarises 'Sorting and Choice in English Secondary Schools' by Simon Burgess, Brendon McConnell, Carol Propper and Deborah Wilson, CMPO Discussion Paper No. 04/111 For the full paper, see: http://www.bris.ac.uk/cmpo/workingpapers/w111.pdf

The Market for Liars: Why Big Auditors Risk their Reputations

The world's biggest companies rely for their annual audits on an increasingly concentrated accountancy profession – the 'Big n', where n is now down to four. Research by ***Andrew McLennan*** *and CMPO's* ***In-Uck Park*** *explores the circumstances in which one of these firms might risk its reputation for honesty.*

Increasing market share may undermine the mechanism that sustains the honesty driving top auditors' higher reputation

The wave of financial scandals – beginning with the announcement of bankruptcy by Enron in October 2001 and the subsequent revelation of document shredding, and perhaps other improprieties at Arthur Andersen – have focused public concern on issues related to the financial auditing of the accounts of major corporations.

Should regulation require more extensive disclosure of financial information? Should corporations be obliged to change their auditor periodically? Should auditors be prohibited from selling consulting services to audit clients? And is the supply of audit services becoming excessively concentrated in a dwindling number of firms whose reports have much greater credibility in financial markets?

Implicit in this discussion is concern that the credibility of leading auditors is fragile. Auditors 'rent' their reputation to client firms to win the confidence of investors. But while investors make use of audit services, it is the client firms who pay for them and could benefit by misleading investors. Since the auditors may get away with false reporting as long as the client firm stays solvent (perhaps because the firm's finances improve due to the false reporting), the separation of users and purchasers of audit services creates the possibility that an auditor may be influenced by the client to gamble, hoping that dishonest behaviour will never be revealed.

In the first three decades of the twentieth century, the audit industry grew rapidly with several auditors opening branches in multiple cities. Since then, a small number of large firms – the 'Big *n*' – has been generally acknowledged to have special status within the industry. Two bilateral mergers in 1989 reduced *n* from eight to six, a merger in 1998 reduced the number to five and the collapse of Arthur Andersen left four: Deloitte & Touche, Ernst & Young, KPMG and PricewaterhouseCoopers. These giants audit all of Britain's 100 biggest public companies and virtually all American public companies with sales over $250 million.

The membership of the Big *n* seems to be very stable. Although members occasionally leave, it seems to be very hard to enter the group. All current members are descended from those that expanded on a national scale during the early part of the last century. These firms have also undergone considerable internal expansion in recent decades.

Various studies suggest that smaller auditors charge lower fees and their clients receive less favourable treatment from financial markets in connection with transactions like initial public offerings. This suggests an industry consisting of two groups of auditors: Big *n* firms, which have a higher reputation and charge higher fees; and the rest, which have a lower reputation and charge lower fees. There is also an entry barrier to the former group in the sense that since the special status of Big *n* firms was established, no additional auditor has managed to rise to the same status.

Given that the reports of Big *n* auditors seem to carry more credibility in the financial market, a few questions naturally arise. Will the economy be better served if the Big *n* increase their market share by internal expansion? And if there were no entry barrier, could the whole economy be served by auditors of the current Big *n* standards?

Research by Robert Wilson argues that answering these questions requires game-theoretic analysis of the strategic interactions among three major players – the auditors, the client firms and the financial markets. The results of such analysis by McLennan and Park provide a clear warning: increased market share for the Big *n* or elimination of the entry barrier may undermine the very mechanism that sustains the honest behaviour driving their higher reputation. This may result in the collapse of the more reputable segment of the audit industry.

To see the basic intuition for this, note that to resist the 'favours' offered by client firms in return for fabricating audit reports, a reputable auditor must expect a stream of high enough fee premiums that would be forfeited if it succumbed to fraud and were found out. The size of the premium is determined by the willingness to pay of the worst firm that hires a reputable auditor. But the larger the proportion of reputable auditors in the market, the less healthy will this marginal firm be. Since the less healthy firm has less to gain from honest reporting by the reputable auditor, the premium it is willing to pay dwindles, eventually to a level insufficient for the auditor to resist favours from client firms.

In our analysis, firms that are seeking financing hire auditors to certify their accounts. The firms are heterogeneous insofar as they are privately informed about the probability that the state of the firm will be good. After the auditor completes its work, both it and the client firm know the actual state of the firm, which is either 'good' or 'bad.' If the state is good, the auditor states this publicly; if the state is bad, the auditor may state this (in the terminology of the industry, it 'qualifies the accounts') but the client may offer inducements to not qualify the accounts. In reality, these inducements take many forms, including the prospect of continued patronage and purchase of consulting services. In our analysis, we describe them simply as a 'bribe.'

We assume that there is a given supply of reputable auditors that have acquired a reputation for refusing bribes. Other auditors may enter the industry by paying a certain entry cost, but our analysis includes no mechanism by which they might acquire a positive reputation so they always accept bribes when offered. The financial markets regard the reports of such auditors as uninformative and provide financing to their clients on terms that reflect the average probability of a good state for such firms.

In contrast, firms that receive an unqualified audit from a reputable auditor receive financing on terms reflecting the belief that the state is good. Consequently, firms with a high prior probability of a good state will be willing to pay more for the services of reputable auditors. Our focus is on describing the conditions under which the rents accruing to reputable auditors are valuable enough to deter them from accepting bribes, thereby justifying their reputation.

The main result from our analysis is that as the supply of reputable auditors increases, the premium that they can charge decreases (due to the diminishing willingness to pay by the marginal client firm). At some point, the premium is insufficient to deter them from accepting bribes. In other words, there is a threshold size for reputable auditors beyond which their honest reporting behaviour can no longer be sustained.

This result suggests that to limit the size of

Entry barriers to the reputable segment of the audit industry sustain honest behaviour

The exit of top auditors like Arthur Andersen create antitrust concerns that become increasingly severe

reputable auditors (and hence maintain their honest behaviour), it is necessary to have an entry barrier to the reputable segment of the industry. Indeed, reputable and 'disreputable' auditors could not co-exist if there were no entry barrier: the principle of competition would dictate that they charge the same fees (just enough to recover the initial entry cost to the profession) and hence the demand for the services of disreputable auditors would dry up. Since the audit reports of disreputable auditors are uninformative, firms hiring such auditors are 'pooled'. The 'best' firms in this pool receive worse treatment from financial markets, on average, than they would if they hired a reputable auditor, so they would switch if the two types of auditors charged identical fees.

Data suggest that the market share of the top auditors has increased slowly yet substantially during recent decades, although there has been no entry of new firms into the Big *n*. Our result that the size of the reputable segment is limited approximates to internal expansion that is constrained to be slow – for example, because the corporate culture of reputable auditing can only be sustained in an environment in which veterans greatly outnumber new employees. In this view, the slow expansion was accompanied by a diminution of the fee differential, which led eventually to a situation in which Arthur Andersen was tempted to risk its reputation.

The collapse of Arthur Andersen led to much discussion of reforms aimed at strengthening 'auditor independence'. Such reforms may postpone the collapse of the reputation mechanism, but we know of no proposed reform that would arrest the internal expansion of the Big *n* firms. Arthur Andersen's exit probably diminished the size of this segment even though many former Arthur Andersen employees have found employment at other Big *n* firms. But such departures from the Big *n* create antitrust concerns that become increasingly severe as *n* shrinks.

Further details of the analysis in this article are in 'The Market for Liars: Reputation and Auditor Honesty' by Andrew McLennan and In-Uck Park, Discussion Paper No. 321 (2003), Center for Economic Research, University of Minnesota. The paper by Robert Wilson is 'Auditing: Perspectives from multi-person decision theory', *The Accounting Review* (1983).

Recent additions to the CMPO working paper collection:

Why Voluntary Contributions? Google Answers! Tobias Regner, January 2005, WP05/115

Macroeconomic Performance and Inequality: Brazil 1983-94, M.F. Meyer Bittencourt, January 2005, WP05/114

Evaluating the Impact of Performance-related Pay for Teachers in England, Adele Atkinson, Simon Burgess, Bronwyn Croxson, Paul Gregg, Carol Propper, Helen Slater and Deborah Wilson, December 2004, WP04/113

Strategic Delays of Delivery, Market Separation and Demand Discrimination, Eric Avenel and Sébastien Mitraille, November 2004, WP04/112

Sorting and Choice in English Secondary Schools, Simon Burgess, Brendon McConnell, Carol Propper and Deborah Wilson, October 2004, WP04/111

Nonlinear Pricing and Multimarket Duopolists, Silvia Sonderegger, October 2004, WP04/110

Constitutional Rules, Toke A Aidt and Francesco Giovannoni, September 2004 WP04/109

Centre for Market and Public Organisation, Department of Economics
University of Bristol, Mary Paley Building, 12 Priory Road, Bristol BS8 1TN
Tel: 0117 954 6943 Fax: 0117 954 6997 Email: cmpo-office@bristol.ac.uk ***Website:*** www.bris.ac.uk/cmpo/