Information technology outsourcing and organizational restructuring:
An explanation of their effects on firm value

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Abstract

This paper draws from behavioral finance theory to provide an alternative explanation to the efficient market hypothesis that investor under- and overreactions occur by chance. Hypotheses propose relationships between information technology/systems outsourcing (hereafter IT/IS) decisions on short- and long-term abnormal returns, while exploring the potentially confounding effect of organizational restructuring events that frequently follow such decisions. Using event studies techniques, it is found that although IT/IS outsourcing announcements are positively related to short-term abnormal returns, restructuring charges after the announcement moderate the relationship between the short-term effect of such announcements and long-term abnormal returns, so that long-term returns become negative when followed by organizational restructuring efforts resulting from IT/IS outsourcing.

Keywords: Information technology management; Information technology restructuring; Management information systems; Information systems outsourcing; Information technology outsourcing; Event studies

1. Introduction

The outsourcing of information technology (IT) and information systems (IS) has transformed corporate strategy in the past 10 years. This technology-led phenomenon has given rise to a $100 billion industry and an expected market penetration of over 50% by 2006 (King, 2004). The unprecedented growth has not been without pain both for corporations and their shareholders. IT/IS outsourcing strategies have, in some instances, preceded costly restructuring efforts, failure to attain strategic goals, and loss of firm value.

The purpose of this study is to examine the dual effect of IT/IS outsourcing decisions and organizational restructuring initiatives on firm market value. Traditionally, both types of decisions have been billed as cost-reducing, efficiency-enhancing efforts that allow the firm to focus on their core competencies and markets to improve performance. With either strategy, the firm’s value is expected to increase, due to the intended fundamental changes to the firm’s discounted future cash flows. However, while IT/IS outsourcing decisions are generally well received by investors (Hayes, Hunton, & Reck, 2000), organizational restructuring is not (Lopez, 2002; Poon, Newbould, & Durtschi, 2001).

Firms often pursue both strategies sequentially. That is, major outsourcing decisions are not uncommonly followed by a downsizing of related functions, sometimes even to the extent of transferring whole departments...
(including human and physical resources) from the firm to the service provider. Given the polar effects of IT/IS outsourcing announcements (a positive signal) and restructuring decisions (a negative signal) on investor reactions, it is important to understand how their sequential occurrence may in the aggregate affect firm value. The focus of this paper, therefore, is to explore the changes to firm value – both short-term and long-term – when both strategic initiatives are employed. To investigate these issues, we draw on market efficiency and behavioral finance research.

According to the market efficiency hypothesis, anomalies in short- and long-term market returns happen by chance (Fama, 1998). Behavioral finance theory provides an alternative explanation. Emanating from cognitive psychology, this theory agrees that investors pay scant attention to the fundamentals of firm value, but proposes that investor decisions are influenced by cognitive biases (Barberis, Shleifer, & Vishny, 1998; Daniel, Hirshleifer, & Subrahmanyam, 1998). Based on this theoretical approach, we develop a more complete explanation of short- and long-term firm value than that provided by the efficient market hypothesis. We further contribute to theory and practice through the focus on IT/IS outsourcing and restructuring decisions, an integration that is very common in technology management practice but has received little research attention. This approach provides a better understanding of the interaction effects of complex strategic decisions, and a better specified model of firm strategic behavior (Gilley & Rasheed, 2000; Gilley, Worrell, Davidson, & El-Jelly, 2000; Lei & Hitt, 1995).

Using event studies techniques, we test our hypotheses with a sample of IT/IS outsourcing announcements released from 1997 to 2003 by publicly traded firms. Event studies research has a long tradition in finance, economics, and management, examining the association between short- and long-term effects of corporate strategic announcements and abnormal market returns (Brown & Warner, 1985; McWilliams & Siegel, 1997; Neill, Pfeiffer, & Young-Ybarra, 2001; Park, Mezias, & Song, 2004; Shi, 1998). Consistent with prior research, our results show that investors generally respond well to IT/IS outsourcing announcements, as demonstrated by positive short-term abnormal returns. However, results also show that the long-term investor response to IT/IS outsourcing initiatives appears to be negative. Interestingly, the degree of restructuring that takes place after the outsourcing announcement influences the long-term impact of IT/IS outsourcing on firm market value.

The following section briefly discusses the IT/IS outsourcing decision, outlines unanswered questions, and develops hypotheses to address these questions.

2. Theory and hypotheses development

2.1. The intent underlying IT/IS outsourcing decisions

IT/IS outsourcing has been described as the process of turning over part or all of an organization’s technology/systems-related functions to an external services provider(s) (Loh & Venkatraman, 1992). Although the practice of IT/IS outsourcing has been around since 1954 when General Electric Corporation contracted with Arthur Anderson, its popularity as a tactical and strategic corporate move has exponentially increased. According to IDC, a market research firm, spending on IS outsourcing is expected to top $100 billion by 2005.

IT/IS outsourcing encompasses not only functions such as help desks, data centers, network management, and application development, but also business processes enabled with IS and technology such as human resources or accounting and finance. In practice this latter type of outsourcing is known as business process outsourcing (BPO) and involves the delegation of certain non-core business processes to an external provider for ownership and management (The Outsourcing Institute, 2005).

Traditionally, companies made outsourcing decisions for tactical, rather than strategic, reasons. They limited their IT/IS outsourcing initiatives to cost-reducing objectives, namely off-loading non-critical, back-office functions. Strategic functions (that is, core competencies that supposedly engendered a competitive advantage in the marketplace) were typically beyond this decision-making purview (Craumer, 2002). Over the last few years, however, observers claim that the intent underlying many IT/IS outsourcing decisions has moved from tactical (cost reduction) to strategic (competitive advantage and leveraging providers’ knowledge) (Teng, Cheon, & Grover, 1995). They explain this trend by pointing to firms’ increasing recognition that greater IS expertise can be obtained externally, rather than internally, and that, moreover, this expertise is a key driver of economic competitive advantage (Yang & Huang, 2000). Others have observed that, in general, outsourcing decisions of publicly traded firms are more likely to be of the cost-saving type (Chalos & Sung, 1998).
2.2. Prior research and unanswered questions

Limited prior research has examined the impact of IT/IS outsourcing announcements on the market value of contract-granting firms. Hayes et al. (2000) find a short-term positive market reaction to IT/IS outsourcing announcements by smaller contract-granting firms, while larger firm market values did not change significantly. One potential explanation given by the authors for those results is that the signaling strength of small-firm announcements is relatively stronger than large firm announcements due to the fact that smaller companies have less public information available. Thus, information asymmetry is imposed between large and small firms. We propose an alternative explanation: that larger firms, which already have significant IT/IS investments and structure in place, may undergo organizational restructuring following the outsourcing of their IT functions. In turn, sophisticated investors may have anticipated these effects (Lubatkin, Srinivasan, & Merchant, 1997), which would confound the positive effects generally expected from outsourcing decisions.

Three interesting issues arise as possible explanations to the Hayes et al. (2000) findings that we believe warrant future investigation and motivate this study: First, do investors care about the intentions behind managers’ decisions to outsource? Second, are sophisticated investors anticipating IT/IS outsourcing announcements and their consequences? And third, given both outsourcing and restructuring events in sequence, what is their joint effect on firm value over time? More generally, should we not look at a longer-term window to understand the effects of strategic decisions on firm value?

In the following sections we begin to address these questions in several ways. First, we develop the behavioral finance hypothesis as a baseline for the study. Second, we develop a counter hypothesis based on market efficiency arguments by extending the research window 30 days prior to the announcement of an IT/IS outsourcing contract and discussing the potential confounding effect of recent market performance. And third, we extend our research window to 240 days post-announcement and develop a hypothesis that combines the interaction of IT/IS outsourcing announcements and their associated organizational restructuring events.

2.3. The behavioral finance hypothesis

Behavioral finance theory argues that investors place more weight on recent trends and less weight on the fundamental underlying characteristics of firm value (representativeness bias); it also asserts that investors are slow to update their decision-making models in the face of new evidence (conservatism bias) (Barberis et al., 1998). A complementary model with behavioral foundations posits that informed investors (that is, those that help determine stock prices) overreact to private information (overconfidence) and downplay public signals (biased self-attribution), particularly when those signals contradict private information (Daniel et al., 1998).

Event studies research has a long tradition of comparing pre- and post-event long-term abnormal returns around different kinds of events with the short-term effect. Such research has studied events such as: initial public offerings, seasoned offerings (Loughran & Ritter, 1995), mergers and divestitures (Asquith, 1983; Flanagan, 1996; Lubatkin et al., 1997), acquisitions (Agrawal, Jaffe, & Mandelker, 1992; Lei & Hitt, 1995), environmental and outsourcing initiatives (Gilley et al., 2000; Klassen & McLaughlin, 1996), restructuring and spinoffs (Cusatis, Miles, & Woolridge, 1993; Miles & Rosenfeld, 1983), and share repurchases (Ikenberry, Lakonishok, & Vermaelen, 1995; Lakonishok, 1990).

Fama’s (1998) review of these studies uncovers an interesting pattern. With the exception of two types of event scenarios (one, studies of seasoned offerings and dividend omissions, which showed a negative abnormal short-term return; and two, mergers, which showed no abnormal short-term return), all of the studies reported a positive abnormal short-term return. In general, technology alliances are hypothesized to add value to the partnering firms. In particular, an event studies recently found significant positive abnormal returns surrounding the announcement of IT alliances (Neill et al., 2001). These studies lead us to conclude that public announcements regarding IT/IS outsourcing decisions are likely to have a positive effect on short-term returns as well, supporting the behavioral notion that investors put more weight on recent events regardless of fundamentals (representativeness bias). The research discussed above leads us to propose the baseline hypothesis for this investigation:

H1. Public announcements of IT/IS outsourcing contracts are positively associated with short-term abnormal returns.
2.4. The efficient market hypothesis

Market efficiency theory posits that in the long run, anomalies in the marketplace are evenly split between investor over- and underreaction; thus the expected value of abnormal returns is zero (Fama, 1998). This view argues that chance is the only possible explanation as to why investors overreact in some circumstances and underreact in others. In other words, the theory is supported when, in the aggregate, anomalies to market returns split evenly between over- and underreactions.

Recent iterations of the efficient market theory state that stock prices fully reflect available information and argue that sophisticated investors partially or fully anticipate corporate strategy decisions prior to their public announcement (Lubatkin et al., 1997). This argument is complementary to the behavioral explanations of overconfidence and biased self-attribution: that investors rely more on private information and tend to downplay public signals. These arguments suggest that public announcements of IT/IS outsourcing contracts might not change investor’s prior assessments based on private information.

Furthermore, Barberis et al.’s (1998) representativeness bias suggests that investors will place more weight on recent trends than firm fundamentals. If this is the case, recent stock performance should show a relationship to short-term abnormal returns. Additionally, they argue that investors are slow to update their decision-making models in light of new evidence. Taken together, these two biases would lead investors to downplay announcements in favor of recent market performance (defined here as abnormal returns 30 days prior to the announcement). Thus, efficient market reasoning would predict a positive relationship between recent performance and short-term performance (2 days following the announcement), despite the presence of a positive signal such as an IT/IS outsourcing announcement. More formally,

H2. Recent abnormal returns are positively related to post-announcement short-term abnormal returns for firms announcing IT/IS outsourcing contracts.

Consistent with the efficient market hypothesis, Fama (1998) shows that event study research to date has found no consistent pattern of relationships between short- and long-term abnormal returns, concluding that chance is the likely explanation. A critique in the management literature to event studies using long-term windows is that other events will naturally occur as the window expands into the future and will confound the effects of the event under study (McWilliams & Siegel, 1997). These arguments would provide an alternative explanation as to the inconsistent pattern of relationships attributed to chance by the efficient market theory. To explore this possibility, in the following section we develop hypotheses related to an event that often occurs following an IT/IS outsourcing decision, organizational restructuring, that could adversely affect firm value after the announcement.

2.5. Organizational restructuring and long-term returns

Although IT/IS outsourcing announcements are generally touted as strategic, providing the firm an ability to redirect its limited resources to focus on their core competencies, oftentimes they are associated with cost reduction efforts. In fact, one could argue that IT/IS outsourcing decisions with a primarily cost-reduction intent are no more than restructuring initiatives in disguise. For example, in their study of pre-event financial characteristics of firms announcing IS outsourcing, Smith, Mitra, and Narasimhan (1998) find that the firms had significantly lower cash reserves, higher debt, and declining growth rates before the outsourcing event than their counterparts in the same industry.

Research on the effect of organizational restructuring efforts on a firm’s market value strongly supports the notion that these strategies are generally ineffective and elicit negative reactions from investors and analysts (Bowman & Singh, 1993; Bowman, Singh, Useem, & Bhadury, 1999). There are some qualifications; for example, Khurana and Lippincott (2000) find that investors respond differently to restructuring efforts aimed at cost reduction, depending on whether or not the firm is profitable. If the firm is profitable, investors respond negatively; if the firm is not profitable, then investors respond positively. Other researchers have found mostly negative effects associated with restructuring, including both abnormal market returns, and long-term productivity and profitability. For instance, Palliam and Shalhoub (2002) find strong evidence that corporate downsizing does not lead to sustained stock price gains in the long term, and suggest that downsizing does not appear to benefit stakeholders. Lopez (2002) concludes that analysts
interpret organizational restructuring negatively, especially when it involves employee terminations and inventory write-downs.

Prior research has shown the advantages of studies that address complex strategies. For example, Gilley and Rasheed (2000) find that both firm strategy and context moderate the relationship between outsourcing announcements and performance. In separate research, Gilley et al. (2000) report no overall effect of natural environment initiatives on stock returns, but do find differential market reactions to product- and process-driven initiatives. These studies of interaction effects provide a better understanding of the potential effects of announcements on firm value, in particular when opposing effects are expected in the long run.

Given the interrelated nature of outsourcing and restructuring strategies, it is important to understand their combined effect on long-term market performance (Gilley & Rasheed, 2000; Gilley et al., 2000; Lei & Hitt, 1995). The conservatism bias recognizes that investors will eventually update their models in the face of new information. This leads us to argue that information on restructuring efforts eventually will negatively affect stock performance. Poon et al. (2001) support this argument by finding that restructuring efforts that impose a charge against the firm’s earnings reveal unfavorable information and are typically associated with negative abnormal returns. Furthermore, their research finds a significant negative relationship between the amount of the restructuring charge and the stock’s performance.

As discussed, IT/IS outsourcing strategies, a generally positive signal (Hayes et al., 2000), sometimes lead to restructuring efforts, a negative signal (Lopez, 2002; Poon et al., 2001). These two sequential effects may jointly lead to either positive or negative post-performance in the long run. The representativeness bias posed by behavioral finance states that investors put more weight on recent trends than on the underlying business fundamentals. Based on this argument, and on the expected negative effect from restructuring events found by prior research, we propose that restructuring decisions following IT/IS outsourcing contracts will negatively affect the relationship between short- and long-term abnormal returns following the outsourcing announcement. In other words:

**H3.** Restructuring decisions following the announcement of an IT/IS outsourcing contract negatively moderate the relationship between short-term abnormal returns following the contract announcement and long-term abnormal returns.

### 3. Methodology

#### 3.1. Sample

The data for this study were obtained from IT/IS outsourcing announcements found in Business and Finance News of Lexis-Nexis Academic Universe. Firms publicly announcing IT/IS outsourcing contracts between 1997 and 2003 were initially included in the sample. A keyword search employing a combination of the terms “outsource”, “information”, “systems”, “today”, and “announce” yielded an initial population of 301 announcements. Of the 301 announcements identified for this period, 232 were removed because the outsourcing firm was not publicly traded (i.e., data not available on COMPUSTAT) or did not have the necessary security information to calculate short and long-term stock performance (i.e., data not available on CRSP).

To control for possible confounding effects during the short-term window (McWilliams & Siegel, 1997) we searched Lexis-Nexis Academic Universe for accounting related events (e.g., earnings or dividend announcements) occurring 10 days before or after the outsourcing announcement. We identified three potentially confounding events and removed these firms from the study, leaving a final sample of 66 announcements by publicly traded outsourcers (see Table 1).

| Table 1 |
| Sample size |
| IT/IS outsourcing announcements found in Lexis-Nexis Academic Universe | 301 |
| Less: outsourcer not publicly traded (Population) | 74 |
| Less: missing security data | 69 |
| Less: announcement accompanied by confounding events (sample) | 66 |
Table 2 presents descriptive information regarding the 66 outsourcing firms included in the study. Panel A reveals that IT/IS outsourcers represented a large cross-section of industries with the majority of contracts awarded by firms in services (12), manufacturing and retail (11), finance and insurance (7), oil, gas and energy (7) and telecommunications and transportation (7). Panel B reveals that the majority of contracts were awarded in years 1999 (18), 2000 (15) and 1998 (14).

### 3.2. Controlling for intent announced

Given that behavioral finance suggests that investors are prone to be affected by the content of announcements, we explored and classified the intent behind the outsourcing contract included in each IT/IS announcement. To classify intent, each of the 66 press releases was read to ascertain company intent(s) for outsourcing. The analysis reveals that companies often cite publicly a number of different reasons for their IT/IS outsourcing decisions. Table 2 presents examples of the keywords found in the announcements, which were used to code each company’s intent(s) for outsourcing. The table also reveals the frequency and percent of each intent found in the announcements.

In all, there were a total of 129 reasons cited in the 66 announcements (most contracts cited at least one reason for outsourcing). In the majority of contracts, companies stated that they outsourced IT/IS for the following reasons: to leverage provider expertise (25%), focus on core competence (21%) and costs savings (17%). To a lesser degree outsourcing announcements also improved customer service (13%), upgraded systems (9%), improved efficiencies (8%), and supported firm growth (7%).

To determine correct coding of each intent, a second researcher read each press release and a Cohen’s Kappa coefficient of agreement was computed to assess the relative agreement between the coders (Cohen, 1960). Three of the intents, focus on core competence, cost savings, and leverage provider expertise had substantial agreement between raters (0.75, 0.69 and 0.68) (Table 3). The remaining intents had marginal agreement. Subsequent attempts to resolve the discrepancies were unsuccessful due to the ambiguousness of the contracts. Thus, only the three intents with high Cohen’s Kappas were included in our analysis as control variables.

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Table 2

<table>
<thead>
<tr>
<th>Industry Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance and insurance</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Oil, gas and energy</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Healthcare</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Services</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Manufacturing and retail</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Technology</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Telecommunications and transportation</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Chemical</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Consumer products</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>66</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Announcement Year</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>1998</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>1999</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>2000</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>2001</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>2002</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>66</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

1 Other intents were found in the contracts, but were mentioned far less frequently (i.e. increased firm flexibility and business process reengineering).
3.3. Computation of restructuring events

Information on restructuring charges for the fiscal year following the announcement was obtained from COMPUSTAT. Thirty-two percent of the outsourcing firms incurred restructuring charges during that time. In terms of what is needed for costs to qualify as restructuring costs within a company’s income statement the following must apply:

- A “restructuring plan” has been approved at the appropriate level within the firm.
- The plan is specific enough to determine its effects.
- The plan has been communicated to employees.
- The period of time to complete the plan indicates that changes to the plan are not likely. (Statement of Financial Accounting Standards No. 146 Accounting for Costs Associated with Exit or Disposal Activities. July 2002)

3.4. Computation of abnormal returns

We employ event studies methodology to assess the change in firm value around the time of the outsourcing agreement (Brown & Warner, 1985; McWilliams & Siegel, 1997; Neill et al., 2001; Park et al., 2004; Shi, 1998). The variables are examined using cumulative abnormal returns (CARs) which are the sum of daily returns, for a specified time window, in excess of general stock market movements. Following prior event studies research design, we use the market adjusted return method for computation of excess returns. The excess return on a particular security on a corresponding event date \( A_{it} \) is defined as,

\[
A_{it} = R_{it} - R_{mt},
\]

where \( R_{it} \) is the return of stock \( i \) on day \( t \) and \( R_{mt} \) is the market return (CRSP value weighted return) on the same day. The cumulative abnormal return around the outsourcing announcement (i.e., \(-T\) to day \(+T\)) on a particular security is given by:

\[
\text{CAR}_{iT} = \sum_{t=-T}^{T} A_{it}.
\]

The average excess return on a particular event date and the cumulative abnormal return on a particular window over the sample are given by:

\[
\bar{A}_t = \frac{1}{n} \sum_i A_{it}, \quad \text{and} \quad \text{CAR}_T = \frac{1}{n} \sum_i \text{CAR}_{iT}.
\]

\footnote{Among the new disclosures required by EITF 94-3 is the requirement that firms disclose the nature and amounts of the material components of a restructuring charge. Research shows that analysts interpret restructurings as bad news and that inventory write-downs and employee terminations are interpreted as the most negative restructuring components (Lopez, 2002).}
To test the hypothesis that $\bar{A}_t$ and $\bar{ CAR}_T$ equal zero, we compute the following Student’s $t$ statistics:

$$t_A = \frac{\bar{A}_t}{S_A/\sqrt{n}}, \text{ and } t_{CAR} = \frac{\bar{ CAR}_T}{S_{CAR}/\sqrt{n}}.$$

### 3.5. Research design

We ran two separate regressions to test hypotheses. The first model tests the effects of pre-announcement recent performance ($\bar{ CAR}_{-30, -1}$) on short-turn, post-event abnormal returns ($\bar{ CAR}_{0, +1}$). In this model, we control for the three most commonly cited intents stated by managers as the reasons for their decision to outsource (i.e., cost savings, focus on core competence, and leverage provider expertise). The second model, a hierarchical regression, tests the interaction effect proposed between the two independent variables in this model, short-term abnormal returns ($\bar{ CAR}_{0, +1}$) and restructuring charges on long-term abnormal returns ($\bar{ CAR}_{+2, +250}$).

### 4. Results

Table 4 reports descriptive statistics, $t$ tests, and descriptions of the variables under study for our sample of publicly traded firms. Consistent with prior research we find that, on average, short-term abnormal returns ($\bar{ CAR}_{0, +1}$) ...
following the announcement of IT/IS outsourcing contracts are significantly different from zero (significant t test at 1% level) and positive, supporting Hypothesis 1. This hypothesis proposes the representativeness bias argument put forward by the behavioral finance theory positing that investors put relatively more weight on recent events when making investment decisions. Table 5 reports correlations among the variables under study. In general, the correlations among independent variables indicate that multicollinearity is not a problem.

4.1. Short-term abnormal returns

Table 6 presents the results of the first regression, which tests the relationship between cumulative abnormal returns 30 days prior (CAR $-30, -1$) to the announcement and short-term abnormal returns (CAR $0, -1$). We include in this model that the three most commonly cited reasons sample firms provide for outsourcing (i.e., leverage expertise, focus on core competence, and cost savings) and find no significant relationship between the reasons for outsourcing and short-term abnormal returns. Abnormal returns 30-days prior to announcement show a partially significant relationship with post-event short-term abnormal returns ($p = 0.083$), providing marginal support to the representativeness bias argument that investors will put more weight on recent performance and to the conservative bias argument that they are slow to update their decision models.

4.2. Long-term abnormal returns

The model shown in Table 7 provides support for Hypothesis 3. The model shows a significant $R^2$ change when introducing the interaction term, and the interaction is significant ($p = 0.055$). This result suggests a moderating role of restructuring charges in the relationship between short- and long-term abnormal returns.

In order to depict this interaction, we employ moderator analysis plotting using Cohen and Cohen (1975) procedures (Fig. 1). The plot shows that at low levels of restructuring charges, a positive relationship exists between short- and long-term abnormal returns. However, for high levels of restructuring charges, the relationship is negative. More interestingly, at average levels, the relationship is positive, but the effect is diminutive (i.e., low slope). These findings demonstrate that market efficiency tests can be confounded by intervening variables such as restructuring.

Table 6
Regression on short-term abnormal returns

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Standard error of the estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.391$^a$</td>
<td>0.153</td>
<td>0.098</td>
<td>0.1122</td>
</tr>
</tbody>
</table>

ANOVA$^b$

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>$df$</th>
<th>Mean square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>0.141</td>
<td>4</td>
<td>0.035</td>
<td>2.796</td>
<td>0.034$^c$</td>
</tr>
<tr>
<td>Residual</td>
<td>0.780</td>
<td>62</td>
<td>0.013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>0.921</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Coefficients$^d$

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized coefficients</th>
<th>Standard error</th>
<th>Standardized coefficients</th>
<th>Beta</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>$-0.008$</td>
<td>0.027</td>
<td>$-0.300$</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td>CAR $-30, -1$</td>
<td>$0.100$</td>
<td>0.057</td>
<td>0.210</td>
<td>1.759</td>
<td>0.083</td>
</tr>
<tr>
<td>Leverage provider expertise</td>
<td>$0.048$</td>
<td>0.029</td>
<td>0.205</td>
<td>1.662</td>
<td>0.102</td>
</tr>
<tr>
<td>Focus on core competence</td>
<td>$-0.027$</td>
<td>0.030</td>
<td>$-0.112$</td>
<td>$-0.896$</td>
<td>0.374</td>
</tr>
<tr>
<td>Cost savings</td>
<td>$0.047$</td>
<td>0.029</td>
<td>0.191</td>
<td>1.599</td>
<td>0.115</td>
</tr>
</tbody>
</table>

See Table 5 for other variable definitions.

$^a$ Predictors: (constant), focus on core competence, cost savings, leverage provider expertise, CAR $-30, -1$.

$^b$ Dependent variable: CAR 0, $+1$.

$^c$ Predictors: (Constant), focus on core competence, cost savings, CAR $-30, -1$, leverage provider expertise.

$^d$ Dependent variable: CAR 0, $+1$. 

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5. Discussion and conclusion

Based on behavioral finance theory we develop and test hypotheses that investigate the relationship between short- and long-term abnormal returns around a corporate decision that is generally viewed positively by investors (IT/IS outsourcing). We also introduce the effect of an event generally viewed negatively (organizational restructuring) occurring after the IT/IS announcement. Three related questions were posed at the outset of this study regarding the effect of these corporate-level decisions on firm value. Results shed interesting light on these issues. First, our study shows that while the announcement decision has a positive short-term impact, the intent behind IT/IS outsourcing as stated by management in the press releases, whether strategic or tactic, appears to have no impact on short-term firm value.

Second, we find that extending the event window for analysis of complex and sequential strategies (i.e., IT/IS outsourcing and restructuring) is warranted and provides a better specified model of investor behavior and firm value over time. In contrast with market efficiency theory, investors do not anticipate corporate announcements, they do not seem to pay attention to recent performance, nor do they factor in the potential effects of restructuring initiatives resulting from the outsourcing decision. The finding that investors react positively immediately after the IS/IT announcement and then react negatively to restructuring charges provides support to this argument.

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Standard error of the estimate</th>
<th>Change statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$R^2$ change</td>
</tr>
<tr>
<td>1</td>
<td>0.361$^a$</td>
<td>0.130</td>
<td>0.103</td>
<td>1.7790</td>
<td>0.130</td>
</tr>
<tr>
<td>2</td>
<td>0.424$^b$</td>
<td>0.180</td>
<td>0.141</td>
<td>1.7411</td>
<td>0.050</td>
</tr>
</tbody>
</table>

**ANOVAC**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of squares</th>
<th>$df$</th>
<th>Mean square</th>
<th>$F$</th>
<th>Sig. $^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>30.288</td>
<td>2</td>
<td>15.144</td>
<td>4.785</td>
<td>0.012</td>
</tr>
<tr>
<td>Residual</td>
<td>202.563</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>232.851</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Regression</td>
<td>41.856</td>
<td>3</td>
<td>13.952</td>
<td>4.602</td>
<td>0.006</td>
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<tr>
<td>Residual</td>
<td>190.995</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>232.851</td>
<td>66</td>
<td></td>
<td></td>
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</tbody>
</table>

**CoefficientsC**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized coefficients</th>
<th>Standardized coefficients</th>
<th>1</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>Standard error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>$-0.281$</td>
<td>$0.227$</td>
<td>$-1.234$</td>
</tr>
<tr>
<td></td>
<td>CAR 0, +1</td>
<td>$5.391$</td>
<td>$1.866$</td>
<td>$0.339$</td>
</tr>
<tr>
<td></td>
<td>Rest % T+1</td>
<td>$-7.464$</td>
<td>$5.199$</td>
<td>$-0.169$</td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td>$-0.252$</td>
<td>$0.223$</td>
<td>$-1.128$</td>
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<tr>
<td></td>
<td>CAR 0, +1</td>
<td>$12.110$</td>
<td>$3.895$</td>
<td>$0.762$</td>
</tr>
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<td></td>
<td>Rest % T+1</td>
<td>$-12.395$</td>
<td>$5.680$</td>
<td>$-0.280$</td>
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<tr>
<td></td>
<td>Rest T1 x CAR2</td>
<td>$-167.962$</td>
<td>$85.984$</td>
<td>$-0.479$</td>
</tr>
</tbody>
</table>

See Table 5 for other variable definitions.

$^a$ Predictors: (Constant), Rest % T+1, CAR 0, +1.

$^b$ Predictors: (Constant), Rest % T+1, CAR 0, +1, Rest T1 x CAR2.

$^c$ Predictors: (Constant), Rest % T+1, CAR 0, +1, Rest T1 x CAR2.

$^d$ Predictors: (Constant), Rest % T+1, CAR 0, +1, Rest T1 x CAR2.

$^e$ Dependent variables: CAR+2, +250.

$^f$ Dependent variable: CAR +2, +250.
Third, by integrating IT/IS outsourcing announcements with subsequent restructuring charges we provide a more complete explanation of the cumulative effect of both types of decisions on firm value than that provided by efficient market theory. The analysis of interaction provides an indication that the introduction of restructuring charges into the equation may explain the randomness of long-term abnormal returns suggested by efficiency theory. The interaction plot clearly shows that the long-term effect of IT/IS outsourcing decisions on the market value of firms is dependent on the degree of organizational restructuring that follows.

This study provides initial evidence about perceived market values of IS outsourcing decisions. As a result, several limitations limit its generalizability and provide avenues for improvement in future studies. First, our results are limited to IT/IS outsourcing decisions reported in public sources and limited to those firms with financial information available in CRSP and COMPUSTAT databases. Second, we are unable to control for the length of the outsourcing arrangement because of the lack of publicly disclosed IT/IS outsourcing contract information. Given that outsourcing contract length may directly impact future cash flows, this information would provide additional insights. Third, we are also unable to capture the magnitude or size of the IS outsourcing arrangement. The size of outsourcing decisions (e.g., the magnitude of the outsourcing contracts) may impact market reactions to the IT/IS outsourcing announcements. Thus future studies could also benefit from such information.

Finally, our sample size is small, yet it includes all announcements we were able to find in the Lexis-Nexis database for publicly-traded firms over the period 1997–2003. The small sample has prevented us from performing more complex analyses of an integrated model, as well as the use of additional control variables. On the other hand, the fact that we do find an interaction effect is promising. Given the newness of the IT/IS outsourcing phenomenon, an extension of the sample before 1997 would not substantially increase the sample size and could introduce additional confounding effects.

Critics of event studies argue that researchers tend to analyze single event effects and ignore the potential confounding effects of other events occurring during the window of analysis (McWilliams & Siegel, 1997). We have addressed this issue for the short-term return window by deleting from the sample those firms that had additional confounding events during the period. For the long-term window, we have explored interactions between an event, short-term abnormal returns, and an alternative explanation, restructuring charges post-event. Other explanations may also be plausible for the long-term reversal in stock performance, for example, that the betas used to estimate returns could be biased (McNulty, Yeh, Schulze, & Lubatkin, 2002).

A key consideration of efficiency theory is that well-informed investors anticipate events of this nature. We find no evidence to support this contention, and show support for the concept of investor bias. Some may argue that

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**Fig. 1. Interaction effect.**

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outsourcing strategies are at most tactical, hence easily copied by competitors, and whatever advantage they provide will be quickly eroded. Market efficiency proponents argue that such announcements will be understood as tactical by sophisticated investors and thus not bid up the stock (Lubatkin & Shrieves, 1986). Although our results reject these contentions, they are not conclusive. Thus, these issues provide interesting avenues for future research.

Our findings provide clear guidance for managers. Restructuring charges send negative signals to investors and can revert the positive effects expected from IT/IS outsourcing announcements. From a long-term investor perspective, the study shows the need to understand whether or not IT/IS outsourcing announcements are in fact restructuring strategies in disguise. Managers should provide the necessary information to investors to avert such conclusions. This study also suggests that the objective analysis of firm value based on expected discounted future cash flows has little relationship with investor and market reactions to fundamental changes in corporate strategy. Although we do not contend that fundamentals are not important, it is clear from this study that investor behavioral biases must be considered and understood.

Because there is limited empirical work related to IS outsourcing decisions, there are several avenues for future research. More information is needed to understand the actual benefits of IT/IS outsourcing arrangements. Research regarding the tangible and intangible benefits and costs associated with IT/IS outsourcing is needed. While this study provides additional information about restructuring charges, firm announced intents, and market reactions to outsourcing arrangements, more analysis of firm differences and contract specifics would provide greater insight about factors influencing shareholder and investor perceptions of management’s decision to outsource IT/IS functions.

References


