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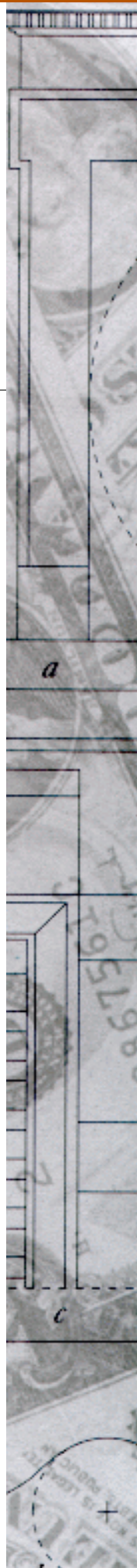
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*Searching for the Value of Quality
in Financial Services*

by
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Searching for the Value of Quality in Financial Services¹

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October 2000

Abstract

In this paper we report results from a study, which explores the impact of quality on performance in the financial services industry. Although some disagreement exists, the operations management, economics and marketing literatures advocate a positive relationship between quality and financial performance. Recent strong evidence suggests that in order to be meaningful, such studies must focus on individual industries. Our study focuses on the financial services industry and provides new insights on the relationship between quality and financial performance in this important service sector. Stock performance information is used to further explore this relationship. Through the results reported here, we also identify the weaknesses inherent in existing stock-performance studies on the impact of quality, and identify the methodological approaches that should be pursued in order to avoid such weaknesses.

Keywords: Quality, financial services, shareholder value, event study.

¹This research was funded in part by research grants from the University of Cyprus, and the HERMES European Center of Excellence on Computational Finance and Economics, at the University of Cyprus. The authors would like to acknowledge the research assistance provided by Evangelia Georgagaki.

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1 Introduction

Fueled by improvements in technology and innovation, the financial services sector is rapidly becoming a core economic sector in most modern economies. In the US alone, the financial service sector accounts for almost 5% of the GDP and employs more than five million people (Harker and Zenios, 2000b). Such numbers may even hide the indirect role that this industry plays in the economy, towards mobilizing economic activity, increasing income per capita and raising the standard of living (Herring and Santomero, 1991). Despite the plethora of research work on the efficiency of financial institutions that was witnessed during the last decade (see, for example, Berger and Humphrey, 1997; Resti, 1997), much remains to be done in understanding and further exploring what drives the performance of such institutions (Merton, 1990). Harker and Zenios (2000b) refer to two major axes of the activities of financial institutions, which focus on (a) providing products and services to their clients and, (b) engaging in financial intermediation and the management of risk. In this paper we specifically focus on the first axis and the quality of provided services and we give an answer as to whether ‘*quality pays*’ in the case of financial institutions.

Until the last decade, the belief that better service lead to improved profits has been mostly based on anecdotal evidence. (Notable exceptions are the works of Buzzel and Gale, 1987, and Jacobson and Aaker, 1987). An abundance of articles in the popular literature exist that discuss the effects of quality on the bottom line and suggest a direct link of quality and performance, either through attracting new customers (offensive marketing) or retaining the existing client base (defensive marketing) (Zahoric and Rust, 1992). The financial services industry was no exception (see, e.g., Colby, 1992). This, in turn, has led to an increasing popularity of quality improvement programs. More than 93% of all large US corporations have currently initiated some form of service quality improvement program (Rust et al., 1994). The lack, however, of empirical evidence linking quality to perfor-

mance gave rise to a wave of publications in the early 90s, which question the impact of quality and present it as an out-of-fashion fad (Fuchsberg 1992).

During the last few years, an increasing number of studies that empirically demonstrate the positive impact of quality on financial performance have appeared in the literature (see among others Hendricks and Singhal, 1997; Anderson et al., 1997; NIST, 2000). Most of these studies utilize empirical data and identify a positive link between quality and financial performance. Although Anderson et al. (1997) do focus on the differences between services and manufacturing in establishing a relationship between satisfaction and financial performance, existing research does not address the idiosyncrasies that might be evident within individual industries, as suggested by Jacobson and Aaker (1987). Such idiosyncrasies may lead to fundamentally different conclusions regarding the impact of quality across industries. For example, Anderson et al. (1997) report negative association between customer satisfaction and productivity in certain service industries, in contrast with the positive association reported for goods. These suggested trade-offs between productivity and satisfaction in services, may have important implications on the quality-financial performance relation that warrant further industry-specific investigation.

In this paper, we present the findings of our study that investigates the relationship between quality and financial performance in the financial services sector. Using the receipt of prestigious quality awards as a proxy for firms that exhibit high levels of quality in their service delivery systems, we focus on shareholder value (rather than accounting book value) measures in order to investigate the above relationship. Our findings suggest that quality in this industry is indeed an important driver of financial performance. Furthermore, we identify a number of challenging questions relating to previous findings and lay the ground for future work that can shed additional light into this important relationship.

This paper makes a number of contributions. First, we provide addi-

tional evidence on the positive relation between quality and financial performance. We concur with Jacobson and Aaker (1987) that such investigations are meaningful if focused on individual industries, and present evidence from the financial services, the most important perhaps service industry in the US. Second, unlike most empirical studies, which have been published until now we use shareholder value measures of performance to investigate the aforementioned relationship. Third, we do not use self-reported quality measures, an approach that may introduce severe biases in the results. Instead, the organizations that make up our quality set are winners of prestigious quality awards. Finally, we discuss potential improvements of the above measures, which open up the road for further investigation towards either strengthening or refuting results from such empirical investigations. More specifically, we discuss shortcomings that may lead to wrongful conclusions if not accounted for, and suggest ways to overcome them.

The rest of the paper is structured as follows. A brief background on recent attempts to link quality and financial performance from different literatures in accounting, marketing, economics and operations management, is presented in Section 2, followed by a presentation of the specifics of our study in Section 3. Main results are discussed in Section 4, along with future research directions.

2 Does Quality Pay?

Given the multidisciplinary nature of the concept of quality, we review the current state-of-the-art from the accounting, marketing, economics, and operations management literatures. It is not our intent to provide a thorough review of all these literatures but rather to highlight current developments in these different literatures, with respect to the relationship of quality with financial performance, thus properly framing our own study.

2.1 Quality and Financial Performance: Theoretical Premises

A growing body of *accounting* literature advocates that non-financial indicators of performance—including investments in areas such as quality, customer satisfaction and innovation—should supplement financial measures in internal accounting systems (e.g., Kaplan and Norton, 1996). Such ‘intangible’ assets may be better predictors of financial performance (Wallman, 1995; Stewart, 1997). Indeed, one of the conclusions of a report by the American Institute of Certified Public Accountants (1994, p. 143) discusses the need to disclose leading nonfinancial measures on key business processes such as quality, customer and employee satisfaction, innovation and cycle times.

A consensus exists in the *marketing* literature that service quality and customer satisfaction lead to an improvement of financial performance by increasing customer loyalty (Anderson and Sallivan, 1993; Bolton and Drew, 1991), improving word-of-mouth advertising, thus reducing marketing costs, reducing price elasticities (Anderson, 1996), reducing transaction costs (Reicheld and Sasser, 1990), and improving firm reputation (Reicheld and Sasser, 1990; Anderson et al., 1994). Although there has been considerable research work on the relationship between some of the above constructs, the direct link between quality and the bottom line, i.e., profitability, is still under the microscope of many researchers.

Among *economics* and *operations management* scholars there seems to be considerable disagreement concerning the nature of the relationship between customer satisfaction and performance improvement through productivity enhancements. In economics, for example, the notion of trade-offs between costs and customer satisfaction is well received. Customer satisfaction is synonymous to customer utility, a function of product or service attributes, higher levels of which come at higher cost. In the production and operations management (POM) literature it is commonly argued that the above relationship is positive: Higher levels of customer satisfaction require fewer

resources to handling returns, rework, warranties, and complaint management, thus lowering costs and improving productivity (Crosby, 1979; Juran, 1988)¹. In a services context, Reicheld and Sasser (1990) argue that reducing defects leads to increased loyalty, which in turn, leads to higher productivity via lowering costs of making future transactions, favorable word-of-mouth and perhaps even a price premium.

Among the first, perhaps, attempts to empirically demonstrate the impact of quality on financial performance, was reported by Buzzell and Gale (1987), who explored the relation between the two using cross-sectional data from the Profit Impact for Marketing Strategy (PIMS) dataset. They report positive relationships between relative quality and return on investment for firms included in the PIMS data set—which included mostly manufacturing firms— but failed to provide any support on the highly debatable relationship between quality and costs. The study used self-reported and not customer-based measures of quality, which also constitute the major drawback of most subsequent studies on the PIMS dataset (Phillips et al., 1983; Jacobson and Aaker, 1987). Using the same data set, Jacobsen and Aaker (1987) provide the first empirical evidence that this positive relationship may be industry specific and that it varies across industries. Although their study was, given the nature of the PIMS database, heavily based on manufacturing industries, it provides further justification for research that further examines whether the aforementioned relationship still holds for services (Anderson et al., 1997) and for research that focuses on specific service industries like the one we present in this paper.

Since then, a number of different performance frameworks presenting quality as a major driver of performance have been presented in the lit-

¹A number of exceptions also exist within the POM literature (e.g. Rust et al., 1994; Soteriou and Hadjinicola, 1999). According to Rust et al., (1994, p. 6), “...spending on quality is like any other resource allocation decision; it is expected to produce returns that are greater than the costs.” Thus, improvements in customer satisfaction may not necessarily result to direct improvement in organizational performance.

erature (See, for example, Roth et al., 1997; Heskett et al., 1997; Soteriou and Zenios, 1999, Athanassopoulos, 1999), along with empirical studies that have also validated the impact of quality on non-financial performance (e.g., Flynn et al., 1993). As shown in the next Section, these, along with the numerous examples from the popular literature, sparked the need for rigorous empirical studies to validate the relationship between quality and financial performance.

2.2 Quality and Financial Performance: Empirical Evidence

With the exception of few firm-specific studies (Rust and Zahoric, 1993) empirical studies on the relationship between financial performance have until recently been scarce—due mostly to unavailability of extensive databases on quality—and have provided mixed evidence. Reasons for the lack of conclusive evidence include quality data incompatibility with respect to measurement, industry and level of analysis (Ittner and Larcker, 1998). As customer satisfaction measures become more popular (Ittner et al., 1997), however, additional insights from such studies are expected to come forward. In general, most research in this area falls into two categories depending on the measures used for assessing performance, accounting or shareholder value.

In a recent study by Arthur Andersen & Co. (1994), no support was found for a positive relationship between quality and profitability, in various manufacturing industries. Although a number of earlier studies do provide support for a positive relationship between accounting performance and quality measures (see Haim, 1993, for a review) most suffer many limitations such as the lack of any statistical testing, or the incorporation of survey data and the absence of proper controls for industry-and economy-wide influences. Banker et al. (1998) found that customer satisfaction measures were positively associated with accounting performance in 18 hotels managed by a single hospitality firm. Anderson et al. (1997) reported positive contem-

poraneous associations between customer satisfaction measures and return on investment in Swedish manufacturing firms, but weaker or even negative associations in service firms. According to Anderson et al. it may be more difficult to pursue both customer satisfaction and productivity when it is important to customize market offerings to better meet customers's needs. Thus, the relationship between quality and financial performance in service industries may depend on the nature of the service itself, a finding which justifies further investigation into individual service industries.

More rigorous research methods to estimate the financial impact of TQM approaches were followed by Easton and Jarrell (1994) and Hendricks and Singhal (1997). Easton and Jarrell demonstrated the positive relationship between quality practices and accounting performance using a set of 108 publicly traded firms and an appropriate control group. Their test group was chosen using in-depth interviews with the director or VP of quality to determine if the firms have seriously pursued TQM. Hendricks and Singhal report similar findings using firms—mostly manufacturing—that have previously won quality awards against a group of non-award winners. This is in our opinion the most rigorous methodology for measuring the impact of quality on performance, as it avoids biases for self reporting, focuses on a homogeneous group and compares against a control group to eliminate exogenous non-quality related influences. This is the methodology we adopt in our study, but with further refinements of the metrics we use.

Evidence on the relationship between quality and stock price performance has been scarce. Hendricks and Singhal (1996) showed that stock market reacts positively to announcements of winning quality awards. Their study used a sample of 33 different awards given mostly to manufacturing firms. Related research by Aaker and Jacobson (1994), who examined the association between stock returns and customers' perceptions of brand quality, reported similar findings. Heller (1994) also reports a similar study of 150 TQM firms that had an abnormal change of 4.95% in stock prices during the

1989-1992 period. In both studies, however, which focus mostly on manufacturing firms, the increase in stock prices could also have been the result of capital market inefficiencies. No adjustments were allowed to correct for such inefficiencies using relevant models from the finance literature. Similar results are reported by the National Institute of Science and Technology (2000) when the stock performance of Baldrige Award winners was tracked over time.

In an article that has recently received the award for Best Services Article from the American Marketing Association, Anderson et al. (1997) argue for the first time that the nature of this relationship may differ when we focus on service firms and individual service industries. More specifically, they argue that satisfaction and productivity are less likely to be compatible when satisfaction is more dependent on customization, and when it is costly to provide both customization and standardization simultaneously. They support these arguments through empirical analysis using satisfaction indices and economic returns data.

In general, apart from methodology differences, most of the disagreement among the aforementioned studies results from differences in the way quality is defined (product quality vs customer satisfaction through interviews, surveys, quality awards) and from whether products and services are treated differently (industry differences).

3 Quality and Financial Performance in Financial Services: An Event Study

Our study provides additional evidence on the financial performance-quality relationship, focusing on a single service industry—the financial services industry— using stock performance measures. Although the need for industry specific studies has been stressed in the literature, we have not yet seen studies like this focusing on the financial services industry. We next

discuss the specific hypotheses that were tested in the study, followed by a brief description of the data used and the methodology followed.

3.1 Development of Hypotheses

As we have seen in the previous Section, no consensus has yet been reached as to the relationship between quality and financial performance in services in general, or for financial services in particular. Although the general conjecture in the operations management literature that improving quality is likely to decrease costs and further improve revenues, has been challenged in the case of highly customized services (Anderson et al., 1997; Juran, 1988) the different literatures are far from being conclusive. We posit that in the case of financial services, practices leading to higher quality services for clients will lead to higher net expected future cash flows, which in turn will be rewarded by the stock market. Since we are in no position to evaluate “good” from “bad” quality practices nor we want to impose subjective evaluations of an effective or ineffective quality program, we will use the presence of a prestigious quality award as a proxy for the existence of an effective quality program. Our first hypothesis follows:

Hypothesis 1: Quality award winning financial institutions will exhibit abnormal returns during the month the quality award is announced or awarded.

Focusing on the market value of the firm alone, however, without adjusting for the risk observed maybe problematic (e.g., Black and Scholes, 1973; Holmer and Zenios, 1995). Indeed, the observed market value of the firm may overestimate or underestimate the impact of the quality award depending on the variance of the rate of return of the firm. Thus, in order to proceed to any *meaningful* conclusions as to the nature of the relationship between quality and financial performance when using stock measures both the market value *and* the variance of the rate of return must be considered simultaneously. If, for example, the winning a quality award increases its

market value but further increases the variance of the rate of return of the firm, then the impact of the award can be jeopardized. If there is indeed a positive relationship between quality and financial performance in services, then the following hypothesis should hold.

Hypothesis 2: Quality awards will not only result in an increase of the firm's stock return, but also in a simultaneous decrease (or no change) of the variance of the stock's rate of return.

Finally, we take into consideration the size of the firms under investigation and posit that the size of the firm can impact the magnitude of the abnormal return generated, if any. We expect that the impact—and the mean abnormal return—will be larger in smaller firms, as compared to large capitalization firms, which has been reported in similar finance studies (Fama and French, 1993). (This is the so called small-cap effect.)

Hypothesis 3: The size of the financial institution will affect the impact of the quality award as measured by the stock's mean abnormal return.

3.2 Data Used

In order to eliminate selection biases for our study, we developed a sample of quality award winners, within the financial services industry in the U.S., as a proxy of companies having implemented successful quality improvement programs. This turned out to be a difficult task. We note that the samples in most of the studies discussed in Section 2 are heavily biased towards manufacturing firms. This is not surprising, as TQM programs have only been recently gaining popularity within the service sector. For example, out of the 39 Baldrige awards given out during the years 1988-1999 only nine were awarded to service firms. Five of these awards came after 1996. Since the initiation of the award in 1988, only two financial institutions have received the award.

A number of steps were taken in order to increase the number of financial institutions included in our sample. First, we directly contacted by telephone, fax or e-mail all State, Senate productivity, and local quality awards, obtaining lists of award recipients, and directly contacted all related financial institutions. Second, we searched the internet, using search keys such as “quality awards”, “financial institutions”, or related combinations. Third, we downloaded a list of all financial institutions from Compustat and thoroughly went through the homepage of each institution, searching for publicized information on any quality awards. Fourth, a thorough search of the Dow Jones News Service (DJNS) for related announcements of financial institution quality awards was performed. The findings from the above “detective” work were used to expand our database only if (i) the institution in the announcement was publicly traded, (ii) the announcement included at least the month of the award announcement and (iii) market performance data for the firm in question were available through Compustat or CRSP (Center for Research in Security Prices).

If an institution received two or more different awards at different times, the institution was included in our sample as two separate entities. Also included in our sample was Chase Manhattan Corp., which although it did not receive an award we know of, it was a finalist—a site visit was conducted—of the Malcolm Baldrige award in 1994. Given the prestige and the difficulty of the Baldrige award, we considered it appropriate to include this firm in our sample. Our final sample size included twelve financial institutions with stock-performance information available through Compustat (see Table 1).

Quality Award Name	Institution	Date
Malcolm Baldrige Award	AT&T Corp. (Universal Card Services)	November 1992
Florida Governor's Sterling Award	AT&T Corp. (Universal Card Services)	May 1993
Malcolm Baldrige Award	Dana Corp. (Commercial Credit Corporation)	November 1996
New Jersey Quality Achievemnt	Merrill Lynch & Co. (Credit Corporation)	November 1995
Malcolm Baldrige Award	Merrill Lynch & Co. (Credit Corporation)	October 1997
Florida Governor's Sterling Award	Merrill Lynch & Co. (Merrill Lynch Insurance Group)	June 1995
Florida Governor's Sterling Award	Merrill Lynch & Co. (Credit Corporation)	May 1996
Governor's Sustainable Florida Award	Seacoast Banking	February 1999
Baldrige Finalist (Site Visit)	Chase Manhattan Corp.	October 1994
Missouri Quality Award	Spint Fon Group (Long Distance Div. - Billing Services)	October 1999
Tennessee Quality Achievement Award	Caterpillar Financial (Financial Services)	January 1999
Tennessee Quality Excellence Award	Caterpillar Financial (Financial Services)	February 2000

Table 1. Names of financial institutions included in our sample set along with the names of the corresponding Quality Awards, and dates of award announcements.

3.3 Methodology

We next describe two methodologies that were employed for the purposes of our study. First, we utilize an event study, a popular technique in empirical financial research. Second, we utilize an approached based on portfolio comparison, an approach that has been used extensively in similar studies or quality effects in the past. The latter is used mostly to highlight weaknesses in studies using this methodology.

3.3.1 An Event Study

Our empirical investigation into the impact of quality in the financial industry was conducted using an event study methodology, a technique used extensively in accounting studies to isolate the component of price change

due to firm-specific events. In our case, the firm specific event is the announcement of the quality award. A capital asset pricing model (CAPM) was constructed in order to capture the excess returns of the firms in our quality sample as follows:

$$R_t^i - R_t^f = a_i + \beta_{im}(R_t^m - R_t^f) + \varepsilon_t^i, \quad (1)$$

where $t = 1, 2, \dots, T$, denotes time. R_t^i is the return from stock i at time t , R_t^f the risk free rate at time t , R_t^m the market return at time t and finally β_{im} is the ordinary least squares regression coefficient, which quantifies the stock's tendency to move with the market as a whole (stock's beta). The abnormal return for stock i at time t , will then be:

$$A_{it} = (R_t^i - R_t^f) - a_i - \beta_{im}(R_t^m - R_t^f), \quad (2)$$

and the mean abnormal return \bar{A}_t of a portfolio with n stocks on day t , can easily be computed as:

$$\bar{A}_t = \frac{1}{n} \sum_{i=1}^n A_{it}, \quad (3)$$

It is important to use an appropriate index when evaluating R_t^m , the market return at time t . Indices such as the equally weighted CRSP index or the S&P 500 index can provide adequate market benchmarks when analyzing samples resembling the market as a whole. In the case of specific industry analysis such as the one we conduct here, an industry specific index must be used. The S&P500 Financial index was used for the purposes of our study.

A number of statistical tests have been developed for the null hypothesis that the abnormal returns are not significantly different than zero (e.g., Brown and Warner, 1985). Because of the small sample size in our case, we cannot rely on t-tests or similar tests, which make the assumption of normality in monthly return data. Hence, we used a non-parametric rank test proposed and evaluated by Corrado (1981) to test for abnormal price performance. The test is as follows:

$$C = \frac{1}{n} \sum_{i=1}^n [k_{io-(T/2)}] / S(k), \quad (4)$$

where,

$$S(k) = \sqrt{\frac{1}{T} \sum_{i=1}^T \left(\frac{1}{n} \sum_{i=1}^n [k_{it-(T/2)}] \right)}, \quad (5)$$

and,

$$K_{it} = \text{rank}(A_{it}), \quad \text{for } t = 1, 2, \dots, T. \quad (6)$$

Corrado demonstrated that this rank test shares the power and specification of the Wilcoxon two-sample rank test, which has a power advantage over the two sample t-test for fat tailed distributions, and performs particularly well for smaller samples.

The event study we utilize here is based on the notion of informationally efficient markets and adopts the prevailing efficient market theories that the abnormal return, or the return beyond what would be predicted from market movements alone, should be zero. Our study estimates the abnormal return around the month that the information regarding the quality awards is released to the market and attributes the abnormal stock performance to the new information.

To calibrate the model, an estimation period of 108 months was used, starting 110 months prior to the month of the award for all the firms in the quality sample. This provided adequate data to fit the CAPM model and avoided the time periods prior to the October 1987 stock market crash.

3.3.2 Portfolio Comparison

In order to provide further insights on the returns of the quality set and the impact of quality awards, we also followed the alternative approach—similar to the one employed by the yearly studies conducted by the National

Institute of Science and Technology (see yearly reports NIST, 1995-2000). This method attempts to compare the performance of two different portfolios: one following a selected set of ‘quality’ firms and the other following the market index. Thus, we proceeded in investing a hypothetical sum of \$1000 in each of the quality award winners 6.75 years before they received the award. This was necessary in order to avoid the October 1987 stock market crash for all twelve firms in our “quality” portfolio. The investment was tracked from the beginning of this year (Y-6.75) year until the end of the third year after they received the award (Y+3). Two firms that received the award very recently and, hence, financial information was not available for the time period after the award announcement, were excluded from the sample. The same dollar amount was invested in the S&P 500 Financial Index —the appropriate index for our industry— on the same day. The investment was tracked making adjustments for stock splits and dividends.

As we discuss in more detail in the next section, caution must be exercised when using this methodology. First, unless an appropriate market index for benchmarking is used, the results may be misleading. Given that we focus on the financial services, we chose to use the S&P500 Financial index, as an appropriate benchmark. In the study conducted by NIST (1999), the return of the portfolio consisting of Baldrige winners was compared against the S&P500. However, unlike the S&P500, the group of Baldrige winners in the period from 1988-1999 consists of mostly manufacturing firms. Second, when making portfolio comparisons of this nature, an adjustment for the small cap effect must be made. Market value weights must be used to account for the fact that small market value firms have been shown to have unusually high average returns. Finally, as we further discuss in the next section, such portfolio comparisons must also consider whether the excess return observed is a result of the risk involved in the portfolios, and not the result of quality efforts. None of these issues have been addressed in previous studies of this nature.

4 Results and Discussion

4.1 Analyzing Abnormal Returns

Table 2 and Figure 1 summarize the results from the event study used to estimate abnormal returns. For the month during which the award was announced, the mean abnormal return is positive and significantly different than zero, using the Corrado nonparametric test ($p < 0.05$). This suggests that a positive relationship between quality and financial performance for the case of financial services does hold, which provides support for Hypothesis 1 as developed in Section 3.1.

Month	Mean Abnormal Return
M-2	0.255
M-1	-2.802
M-0	3.034 **
M+1	0.011
M+2	2.095

Note: ** $p < 0.05$.

Table 2. Mean abnormal returns (in percentages) resulting by using the CAPM model, over 108 periods. M-0 refers to the month the award was announced.

Although these results are in agreement with research supporting a positive association between quality and financial performance, they contradict the more recent work that focuses on services and which suggests that within a service context, trade-offs between customer satisfaction and productivity are more likely. In general, services that are dependent on customization are more likely to exhibit such trade-offs (Anderson et al., 1997). One could argue, however, that although financial services have traditionally been viewed as “pure services” and, according to Anderson et al. high performance strategies in such services are expected to demonstrate both high customer satisfaction *and* low productivity, this picture maybe rapidly changing due to the

recent technology innovations that the financial services industry has been experiencing (Harker and Zenios, 2000a), and the ease with which financial services are customized. Our findings support a recommendation by Anderson et al. (1997, p. 129) that “...this does not imply that such firms should not seek improvements in both customer satisfaction and productivity. For example, appropriate applications of information technology may improve both customer satisfaction *and* productivity simultaneously.” Indeed, the financial services industry is by far the largest consumer of information technology in the economy (Frei et al., 2000). Using data from Sweden, Anderson et al. (1997) classified insurance firms in the category that is not dependent on customization, and thus high productivity may not necessarily come at the expense of customer satisfaction. Productivity in insurance, for example, is measured by total assets relative to the number of employees rather than current sales. Banks, on the other hand are classified as services that are dependent on customization. This stresses the heterogeneity among financial services and calls for future work to address these issues at lower levels of analysis, within the financial services industry.

None of the abnormal returns for the months immediately following and immediately preceding the award month are significantly different than zero. This suggests that (i) the event month was not misspecified and, (ii) that there was no prior leakage of information to the market regarding the announcement of the award. One would expect such leakage of information given the non-confidential nature of the data we use. In many cases, for example, the quality award recipients are informally informed about their winning of the award, although the actual announcement may follow a few days later. Also, no prohibitive penalties are associated with such leakages. The use of monthly return data overcomes this problem and can help isolate the impact of quality awards on the firm’s stock return.

For completeness, a similar analysis was also conducted using daily returns, following the approach taken by Hendricks and Singhal (1997). The

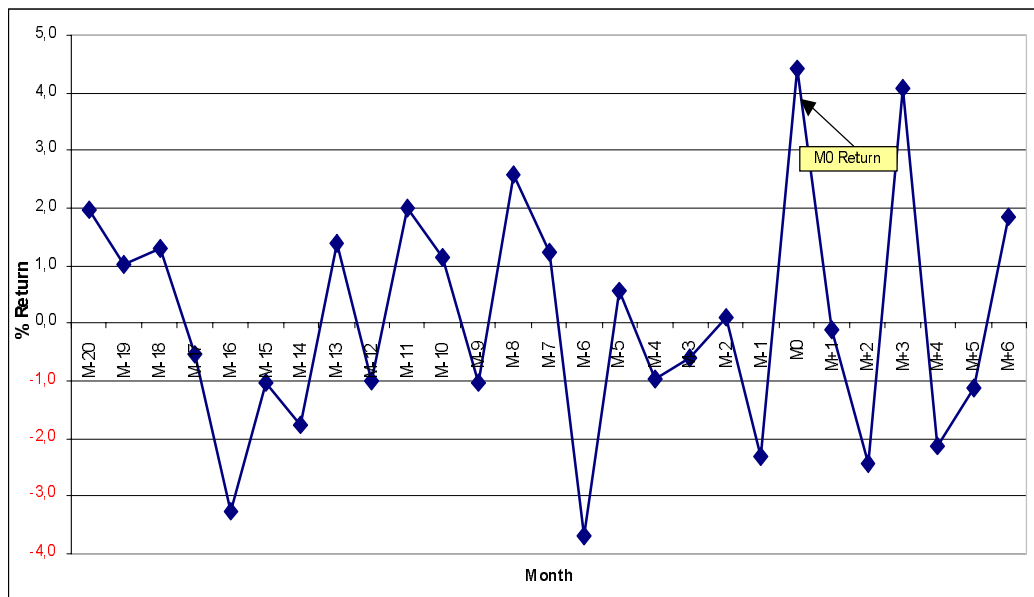


Figure 1: Abnormal returns during the month of the quality announcement, as well as for the months immediately preceding and immediately following the award.

CAPM model was calibrated during a 700 day period prior to the date of the award announcement, and abnormal returns for the date of the award were evaluated. Although the mean abnormal return on the date of the award was positive the results are not statistically significant. This suggests that leakage of information does occur, but given the results using monthly returns, such leakage is restricted within a period of a few days prior to the award. Figure 2 provides additional evidence regarding the leakage of information, by presenting cumulative daily returns before and after the award announcement date. We observe that a gradual increase of abnormal cumulative daily returns begins at least 20 days prior to the announcement date, which provides further support that leakage of information may be evident.

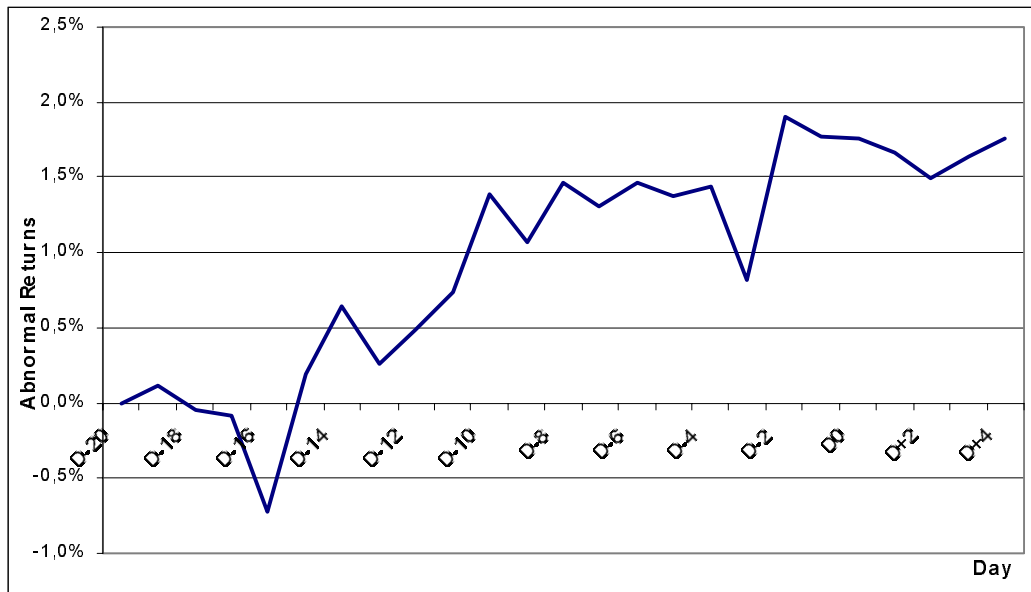


Figure 2: Cumulative abnormal daily returns before and after the quality award announcement date.

4.2 Comparing the Quality Portfolio Against the Market

Index

We now turn our attention to the results of the portfolio comparison described in the previous section. Figure 3 presents results from the returns of three portfolios: one consisting of the ‘quality’ sample, one following the S&P500, and one following the S&P500 Financial index. Cumulative returns for an identical investment in each of these separate portfolios are presented. The dotted line corresponds to the year the quality award was announced for each firm in the ‘quality’ sample.

As Figure 3 suggests, the return of the quality set outperforms both the return of the S&P500 and the S&P500 Financial indices, providing support for Hypothesis 1. In agreement with the findings reported by NIST (1999) and Hendricks and Singhal (1996), the market rewards quality efforts and this

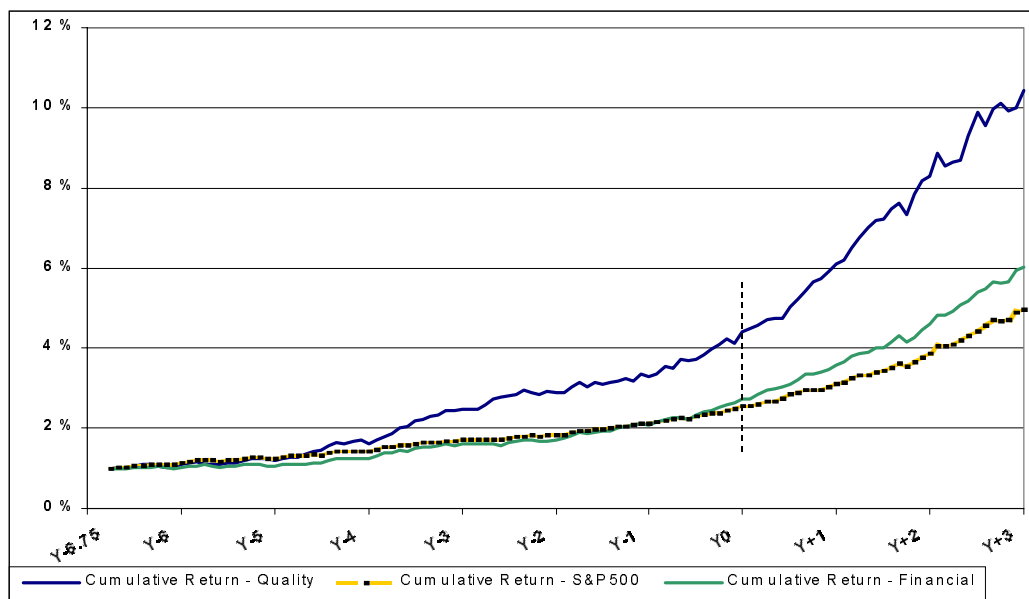


Figure 3: Cumulative returns obtained through an identical investment in the quality set and in the S&P500 and S&P500 Financial indices, starting 6.75 years before the announcement of the award. (The investment is not weighted by the firm’s market value).

is reflected in the firm’s stock return. Tracking a hypothetical investment long before receiving the award can provide additional insights. Although during the period prior to the award the return of the investment in the quality group is higher than the one in the market indices, during the post award period this difference is higher ($p < 0.05$). Despite the small sample size, our findings from the financial industry appear to be in agreement with findings from other studies, most of which, however, use manufacturing-based samples.

Note, however, that the choice of an appropriate benchmark may have a great influence in the direction of the results. In Figure 3, the difference between the return of the ‘quality’ portfolio and the market index is over-estimated when the S&P500 index is used instead of the more appropriate

S&P500 index. This finding suggests that unless a proper index that reflects the characteristics of the firms in the quality set is used, the observed performance superiority of the quality portfolio maybe a bias due to the benchmark choice.

Figure 4 presents further results for the case where the investment in the ‘quality’ sample was weighted according to the firm’s market value. Thus, larger in market value firms received larger investments. Although the overall result remains unchanged, in that the performance of the ‘quality’ portfolio still outperforms that of the market indices, cumulative returns are now smaller, when compared to those observed in Figure 3. This observation provides further support for Hypothesis 2 and points to the existence of a small cap effect, as the returns of smaller firms in the portfolio now receive less weight. Thus, not only the choice of an appropriate index but also the effect of the firms’ size must be taken into consideration in such analyses. Although the observed differences were small, it may be the case that the observed differences will be large enough so that the performance of the market indices can outperform that of the ‘quality’ portfolio, in other service industries. Figure 4 shows that even after adjustments for small cap effect, quality does pay.

	Equal weights		Sharpe	Market Value Weights		Sharpe
	Mean Return	σ	ratio	Mean Return	σ	ratio
Quality Set	8.62%	3.27	0.2258	3.77%	4.37	0.098
S&P500 Fin.	4.06%	2.21	0.1743	-0.74%	4.00	-0.003
S&P500	2.79%	0.17	0.1715	-1.88%	2.91	-0.01

Table 3. Excess returns over the risk free rate, volatilities (σ), and Sharpe ratios, for identical investments in the ‘Quality’ set, the S&P 500 Financial and the S&P 500 index.

Figure 4, however, may still be misleading in that it only presents information regarding the average return of our ‘quality’ portfolio compared to a

benchmark index. Such information does not take into account nonsystemic risk associated with the different portfolios. Table 3 also presents risk related information on the portfolios (volatilities) and reports a risk adjusted measure of performance namely the Sharpe ratio ($S = \frac{E(R_p) - R_f}{\sigma_p}$). This measure captures the portfolios' risk by measuring the reward to total volatility trade-off. The table presents information for the two different cases, when our investment was weighted based on the market value of the firms in our portfolio (using market value weights) and when it was not (using equal weights).

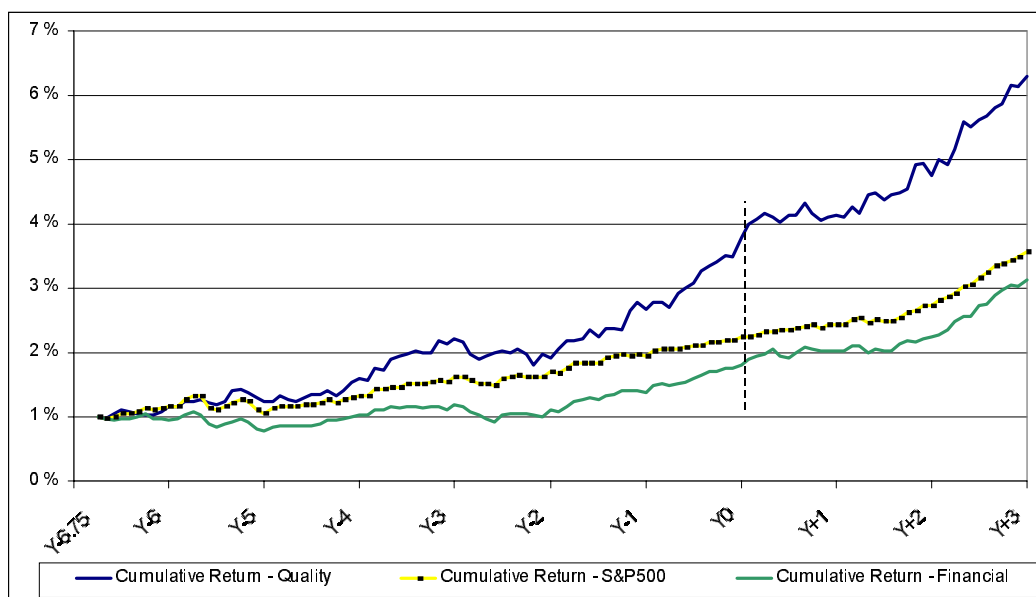


Figure 4: Cumulative returns obtained through an identical investment in the quality set and in the S&P500 and S&P500 Financial indices, starting 6.75 years before the announcement of the award. (The investment is weighted according to the firm's market value).

The results from Table 3 show that the quality portfolio is associated not only with an increase in the expected returns, but also with an increase of the portfolios' volatility. Does quality really pay or is it the increased financial risks (volatility) that generates the increased return? If we examine the Sharpe ratios for the different portfolios we observe that despite the increase in volatility, the portfolio consisting of the quality firms still outperforms the market index². Hence, even when adjusting for risk, the quality programs offer increased rewards.

Although these results do not directly support Hypothesis 2, they do not alter the observed impact of quality awards on market performance. The volatility of the 'quality' portfolio is higher than the market index but this is compensated by a non-proportional increase in the expected return. The Sharpe ratios we used to assess performance differences across portfolios can provide useful insights as to the superiority of the 'quality' portfolio compared to the market index. Although this is a well known fact in the finance literature, a number of studies including the one by the National Institute of Science and Technology (1999) do not consider the associated risk when making portfolio comparisons.

Given the small size of our sample it is difficult to assess how the size of the financial institution affects the impact on abnormal returns due to the announcement of the quality award. Small and especially value stocks seem to have abnormally high returns even after accounting for market beta (see Fama and French, 1993 for a review on the return of small and value/growth stocks). Table 3 suggests that the general picture regarding the superiority of the 'quality' portfolio remains unaffected when a market value weighted investment strategy is followed. A multifactor model which would directly account for the size effect as advocated by Fama and French (1993) would

²For a more direct comparison of the portfolio performance, the M^2 measure (see Modigliani and Modigliani, 1997) can also be used. The results are identical: the 'quality' portfolio always outperforms the market index.

provide additional insights regarding Hypothesis 3, but it would at the same time require a larger sample, towards which we are currently working.

5 Future Research and Concluding Remarks

Research on the relationship between quality and performance is far from being conclusive. In our study we provide additional empirical support on the positive relationship between quality and financial performance in the important industry of financial services. The event study conducted in this paper provides support for the Hypothesis that abnormal returns are observed following the announcement of quality awards, and further supports the positive relationship reported elsewhere between quality and financial performance. Furthermore, we point towards some of the weaknesses inherent in certain earlier attempts in this direction, which deal with the treatment of the nonsystemic risk associated with stock performance, the impact of the firms' size, and the choice of an appropriate market benchmark. The use of Sharpe ratios and the use of appropriate industry indexes as discussed in this paper isolates excess returns due to quality programs from excess returns due to increased volatilities and small cap effect.

We are currently undertaking a number of steps towards improving the validity and the generalizability of this study. Perhaps the biggest barrier to this type of studies has to do with the difficulty in obtaining objective information regarding quality. Although quality awards can provide a good proxy towards objective assessment of effective quality improvement programs, these have not started becoming popular until the end of the last decade. As the number of such award winners increases, so do the opportunities to conduct empirical longitudinal investigation on the aforementioned issues. Improving the sample of this study is one of the directions we are currently undertaking.

The limitations of this study provide fruitful directions for future research.

Focusing on the development of the multifactor models suggested by Fama and French (1993) can not only strengthen some of the arguments made in this paper but can also help isolate the effect of size and other factors on the abnormal returns observed. Larger and longer in duration samples can further permit a more in-depth risk analysis of the periods prior and after the award announcements. What are the implications of such quality awards on the long term risk associated with the firms' return? It would also be interesting to see whether announcements of non-winning firms have a negative reaction to the firm's market value. Finally, it would be of great interest to be able to further examine the impact of such awards (or their absence) to accounting performance data³.

Finally, future efforts can concentrate on the need to address the issues examined in this study not only *across* different industries, but also *within* different industries. This becomes important given the increasing heterogeneity observed within industries. Are there differences, for example, between banking and insurance institutions when it comes to the treatment of quality? Between commercial and investment banks? As research efforts have slowly appeared that focus on individual industries, such in-depth investigations will most certainly follow.

³For completeness, despite our small sample, comparisons using financial (accounting) performance information were also attempted. This is the type of data that need to be examined in order to understand *why* the picture of Figure 1 holds. For each financial institution that received a quality award, a matched pair sample was included in a control group, that had the same two-digit SIC code, and was closest in size-as determined by the book value of assets at the fiscal year-end before the winning of the quality award. The quality winners outperformed the control group on a number of performance indicators especially during the months immediately following the announcement of the award. However, our sample size was too small to conduct any statistical testing on before and after differences and results are not reported here. (Out of the 12 firms that had financial information available, only 4 of them had data available for at least four years after the award.)

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