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An Exploratory Analysis of the 1989 Accounting Firm Megamergers

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SYNOPSIS: The 1989 "megamergers" (creating Ernst & Young and Deloitte & Touche), as well as recent merger activity within the accounting profession, have attracted widespread attention from regulators. Given the magnitude of such mergers, and the regulatory interest generated by them, it becomes increasingly important to understand the impact that such mergers have within the public accounting market.

This study is a descriptive exploratory investigation into the effects of the 1989 mergers. Data for the firms involved in the mergers were compared to data for competitor firms not involved in the mergers (direct rivals) to help to control for the effect of market forces. The post-merger period was characterized by a slight decline in market share for the merged firms compared to their direct rivals, a decline in audit price for both groups, and a decrease in factor costs for the merged firms relative to their direct rivals.

The results of data analysis are consistent with the premise that 1989 megamergers predominantly resulted in increased efficiencies within the audit market that were then passed through to end-users in the form of lower prices. Further study is needed to determine whether these efficiencies within the audit market were offset by market power influences in nonaudit services.

Key Words: Audit market, Mergers, Efficiency, Market power.

Data Availability: Data used in this study are publicly available from the sources identified in the paper.

INTRODUCTION

This paper explores the effects of the 1989 mergers that formed Ernst & Young and Deloitte & Touche. Given the relatively high market concentration in auditing, mergers in the accounting profession have attracted significant attention from regulators concerned about potential anti-competitive effects. This study, which is largely descriptive

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and exploratory in nature, uses an economics-based method designed to help isolate merger effects and mitigate the impact of market forces. Specifically, this design calls for direct comparisons of data for the firms involved in the mergers to data for their direct rivals.¹

This study addresses the following questions related to the 1989 megamergers: (1) Did the mergers predominantly result in the creation of market power for the merged firms and direct rivals within the U.S. market for audit services?² (2) Did the mergers primarily result in enhanced auditor efficiency? (3) Did the mergers result in some combination of market-power effects and efficiency gains where neither effect overwhelmed the other? The results of this study may have implications for major accounting firms, their smaller rivals, their corporate clients, and the regulatory bodies overseeing the industry (i.e., the Securities and Exchange Commission, the Federal Trade Commission, the Antitrust Division of the Department of Justice, and the Government Accounting Office).

LITERATURE AND THEORY

The question addressed in this paper is whether the overall result of the two accounting firm megamergers has been predominantly an increase in market power, an increase in efficiency, or a combination of the two effects where neither effect dominated. While there is a vast body of accounting literature that focuses on the effect of mergers on audit-market concentration³ or on non-U.S. audit fees,⁴ no study, to our knowledge, has focused on the both the market-power and efficiency effects of accounting firm mergers in the U.S. audit market. Much of the empirical economics research on the effects of mergers and acquisitions over the past two decades examines the stock market reactions to mergers and acquisitions announcements, while a smaller body of economics literature uses changes in price and output to examine the effects of mergers and acquisitions. Regardless of the methodology employed, two main strands of merger research can be distinguished: (1) research on the effects of mergers and acquisitions on

¹ Direct rivals are defined as firms similar in operations and size that compete in the same market. Big 6 firms are direct rivals with each other. Fringe rivals are defined as firms of different size or operating capabilities operating within the same market. Non-Big 6 firms are fringe rivals to the Big 6 firms.

² As of the end of fiscal 1988, the audit revenues accounted for roughly 54 percent of total revenues on average for the Big 8 accounting firms. Management advisory services (MAS) and tax services each comprised approximately 23 percent of total revenues. As of the end of fiscal 1996, audit, MAS, and tax services comprised roughly 43 percent, 33 percent, and 24 percent of revenues, respectively. Because the audit market represents the largest segment of operations and because of data availability constraints with respect to MAS and tax, we have chosen to investigate only the market for audit services in this study. We recognize that the audit market focus is a limitation of our study as we do not capture nor attempt to capture the effects of cross-subsidies that occur between the audit, MAS, and tax functions.

³ See Burton and Roberts (1967), Zeff and Fossum (1967), Rhode et al. (1974), Schiff and Fried (1976), Arnett and Danos (1979), Simunic (1980), Dopuch and Simunic (1980), Eichenseher and Danos (1981), McConnell (1984), Campbell and McNeil (1985), Danos and Eichenseher (1986), Tomczyk and Read (1989), Maher et al. (1992), Hermanson et al. (1990), Tonge and Wootton (1991), Minyard and Tabor (1991), and Wootton et al. (1994).

⁴ Evidence regarding the behavior of audit fees in the post-merger period is not definitive. Tai and Kwong (1997) investigated the impact of the mergers on audit fees in the Hong Kong audit market and found that real audit fees increased from 1988 to 1991. Alternatively, Iyer and Iyer (1996) investigated audit-fee data in the United Kingdom and found no significant evidence indicating an increase in audit fees in the post-merger period. Both of these studies investigated only a small sample of the market and surveyed companies to determine audit fees. In our study, we perform a broader investigation by studying the U.S. market for audit services as a whole.

shareholders of target and acquiring firms⁵ and (2) research on the efficiency implications of mergers and acquisitions (i.e., whether consolidation of two firms resulted in market-power effects or efficiency effects). It is this latter strand of research on which the theory used in this study is based.

The strand of research examining the economic efficiency consequences of mergers and acquisitions can be categorized according to the type of statistical methodology used. Several studies in this area employ an event-study methodology to examine the stock market reactions to announcements of mergers and acquisitions.⁶ Other studies (e.g., Kim and Singal 1993) utilize price and output data instead of stock price data.⁷ In a comprehensive study of the effects of mergers in the airline industry, Kim and Singal (1993) used price and output data to examine 14 airline mergers, initiated during the period 1985–88. Obviously, none of the information related to the audit market is obtainable using the event-study methodology. However, audit price and output data for public accounting firms is either available or can be estimated with proxies.

Similar to the Kim and Singal (1993) study, and consistent with the parameters of the revised efficiency section of the joint Horizontal Merger Guidelines⁸ issued by the Department of Justice and the Federal Trade Commission in 1997, we use price and output data to examine whether the two megamergers within the accounting profession resulted in an increase in market power, an increase in efficiency, or a combination of the two. The following framework helps to distinguish among these three alternatives.

Market Power

The U.S. market for audit services has long been characterized as oligopolistic (Hermanson et al. 1987). Consistent with Stigler's (1950) theory of oligopoly, horizontal mergers may yield benefits to both the firms participating in the merger and to the rivals who remain outside the merger.

Firms involved in a merger within an oligopoly market can benefit from the merger via enhanced monitoring and, in turn, the exercise of market power. Market power may arise in two ways. Horizontal mergers increase industry concentration and, with barriers to entry, may result in (1) higher prices to consumers (Williamson 1977), and (2) lower prices to input suppliers. Since the concentration within the accounting profession

⁵ Research in this area finds that shareholders of target firms in mergers gain on average 20 percent on the announcement of mergers, whereas target-firm shareholders in successful tender offers gain on average 32 percent on the announcement of tender offers (Jensen and Ruback 1983). The gains to the acquiring-firm shareholders are shown to be either small or not significantly different from zero. Since public accounting firms are not publicly held, the method used in this strand of research is not appropriate for study of the audit market.

⁶ This class of research uses the stock prices of rival firms to examine whether mergers and acquisitions are efficiency enhancing or efficiency reducing (Ellert 1976; Eckbo 1983; Wier 1983; Stillman 1983). The theory is that if the net effect of mergers and acquisitions is an increase in market power (and consequently a rise in the price of output by the merged firm), rival firms will free-ride on the merger by increasing their prices as well. On the other hand, if the net effect of mergers and acquisitions is efficiency enhancing (i.e., a reduction in the price due to a reduction in the marginal cost of production), rival firms stand to lose, unless they imitate the new techniques used by the merged firm.

⁷ Kim and Singal (1993) studied a sample of 1,629 routes, where at least one of the merging airlines operated. Average prices were computed for the merging firms and rivals for each route. The overall results showed that the effect of merger-induced efficiency gains was more than offset by the effect of merger-induced market power.

⁸ The Horizontal Merger Guidelines also stress the importance of consumer surplus over total surplus in evaluating mergers in the U.S. A detailed discussion of the new guidelines is presented in Werden (1997).

increased as a result of the mergers and, given the existence of barriers to entry such as the high cost of building a firm infrastructure and the reluctance of clients to switch to new auditors, market power is a possible consequence of the mergers.

If the merger-induced market power results in a net increase in the price by the merged firm, direct rivals may also benefit. Direct rivals may raise their own prices to a lesser extent and thus gain market share from the merged firm. Consequently, both price and market share of direct rivals may increase after the merger.

Efficiency Enhancement

Alternatively, mergers may result in a cost reduction. In the absence of an increase in market power, a merger-induced cost reduction should result in lower prices. Efficiency gains from mergers may stem from economies of scale, economies of scope, changes in production techniques, strategic use of complementary resources, redeployment of assets to more productive uses, and improved management skills (Kim and Singal 1993). These types of efficiencies could be reaped by the merging firms through economies in technology investment and audit techniques, synergies between firm practices, facility cost reductions, and more efficient office/firm leadership.

Reductions in the merged firm's cost should lead to a decrease in price, an increase in profits, and an increase the market share of the merged firm. The effect on the direct rivals from the merger would depend on the extent of two potential offsetting forces (Eckbo 1983). First, a merger that is expected to enhance efficiency tends to lower product price, increase output, increase demand for factors of production, and thus increase the price of factors of production. The lower product price by the merged firm and higher price for factors of production should result in a reduction in the profitability of the rivals. However, if the technology or actions of direct rivals are closely related to that of the merged firms, an efficient merger can also signal opportunities for direct rivals to implement technology or actions similar to those of the merged firms. This information or signaling effect tends to counter the price effect on direct rivals, thus rendering the net effect of an efficient merger on direct rivals indeterminate. On the other hand, if the merger affords the merged firm unique advantages not shared by direct rivals, enhanced efficiencies by the merged firm would imply increased market share on the part of the merged firm and decreased market share on the part of direct rivals.

Combined Market Power and Efficiency

If a merger generates both efficiency gains and an increase in market power, the net impact on the price charged to clients would indicate which of the effects dominates (Williamson 1977). While efficiency gains from mergers tend to lower price, increases in the market power tend to increase price. Whether the net effect is efficient or inefficient depends on which of the two effects dominates. Throughout the remainder of this paper, the market-power scenario refers to a situation in which market-power effects dominate the post-merger period and the efficiency-enhancing scenario refers to a situation in which productive efficiency effects dominate the post-merger period. Table 1 summarizes the market share, price, and cost predictions under each scenario.

METHOD

Sample

The primary market in the U.S. for the audit industry consists of all publicly traded companies. To analyze the effects of the two megamergers, we obtained data on the following variables: the amount of assets audited for the corporate clients of the Big 6,

TABLE 1
Predictions

Panel A: Predicted Post-Merger Effects under the Market Power Scenario

<u>Measure</u>	<u>Merged Firms</u>	<u>Direct Rivals</u>
Market Share	Decrease	Increase
Product Prices	Increase	Increase

Panel B: Predicted Post-Merger Effects under the Productive Efficiency Scenario

<u>Measure</u>	<u>Merged Firms</u>	<u>Direct Rivals</u>
Market Share	Increase	Decrease
Production Costs	Decrease	Undetermined
Product Prices	Decrease	Undetermined

the amount of audit revenues of the Big 6 and their fringe competitors, the number of professional staff employed by audit firms, and the number of office branches of audit firms. The data on the amount of assets audited were obtained from *Compact Disclosure* for the years 1988 through 1996. The number of client companies included in the sample ranged from approximately 5,900 to 7,800 across the sample period. Additional data, such as revenue data, professional staff data, and office data were collected from the *Public Accounting Report (PAR)* for the years 1988 through 1996.

Research Design

We define 1988 as the pre-merger year, 1989 as the merger year, and 1990 through 1996 as the post-merger years. Each of the scenarios discussed in this study will be evaluated based on comparisons of market share, product price, and production-cost effects (where a sign is predicted) for the merged firms to their direct rivals. The research design of comparing the merged firms to their direct rivals helps mitigate the impact that changing technology or other market factors would have on the results, since technological innovations and market factors are controlled for in the design. Since both the merged firms and the direct rivals operated as direct competitors within the audit market during the period under study, any changes in product price or cost that impacted one group of firms more than the other group should result from a real difference between the groups and not from market forces.⁹ The operational variables used to analyze market share, price, and cost effects are discussed in detail below.

Analysis of the Market-Power Scenario

The market-power scenario predicts that the two megamergers result in an increase in the market share of rival firms, a decrease in the market share of the merged firms, and an increase in the price. We first analyze the market-share predictions and then the price-change prediction.

Market-Share Prediction

Changes in market share were compared for the merged firms vs. the direct rivals from the pre-merger year to post-merger years. The market-share calculation was based

⁹ Because the number of observations used in this study consists of (on average) over 6,500 clients of the major public accounting firms and encompasses nearly the entire market for audit services (i.e., the entire population), comparisons of operational variables are made on an absolute basis rather than using a sampling procedure.

on the dollars of assets¹⁰ audited. The pre-merger year, 1988, is presented on a *pro forma* basis (i.e., as if the firms had already merged) by summing the market shares of the merged firms.

Price-Change Prediction

In the case of public accounting firms, "product" price for auditing services is equivalent to the audit fee. To analyze the price effects of the mergers, we calculate the audit fee as gross audit revenues per accounting firm divided by the dollar value of assets audited for that firm to determine a price per million dollars of assets audited.¹¹ The price per million dollars of assets audited was adjusted for changes in inflation so that the price is comparable in real rather than nominal terms.¹²

Analysis of the Efficiency Scenario

With respect to production costs, two variables were used: professional staff costs and office space costs. These costs tend to constitute the bulk of the overall costs for a public accounting firm. Because actual information on changes in professional staff costs and office space costs are not publicly available, proxies for professional staff and office space costs were utilized in the analysis. The number of professional staff serves as a reasonable proxy for professional staff costs, since clearly a reduction in the number of professional staff would coincide with a reduction in professional staff-related costs. Hence, professional staff cost effects can be investigated by analyzing changes in the number of professional staff in the merged firms post-merger vs. pre-merger. To enhance comparability among firms, the number of professional staff was divided by the billions of dollars of assets audited.¹³

The number of offices serves as a reasonable proxy for office costs. Therefore, the number of offices was divided by billions of dollars of assets audited to analyze any efficiencies that may have been generated with respect to office costs.

¹⁰ Audit-market concentration may be measured using assets audited, sales dollars audited, audit fees (or revenues), or number of clients. In a study investigating surrogates for audit fees to use in studying market concentration, Moizer and Turley (1987) find that, while the number of audit clients is a poor basis, there is no single-best basis for measuring audit-market concentration. Consistent with these findings, we utilize assets audited as the primary measure of quantity in our study. The use of assets audited in market-share calculations is also consistent with Doogar and Easley (1998), Lee (1996), and Danos and Eichenseher (1982), among others. We also calculated (but did not present) market-share data using audit revenues and sales dollars of audit clients. The results of the study did not meaningfully change when market share was calculated using either of these additional two bases. Consistent with the findings of Mozier and Turley (1987), we did not use gross number of audit clients in any market-share calculations. In sum, we computed the market-share results using the three recommended bases for making market-share calculations and obtained similar results with each measure.

¹¹ Audit fee studies typically use fees deflated by assets as the dependent variable in the fee model (Simunic 1980; Simon 1985) or use a fee model where size falls out as the primary explanatory variable (Palmrose 1986; Francis and Simon 1987). Consistent with these studies, we use a fee deflated by size variable. Given the exploratory nature of our study and the sheer magnitude of the market we are investigating, obtaining individual client audit-fee data was not feasible. Accordingly, we use audit-market revenues per firm divided by assets audited per firm as our proxy for audit fees.

¹² Because dollars of assets audited are stated at book value, whereas total revenues are in terms of nominal values, it is necessary to adjust price for the effect of inflation. All prices were stated in 1988 dollars for analysis purposes.

¹³ Consistent with the justification for deflating fees by assets that was discussed in footnote 11, professional staff and offices were also deflated by assets audited so that meaningful comparisons of the data can be made between groups of firms.

As a further test of efficiency, offices and market-share data were deflated by the number of professional staff to evaluate whether meaningful differences between the merged firms and the direct rivals existed with respect to the number of offices or total market share per professional staff member.

RESULTS

Market Share

Market-share data are presented in Table 2. As shown in the table, the market share of the merged firms first increased in the post-merger year and then decreased subsequently from year to year. As of 1996, the net cumulative change from the pre-merger period was a decrease in market share for the merged firms of 4.58 percent. The market share for the direct rivals exhibited a slight decrease in the post-merger year but then an increase in the subsequent years. By 1996 the market share of the direct rivals had increased by 3.27 percent, compared to the 4.58 percent drop for the merged firms. Hence, the merged firms, which initially gained market share from the direct rivals, had by 1996 lost a small amount of market share to the direct rivals.

The overall change in the market shares appears consistent with the market-power scenario. However, the post-merger change in the market shares is relatively small and may indeed have stemmed from factors other than market power. For instance, when Ernst & Whinney, which audited Coca-Cola, merged with Arthur Young, the auditor of PepsiCo, the merged firm retained Coca-Cola, while another Big 6 firm became the new auditor of PepsiCo.

Price Results

As shown in Table 3, price was analyzed in both nominal and real terms. In both cases, the average price per million dollars of assets audited declined for both the merged firms and the direct rivals. Additionally, the spread in price between the two groups decreased from nearly \$83 in 1988 to only \$36 in 1992 indicating that in the first three years subsequent to the merger, prices for the merged firms dropped more rapidly than prices for the direct rivals. After 1992, however, the direct rivals began to drop their

TABLE 2
Market Share Results Measured by Dollars of Assets Audited
(Cumulative change since pre-merger year [1988] in parentheses)

	Pre-Merger	1990	1991	1992	1993	1994	1995	1996
Merged Firms	37.95%	38.84% (2.34%)	38.13% (0.47%)	37.36% (-1.56%)	34.40% (-9.36%)	35.42% (-6.68%)	35.24% (-7.15%)	36.21% (-4.58%)
Direct Rivals	59.64%	59.57% (-0.12%)	60.64% (1.67%)	61.26% (2.71%)	63.37% (6.24%)	62.83% (5.34%)	60.92% (2.14%)	61.59% (3.27%)
Fringe Rivals ^a	2.40%	1.59%	1.23%	1.38%	2.23%	1.75%	3.84%	2.19%
Total	100%	100%	100%	100%	100%	100%	100%	100%

^aNon-Big 6 firms.

TABLE 3
Price Results
 (Cumulative change since pre-merger year [1988] in parentheses)

Panel A: Nominal Audit Price Per \$Million of Assets Audited

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	503.60	511.69 (1.61%)	509.53 (1.18%)	519.60 (3.18%)	529.73 (5.20%)	491.32 (-2.43%)	440.34 (-12.56%)	441.84 (-12.26%)
Direct Rivals	441.28	464.51 (5.27%)	463.00 (4.92%)	487.77 (10.54%)	427.06 (-3.22%)	431.59 (-2.20%)	359.75 (-18.47%)	378.41 (-14.25%)

Panel B: Real Audit Price Per \$Million of Assets Audited

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	667.86	615.01 (-7.91%)	587.02 (-12.11%)	581.21 (-12.98%)	575.80 (-13.79%)	520.47 (-22.07%)	453.50 (-32.10%)	441.84 (-33.84%)
Direct Rivals	585.25	558.31 (-4.60%)	533.41 (-8.86%)	545.61 (-6.77%)	464.19 (-20.68%)	457.19 (-21.88%)	370.50 (-36.69%)	378.41 (-35.34%)

prices at a faster rate than did the merged firms. Since real audit prices did not increase, but instead decreased for both the merged firms and the direct rivals, the data pattern would be consistent with an efficiency scenario rather than a market-power scenario.

Production Cost Results

Table 4 presents the production cost data results. Panel A of Table 4 shows the number of offices occupied by audit firms per billion dollars of assets audited. The merged firms were less efficient than were the direct rivals in the pre-merger year. The merged firms had .0997 offices per billion dollars of assets compared to the .0675 offices per billion dollars of assets audited for the direct rivals. However, by the end of the post-merger period, the merged firms had only .0336 offices per billion dollars of assets audited compared to .0430 offices for the direct rivals. In terms of cumulative change, the merged firms experienced a 66 percent decline in the number of offices per billion dollars of assets audited compared to only a 36 percent decline for the direct rivals. These results are clearly consistent with the productive-efficiency scenario.

Panel B of Table 4 presents the results for the number of professional staff employed per billion dollars of assets audited. In the pre-merger year, the merged firms were slightly more efficient than the direct rivals with respect to this measure, 8.33 professional staff per billion dollars of assets audited for the merged firms compared to 8.43 for the direct rivals. As of 1996, the merged firms employed 5.00 professional staff members per billion dollars of assets audited, whereas the direct rivals employed 6.38 professional staff members. Once again, the merged firms experienced a larger decrease than did the direct rivals. Thus, the data for professional staff are also consistent with the productive-efficiency scenario, with the merged firms experiencing greater efficiencies than did the direct rivals in the post-merger period.

Panel C of Table 4 presents the results for the number of partners. The number of partners per billion dollars of assets audited fell from .910 (in 1988) to .602 (in 1996) for the merged firms. During the same period, the number of partners per billion dollars of assets audited fell from .828 to .542 for the direct rivals. While the post-merger period

TABLE 4
Production Cost and Efficiency Results
 (Cumulative change since pre-merger year [1988] in parentheses)

Panel A: Offices per \$Billion of Assets Audited

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	.0997	.0527 (-47.12%)	.0516 (-48.20%)	.0520 (-47.84%)	.0489 (-50.96%)	.0421 (-57.78%)	.0356 (-65.24%)	.0336 (-66.26%)
Direct Rivals	.0675	.0638 (-5.51%)	.0622 (-7.81%)	.0655 (-2.85%)	.0564 (-16.37%)	.0512 (-24.07%)	.0448 (-33.57%)	.0430 (-36.30%)

Panel B: Professional Staff per \$Billion of Assets Audited

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	8.33	7.09 (-14.89%)	6.91 (-17.03%)	6.15 (-26.20%)	5.32 (-36.16%)	4.99 (-40.12%)	4.69 (-43.72%)	5.00 (-39.97%)
Direct Rivals	8.43	8.11 (-3.86%)	7.87 (-6.62%)	7.62 (-9.62%)	6.24 (-26.03%)	6.28 (-25.50%)	6.06 (-28.12%)	6.38 (-24.34%)

Panel C: Partners per \$Billion of Assets Audited

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	.910	.829 (-8.98%)	.784 (-13.92%)	.775 (-14.92%)	.732 (-19.60%)	.653 (-28.30%)	.611 (-32.93%)	.602 (-33.92%)
Direct Rivals	.828	.796 (-3.89%)	.732 (-11.54%)	.720 (-13.00%)	.625 (-24.48%)	.584 (-29.46%)	.543 (-34.36%)	.542 (-34.52%)

Panel D: Offices per 1,000 Professional Staff

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	11.96	7.43 (-37.86%)	7.47 (-37.57%)	8.46 (-29.31%)	9.19 (-23.18%)	8.44 (-29.50%)	7.60 (-36.46%)	6.72 (-43.80%)
Direct Rivals	8.00	7.86 (-1.72%)	7.90 (-1.27%)	8.60 (7.48%)	9.05 (13.06%)	8.15 (1.91%)	7.39 (-7.59%)	6.74 (-15.80%)

Panel E: Market Share per 1,000 Professional Staff

	<u>Pre-Merger</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Merged Firms	1.1184	1.2287 (9.87%)	1.2547 (12.19%)	1.4232 (27.25%)	1.4843 (32.72%)	1.4502 (29.67%)	1.3737 (22.82%)	1.2488 (11.66%)
Direct Rivals	1.1046	1.0743 (-2.74%)	1.1012 (-0.31%)	1.1477 (3.90%)	1.2653 (14.55%)	1.1512 (4.22%)	1.0623 (-3.83%)	0.9786 (-11.41%)

shows improved efficiency for both groups of firms, the merged firms continued to be less efficient than their direct rivals. These results are not surprising given that a proposed merger must be ratified by existing partners, and it is less likely that a merger would be approved if the partners expected significant downsizing within their own ranks. What is interesting, however, is that the spread between the two groups narrowed in the post-merger period compared to the pre-merger year, a finding that is consistent with the productive-efficiency scenario.

Panel D and Panel E of Table 4 are particularly interesting as additional tests of the efficiency scenario. Panel D shows the number of offices per 1,000 professional staff.

Prior to the mergers, the merged firms appear to be less efficient than the direct rivals with respect to offices (11.96 compared to 8.00). However, immediately after the mergers, the merged firms had become more efficient with respect to offices and remained comparably efficient through the remaining years of study.

Panel E shows the trends in market share per 1,000 professional staff. Before the mergers, there were small differences in market share per 1,000 professional staff (1.118 for the merged firms vs. 1.105 for the direct rivals). However, by 1992 through 1994, the merged firms had become considerably more efficient with respect to this measure than the direct rivals. A large difference in this measure between the merged firms and the direct rivals was still present as of 1996. The results for both measures used in Panel D and E of Table 4 are consistent with the efficiency-enhancing scenario.

Prior to this study, the question of what competitive effects the mergers may have had on the U.S. market for audit services had largely been ignored in the literature. On an overall basis, the results appear consistent with the productive-efficiency scenario. In fact, the most likely explanation for the results is that the merged firms may have been less efficient than the direct rivals in the pre-merger period and may have needed to merge in order to remain competitive. Through the mergers, the firms appeared able to reduce costs and pass through some of the efficiencies gained in the merger via lower prices. These lower prices by the merged firms may explain the decline in price for the direct rivals as well. However, while some degree of market-power effects may have resulted from the mergers, the evidence presented in this study suggests that efficiency effects were predominant.¹⁴

LIMITATIONS

The results of this study should be interpreted with caution for several reasons. First, on the demand side, although accounting firms perform multiple functions, including auditing, tax, and management consulting, this study examines the audit function in isolation. The mergers could have been motivated by positive effects in any or all of these markets. For instance, firms may cross-subsidize the pricing of the various functions to their clients. On the cost side, there may well be synergies in performing these multiple functions. To the extent there are cross-subsidies and/or synergies in the various markets in which the firms conduct service, our results may not be robust. Unfortunately, data limitations constrain our ability to identify and thus account for these complexities.

Second, several proxies for production costs and product prices are used in this study. To the extent these proxies are crude measures of the characteristics they purport to represent, the results of the study may be noisy or biased. For instance, audit-fee data may include fees for services earned by the auditing departments for services other than auditing services. Also, the use of dollars of assets audited and sales dollars audited as measures of market share may be impacted by differences in the growth rate of existing clients rather than from changes in auditors. Further, professional staff and office data may not capture certain efficiencies reaped by firms in the mergers. Thus,

¹⁴ The results were also analyzed by removing KPMG Peat Marwick (KPMG) from the analysis, since it could be argued that some of the effects of the 1986 merger between KPMG Peat Marwick and Main Hurdman may have still been manifesting themselves in the market during the period of study. The results found in this study are consistent with the efficiency-enhancing scenario regardless of whether the effects of the KPMG merger are included in or excluded from the analyses.

our analysis of market-share, price, and cost effects may not represent robust measures of market power or productive efficiency.

Third, the results are specific to the years 1988 through 1996, and may not be relevant to prior or future years. Further, the results pertain only to the two 1989 megamergers and not to prior or future mergers within the accounting profession. In addition, the results are subject to any limitations present in the resources used for data collection.

Finally, while the results appear to be consistent with an efficiency scenario, we also acknowledge that since market-power and efficiency effects may both be operating in the post-merger audit market, it is possible that the merged firms chose to share some of the efficiencies gains with clients in the form of lower audit prices in order to mitigate regulatory scrutiny.

SUMMARY AND CONCLUSIONS

This study represents an exploratory analysis of post-merger changes in the market for audit services subsequent to the most significant mergers in the recent history of the accounting profession. While largely descriptive in nature, the evidence suggests that the net effect of the mergers was predominantly the creation of productive efficiency. Despite the fact that audit-market concentration increased subsequent to the mergers, no evidence was found in this study that suggests that anti-competitive effects resulted from the megamergers. Instead, the results suggest that the megamergers actually had pro-competitive effects on the market for audit services. However, care must be taken in relying on these results in forming public policy. Regulatory agencies should be aware of the narrow scope of this study in formulating policies regarding market concentration and competition.

Due to the limitations of this study, several avenues for future research exist regarding the effects of mergers within the accounting profession. Future research could investigate merger effects beyond the U.S. audit market, by including both international issues and data for nonaudit services. Future research could also explore the potential pro-competitive and anti-competitive effects of the mergers using different proxies from those used in the present study. In addition, research as to the motives and effects of the PricewaterhouseCoopers merger and any future mergers could also be performed. Finally, game theory could be used to model the dynamic effects of the market under various conditions. This methodology might provide additional insights into the market-power vs. efficiency effects of accounting firm mergers.

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