Changing corporate effects on US business performance since the 1970s

Paul M. Vaaler*

Department of Strategic Management & Organization, Carlson School of Management, University of Minnesota, 3-424 CarlSMgmt, 321 19th Avenue South, Minneapolis, MN 55455, USA Fax: (612) 626-1316 Email: vaal0001@umn.edu *Corresponding author

Gerry McNamara

Department of Management, Broad School of Management, The Michigan State University, N475 North Business Complex, East Lansing, MI 48824, USA Fax: (517)-432-1111 Email mcnamara@bus.msu.edu

Abstract: A simmering debate in strategic management pits two conflicting views on the impact of corporate-level factors on affiliated business units. ‘Mainstream’ proponents hold that corporate effects on business performance are substantial, while ‘revisionist’ proponents hold that corporate effects are insubstantial compared to the impact of industry-related and macroeconomic factors shaping business performance. We provide a basis for reconciling these opposing views. With a broad sample of operating returns for US firms, we estimate corporate and other variance components of business performance in 17 successive four-year moving windows from 1979 to 1997. Corporate variance components of business performance shift from modest (5%) in the early-1980s as proposed by revisionists to quite substantial (33%) by the mid-1990s as proposed by mainstream proponents. We conjecture that new theoretical insights on and practices developing the strategic capabilities of corporations through more focused diversification have promoted this evolution and reinvigorated the corporate strategy field.

Keywords: corporate strategy; business performance; diversification; governance; variance components.

1 Introduction

Since at least the mid-1980s, strategic management researchers and company executives have debated the impact of corporate strategy-related factors on the performance of affiliated business units. On one side of this debate stand corporate strategy researchers and executives holding views at least as old as the field of strategic management itself. They draw on seminal ideas from Barnard (1938), Andrews (1951, 1971), Chandler (1962), Bower (1972) and other corporate management laureates. They point to more than five decades of empirical research on corporate organisation, finance and strategy summarised by Goold and Luchs (1993), Villalonga (2003) and others. They remind us of corporate management legends from Harold Geneen at ITT in the 1960s to Jack Welch at GE in the 1980s and 1990s. From all of this, they conclude (and have built academic and professional careers assuming) that factors associated with multi-business corporate organisation, diversification, oversight and intra-corporate resource-sharing substantially if not dominantly shape the behaviour and performance of affiliated business units.

On the other side of this large, well-established group of corporate management scholars and practitioners we describe as ‘mainstream’ stands a smaller group of ‘revisionists’ with more critical assessments of corporate strategy factors and their impact on business performance. The revisionist critique follows from publication of several important broad-sample empirical studies by Schmalensee (1985), Rumelt (1991) and McGahan and Porter (1997), all three of which suggest that corporate-level factors, if they matter at all to affiliated business-unit performance, occupy at best a tertiary position of importance behind factors at the business-unit and industry levels of analysis. Perhaps, as Hoskisson et al. (1995) consider, many corporate managerial exploits are merely legends without substantial supporting facts and their sprawling multi-business networks are...
Changing corporate effects on US business performance

becoming fossils of a by-gone era. If so, then corporate managers may yet reign over affiliated business units, but, like monarchs in many modern states, do relatively little affecting day-to-day business unit behaviour and performance.

Understanding and, if possible, reconciling these opposing views matter for strategic management scholarship, practice and even public policy related to the multi-business firm. Understanding the relative impact of corporate, industry, business unit and other categories of factors is part of a broader investigation into strategic management’s fundamental research question, that is, how to explain persistent differences in firm performance (Rumelt et al., 1991). Conflicting views about the relative impact of corporate effects on business performance undermines any evidence-based consensus-building regarding this fundamental research question. Executives listening for actionable proposals about multi-business firm strategy and performance, and legislators listening for practical policy reforms regarding the prudential regulation of multi-business firm strategy and performance hear only a cacophony of contradiction between mainstream proponents touting corporate strategy theory and history on the one hand, and revisionist proponents touting recent corporate strategy evidence on the other. In this context, vigorous scholarly debate remains valuable, but so is the search for common ground, reconciliation and greater relevance with key stakeholders from private and public sectors.2

In this study, we contribute to strategic management research by presenting a basis for reconciling traditionalist and revisionist views and thus rebuilding consensus about the important role of corporate strategy in directing affiliated business unit behaviour and performance. Specifically, we propose that corporate effects on business performance have changed substantially since the 1970s when research, practice and policy concerns focused on diversification for purposes of risk reduction, earnings management and anti-trust considerations (e.g. Andrews, 1971; Wright, 1973). We note a corporate strategy revolution in the 1980s and 1990s prompting researchers, managers and public policy-makers to refocus attention on multi-business management for greater business relatedness, resource sharing and value creation (e.g. Prahalad and Bettis, 1986; Prahalad and Hamel, 1990). Consistent with that change, we report new evidence about the increasing importance of corporate-level factors for affiliated business-unit performance from 1979–1998. We use sampling and variance components estimation methods comparable to those used in Schmalensee (1985), Rumelt (1991), McGahan and Porter (1997) and elsewhere (e.g. Roquebert et al., 1996; Brush et al., 1999). We estimate corporate effects on operating business performance with alternative model specifications, including specifications that follow suggestions by Bowman and Helfat (2001) to partition stable (multi-year) and unstable (year-to-year) corporate effects. Perhaps most importantly, our variance components estimates of corporate and other effects on business-unit operating returns are applied to 17 successive four-year moving data ‘windows’ (1979–1982, 1980–1983, 1981–1984,…, 1993–1996, 1994–1997, 1995–1998). This sampling innovation permits detailed examination of change in corporate effects over 20 years.

Consistent with the revisionist view, estimates for early windows from the late-1970s up to the mid-1980s indicate that variance in business-unit returns related to corporate factors is quite modest (0–5%) compared to variance related to stable business-unit- and industry-related factors. On the other hand, estimates for later windows covering the mid-1980s to the late-1990s support mainstream proponents. Variance in business-unit returns attributable to stable and unstable corporate factors ranges as high as 33% of total variance in business returns. Our results suggest that corporate effects have evolved over
time from marginal, as revisionists contend, to quite substantial, as traditionalists
maintain. Revisionist views based on studies drawing largely on data from the 1970s and
eyear-1980s are, indeed, well-supported, but by the late 1990s (and most likely
still today) revisionist views lost support to mainstream views holding for the substantial
and at times even dominant importance of corporate effects.

Thus, we contribute to strategic management research with a novel proposition for
reconciling conflicting views about the nature of corporate effects on business performance.
We contribute further with novel research methods to investigate that proposition:
novel methods for creating broad samples of business operating returns for US firms
comparable to those used in previous relevant studies; novel methods for specifying
models of business performance driven by stable and unstable corporate-level factors;
and novel methods for assessing changes in these corporate-level factors over multiple
time periods. We contribute further with broad-based evidence documenting support
for our research proposition of substantial increase in corporate effects on business
performance since the 1970s.

These results understandably prompt the question of why corporate effects have
increased in importance. For preliminary insight on this follow-on question, we briefly
examine diversification patterns by multi-business firms during the same 17 four-year
windows from 1979–1998. We observe change in the diversification behaviour of
multi-business firms over the period studied, with firms typically exhibiting lower levels
of unrelated diversification and higher levels of related diversification in the later periods
studied compared to the earlier years in the study. Again, this change is consistent
with the research revolution in the 1980s and 1990s in corporate strategy and finance
(e.g. Jensen, 1986) counselling greater business relatedness and promising increased
corporate value creation documented later in diversification studies published by
Markides (1992, 1995), Palich et al. (2000), Villalonga (2003) and others. These findings
and their implications for future research and practice in corporate strategy field are
discussed at the conclusion.

2 Background

2.1 Mainstream and revisionist perspectives

Corporate strategy research dates back to the origins of strategic management itself, with
seminal insights on corporate structure and management running from Barnard’s (1938)
insights on the oversight function of corporate executives, to Chandler’s (1962) framework
for understanding when and how firms resort to multi-divisional structures, to insights
by Andrews (1951, 1971), Bower (1970) and Rumelt (1974) about how capital and
technology are created and distributed across affiliated businesses. These and other
insights provide the theoretical basis for decades of empirical work investigating links
between corporate strategy, diversified business structure and performance chronicled
hold that the weight of this work clearly supports the significance and substantiality of
corporate factors shaping affiliated business behaviour and performance. Adner and
Helfat (2003) go further. When researchers account for time-varying effects of company
environments and decision-making, corporate effects often can and do comprise the
dominant share of explained variance in near-term business performance.
We think it helpful to describe the revisionist view of corporate strategy as ‘constructively sceptical’ of such mainstream conclusions. A revisionist view can acknowledge the seminal contributions of corporate management laureates like Barnard, Chandler, Andrews, Bower and others (e.g. Rumelt, 1974), and need not question the validity of countless findings in empirical research over several decades documenting significant links between corporate strategy and structure on the one hand and affiliated business unit behaviour and performance. Revisionists can even concede that affiliated businesses are periodically vulnerable to swings in performance due to corporate-compelled reorganisations, acquisitions, divestitures, expansions or contractions. Revisionist scepticism has less to do with the periodic significance of corporate effects than with their average relative importance, which revisionists demote to tertiary order after idiosyncratic business-unit- and common industry-level factors (e.g. Carroll, 1993; Hoskisson et al., 1993; Ghemawat, 1994; McGahan, 2004). This revisionist view suggests that theoretical and empirical work in corporate strategy might still have practical relevance for, say, portfolio management (Henderson, 1970) and capital structure and financing choices (Kochhar and Hitt, 1998), but the performance impact of these corporate-level practices on affiliated business units is difficult to uncover, inconsistent and, likely, limited in importance over time.

2.2 Revisionist evidence

Results from empirical studies by Schmalensee (1985), Rumelt (1991) and McGahan and Porter (1997) summarised in Table 1 are central to support of the revisionist view. Taken together, their results suggest that the total impact of corporate factors on business-unit performance is negligible, that is 0–4% of total variance in business-unit returns. At a minimum, these results buttress revisionist claims that the relative importance of corporate effects falls below both idiosyncratic business-unit and common industry effects. More expansively, these results suggest the near negligibility of corporate-level oversight, diversification, and resource-sharing for the average affiliated business.

The evidentiary basis for these conclusions is substantial: It relies on variance component analyses of a broad-based sample of US corporations and their affiliated business units in different industries over three decades. Studies by Schmalensee (1985) and Rumelt (1991) relied on the US Federal Trade Commission’s Line of Business (‘FTC LOB’) database. As Ravenscraft and Wagner (1991) point out, the FTC LOB database provided researchers for the first time with extended coverage of the performance of major US manufacturing companies across the US economy down to the line of business level, which approximates 3- or 4-digit Standard Industrial Classifications (‘SICs’). The FTC LOB database covers 1973–1977, although 1973 provides only partial coverage. McGahan and Porter (1997) moved the context of this broad sample research from the FTC LOB to the Compustat Industry Segment database. Their choice substantially expanded the industry breadth (628 4-digit SICs rather than 242 4-digit FTC LOBs), and a substantially longer time period of observation (14 years) spanning 1981–1994 compared to only four years covering 1974–1977. With evidence from three decades, these three empirical studies provided revisionists with a seemingly solid empirical basis for questioning the mainstream assertion that corporate strategy-related factors have a substantial impact on the performance of affiliated business units.
<table>
<thead>
<tr>
<th>Study</th>
<th>Data source and sampling</th>
<th>Corporate effects</th>
<th>Business-unit effects**</th>
<th>Industry effects***</th>
<th>Year effects</th>
<th>Other effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schmalensee (1985)</td>
<td>FTC LOB: 4-digit FTC Industry Segments (3-4-digit SIC); Manufacturing Industries Only; 456 Corporations, 242 Industries and 1775 Business Units; 1975 Time Period</td>
<td>Not Included*</td>
<td>(Market Share) 0.6%</td>
<td>19.5%</td>
<td>Not Included</td>
<td>Covariance of Business Unit and Industry Effect: 0.6%</td>
</tr>
<tr>
<td>Rumelt (1991)</td>
<td>FTC LOB: 4-digit FTC Industry Segments (3-4-digit SIC); Manufacturing Industries Only; Either 457 (Sample A) or 463 (Sample B) Corporations, 242 Industries and Either 1774 (Sample A) or 2810 Business Units (Sample B); 1974–1977 Time Period</td>
<td>Sample A: 0.0% Sample B: 1.6%</td>
<td>A: 47.2% B: 44.2%</td>
<td>A: 16.2% B: 9.3%</td>
<td>A: 0.0% B: 0.0%</td>
<td>Covariance of Industry and Corporation Effect: A: 0.76%; B: 0.0%</td>
</tr>
<tr>
<td>Roquebert et al. (1996)</td>
<td>Compustat: 4-digit SIC Segments; Manufacturing Industries Only; 94–114 Corporations, 223–266 Industries and 387–451 Business Units (10 Samples); 1985–1991 Time Period</td>
<td>17.9% (Average Across 10 Samples)</td>
<td>37.1% (Average Across 10 Samples)</td>
<td>12.4% (Average Across 10 Samples)</td>
<td>0.4% (Average Across 10 Samples)</td>
<td>Not Included</td>
</tr>
<tr>
<td>McGahan and Porter (1997)</td>
<td>Compustat: 4-digit SIC Segments; All Non-Financial Industries; 7003 Corporations, 628 Industries and 12,296 Business Units; 1981–1994 Time Period</td>
<td>4.3%</td>
<td>31.7%</td>
<td>18.7%</td>
<td>Not Included</td>
<td>Covariance of Industry and Corporation Effect: 5.5%</td>
</tr>
<tr>
<td>Brush et al. (1999)</td>
<td>Compustat: 3- and 4-digit SIC Segments; All Non-Financial Industries; 535 (3-digit) and 173 (4-digit) Corporations, Unknown Number of Distinct 3-or 4-digit Industries and 1605 (3-digit) and 692 (4-digit) Business Units; 1986–1995 Time Period</td>
<td>3-digit: 5.07% 3-digit: 14.52% 4-digit: 15.32%</td>
<td>3-digit: 48.04% 4-digit: 25.13%</td>
<td>3-digit: 9.67% 4-digit: 15.32%</td>
<td>3-digit: 1.14% 4-digit: 0.78%</td>
<td>Not Included</td>
</tr>
</tbody>
</table>

Notes: *Schmalensee (1985) found no corporate effects (0%) in accompanying results using OLS hierarchical regression (ANOVA).

**Includes stable (across time period of observation) business unit effect. It does not include the error term in variance components models though other studies (Rumelt, 1991; Fox et al., 1997) have also interpreted this term as an unstable (business-unit × year) effect.

***Includes stable (across time period of observation) industry effect and unstable (industry × year) industry effect.

Source: Based on Tables Presented in Brush et al. (1999) and Bowman and Helfat (2001)
2.3 Mainstream rebuttals

These startling results prompted spirited rebuttals from mainstream proponents since the mid-1990s. Brush and Bromiley (1997), Brush et al. (1999), Bowman and Helfat (2001) and Adner and Helfat (2003) identified several issues that could explain revisionist findings regarding the importance of corporate factors in explaining business unit performance. We note four such issues as background for our study. First, variance components analyses make several simplifying assumptions for estimation purposes that might decrease corporate effects. Both Bowman and Helfat (2001) and Adner and Helfat (2003) note that variance components analyses estimate average effects across all affiliated businesses units over time rather than in specific business units under specific circumstances such as, say, when one affiliated business is compelled by corporate parents to downsize or divest from key markets. Such contingencies underscore the practical importance of corporate effects even if they merely punctuate periods of corporate-level quiescence. Both Brush and Bromiley (1997) and Brush et al. (1999) remind us of this shortcoming when noting that business portfolio management by corporate managers is rarely uniform across all affiliates, but occurs in series and differs across the portfolio.

A second and related criticism of variance components estimation is that it may underestimate true effects, particularly as such effects decrease relative to leading referents. Using data simulation methods, Brush and Bromiley (1997) demonstrate that decreases in ‘true’ corporate effects relative to business unit effects tend to be magnified by the quadratic-based estimation algorithm of variance components.

A third critical issue relates to variance components model specifications rather than estimation. Bowman and Helfat (2001) and Adner and Helfat (2003) both emphasise the importance of modelling all effects to account for both stable, longer-term and unstable, shorter-term factors shaping business performance. These papers point out the failure of most broad sample studies, including those by Schmalensee (1985), Rumelt (1991) and McGahan and Porter (1997), to partition corporate effects on business performance into both stable multi-year and unstable year-to-year effects. The purported consequence is, again, understatement of the full extent of overall corporate effects.

Fourth and finally, mainstream proponents note that, notwithstanding these other issues, evidence regarding the importance of corporate effects is still mixed, with some recent broad sample studies suggesting that corporate factors have more than a negligible impact on affiliated business-unit performance. Table 1 summarises results from two such broad sample studies. Roquebert and his colleagues (1996) and then Brush et al. (1999) both find that corporate components could comprise as much as 14–18% of total variance in business performance in the 1980s and 1990s. These estimates put corporate effects at or slightly above total industry effects, thus suggesting that the tertiary order of corporate-level factors may be in error.

Many of these mainstream rebuttals are themselves vulnerable to retort. Assume as mainstream proponents do that variance components estimates shed light on average rather than contingent, event-driven effects. If observed over a broad sample of firms over many years, however, then these average estimates may also convey the most representative measures of relative importance. Assume as mainstream proponents do next that variance components estimate understate the ‘true’ effect of corporate and other components of variance in business performance, particularly as those effects decrease relative to the referent business unit effects. But nobody challenges the precision with
which variance components estimates assess the rank order of such effects. Thus, a third-
place finish for corporate variance components compared to industry and business unit
compONENT effects in broad sample studies by Rumelt (1991) and McGahan and Porter
(1997) likely indicate the ‘true’ and decidedly tertiary relative importance of corporate-
level effects. These same two studies exploit substantially larger samples of industries,
corporations and businesses compared to studies reporting larger corporate effects by
Roquebert (1996), Brush (1999) and their respective colleagues. This leaves for retort the
issue of whether to partition corporate effects into stable and unstable components. We
deal with that issue below by specifying alternative variance components models with
and without such partition. We conclude from this review of the debate between
mainstream and revisionist scholars that genuine, and as yet not effectively rebutted,
issues and evidence have been raised about the relative importance of corporate effects
on business performance.

2.4 The time factor in this debate

Even a cursory glance at Table 1 highlights marked differences in the time periods
of study relied on by revisionists versus mainstream proponents. The time period of
observation for Roquebert and his colleagues (1996) was 1985–1991 and for Brush and
his colleagues (1999) was 1986–1995. These time periods for pro-mainstream studies
differ markedly with pro-revisionist studies by Schmalensee (1985) and Rumelt (1991)
who analysed data from the mid-1970s. These pro-mainstream studies also differ

This difference in time period and in the impact of corporate effects may be more
describe a revolution in theorising and empirical work since the mid-1980s linking
corporate-level factors to affiliated business performance enhancement including: factors
promoting more closely related diversification and resulting economies of scope and
market power (e.g. Navar and Kazanjian, 1993); management oversight of capital
structure and efficiency (e.g. Jensen, 1990; Jensen, 1996); inter-business resource sharing
(Markides and Williamson, 1994; Robins and Wiersema, 1995; Markides and Williamson,
1996); and the development of corporate-wide competencies (Prahalad and Hamel, 1990;
connects this theoretical change to trends among firms in the US towards reduced
diversification. Such changes in corporate strategy theory and practice contrasted with
earlier work from the 1970s generally downplaying the corporation’s contributions
to value enhancement in affiliated businesses. They highlighted instead the value of
corporate portfolio management as a method for mitigating company risk and smoothing
corporate-wide earnings (e.g. Henderson, 1970; Markham, 1973; Wright, 1974).

This change in theory and practice suggests that corporate effects on affiliated business
performance could have changed substantially since the late 1970s. In terms of the debate
between mainstream and revisionist proponents, it implies that the marked difference in
results between studies listed in Table 1 can be explained by their respective time
periods. Corporate effects on affiliated business performance are greater in later studies
consistent with changes in theorising and practice then occurring in the corporate strategy
field. We next investigate this conjecture empirically with our own broad sample study
permitting estimation of corporate effects on US business performance since the 1970s.
3 Methodology

3.1 Data collection and sampling

To investigate this conjecture empirically, we create a broad cross-sectional sample of business-unit returns using the Compustat database from 1979 to 1998, and then implement a series of variance components estimations designed to uncover any time trends in corporate-related variance components. This 20-year period of observation is substantially longer than any previous study on this issue and effectively connects all previous broad sample studies running from Schmalensee (1985) and Rumelt (1991) working with similar data from the 1970s to Roquebert and his colleagues (1996), Brush and his colleagues (1999) using similar data from the 1980s and 1990s.

We follow Roquebert and his colleagues (1996), McGahan and Porter (1997) and other recent broad sample studies of this sort (e.g. McNamara et al., 2003), in using Compustat Industry Segment data for our estimations. The Compustat Industry Segment data includes basic operating performance information for business units affiliated with all firms listed on US stock exchanges. Guidelines from the US Securities & Exchange Commission and the US accounting profession (FASB) require financial information for all business segments that contribute at least 10% of a corporate parent’s business. For each corporation, therefore, the Compustat Industry Segment data set includes information on up to 10 business segments for each reporting year. These business segments become our business units. Their primary 4-digit SIC becomes the industry definition used in our analyses. Their listed corporate affiliation becomes the corporate parent definition used in our analyses. Business units, therefore, are unique combinations of industry and corporate parent designations.

We follow McGahan and Porter’s (1997) suggestions for screening this database of business units and arriving at our samples for analysis. We start with a total of 241,033 observations, each of which related to a business unit’s Return on Assets (‘ROA’) reported in a particular year between 1979 and 1998. ROA is measured as the business unit’s annual operating income divided by its identifiable assets.

We then screen this database five ways to arrive at our base sample for analysis with different models. First, we eliminate 6159 observations because they did not contain a primary SIC designation. Second, we drop 28,873 observations because their industry designations indicated that they are from residual industry categories or government-related classifications. In this second step, we also drop business units whose industry designations include the terms ‘not elsewhere classified’, ‘non-classifiable establishments’ or ‘government’. Third, we exclude another 28,710 observations from businesses reporting in financial services industries since their returns are difficult to compare with those in other industries. Fourth, we eliminate another 58,857 observations because they come from small businesses with sales and or assets less than $10 million. Fifth and finally, we drop 442 observations with returns on identifiable assets exceeding 100%. In these cases, the corporate parent is likely either understating assets of the business unit or consciously lumping profits into it for reporting purposes alone.

Once screened on these criteria, our base sample comprises a total of 117,992 business-unit ROA observations over the 1979–1998 period. On average, the base sample has approximately 5900 business-unit ROA observations for analysis in each year of the 20-year period of study. This average annual sample size is comparable to sample characteristics in McGahan and Porter (1997) summarised in Table 1. This broad sample
represents a cross-section of business activity across the US economy from 1979 to 1998, including agricultural and mining (1-digit SIC designations 0 and 1), manufacturing (1-digit SIC designations 2 and 3) and transportation (1-digit SIC designation 4), and wholesale and retail trade (1-digit SIC designation 5) as well as services businesses (1-digit SIC designations 7 and 8). Again, the decision to include manufacturing and non-manufacturing businesses follows previous research (McGahan and Porter, 1997) as well as from our research interest in understanding the broadest cross-sectional impact of corporate effects on business performance over time.

### 3.2 Longitudinal partitioning and random sub-sampling

Recall that one innovation of our study involves extending the time period of observation from 1979 to 1998. This way, we can examine the impact of corporate effects related to trends in corporate strategy research and practice implemented as late as the mid-1990s, by which time the change in academic and professional focus on improving affiliated business-unit performance through active corporate management techniques was arguably in full play.

Another methodological innovation in our research involves partitioning the base sample into 17 four-year moving time ‘windows’.\(^4\) By using these moving time windows, we can assess change in corporate effects business performance over time. Our 17 four-year moving time windows comprise 1979–1982, 1980–1983, …, 1994–1997, 1995–1998. Four-year moving time windows make sense for several reasons. This time length follows Rumelt (1991) and Fox et al. (1997), two previous variance components studies using four years of data. A four-year time length also approximates the length of average business cycles in the USA since the 1970s. This time length also permits effective estimation of variance components for a very large cross-section of firms.

The 17 four-year windows include as few as 20,929 and as many as 26,757 observations of annual business-unit operating returns on assets. The average four-year window includes 8038 business units from 753 industries and 5050 corporations. The data matrix for variance components analysis can become exceedingly large since the technique creates a data column for every unit within each effect analysed, including interaction effects. To allow analyses of both variance components models described below, we randomly sort the corporations in our sample, partition the data within each four-year window into 4000 observation sub-samples (with the exception of the final sub-sample which contains the remaining observations), and analyse each of these subsets independently. We then calculate weighted average variance components estimates for all of the samples within each of the four-year windows. This allowed us to include all of the observations in our analysis while also allowing us to examine a computationally challenging model.

### 3.3 Dependent variable

Our dependent variable, business-unit ROA, is measured as the ratio of operating income to identifiable assets for each reporting business segment. This choice of dependent variable is easily derived, commonly understood among researchers and consistent with previous research (e.g. Rumelt, 1991; Roquebert et al., 1996; McGahan and Porter, 1997), thereby facilitating comparison of results. On the other hand, this dependent
variable measure has certain drawbacks. As McGahan and Porter (1997) note, it suffers from the normal shortcomings of accounting data. Additionally, the operating income component of ROA excludes some factors, such as financing costs, which can also materially affect bottom line profitability. Finally, since Compustat Industry Segment data only account for identifiable assets, the assets component of ROA may be understated for some business units. Having acknowledged these shortcomings, we retort that our ROA dependent variable facilitates a broad cross-section time series analysis of factors shaping a well-known and often-used business-unit performance metric.

3.4 Variance components models: basic and extended

To investigate our conjecture about the changing importance of corporate effects on business performance, we next define for estimation two random effects variance components models. The first model below partitions variance in business returns into different levels of analysis broadly defined:

$$r_{it} = \mu + \gamma_t + \alpha_i + \beta_k + \phi_{ik} + \epsilon_{it}$$

In model (1), $r_{it}$ represents the ROA for a given business unit operating in 4-digit SIC $i$, affiliated with corporate parent $k$, and reporting in year $t$. The $\mu$ term represents a mean return for the entire population of businesses in the sample. $\gamma_t$ represents the impact on the ROA attributable to economy-wide factors in a particular year. Such factors might include short-term shocks to the price of energy inputs used by businesses across a broad range of industries in the economy. $\alpha_i$ represents the impact of industry-specific rather than economy-wide factors. Here, think of factors commonly associated with the classic IO perspective associated with Bain (1956) and others (e.g. Schmalensee, 1985). It links business performance to industry concentration, capital requirements, regulatory barriers, collusion and the like. $\beta_k$ captures the impact on business returns attributable to a businesses affiliation with a particular corporate parent. These factors correspond to corporate strategy perspectives championed by Prahalad and Bettis (1986) and others (e.g. Bowman and Helfat, 2001). They emphasised on the value of corporate accounting and oversight of business unit performance, and shared corporate capacities to manage assets more (or less) efficiently for the benefit (detriment) of all affiliated business units. The $\phi_{ik}$ term refers to stable, longer term effects specific to certain business units within industry $i$, affiliated with corporate parent $k$. $\phi_{ik}$ corresponds to the Resource-Based View ('RBV') associated with Wernerfelt (1984) and others (e.g. Mahoney and Pandian, 1992). It emphasises the impact of fixed idiosyncratic business-unit factors on performance over time. The $\epsilon_{it}$ term, which reflects the error term in the model, has also been interpreted to capture less persistent, year-to-year effects consistent with the Austrian views of strategy enunciated by Jacobson (1992) and hypercompetitive views described by D’Aveni (1994, 1995).

Model (1) represents a basic explanation of macroeconomic, industry, corporate and business-unit effects on business performance comparable with models used in previous research cited by mainstream and revisionist adherents (e.g. Schmalensee, 1985; Rumelt, 1991; Roquebert et al., 1996; McGahan and Porter, 1997; Brush et al., 1999). This model can be extended slightly to provide additional precision to the explanation of business performance. In this extended model, business-unit returns are partitioned into year,
industry, corporate and business-unit effects as in the basic model (1). In model (2), however, industry and corporate effects are also fully partitioned into those considered stable across the four-year period observed (subscripted with \(i\) or \(k\) alone) and those considered unstable (year-to-year) in the four-year period observed (subscripted with \(it\) or \(kt\) to reflect the interaction of corporate and year terms):

\[
r_{it} = \mu + \gamma_i + \alpha_i + \delta_{it} + \lambda_{kt} + \phi_{it} + e_{it}
\]

The unstable industry term, \(\delta_{it}\), captures, for instance, performance effects related to a short-term industry-wide strike or supply-shock. Similarly, the unstable corporate term, \(\lambda_{kt}\), captures year-to-year performance effects across the corporation’s affiliated business units. Think here, for example, of a change in senior leadership that has substantial effects across the firm’s portfolio of businesses, but that occurs during the third year of a four-year time period of observation. Since the effect of such a change would not be evident for the entire period, the performance implications of this change would likely be captured in the unstable corporate effect component. Thus, \(\delta_{it}\), and \(\lambda_{kt}\) capture unstable effects that reflect significant changes in industry or corporate factors occurring during part of one four-year time window. These unstable components are also likely to capture transient effects consistent with more dynamic views of industry structure and corporate strategy espoused by Prahalad and Hamel (e.g. Prahalad and Hamel, 1994; Hamel, 2000). The central purpose in specifying and estimating the extended model (2) is, therefore, to facilitate a more fine-grained inquiry into the nature of corporate effects on affiliated business unit returns over time. With model (2), we can assess not only changes in the combined impact of \(\beta_k\) and \(\lambda_{kt}\) over time, but also changes in the relative importance of each.

Consistent with the assumptions of this random effects model, we treat each effect in models (1) and (2) as having a mean of zero and unknown but independent variances \(\sigma_{\gamma}^2\), \(\sigma_{\alpha}^2\), \(\sigma_{\delta}^2\), \(\sigma_{\beta}^2\), \(\sigma_{\lambda}^2\), \(\sigma_{\phi}^2\), \(\sigma_{\epsilon}^2\). We may, therefore, partition the overall variance in business-unit ROA for each four-year window, \(\sigma_r^2\), and assess the relative impact of each effect as a percentage of that overall. For these estimates we use the SAS VARCOMP procedure and the ANOVA method, also known as Henderson’s Method II (SAS, 1989).

4 Results

4.1 Basic model (1) results

Tables 2 reports the weighted average variance component estimates from iteratively analysing randomly chosen sub-samples of 4000 business-unit ROA observations for each of 17 four-year time windows. Given the total number of observations available in each four-year window, this results in weighted average estimates based on either six or seven sub-sample analyses. For each four-year window, we report the estimated percentages of weighted average variance in business-unit returns attributable to year-to-year economy-wide (\(\sigma_1\)), industry (\(\sigma_2\)), corporate parent (\(\sigma_3\)), stable business-unit (\(\sigma_4\)) and unstable, year-to-year (error) (\(\sigma_5\)) effects. Figure 1 provides additional explanation of results by charting the weighted average estimates for corporate effects (\(\sigma_3\)).
Table 2: Variance components model results: percent of variance in profitability (ROA) attributed to various effects

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Year ($\sigma_\gamma$)</td>
<td>1.7</td>
<td>1.1</td>
<td>0.5</td>
<td>0.0</td>
<td>0.5</td>
<td>0.5</td>
<td>0.1</td>
<td>0.0</td>
<td>0.4</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.3</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Industry ($\sigma_\alpha$)</td>
<td>8.8</td>
<td>10.0</td>
<td>12.1</td>
<td>13.7</td>
<td>14.8</td>
<td>13.8</td>
<td>12.5</td>
<td>12.0</td>
<td>10.8</td>
<td>9.3</td>
<td>8.8</td>
<td>9.0</td>
<td>8.1</td>
<td>5.8</td>
<td>4.2</td>
<td>2.8</td>
<td>2.7</td>
</tr>
<tr>
<td>Corporate Parent ($\sigma_\beta$)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.9</td>
<td>3.3</td>
<td>6.3</td>
<td>13.0</td>
<td>18.1</td>
<td>19.7</td>
<td>19.5</td>
<td>13.9</td>
<td>10.7</td>
<td>14.8</td>
</tr>
<tr>
<td>Stable Business Unit ($\sigma_\phi$)</td>
<td>58.0</td>
<td>55.8</td>
<td>56.5</td>
<td>55.1</td>
<td>52.3</td>
<td>48.1</td>
<td>45.1</td>
<td>41.6</td>
<td>39.8</td>
<td>38.9</td>
<td>40.2</td>
<td>45.7</td>
<td>49.0</td>
<td>47.0</td>
<td>41.5</td>
<td>45.6</td>
<td>46.4</td>
</tr>
<tr>
<td>Unstable Business Unit (Error) ($\sigma_\varepsilon$)</td>
<td>31.5</td>
<td>33.2</td>
<td>30.9</td>
<td>31.2</td>
<td>31.5</td>
<td>34.3</td>
<td>36.0</td>
<td>33.4</td>
<td>31.1</td>
<td>31.7</td>
<td>31.3</td>
<td>31.4</td>
<td>32.1</td>
<td>32.3</td>
<td>32.5</td>
<td>31.9</td>
<td>31.0</td>
</tr>
</tbody>
</table>

**Total Number Analyzed:***

<p>| | | | | | | | | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td>21147</td>
<td>21235</td>
<td>21158</td>
<td>21160</td>
<td>21143</td>
<td>21052</td>
<td>21018</td>
<td>20944</td>
<td>20929</td>
<td>21525</td>
<td>22363</td>
<td>23593</td>
<td>25122</td>
<td>26215</td>
<td>26757</td>
<td>26159</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Businesses Units</td>
<td>7337</td>
<td>7529</td>
<td>7549</td>
<td>7546</td>
<td>7802</td>
<td>7813</td>
<td>7694</td>
<td>7609</td>
<td>7428</td>
<td>7193</td>
<td>7551</td>
<td>7608</td>
<td>8046</td>
<td>8750</td>
<td>9232</td>
<td>9403</td>
<td>10748</td>
<td></td>
</tr>
<tr>
<td>Industries</td>
<td>842</td>
<td>840</td>
<td>843</td>
<td>730</td>
<td>736</td>
<td>742</td>
<td>737</td>
<td>735</td>
<td>724</td>
<td>715</td>
<td>723</td>
<td>727</td>
<td>733</td>
<td>739</td>
<td>743</td>
<td>739</td>
<td>747</td>
<td></td>
</tr>
<tr>
<td>Corporations</td>
<td>3877</td>
<td>4025</td>
<td>4138</td>
<td>4281</td>
<td>4521</td>
<td>4630</td>
<td>4646</td>
<td>4749</td>
<td>4760</td>
<td>4749</td>
<td>4954</td>
<td>5180</td>
<td>5505</td>
<td>6071</td>
<td>6533</td>
<td>6697</td>
<td>6549</td>
<td></td>
</tr>
<tr>
<td>Single Business Unit Corporations</td>
<td>1936</td>
<td>2092</td>
<td>2220</td>
<td>2393</td>
<td>2640</td>
<td>2781</td>
<td>2834</td>
<td>2971</td>
<td>3066</td>
<td>3147</td>
<td>3370</td>
<td>3609</td>
<td>3909</td>
<td>4409</td>
<td>4834</td>
<td>5006</td>
<td>4343</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1  Corporate variance components model results from Table 2 (see online version for colours)
We highlight two key results. First, corporate effects ($\sigma_\beta$) exhibit marked absolute increase over the 17 four-year time windows. Variance estimates change from approximately 0% in the earlier four-year windows (e.g. 1979–1982, 1980–1983) to approximately 20% of overall variance in the returns of business units in the last three four-year windows (1993–1996, 1994–1997, 1995–1998). Second, corporate estimates exhibit not only absolute but also relative levels of increase. Corporate variance estimates draw roughly even with those for year-to-year economy-wide ($\sigma_\gamma$) and industry effects ($\sigma_\alpha$) during the 1980s and then surpass both to become the second most important source of explained variance after stable business-unit effects throughout the 1990s.

In light of what we know about the data sources and time periods of observation in previous studies, these results can be construed to provide support both to revisionist and mainstream views. Consistent with the revisionist view and results obtained by Schmalensee (1985) and Rumelt (1991) with data from the 1970s, the earliest window (1979–1982), also including data from the 1970s, exhibits negligible corporate variance estimates. This negligible estimate persists across the first four time windows we analyse and does not breach the 5% level until the time window for 1985–1988. The average corporate variance estimate for time windows starting with 1979–1982 and ending with 1991–1994 is 8.1%. This estimate is comparable to, though somewhat larger than, the 4.3% estimate of corporate variance McGahan and Porter (1997) obtained when analysing business-unit returns over the entire 1981–1994 time period. On the other hand, our average corporate variance estimates are closely comparable to those obtained by Roquebert (1996) and Brush (2000) and their colleagues. Our average corporate estimate for windows spanning 1985–1988 to 1988–1991 is 14.3% compared to Roquebert and his colleagues (1996) with average estimates of 17.9% over the same time period. Our average corporate estimate for time windows spanning 1986–1989 to 1992–1995 is 15.7% compared to Brush and his colleagues (1999) with an estimate of 14.5%. Overall, we see a fairly close correspondence between corporate variance estimates in our study and estimates obtained by the key revisionist and mainstream studies from comparable time periods.

Figure 1 illustrates the interesting pattern of increase in corporate effects over 20 years. A flat line of initially negligible estimates in the late-1970s and early-1980s is followed by a steady increase throughout the rest of the 1980s. Interestingly, this steady increase is followed by a brief but steep decline and, finally, resurgent increase in corporate effects in the 1990s. Aside from the decline in corporate effects in the early-1990s – an anomaly surely meriting analysis in future research – the pattern we observe is consistent with our proposition that corporate effects on affiliated business unit performance in the 1980s and 1990s increased with this same period’s increased emphasis on performance-enhancing corporate strategic theorising and practice.

### 4.2 Extended model (2) results

Table 3 and Figure 2 report results from variance components analyses using the extended model (2). Here we highlight two key results. First, the combined corporate variance estimates ($\sigma^2_\beta + \sigma^2_\lambda$) exhibit somewhat similar patterns to those observed for single corporate variance estimate ($\sigma^2_\beta$) in Table 2. Negligible estimates in early windows (1979–1982 to 1981–1984) rise dramatically in the mid-1980s (1985–1988 to 1988–1991). Interestingly, however, they merely level off rather than decrease steeply as in the basic model (1) results for windows from the late-1980s and early-1990s. A second period of increase during the 1990s raises total corporate variance to, at certain times, more than 30% of total variance in business unit returns.
### Table 3
Variance components model results: percent of variance in profitability (ROA) attributed to various effects including all stable and unstable factors

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable Industry (σ_α)</td>
<td>6.8</td>
<td>7.9</td>
<td>10.1</td>
<td>12.5</td>
<td>14.3</td>
<td>13.4</td>
<td>11.6</td>
<td>11.2</td>
<td>10.2</td>
<td>8.8</td>
<td>8.3</td>
<td>8.9</td>
<td>8.1</td>
<td>5.5</td>
<td>4.1</td>
<td>2.8</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Unstable Industry (σ_δ)</td>
<td>10.5</td>
<td>6.8</td>
<td>5.3</td>
<td>2.9</td>
<td>1.4</td>
<td>1.9</td>
<td>3.5</td>
<td>2.9</td>
<td>2.6</td>
<td>2.1</td>
<td>2.2</td>
<td>0.5</td>
<td>1.2</td>
<td>1.4</td>
<td>0.7</td>
<td>0.1</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Stable Corporate Parent (σ_β)</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.9</td>
<td>5.8</td>
<td>12.8</td>
<td>17.6</td>
<td>18.9</td>
<td>18.1</td>
<td>10.9</td>
<td>7.3</td>
<td>11.9</td>
<td>18.1</td>
<td>16.9</td>
<td>16.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unstable Corporate Parent (σ_λ)</td>
<td>0.0</td>
<td>1.6</td>
<td>4.3</td>
<td>7.7</td>
<td>6.0</td>
<td>3.8</td>
<td>2.2</td>
<td>1.2</td>
<td>2.1</td>
<td>3.8</td>
<td>6.2</td>
<td>12.9</td>
<td>14.1</td>
<td>12.3</td>
<td>14.3</td>
<td>16.4</td>
<td>12.3</td>
<td></td>
</tr>
<tr>
<td>Stable Business Unit (σ_φ)</td>
<td>56.0</td>
<td>57.9</td>
<td>58.7</td>
<td>56.7</td>
<td>53.9</td>
<td>49.3</td>
<td>46.3</td>
<td>42.5</td>
<td>41.0</td>
<td>40.4</td>
<td>42.1</td>
<td>48.8</td>
<td>52.4</td>
<td>50.2</td>
<td>45.1</td>
<td>48.7</td>
<td>49.0</td>
<td></td>
</tr>
<tr>
<td>Unstable Business Unit Error (σ_ε)</td>
<td>25.1</td>
<td>24.7</td>
<td>21.2</td>
<td>20.2</td>
<td>24.0</td>
<td>28.2</td>
<td>30.5</td>
<td>29.4</td>
<td>26.5</td>
<td>25.7</td>
<td>22.9</td>
<td>18.1</td>
<td>16.9</td>
<td>18.8</td>
<td>17.6</td>
<td>14.7</td>
<td>18.9</td>
<td></td>
</tr>
</tbody>
</table>

Total Number Analysed:

| Observations | 21147 | 21235 | 21207 | 21158 | 21160 | 21143 | 21052 | 21018 | 20944 | 20929 | 21525 | 22363 | 2393 | 25122 | 26215 | 26757 | 26159 |
| Businesses Units | 7337 | 7529 | 7549 | 7546 | 7802 | 7813 | 7694 | 7609 | 7428 | 7193 | 7351 | 7608 | 8046 | 8750 | 9232 | 9403 | 10748 |
| Industries | 842 | 840 | 843 | 730 | 736 | 742 | 737 | 735 | 724 | 715 | 723 | 727 | 733 | 739 | 743 | 739 | 747 |
| Corporations | 3877 | 4023 | 4138 | 4281 | 4521 | 4630 | 4646 | 4749 | 4760 | 4749 | 4954 | 5180 | 5505 | 6071 | 6533 | 6697 | 6549 |
| Single Business Unit Corporations | 1936 | 2092 | 2220 | 2393 | 2640 | 2781 | 2834 | 2971 | 3066 | 3147 | 3370 | 3609 | 3909 | 4409 | 4834 | 5006 | 4343 |
Figure 2 Corporate variance components model results from Table 3 (see online version for colours)
Again, our results in the early windows are comparable to those obtained in studies from similar time periods and cited by revisionists for the proposition that corporate factors have little if any impact on business-unit returns (e.g., Rumelt, 1991). Results from windows starting in the mid-1980s and throughout the 1990s are consistent with results obtained in contemporaneous studies cited by mainstream adherents (e.g., Roquebert et al., 1996). Consistent with our previous set of results using the basic model (1), we also find with the extended model (2) that total corporate effects \( (\sigma^2_\beta + \sigma^2_\lambda) \) surpass total industry effects \( (\sigma^2_\alpha + \sigma^2_\delta) \) by the late-1980s to become the second most substantial class of effects after business-unit effects. Again, corporate effects change over time from negligible to quite substantial whether measured absolutely or measured relative to other effects related to macroeconomic, industry or business unit factors.

The second key result in Table 3 concerns the composition of corporate effects we see evolving over time. The inclusion of a term capturing unstable corporate effects \( (\sigma^2_\lambda) \) clearly increases total effects measured. It raises the baseline estimate of total corporate effects in early windows when stable corporate effects are still negligible. As Figure 2 illustrates, stable and unstable corporate effects exhibit a negative correlation over much of the 20-year time period. This fluctuation suggests that, while corporate effects are becoming more important over time, the type of corporate effects – shorter versus longer term – is in flux. At times (e.g., 1988–1991) focus on durable corporate management factors seems paramount. At other times (e.g., 1982–1985) it may be more important to pay attention to dynamic, more transient factors in the corporate environment. At certain other times (e.g., 1994–1997) both types of corporate factors matter equally.

We think this result is important for the entire stream of variance components research discussed in this study. Previous studies have neglected to partition corporate effects into stable and unstable components even though Bowman and Helfat (2001) have argued that such partition would increase total corporate variance estimates in studies relied on by revisionists. Their argument finds support in Table 3’s results. In effect, we learn that a substantial portion of the unexplained variance in previous research may have instead been related to unstable corporate effects. These unstable effects include corporate actions taken during times when we proposed that academic and professional corporate strategy thinking changed substantially (i.e. from the mid-1980s onward). The fact that they these unstable corporate effects account for over 10% of business unit returns in the last six time periods examined is consistent with the argument that corporate managers have taken a more active role in influencing affiliated business unit performance in recent years.

5 Discussion and conclusion

5.1 Central findings of the study

Recall that the central focus of this study was to understand and, perhaps, reconcile two apparently contradictory views on the relative importance of corporate strategy factors shaping the performance of affiliated business units. Results from our study indicate that revisionists may have been justified in arguing that corporate effects were modest, at best, based on analysis of data from the 1970s and early-1980s. But the revisionist justification in early time windows of our analyses melts away as we progress from the early-1980s to the mid-1980s and the 1990s. Mainstream views seem increasingly justified, particularly based on analysis of time windows from the 1990s, in holding
that corporate effects on affiliated business-unit performance is substantial. In short, corporate strategy history from the 1970s and early-1980s supports the revisionists, but corporate strategy dynamics since the 1990s support the mainstream view. Our findings are not likely to end the debate between revisionist and mainstream adherents, but they do provide a basis for understanding and perhaps partially reconciling key evidentiary points based on the time period of observation from which they were derived.

For revisionists relying on Schmalensee (1985), Rumelt (1991) and McGahan and Porter (1997), all of which draw largely from data from the 1970s and 1980s, our results suggest that their evidence and related contentions have become outdated. For both revisionists and mainstream corporate strategy researchers, however, the next question is why this change took place beginning in the mid-1980s?

5.2 Explaining the increase in corporate effects

We noted above that the time period in which we see growing corporate effects coincided with a period in which there appeared to be greater emphasis on corporate performance-enhancing strategies in both the academic and practitioner literatures. Greater corporate parent effects may be the consequence of more attention paid to the exploitation of resources shared across affiliated business units (Prahalad and Hamel, 1990; Robins and Wiersema, 1995; Collis and Montgomery, 1998). Similarly, corporate effects could be increasing due to greater use of cooperative R&D, product cross-selling and market power between affiliated business units (Scott and Pascoe, 1987; Scott, 1993; Navyar and Kasanijan, 1993). Yet another explanation focuses on the evolution of corporate oversight and governance institutions and capabilities (Jensen, 1990; Jensen, 1996). From this perspective, greater corporate effects on business-unit performance might be the product of greater focus on the shareholder-value implications of affiliated business unit strategies, and greater capability to align the interests of business unit managers with those of the corporation. It is more likely that a mix of these and other theoretical and practical perspectives on corporate strategy play a role in explaining the trend we observed.

5.3 A guided conjecture

One strategy implication common to these perspectives concerns corporate diversification. The creation and exploitation of core competence across affiliated business units may be linked to the extent to which such business units serve related or unrelated markets. The impact of corporate-sponsored R&D and cross-selling practices, and the effectiveness of corporate oversight and compensation schemes may also depend on the relatedness of affiliated business-units. Research by Markides (1992, 1995) notes that corporate restructuring and decreased diversification pursued by US corporations in the 1980s may be the product of this search for such corporate-based competitive advantages.

Our own brief analysis of the data is consistent with this view and may help to begin to explain the steady and substantial increase in corporate effects we observed. Going back to our data set for the entire 1979–1998 period, we create a sample of 39,796 observations from 5946 corporations, which represents all of the multi-business unit corporations in our data set. For each corporation in this sample, we measure the extent of diversification using an entropy measure based on Jacquemin and Berry (1979) and refined as in previous studies by Palepu (1995) and Hoskisson and his colleagues (1993). The refinement permits assessment of both the extent of unrelated diversification (an
entropy measure $\xi$ based on all affiliated business units) and related diversification (an entropy measure $\psi$ based on affiliated business units operating in the corporation’s primary 2-digit SIC). We next examine changes in $\xi$ and $\psi$ across our 20-year period of observation. Unrelated diversification ($\xi$) is negatively correlated with time ($r = -0.12$, $p < 0.0001$) while related diversification ($\psi$) is positively correlated with time ($r = 0.074$, $p < 0.0001$). In other words, corporations appear to be becoming more ‘focused’ (related) in their diversification patterns over time. This pattern is consistent with our conjecture that the increase in corporate effects found in our analysis reflects changes in the theory and practice of corporate management.

We also undertake a second post hoc analysis to assess the relationship between diversification behaviour and corporate performance. We regress corporate performance on the two diversification measures and their associated quadratic forms. Unrelated diversification ($\xi$) and related diversification ($\psi$) coefficient estimates are positive and significant ($\xi$ coefficient estimate of 0.04 and $p < 0.0001$; $\psi$ coefficient estimate of 0.06 and $p < 0.0001$), while their respective quadratic terms are negative ($\xi^2$ coefficient estimate of $-0.02$ and $p < 0.0001$; $\psi^2$ coefficient estimate of $-0.04$ and $p < 0.0001$). These results suggest that the link between corporate diversification and performance may be complex. Moderate levels of either unrelated or related diversification are associated with better corporate-wide performance; extremely higher or lower levels of diversification are not. These results comport with research by Palich and colleagues (2000), who find that corporate diversification and performance exhibit a curvilinear rather than linear association. Corporate strategy theorising and practice promoting moderately increased focus in affiliated business holdings may, therefore, help to explain the evolution of corporate effects from negligible and tertiary to substantial and secondary only to business-unit effects from 1979 to 1998.

5.4 Future research

Our brief analysis of corporate diversification trends since the 1970s does not conclude investigation into the root causes of increasing corporate effects on business unit performance. We suggest only that its results are consistent with various corporate strategy perspectives developed and popularised among scholars and practitioners starting in the mid-1980s, a time when the impact of corporate effects on business performance also began to increase. Questions such as why corporate effects increased then, and why stable and unstable corporate effects fluctuated during this period of increase are both ripe for additional exploration by management researchers. At first glance, these questions suggest historical inquiry into the root causes of change in management theorising and practice during the 1970s and early-1980s. The inquiry would also likely benefit from review of contemporaneous institutional developments touching on corporate governance and investor markets. In seeking to reconcile conflicting results fuelling one debate in the corporate strategy field, we hope to spark another debate among scholars adhering to different and perhaps competing views on the underlying determinants and dynamics of corporate control and harmonisation of business-unit performance, past and present.

Acknowledgements

We are thankful to Charles Hadlock for helping in collecting data for this paper.
References


Notes

1 In this study, we use the terms corporation and firm synonymously. They are distinguished from affiliated divisions and or subsidiaries. We refer to these organisations as businesses, business units or business segments. Finally, we use the terms industry or industry segment to refer to business units operating in the same supplier market as defined in Standard Industrial Classifications (‘SICs’) or related classification schemes.

2 To that end, we laud a recent debate on this subject and its implications for scholars, practitioners and public policy sponsored by the Danish Research Unit for Industrial Dynamics (‘DRUID’) in 2005 (DRUID, 2005).

3 This criticism has prompted some strategy scholars to eschew variance components analyses altogether and rely on alternative estimations, including most recently hierarchical linear modelling. Misangyi et al. (2006) use hierarchical linear modelling to estimate corporate effects on US business returns in the 1990s. Their results are similar to variance components estimates we obtain during the same time period in our empirical investigation. We take this similarity in results as indication that variance components analyses are no more biased than other state-of-the-art estimators and that the time period of observing corporate effects is extremely important. We elaborate on this final point in this paper.
To ensure that the results we obtain are not an artefact of the length of the time window chosen, we also analyse the data using three-, five- and six-year time windows. Results from these analyses are consistent with those reported in this paper.

To test the robustness of our results we re-analyse the data with several variants including: (a) the use of three-, five- and six-year moving time windows; and (b) the exclusion of single-business-unit corporations. In all cases, our results are consistent with those just reported. Because we report variance component estimates for each four-year window on a weighted average basis, we also review each of the individual analyses to investigate the degree of consistency across the different runs used in averaging. We find substantial consistency across the variance component estimates averaged.