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Examining the Relationship between Selected Ratios and Market Capitalization of an IPO

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MS, Northern Illinois University, 1996

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Doctoral Study Submitted in Partial Fulfillment

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Doctor of Business Administration

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Abstract

This study examined the relationship between return on equity (ROE) and return on assets (ROA), the business sector, and long-term performance of new firms 5 years after the initial public offer (IPO) date. IPOs have a high rate of delisting from stock exchanges, and understanding possible predictors of long-term performance will benefit business owners and investors. The purpose of this study was to determine if ROE and ROA are predictors of long-term performance of IPOs on U.S. stock exchanges. The research question examined whether there is a statically significant relationship between the ROE, ROA, business sector, and market capitalization of IPOs. This study followed a correlational design to analyze the research question and its hypotheses. Both shareholder theory and financial ratio models constituted the theoretical framework for this study; public databases provided all the historical financial data on publicly traded companies. The population for this study included all firms that pursued an IPO within the United States stock exchanges from January 2007 through December 2009. Using Spearman correlations, the results suggested no significant relationship between ROE and any business sector with market capitalization of IPOs. However, there was a significant correlation with ROA and market capitalization for these IPOs. The implications for positive social change in this study are new insights for leaders concerning the survivability and monetary gain for new firms entering the public market and the new firm's ability as a result of this gain to provide new jobs thereby improving the economy.

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Dedication

I dedicate this study to my loved ones that put up with me throughout this process. Your support and encouragement have guided me through many challenges in my life. I am thankful to you all for helping me complete this doctoral degree.

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To my committee chair, Dr. Sean Stanley, you have encouraged me from the start. Your guidance and support are greatly appreciated, and it is truly an honor to be your first doctoral student for whom you were the committee chair. I would also like to acknowledge my committee, Dr. Kevin Davies and Dr. Robert Hockin, for their support and efforts in helping me through this process. Thank you to my editor, Toni Williams, and to my statistician, Dr. Tom Granoff. For my cohort, continue to support each other through the doctoral process, and I thank you for the opportunity to be your peer leader.

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Section 1: Foundation of the Study

Introduction

One of the steps in the life cycle of a business is going public, which is the first time the firm interacts with financial resources in the public market. The future performance of initial public offerings (IPOs) is a topic of research throughout the business community. Researchers have investigated the characteristics of the board members and the founder, the reputation of any venture capital investors involved with the company, and venture capital investors' influence on the firm (Johnson & Sohl, 2012a; Musteen, Datta, & Kemmerer, 2010; Yang, Zimmerman, & Jiang, 2011). New firms that fail affect the economy and the local community; thus, the survivability of new firms is another topic for researchers to investigate. One topic identified within the literature is how financial ratios can indicate the performance of the IPO.

The financial statement information available on companies can indicate the value of a firm based on a variety of balance sheet and income statement information. Return on assets (ROA) and return on equity (ROE) are two ratios frequently used to value firms, and while researchers have identified the predictive power of financial ratios, there is little research on the ability of the ratios to predict future performance of an IPO. The IPO is a critical milestone for a firm, but going public does not ensure that a firm will survive in the public market. One recent example is Crumbs Bakeshop, Inc., a cupcake manufacturer that went public in June 2010, but was delisted by the stock exchange committee in June 2014 due to a significant drop in stock price (Marr, 2014). The success of new companies is an important factor in the economy, and successful IPOs add jobs to

the economy. The purpose of this study was to determine if financial ratios are an indication of the future performance of an IPO.

Background of the Problem

Organizational leaders use the financial statement information of their firm to calculate financial ratios that assess how well the firm is performing in a specific area (Ak, Dechow, Sun, & Wang, 2013). In addition, these ratios can indicate the strength of a firm and its future performance (Agyemang & Agalega, 2014). ROE serves as a link between the income statement and the balance sheet of a firm and is an indicator of how much profit a firm generates with the money invested. Investment bankers establish the IPO price, and ROE is a significant determinant in IPO pricing (Wang, 2013). Like ROE, the primary use of ROA in the business community is to identify company performance.

Analysts calculate ROA by dividing the net income of a firm by the average total assets; this provides a measure of how well company leaders use company assets to generate revenue. Firms with higher debt or financial distress levels achieve lower returns, and distressed firms have a low ROA ratio (Chen, Novy-Marx, & Zhang, 2011). Identifying and addressing performance issues within an IPO could help strengthen firms and prevent firms from failing on the stock exchange.

The high percentage of IPOs delisting is a concern for leaders in the business community. New firms provide jobs in the U.S. economy, and if the new firm fails then these jobs are lost, which negatively affects the economy. Not every firm will be successful, but identifying indicators of long-term performance is beneficial to all IPOs.

The lack of in-depth information on the impact of ROE and ROA on long-term performance indicated the need for further research.

Problem Statement

The IPO is a critical step as the firm transitions from being privately held to being publicly traded, but the IPO process has challenges for firms, private investors, entrepreneurs, and venture capital investors (Latham & Braun, 2010). Of firms that go public, 47% delist due to suspension, liquidation, mergers, or other reasons within the first 5 years of going public (Espenlaub, Khurshed, & Mohamed, 2012). After 10 years, only 29% of the firms are still operating (Kenney, Patton, & Ritter, 2012). The general problem was that when IPOs fail, people lose jobs and the impact on the economy is negative. The specific business problem was that some business leaders do not know how the financial ratios of their firms at the time of the IPO predict their firm's future financial performance.

Purpose Statement

The purpose of this quantitative correlational study was to investigate the relationship between the ROE and ROA of firms prior to the IPO and the firms' market value after 5 years. The independent variables include the ROE and ROA at the time of the IPO. The dependent variable was the change in market capitalization of the IPO from Year 1 to Year 5. The implications for positive social change include the potential to provide additional information to business managers, entrepreneurs, and venture capital investors who are considering taking their firms public and to investors considering investing in emerging companies.

Nature of the Study

This quantitative study served as a strong foundation for understanding the relationship between ROE, ROA, and the market capitalization of an IPO. The focus of quantitative analysis was finding patterns in the variables and finding consistency or stability within those patterns (Fairweather & Rinne, 2012). If qualitative research is exploratory and is associated with open-ended questions to gain a better understanding about why a particular problem exists (Farrelly, 2013b), in this study, the quantitative methodology was suitable for deductive testing and investigating whether relationships exist between ROE, ROA, and market capitalization.

Each ratio was a calculated ratio derived from the financial data of a company. The ratios are used to examine the relationships between different variables. A correlational design involved examining the relationship between two or more variables (Farrelly, 2013a). One design considered for this study was structured interviews among professionals within the investment profession to determine how they believe ROE, ROA, and market capitalization are related. One weakness to this method is that the researcher could influence the respondents; another weakness was that the researcher would decide which items were important or unimportant (Farrelly, 2013a). There was a potential of adding additional bias to the study using a structured interview design. The purpose of the study was to focus only on the relationship between ROE, ROA, and market capitalization rather than the professional views of individuals. Therefore, a correlational design was the correct choice for this study.

Research Question and Hypotheses

This quantitative correlational study investigated whether a relationship exists between the financial ratios, ROE and ROA, and the long-term performance of IPOs. The Standard and Poor's Compustat database contained the financial information for publicly traded firms, including the information for the independent variables, ROE and ROA used in this study. The dependent variable for the study was market capitalization. The research question for the study was as follows:

Is there a statistically significant relationship between the ROE, ROA, business sector, and market capitalization of IPOs?

Quantitative studies inquire into a relationship between independent and dependent variables. Quantitative studies have hypotheses, and the traditional approach is a null and alternative hypothesis (Farrelly, 2013a). For this study, they were as follows:

$H1_0$: There is not a statistically significant relationship between the Day 1 ROE and the change in market capitalization of the IPO from Year 1 to Year 5.

$H1_a$: There is a statistically significant relationship between the Day 1 ROE and the change in market capitalization of the IPO from Year 1 to Year 5.

$H2_0$: There is not a statistically significant relationship between the Day 1 ROA and the change in market capitalization of the IPO from Year 1 to Year 5.

$H2_a$: There is a statistically significant relationship between the Day 1 ROA and the change in market capitalization of the IPO from Year 1 to Year 5.

$H3_0$: In none of the nine business sectors, the Day 1 ROE metric will relate to the change in market capitalization of the IPO from Year 1 to Year 5.

$H3_a$: In at least one of the nine business sectors will the Day 1 ROE metric relate to the change in market capitalization of the IPO from Year 1 to Year 5.

$H4_0$: In none of the nine business sectors, the Day 1 ROA metric will relate to the change in market capitalization of the IPO from Year 1 to Year 5.

$H4_a$: In at least one of the nine business sectors will the Day 1 ROA metric relate to the change in market capitalization of the IPO from Year 1 to Year 5.

Theoretical Framework

The theoretical framework of a study indicates where the research fits into previous studies and identifies theories used in conducting the research. For this study, the theoretical framework included shareholder theory and financial ratios models as links to existing research on IPO performance. A review of research on IPOs revealed that several theories are possible for this study, but one theory would not capture the purpose of the study.

For this study, financial ratio models were the basis for the ROE and ROA as an indicator of the long-term performance of an IPO. Researchers have used financial ratio models, such as the Altman *Z* ratio, to determine the financial health of companies and their survivability (Agyemang & Agalega, 2014). Edward Altman developed the Altman *Z* ratio in 1968, which calculates working capital/total assets, retained earnings/total assets, earnings before interest and tax/total assets, market value/book value of debt, and sale /total assets (Borghesi & Pencek, 2013). The Fama French three-factor model, developed by Eugene Fama and Kenneth French in 1993, uses a ratio model to determine abnormal stock returns (Choi, Lee, & Megginson, 2010). This three-factor model

revealed that ROE is a significant price determinant but is not significant as a predictive power for growth in gross domestic product (Wang, 2013). With the inclusion of ROA into the Fama French model, the new model outperforms the traditional asset pricing models when explaining a wide range of anomalies (Chen et al., 2011). Financial models in the existing research include ROE and ROA in the calculations for long-term performance, which is why ROE and ROA were the dependent variables for this study.

The dependent variable for this study was the change in market capitalization over a 5-year period. Market capitalization is a product on the stock value and the number of shares currently available. Market capitalization in a firm is an indication of how well the firm is providing financial growth and profit for shareholders, which is why this study included shareholder theory. Investors in IPOs have a goal for that investment to make a profit, and this study involved investigating how ROE and ROA may relate to the growth of market capitalization for an IPO. Milton Friedman received credit for the shareholder theory, which has widespread support in the academic finance community (Danielson, Heck, & Shaffer, 2008). According to shareholder theory, management decisions maximize the present value of future cash flows, also considered the intrinsic value of the firm, to maximize profits for the benefit of all shareholders (Danielson et al., 2008). The stock price is the focus for intrinsic value, and market capitalization includes the stock price to measure the profitability of the firm for the shareholders. If a business does not maintain a profit, it inevitably fails. The focus of shareholder theory is the profitability and success of a firm, and the focus of this study was determining whether ROE and ROA relate to market capitalization, which is why shareholder theory related to the study.

Definition of Terms

Several terms appear repeatedly throughout this study, some of which are abstract and might convey different meanings based on the context of the subject matter. It is therefore appropriate to define them for the reader.

Financial ratios. Financial ratios are transformations of accounting data from the financial statement of a company that provide some information about the firm. The ratios indicate something about the firm's activity such as the relationship of the firm's current assets and its current liabilities (Agyemang & Agalega, 2014).

Initial public offering. An IPO is the process of making a private company accessible to investors on the public market. The IPO is the first time a firm has public ownership with access to external financing (Aslan & Kumar, 2011).

Return on assets. The ROA ratio derived from the sum of net profits and interest after taxes divided by the average of assets (AlOmoush & AL-Shubiri, 2013). The ratio measures how efficiently firm leaders use assets to generate earning.

Return on equity. The ROE ratio derived from net income divided by total equity (Mainul Ahsan, 2012). The ratio measures the profitability of a firm based on the amount of profit generated on the investments made by shareholders.

Shareholder theory. The shareholder theory states that it is the sole purpose of a company is to maximize profits for shareholders (Danielson et al., 2008).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are ideas or beliefs considered true without any proof, and this study required assumptions based on its design. The assumption is that firm leaders provide accurate financial information in their reporting. Firm leaders provide financial information to the SEC prior to the first offering. The SEC's mission is to protect investors, maintain a fair and orderly market, and facilitate capital formation (Prosserman, 2011). Information provided by analysts at the SEC ensures the quality and reliability of the data. The Compustat database was the source of financial information for the study, and it was assumed that the database contained accurate information.

Limitations

Certain conditions beyond my control limited this quantitative study. Firms that go public in bull markets have a lower survival rate when compared to firms that go public in a cold market (Chang, Kim, & Shim, 2013). The years 2008 and 2009, during which there was a severe market decline, had the lowest number of IPOs for the previous 18 years (Ritter, 2011). The firms investigated in this study went public during a down market, which could have affected the findings. In addition, this study only included IPOs, and because this was a narrow population, the results do not generalize to the larger population of all publicly traded companies.

Delimitations

Delimitations are the boundaries that confine the research of a study. In this study, two financial profitability ratios, ROA and ROE, were the only independent variables.

Other financial ratios—such as gross margin, profit margin, return on capital, and efficiency ratio—also provide profitability information to a company, but they were not part of this study. Delimiting the number of financial ratios used confined this research study to a narrow scope.

The scope of this study included IPOs from 2007 to 2009. This range covered 3 years and allowed each firm 5 years of performance data. In addition, this range enabled the study to include the most current data available on the topic. The IPOs were only for new issues and excluded specific types of firms based on previous research (H.-E. Hsu, 2010; Johnson & Sohl, 2012a, 2012b; Krishnan, Ivanov, Masulis, & Singh, 2011). A discussion of the specifics of these exceptions appears in the section on participants. The scope did not include secondary offers for firms already traded on the New York Stock Exchange or the NASDAQ.

Significance of the Study

Contribution to Business Practice

In the business life cycle, the IPO is an important milestone, but after 10 years, only 29% of firms are still in operation (Kenney et al., 2012). The 2,766 firms that went public between 1996 and 2010 had 5.062 million employees (Kenney et al., 2012). Increasing the number of employees is an indication of growth, and both business owners and shareholders have interests in growth and profits. This study involved exploring the relationship of ROE and ROA to the long-term market performance of IPOs, which adds to the knowledge that entrepreneurs and investors can use to make better decisions that affect their business endeavors.

Several factors influence the decision to take a firm public. The first reason could be to diversify investments for the owner and primary investors or to increase capital for future endeavors of the firm. Regardless of the reason, the survivability of the firm is a consideration. If a relationship exists between ROE or ROA and long-term performance, then identifying financial aspects of a firm could strengthen the decision to go public or delay the public offer until the firm is in a stronger position. This study adds value by helping to determine the best time to take a new firm public to ensure the longevity of the firm, which, in turn, provides employment.

Implications for Social Change

Larger companies do not have the same growth percentages that smaller companies achieve, and new companies are the building blocks of the economy. Increasing the likelihood of success for new IPOs bolsters the economy, and the smaller companies increase their number of employees. After IPOs, the smaller companies increased their number of employees by 45% to 7.334 million, which averaged out to 882 employees per IPO (Kenney et al., 2012). Ensuring the IPO survivability rate increases can ensure that these new positions remain in the workforce.

A Review of the Professional and Academic Literature

Introduction

The long-term performance of firms is a topic of interest for entrepreneurs, private investors, venture capital investors, business angel investors, and other stakeholders. Any entity invested in the public market has an interest in the long-term performance of its investments. Researchers measure firm performance for IPOs as pre-

IPO, post-IPO short term, and post-IPO long-term. Researchers have investigated different sources of influence on public firms' performance.

Some researchers have examined long- and short-term performance and considered the leadership of the firm, which includes the entrepreneur and the governance of the firm. Other researchers have looked at performance in different trading markets, including different methodologies, to determine the influences and the ways to measure the results. Researchers have created and combined models to identify individual variables that may affect performance. The Fama French model that includes regression to determine long-term performance is one example found during the literature review that has been of interest in recent research (Cheng & Renucci, 2013). This section involves exploring the current research on firm performance and narrows to a specific emphasis on the research concerning IPO performance and the relationship with ROE and ROA ratios.

Going public is a significant milestone in the life cycle of a company. Initial public offerings are a common topic among researchers, and the purpose of the research varies. An IPO refers to the first time a firm has exposure to the public financial market, and valuing a relatively unknown company is a challenge for the underwriters of the IPO as well as potential investors. Understanding how the leaders run a company, raise revenue, pay debts, and seek growth is important to investors but is difficult to determine. Two ratios frequently used to evaluate firm performance are ROE and ROA.

The ROE and ROA ratios are both from DuPont formulas. F. Donaldson Brown developed the DuPont model of financial analysis in 1914 (Mainul Ahsan, 2012). Return

on assets is the result of net income divided by total assets and is an indicator of how well the leaders of a company use company assets to produce revenue. Return on equity is the result of net income divided by shareholder equity and is an indicator of how well the leaders of a company use the equity provided by shareholders to increase revenue. Investors use both ratios frequently to measure the financial performance of a company. Researchers have investigated these ratios, but investigating the relationship between ROE and ROA with long-term performance has remained relatively unexplored. Further investigation is necessary on the predictive power of financial ratios on IPO performance (Ak et al., 2013).

Search Strategy for the Literature Review

I obtained the references for this study from targeted searches from a variety of databases: Google Scholar, Thoreau Multi-Database, ABI/INFORM complete, Business Source complete, and Emerald Management. The keywords for the search were: *return on equity, return on assets, long-term performance, ROE, ROA, IPO performance, company performance, firm performance and financial ratios*. Different combinations yielded unique results. The search parameters expanded based on the results of the initial search and key words from relevant articles. By reviewing the titles of the reference and the abstracts, I was able to identify relevant sources. I identified more than 200 references during this process, with 140 emerging as relevant to this study. The focus was on peer-reviewed articles from 2010 to 2014, but the review includes some articles outside this range based on their relevance to the study topic. Of the references, 90% were peer reviewed and published between 2010 and 2014.

This section begins with a discussion of entrepreneurial impact and early investors. Then there is a review of the research on how governing boards affect firm performance, and then the review of how the research leads to a discussion on the process of introducing a new IPO to the public market. The last part of the review includes a summary of current research on financial ratios, IPO long-term performance, and a description of potential gaps in the literature.

Shareholder Theory and IPO Performance

Researchers have measured long-term performance in a variety of ways. Capital gains are at the center of most of these methods. Beyond measuring performance, the goal for each company is to be profitable, and this concept aligns with shareholder theory.

The premise of shareholder theory is that management of a company will make decisions for the benefit of its shareholders. Friedman received credit for shareholder theory, and the theory has widespread support in the academic finance community (Danielson et al., 2008). The postulates of shareholder theory are that there is a moral right to property, the shareholder's rights of ownership are the same as an individual's, and the relationship between shareholders and management is voluntary (Mansell, 2013). The key construct of the theory is the emphasis on maximizing the present value of future cash flows, which is also the intrinsic value of the firm, for the benefit of all shareholders. The stock price is the focus for the intrinsic value, and the goal is to increase the stock price (Danielson et al., 2008). If a business does not maintain a profit, it inevitably fails,

so the primary purpose of the business is to profit. This is a linear concept, and other views have a more holistic approach to the purpose of the firm.

Like any theory, shareholder theory has critics. An opposing study incorporated the argument that shareholder theory includes an assumption that only the shareholders own the firm and does not include the labor and management that are a part of business decisions (Fontrodona & Sison, 2006). The belief is that advocates of shareholder theory will eventually have to abandon the view that shareholders own a business. These beliefs align with stakeholder theory in that all the parties involved in the firm are a consideration when making decisions for the firm. Contrary arguments to shareholder theory favor stakeholder theory, and there is a growing body of research for stakeholder theory (Mansell, 2013). According to stakeholder theory, a responsibility exists to all stakeholders, which includes employees, suppliers, customers, and consumers (Mansell, 2013). Leaders of U.S. companies are profit maximizers and focus on investment returns and capital gains (Seber & Arslan, 2012). The focus of this study is on the long-term financial performance of firms. Advocates of the shareholder theory support an orthodox belief that maximizing financial value is the main goal for a corporation, which is why shareholder theory is one of the theoretical lenses chosen for this study.

Taking a company public is a step in the life cycle of the firm, and the goal for the firm is to grow and be profitable. Researchers have found many factors that affect the performance of an IPO. This section includes a discussion of recent research related to IPO survivability, performance over the short term, and long-term performance.

IPO failure and survival. Risk assessment is part of business planning in that the leaders in each firm evaluate each strategy for potential risk. Several variables can contribute to IPO firm failures, but the lack of historical information makes it more difficult to predict the financial performance of the firm (Demers & Joos, 2007). A more accurate model predicts the probability of failure using accounting variables such as research and development expenditures; selling, general, and administrative expenses; gross profit margins; accumulated deficit; and sales (Demers & Joos, 2007). The model demonstrates how accounting variables can have a predictive quality when examining the potential of a firm. The market a firm interacts within is also a factor to consider when examining the potential failure of a firm.

Each exchange market throughout the world is slightly different. In the United States, the failure rate for IPOs increases 4–6% per year and reaches 20% by Year 5 (Kooli & Meknassi, 2007). Larger companies target IPOs and acquire an additional 25% of the IPOs within the first 5 years (Kooli & Meknassi, 2007). The long-term survival rate in the United States is not an accurate representation of the public markets of other countries. Each market has unique characteristics that can have an effect on the survivability of a new firm.

Unlike in the United States, the Canadian and United Kingdom markets have different factors that influence the survivability of IPOs. Smaller IPOs comprise the Canadian market, whereas the U.S. market has large IPOs (Carpentier & Suret, 2011). The failure rate in Canada is lower because a company can easily go public in Canada before reaching profitability, or even the revenue stage, and the delisting criteria are

different (Carpentier & Suret, 2011). For IPOs in the United Kingdom, nominated advisers (Nomads) guide the leaders of new firms, and these advisers have a significant impact on the survivability of a firm (Espenlaub et al., 2012). Having experienced advisers and different market criteria has an impact on the survivability of new firms. This difference illustrates an additional factor that indicates the difficulty in researching survival rates for companies on a global scale. Different criteria and practices within different markets affect the survivability. New firms are still susceptible to failure.

Different markets around the world have unique criteria and variables that affect the performance and survivability of new firms. The effects of an IPO failure have a negative impact on the economy and negatively influence the wealth of investors and entrepreneurs, which makes understanding the factors that affect IPO failures of interest to entrepreneurs, stockholders, and society (Reutzel, 2012). Survivability of IPOs is a broad topic when considering the number of variables involved. Researchers continue to investigate market performance in all the world's markets for both short- and long-term performance of IPOs.

IPO short-term performance. Researchers focus on both long- and short-term performance. Short-term performance refers to days and weeks rather than the years that serve as an indicator for long-term performance. From the short-term perspective, researchers also refer to the underpricing phenomenon as the ex-ante premium. Ex-ante premium is the average difference between IPO offer price and the first-day closing price (Guo, 2011). Based on the first-day returns for an IPO, a connection between the ex-ante premium and market performance exists, and the IPO first-day return correlates with

measures of risk and is a significant indicator for stock market returns (Guo, 2011). Predicting market returns is valuable to business owners and investors, and stock market returns are predictable (Guo, 2011). Market value expresses the performance of the company and the achievements of the company (Nakhaei, Abdul Hamid, & Anuar, 2013). This market capitalization for a firm is one variable used to predict market performance, but researchers have used additional variables to predict performance. Some other variables researchers have used include ROE, ROA, asset rotation speed, own equity, debt rate, current asset ratio, liquid assets, total balance sheet, and net income. Some of these variables appear in discussions later in this study.

Returns for IPOs within the first few days of trading vary between different markets. The difference is primarily due to variations in regulations, contractual mechanisms, and the general characteristics of the markets (Fauzi, Wellalage, & Locke, 2012). The U.S. IPO market and others have positive returns in the first few days of trading, but New Zealand IPOs exhibit negative abnormal returns, which are similar to the findings for German and Japanese IPOs (Fauzi et al., 2012). In addition, firm size, financial risk, tax, and no debt tax shield each has a significant effect on firm performance (Abbas, Bashir, Manzoor, & Akram, 2013). From 2010 to 2011, IPOs in the mineral and chemical sectors performed well in India, yet power, real estate, and finance IPOs suffered losses (Govindarajan, 2012). Again, each market has unique characteristics that affect short-term performance, but the performance in different sectors is another factor to consider. Long-term performance for IPOs can be different from the first few days of trading.

IPO long-term performance. Different methods for tracking long-term performance are present in the existing research, and each can yield varying results. Within the health care system in the United States, the Altman *Z* ratio can predict if a company will be in the top or bottom quartile of all IPO returns (Borghesi & Pencek, 2013). Edward Altman developed the Altman *Z* ratio in 1968, which uses working capital/total assets, retained earnings/total assets, earnings before interest and tax/total assets, market value/book value of debt, and sales/total assets (Borghesi & Pencek, 2013). The Altman *Z* ratio predicts how companies within the health care industry would perform over a 1-year period, which is an indication of how to use ratios to predict future performance of a firm.

Long-term performance measurements vary throughout the literature. The Altman *Z* ratio helped to determine the financial health of 15 Ghanaian companies over a 5-year period and revealed that all were failing, but the Altman *Z* ratio does not include qualitative components of a business (Agyemang & Agalega, 2014). Buy and hold abnormal returns (BHAR) and cumulative abnormal returns (CAR) are two of the predominant methods for measuring IPO performance. The BHAR and CAR methods are different over long time horizons (Choi et al., 2010). In the U.S. markets, using BHAR revealed that Year 3 had the highest abnormal returns, with an average of -22.41% (Smith, 2013). In the Turkish market, CAR indicated that IPOs do not significantly underperform or overperform, yet BHAR indicated that IPOs underperform at 2, 3, and 5 years (Erdogan, 2010). Even though BHAR and CAR have discrepancies, the results align with Fama's theory developed in 1998 that states' long-term return anomalies can

be due to methodology. Most anomalies tend to disappear with the use of different methods (Erdogan, 2010), which causes concern. The Fama French three-factor model involves evaluating risk factors involved in firm performance, and researchers have used it in IPO research.

The Fama French three-factor model regression provides information on long-term performance. Using the Fama French three-factor model confirmed existing research in the United States on the significant long-term performance of IPO stocks when measuring abnormal returns using event time (Cheng & Renucci, 2013). The underperformance of IPO stocks does not exist when adjusting for risk. When using an alternate three-factor model to the capital asset pricing model with modifications to the Fama French three-factor model, and incorporating ROA into the model, the new model outperforms the traditional asset pricing models when explaining a wide range of anomalies (Chen et al., 2011). The inclusion of ROA into the model is an indication of how financial ratios can add to the accuracy of pricing models and may translate across different markets.

Tobin's Q ratio is the sum of market value of equity, the book value of preferred stock, and the book value of total debt divided by the book value of a firm's assets (H.-E. Hsu, 2010). This ratio measures a firm's performance. Financial ratios have a place in analyzing, measuring, and predicting a firm's performance more objectively than other methods. A discussion in the Financial Ratios section below includes additional detail on research regarding the usefulness of these financial ratios. The market has an impact on long-term performance.

Some IPO markets perform different from the majority of markets. In most markets, IPOs have high initial underpricing but demonstrate negative long-term performance (Turgay & Zhakanova, 2013). However, in the Russian market, IPOs overperform at Month 12 and continue to overperform for 5 years (Turgay & Zhakanova, 2013). The Greek market overperforms in the short term, but this overperformance lasts longer than other markets for up to 3 years before the IPOs begin to underperform (Thomadakis, Nounis, & Gounopoulos, 2012). For the French market, firms with high levels of analyst coverage outperformed firms with less coverage over the 3- to 5-year period (Boissin & Sentis, 2014). Financial analysis had an impact on IPO performance in France. Again, IPO long-term performance has anomalies depending on the market. Regardless of the market, it is difficult to place a value on a new emerging company.

With few data, it is difficult to value a firm, so the quality of governance of the firm deserves attention as a factor in predicting short-term performance. In U.S. markets, firms with reputable management also have a reputable underwriter, which increases the credibility of the firm (Chemmanur, Paeglis, & Simonyan, 2010). In addition, board independence increases the IPO premium and long-term performance, and the social ties within management can create a benefit to the firm and minimize internal conflicts (Chahine & Goergen, 2013). However, the board's independence does not have a positive impact on firm performance in the United States (H.-E. Hsu, 2010). In the French market, a positive and significant relationship exists between the concentration of ownership and long-term performance, but institutional ownership has a negative impact on abnormal returns (Boubaker & Mezhoud, 2012). Contrary to findings pertaining to the U.S. markets

(Chahine & Goergen, 2013), a neutral relationship emerged between board independence and long-term abnormal returns in the French market (Boubaker & Mezhoud, 2012). This finding leads to a question about the reliability of the governance of a firm in valuing the firm and predicting future performance. The subjectiveness of evaluating the influence of governance on performance leads to some contradiction, as discussed in detail in another section covering how owners, investors, and management teams affect IPOs.

The IPO Strategy

The various variables identified by previous researchers could act as signals to investors and managers to help guide their decisions. Whether management's decision is to pursue an IPO, remain a private entity, or seek acquisition, indicators are available. These indicators could also help investors in their decision to buy shares of an IPO. Researchers have also studied the financial ratios of the firms to see if they can indicate the future performance of IPOs.

Taking a company public as an IPO is a step in the life cycle of a firm, and the goal for the IPO or firm is to grow and be profitable. Pursuing an IPO is an exit strategy for business owners and principal investors of firms. The average number of IPOs per year from 2001 to 2009 declined by 80% when compared to the annual average from 1980 to 2000 (Gao, Ritter, & Zhu, 2013). The average performance of IPOs in the United States is -1.89%, -32%, and -39% for 1, 3, and 5 years, respectively (Otchere, Owusu-Antwi, & Mohsni, 2013). Some researchers have compared the activity surrounding IPOs and the relationship to the quality of the firm (Williams, Duncan, & Ginter, 2010). Researchers have found many factors that affect the performance of an IPO. This next

section includes a review of recent research related to the exit strategy of IPOs and the factors involved in the strategy. Also discussed is the impact of the owners, investors, and management teams on IPOs, but first the focus is on the exit strategy.

Exit strategy. Investors and entrepreneurs have multiple options for exit strategies. Private equity investors consider their exit strategy early in the process, so they can realize their financial gains (Schmidt, Steffen, & Szabó, 2010). Private equity investors tend to write off nonperforming investments quickly rather than keep them in their portfolio, which serves as strong support for signaling theory (Schmidt et al., 2010). The converse is that if they are taking a firm public, leaders of the equity firm indicate their support of the firm, which can affect future performance as an IPO, and once at the IPO stage, entrepreneurs have another effect on performance.

Entrepreneurs are the driving force behind business ventures from the beginning of the life cycle. The IPO is the first time entrepreneurs can sell their shares to the public. After entrepreneurs sell a stake in their firm, they do not recognize the inefficiencies stemming from further reductions in the stake (Wagner, 2010). The aforementioned inefficiencies can lead to underperformance for the IPO and affect all stakeholders in the firm. In addition, if entrepreneurs commit to not trading shares for long periods after going public, the payoff to all stakeholders improves, and the value of the firm increases (Wagner, 2010). Long-term performance is a challenge for IPOs, but before facing that challenge, the first decision should be whether to go public or remain private. The decision to pursue an IPO, seek acquisition, and remain a private company is a consideration for entrepreneurs and investors.

Several key factors affect the decision by a firm to go public or seek acquisition. Firms competing in a market without a significant player are more likely to go public than to undergo acquisition (Bayar & Chemmanur, 2011). The findings in a study similar to Bayar and Chemmanur indicated that firms with high debt, low equity, and low research and development expenses or capital expenditures are more likely to remain private entities than become publicly traded (Bharath & Dittmar, 2010). The finding that firms with high debt and low equity remain private indicates that the financial position of the firm is a determining factor for pursuing an IPO. Timing and market conditions have also provided insight to the decisions made concerning exit strategies.

The timing of the initial offering is another concern to consider when pursuing an IPO exit strategy. The stock market goes through various cycles when it performs well or poorly as a whole. The IPO market also goes through similar hot and cold phases. The timing for IPOs can have an impact on the performance of a new firm. Initial public offerings in a hot market are 34% more likely to delist when compared to IPOs in a cold market (Chang et al., 2013). This may seem counterintuitive but is consistent with market timing theory. The decision managers and investors face is whether remaining private is more beneficial than going public.

Business owners, investors, and management teams must decide when to take their company public and determine whether that decision will be beneficial. Entrepreneurs face the decision to maintain control of a company or to accept the diversification benefits of going public (Pástor, Taylor, & Veronesi, 2009). Firms with more volatile or uncertain profitability will have a larger decline in profitability after they

go public (Pástor et al., 2009), which aligns with previous research findings that firms that are more productive and efficient go public more often than less productive firms do (Chemmanur, He, & Nandy, 2010). In addition, out of 4,400 IPOs from 1986 to 2001, 26% of the firms in the sample underwent acquisition within 5 years (Boulton 2011). The survival rate and independence of new IPOs are factors that entrepreneurs and investors should consider before taking their firm public.

Although managers, business angel investors, and venture capital investors have an influence over pursuing an IPO, research also supports the timing of the IPO in relation to the market's opinion. The timing for going public aligns with periods when the valuations within the firm's specific industry are high (Aslan & Kumar, 2011). Incumbent companies experience losses in stock price when an IPO takes place within the same industry (H.-C. Hsu, Reed, & Rocholl, 2010). Many factors can influence managerial decisions about pursuing IPOs. Managers must also consider the cost of an IPO.

Taking a company into the IPO process has associated expenses that can vary depending on the size of the firm. The self-interests of the principal parties (i.e., owners, investors, and managers) in the IPO can cause conflict between the principals, which in turn can increase the costs at the time of the IPO (Dalziel, White, & Arthurs, 2011). The possible conflict between principle parties indicates the significance of ensuring the interests of all parties align to minimize unnecessary costs to the firm. The additional cost associated with the indecision of the principle parties is a financial impact on the firm and may be a cost to the synergistic aspect of the principal parties.

The complexity of taking a firm public makes it difficult for a single framework to capture the various benefits and costs associated with the process (Aslan & Kumar, 2011). The listing expenses play a small role in determining the long-term performance of the firm due to the funds spent on going public rather than on investing in capital projects to increase business (Chipeta & Jardine, 2014). Cost can also involve intangible properties rather than financial. For example, when the benefits of liquidity outweigh the cost of giving up control of the decisions concerning the firm, the firm will go public; however, if the cost of control outweighs the liquidity benefits, the reverse is true and firms go private (Bharath & Dittmar, 2010). Aslan and Kumar (2011) found the cost of going public has a financial impact, and Bharath and Dittmar (2010) found there is also a control impact for entrepreneurs and investors, as both parties identify potential risks associated with taking a firm public. The underwriter primarily sets the value placed on an IPO in the form of the price of the IPO, but establishing this value is an important and difficult step in which many parties may speculate on the true value of the IPO.

The size of a firm can affect the valuation for smaller entities. Data gathered on mature firms may not be relevant to new firms that do not have internal resources and capabilities, and business-to-business relationships can allow them access to critical resources (Xiong & Bharadwaj, 2011). Value can be different when considering the future performance of IPOs. Although social equity is not the topic of this study, it does illustrate the various factors that can affect investor perceptions of a new IPO. Future performance has many variables, and business-to-business relationships can benefit smaller firms long-term.

Long-term institutional investors are sophisticated investors who play a positive role in corporate governance, whereas short-term institutional investors do not. Valuation weight on earning increases and book value decreases as institutional ownership increases (Dhaliwal, Li, & Xie, 2010). The increase in institutional ownership, considered long-term investors, adds to the market performance of an IPO and can lead to credibility of a firm. Credibility will also have an impact on the value of the firm.

Value to an IPO can come in many forms. The stakeholder perspective can aid in identifying performance factors to improve long-term performance (Harrison & Wicks, 2013). According to stakeholder theory, treating stakeholders well will lead to a more profitable firm and better long-term performance (Harrison & Wicks, 2013). The value stakeholders find relevant translates to value that firm management should consider pursuing to increase the perceived value of a firm, which relates to prospect theory in which the possibility of unknown outcomes is not a factor when investors value an IPO (Ma & Shen, 2003). Instead, investors overweight the lower probability outcomes and underweight the medium- and high-probability outcomes (Ma & Shen, 2003). Investors determine the value of an IPO based on their personal viewpoint, which is why it is more difficult to value a new firm without performance data. Seasoned equity offerings (SEOs) have more performance data to aid in valuing the offering.

Even though SEOs are different from IPOs, they still have similar value issues. Seasoned equity offering are similar to IPOs in that there is an exceptionally high level of scrutiny by capital markets, investors, analysts, and regulators. Overvaluation at the time of the SEO is more likely when managers engage in real activities manipulation, which

could mislead investors (Roychowdhury, Kothari, & Mizik, 2012), which raises a concern of integrity among business managers and owners. A detailed discussion on the human element involved in pricing new issues appears in the section covering underpricing, but owners, investors, and management team can affect an IPO.

Owners, investors, and management teams affect the IPO. Early investors within a firm can include entrepreneurs, venture capital investors, and business angel investors, and some IPOs are primarily family owned, which can have a different impact on the IPO. The actions of entrepreneurs have affected the performance of companies (Bayar & Chemmanur, 2011). Business angel investors and venture capital investors can both add value to a firm and guide that firm toward pursuing an IPO (Bruton, Filatotchev, Chahine, & Wright, 2010). Business angel and venture capital investors can meet the financial needs of a start-up company, but research has shown these different investors have a different impact on the firm. Additionally, researchers have explored the topic of venture capitalists' and business angels' influence on IPOs as well as the management team's characteristics.

Entrepreneurs have an impact on the future performance of their firms. In the early stages of the life cycle, their drive and attitude have a lasting impression on the business. Failure is part of the experience of being an entrepreneur, but the exit strategy of the entrepreneur and the decision to go public or not can have an effect on the firm's financial performance.

When entrepreneurs and investors make a decision, the company position, timing, and current market conditions are legitimate concerns. Firms of lower quality are more

likely to experience acquisition because the entrepreneur and investors seek to exit the business completely, which is not possible with an IPO (Bayar & Chemmanur, 2011). Stock market performance and monetary policy play an important role in providing a favorable environment for a firm to go public, and stock market performance and volatility play the most important role in timing the IPO (Tran & Jeon, 2011). In some cases, the firm pursues the IPO but the manager or entrepreneur decides to withdraw from the IPO. Managers or entrepreneurs with low equity positions within firms that also have low advantage and managers or entrepreneurs with high equity positions within firms that have high advantage are both more likely to withdraw from an IPO (Latham & Braun, 2010). Low equity combined with low debt is an indication that the firm will not go public. The same is true for high equity combined with high debt. Researchers have also studied the personal characteristics of managers to help quantify their decision process.

The IPO is a critical step in the life cycle of a firm. Researchers have examined the impact entrepreneurs have on the IPO and developed an entrepreneurial intention questionnaire that examined the ease and difficulty individuals have when becoming entrepreneurs (Linan & Chen, 2009). Entrepreneurs' attitude toward the entire entrepreneurial process is a factor in IPO performance in that their method of facing failure has an impact on the future success of their firm.

How entrepreneurs view company failures can influence their overall attitude because these types of failures can have a traumatic effect; furthermore, the failures entrepreneurs have faced indicate their attitude and drive toward building a successful

firm (Cotterill, 2012). The experience of failure may aid entrepreneurs in avoiding similar errors with the next venture they pursue. Each venture has its own challenges, and the exit strategy for an entrepreneur and investors is a consideration that both the entrepreneur and the investors must keep in mind. Pursuing an IPO is one exit strategy that benefits all the stakeholders in the firm.

The IPO is an exit strategy for the entrepreneur and equity investors, and each can affect the performance of the company, but the focus of venture capital investors and business angel investors varies. The involvement of business angel investors typically occurs in the early stages of the life cycle for the business. Less information is available on business angel investors because they are wealthy, successful individuals, and limited reporting requirements on their business activities are available (Bruton, Chahine, & Filatotchev, 2009). Business angel investors invested in 30% of the IPOs from 2001 to 2007 (Johnson & Sohl, 2012b), which illustrates the importance of business angel investors on firms that become large enough to go public.

Business angel investors use their experience to guide new entrepreneurs, which could put those entrepreneurs on the path to success and move them toward an IPO. Business-angel-supported IPOs are more effective in terms of asset turnover, and net sales are four to seven times higher (Levis, 2011). Business angel investors remain focused on the firm's performance (Bruton et al., 2010). For example, private-equity-backed firms in Brazil had a CAR of 13.72% after the first year and other firms averaged 3.23% (Minardi, Ferrari, & AraujoTavares, 2013), which is a different characteristic from a venture capital investor.

After an IPO, venture capital investors tend to shift focus to the investors of their fund (Bruton et al., 2010). Although the findings in one study indicated that business angel investors focus on the performance level of the firm (Bruton et al., 2010), a later study indicated the operating performance of firms is better with venture capital investors than with business angel investors (Johnson & Sohl, 2012a). This contradiction within the research led to the question whether venture capital investors or business angel investors have a greater impact on a new IPO. With different focuses, business angel investors and venture capital investors do have an influence on firm performance.

Not every company goes public for various reasons, but venture capital investors do affect that decision. Venture capital investors screen companies searching for high growth, innovation, new technologies, or entrepreneurial projects, and they bring professional experience and design financial contracts that aid in supporting the growing companies (Chahine & Saade, 2011). Investors view equity-backed firms as high-quality companies for investment purposes and are potential acquisitions for larger firms (Gill & Walz, 2013). Therefore, private equity investors affect the valuation of a firm. Venture-capital-backed firms also experience less underpricing (Chahine & Saade, 2011). In addition to the valuation of the firm, private equity investors affect performance after the IPO. In a French study, venture-capital-backed firms covered by analysts had a 7.31% increase in the first year, whereas venture-capital-backed firms not covered by analysts had a 9.18% decrease (Boissin & Sentis, 2014). Based on the equity to book ratio and ROA, venture-capital-backed IPOs outperformed non-venture-capital-backed IPOs 3 consecutive years after the IPO on the Taiwanese market (Shu, Yeh, Chiu, & Ho, 2011).

Equity investment is part of the life cycle of new firms, and researchers continue to explore their influence on IPO long-term performance. Researchers have also investigated the IPO strategy for family-owned businesses.

Family-owned businesses have also received some attention in the IPO market. The leaders of family-controlled businesses do not pursue venture capital investors and tend to hire less-well-known underwriters when pursuing an IPO (Daugherty & Jithendranathan, 2012). The first-tier group within one study achieved a 1-year adjusted market return of 26.93%, whereas the second-tier underwriters achieved a 17.42% adjusted return (Lee, 2011). The overall performance of family-owned IPOs could produce lower returns than their counterparts achieve. However, appointing independent directors of the board, obtaining a reputable underwriter, and family members retaining shares after the IPO improve market performance for family-owned IPO firms (Ding & Pukthuanthong, 2013). In addition, the reputation of the investment bank has a positive impact on firm performance, ROE, and ROA (Chipeta & Jardine, 2014). Compared to competitors, family-owned businesses that adjust their structure and add independent board members can lead to better long-term performance.

The governance of a firm refers to the board members and management team. Their actions and reputation are intangible and provide a competitive advantage for a firm after an IPO. Firm leaders can enhance their reputation by ensuring their board is not too small, has a greater portion of outsiders, and has tenures that are neither too long nor too short (Musteen et al., 2010). Firms with larger boards do perform well, but when considering ROE, larger boards have a negative impact on ROE for firms (Chipeta &

Jardine, 2014). The characteristics of the board represent signaling information to the business community and support the institutional view of firm legitimacy and reputation (Musteen et al., 2010). This legitimacy signals to the market and influences the performance of the firm's stock. Because an IPO has not interacted with the market before, this corporate reputation has an effect on market sentiment. In addition, open communication among board members helps a firm transition from a small firm to a larger firm (Geldenhuys & Cilliers, 2012). The governance of an IPO is another topic investigated by researchers to identify any impact it may have on long-term performance for the firm and the IPO.

Researchers have found that the board of directors' independence both adds value and does not add value to a firm. In New Zealand, the relationship between the independent director and ROE has a negative correlation (Koerniadi & Tourani-Rad, 2012). This finding was different from finding a neutral relationship between board independence and long-term abnormal returns for French companies (Boubaker & Mezhoud, 2012). Board independence increases the IPO premium and increases long-term performance for companies in the United States (Chahine & Goergen, 2013). The social ties within management can create value to the firm and minimize internal conflicts (Chahine & Goergen, 2013). Researchers using a board of governance to predict future IPO performance have found mixed results in different countries. It is difficult to conclude that governance is a reliable predictor of IPO performance. The experience of the board is another characteristic that is a topic of study.

Following the public offer, the governance of the firm continues to have an impact on long-term performance. Appointing independent directors of the board, obtaining a reputable underwriter, and family members retaining shares post-IPO improve market performance for family-owned IPO firms (Ding & Pukthuanthong, 2013). Researched firms traded in the Taiwan exchange aligned with research in the U.S. market that had similar conclusions (Chahine & Goergen, 2013).

Aside from the independence of a board, the chief executive officer's (CEO's) characteristics can influence a company. The CEO's network, age, and experience level have an impact on reducing the time to IPO (Yang et al., 2011). In addition, younger and inexperienced CEOs quickly pursued IPOs (Yang et al., 2011). Yang et al. (2011) limited their research to the time of the IPO and did not extend out firms' performance after the public offer, which raises the question of how much of an impact CEO characteristics have on the long- and short-term performance of an IPO. The social network extends beyond the CEO to the board of directors.

The board of directors' social ties to the top management team is another area of concern for IPO performance. The social ties between the top management team and the board based on the same foreign nationality, same school, same previous employer, and same club increased the IPO premium as well as long-term buy and hold returns, whereas family ties had a negative effect on the performance of the IPO (Chahine & Goergen, 2014). These tie directly to the relationship of the management team research identified in previous sections and to the family ownership aspect of IPO performance. This information between the board and the management team illustrates some of the same

issues with corporate governance and IPO returns. Research on IPOs concerning corporate governance has had mixed results. Using governance to predict future firm performance requires further investigation.

When the leaders of a new firm pursue an IPO, the management team must communicate with potential investors about the company. The prospectus contains all the financial facts, board member information, market, and other information so investors can make an informed decision about investing in a firm. Researchers have used prospectuses to gain information to use to value firms, determine if the communication methods are beneficial to a new IPO, and show how the prospectuses may affect future company performance or indicate future performance.

The word choice within the prospectus is a recent topic of research regarding the communication method of firms. When the prospectus wording is ambiguous, investors tend to require a higher premium before they will hold shares in the company (Arnold, Fishe, & North, 2010). The premium refers to a lower price that is underpricing the firm to compensate for the higher risk, and underpricing correlates to the measure of negative ambiguity (Arnold et al., 2010). Underpricing is a common phenomenon in IPOs and SEOs. Seasoned equity offerings are similar to IPOs, except SEOs are an additional offering for an already publicly traded company, so this type of offering faces similar phenomena as IPOs. Investor sentiment had a positive and significant impact on SEO performance (Deng, Hrnjic, & Ong, 2012). Word choice within the prospectus and other communications also affects firm performance (Ferris, Hao, & Liao, 2013).

Conservative wording within the prospectus also contributes to underpricing. A study of IPOs from 1999 to 2005 revealed a significant relationship existed with underpricing when organizational leaders increased conservative wording in the entire prospectus, especially the risk factor and management discussion and analysis sections (Ferris et al., 2013). In addition, underpricing highly correlates to the measure of negative ambiguity (Arnold et al., 2010). Additionally, a significant and negative relation between the management discussion and analysis section of the prospectus and post-IPO performance exists for nontechnology IPOs (Ferris et al., 2013). Written communication affects the firm, and the prospectus contains financial information and ratios used by investors. According to signaling theory, investors are not in a position to identify companies of high quality, so firms that provide additional information indicate their higher status among the competition (Abdul-Baki, Uthman, & Sanni, 2014). The IPO prospectus is the first communication to investors, but researchers have also investigated later communications.

Annual reports contain financial information about firms, and the wording can affect investor sentiment. Negative and uncertain terms in an annual report can explain the variance in stock returns in 1 year due to the change in sentiment from the previous year (Hajek, Olej, & Myskova, 2013). Investor sentiment will affect the stock performance of a firm over the long-term.

Researchers have also studied internal communication in companies prior to pursuing IPOs. Leaders should provide solid communication to ensure the smooth multidirectional flow of information practices early that will be the foundation as the

company grows, thrives, and goes public (Saini & Plowman, 2007). Effective internal communication provides a common direction for employees, which will have an impact on the firm's overall performance. The IPO is the first time firms communicate outside the firm to potential shareholders, and the practice of open communication will affect sentiment and stock performance.

The focus of this section on communication is on the overall communications of firms. Investors and business leaders use financial data with ratios to identify strengths and weaknesses within the firm. However, the cost of the IPO is another factor that has an effect on the IPO.

The underpricing phenomenon of IPOs is a well-covered topic within IPO research. Investors have difficulty placing a value on young firms, which leads to underpricing. Researchers determine underpricing by comparing the first-day opening price to the first-day closing price of the IPO. The more difficult it is to price a firm, the more underpricing occurs due to the uncertainty of the firm's future performance (Škapa & Meluzín, 2011). Initial public offerings carved out from larger companies experience less underpricing than typical IPOs (Thompson, 2013). Short-run underpricing is common within developed and developing markets (Fauzi et al., 2012). Underpricing is a concern for business owners because higher underpricing equates to lower revenue for owners of the new IPO. Researchers have investigated many contributors to this phenomenon.

In the United States, individual states have varying levels of protection with antitakeover provisions. Initial public offerings incorporated in states that have strict

antitakeover provisions experience less underpricing by 5% when compared to other states, which benefits entrepreneurs who sell their shares in the IPO (Boulton, 2011). Another variable can affect the initial offer pricing and long-term survivability and performance. In addition to the state of incorporation, firm leaders should also consider the language.

Leaders of new public offerings must explain their business to new investors who are most likely unfamiliar with the business, which helps clarify how the company functions and operates. This document, known as the prospectus, helps investors make an informed decision when they are establishing a value for the firm. The ambiguity within published IPO documents can contribute to initial underpricing (Arnold et al., 2010). Communication is critical within all firms at every stage of the operation. The IPO prospectus is the primary introduction of the firm to the public market, and care and consideration are vital when making this first communication. Underpricing may be beneficial to initial investors, but for the business, it is an indication of leaving money on the table.

Markets in other countries have different policies for IPOs. The Dutch market uses an auction method for pricing IPOs, and less underpricing occurs with IPOs sold using this method (Robinson & Robinson, 2012). Using an auction method to price an IPO causes the price to reflect the sentiment of the investors. On the Alternative Investment Market in the United Kingdom, IPOs have nomads assigned, which are individual advisors for the IPO. Nomads with highly respected reputations cause IPOs to have a lower incidence of underpricing (Espenlaub et al., 2012). These two countries

have different policies that affect the degree of underpricing in an IPO. In contrast, in India, IPOs with higher grading suffered higher losses, and 74% of IPOs are trading at lower prices than the initial offer (Ishwara, 2012). Overpriced IPOs suffering from significant losses in share price, which is unique from other markets, also occurred in India markets (Ishwara, 2012). Underpricing affects the market capitalization for the firm, and other factors affect this underpricing. Within the United States, equity investors can also affect the underpricing of an IPO.

The amount of shared ownership retained by business angel investors is a powerful signal to the market that the firm is high quality, and less underpricing occurs when compared to venture capital investments because business angel investors attract higher quality underwriters (Bruton et al., 2009). In a comparison study, venture-capital-backed firms were able to attract underwriters with higher reputations than business-angel-backed firms (Johnson & Sohl, 2012a). These two studies had conflicting results, but the authors of both confirmed that less underpricing occurs when IPOs have venture capital investors and business angel investors.

Family-owned businesses that go public also face underpricing issues. Leaders of family-owned businesses do not seek venture capital investors, and they have a tendency to hire less-well-known underwriters (Daugherty & Jithendranathan, 2012). A significant correlation emerged between the reputation of an underwriter and the degree of underpricing associated with the IPO opening price (Williams et al., 2010). As noted earlier, having venture capital investors involved in IPOs also decreases the amount of underpricing. However, the larger the asset size is, the less likely underpricing occurs

regardless of whether the firm is family owned or not (Daugherty & Jithendranathan, 2012). Leaders of large corporations use equity carve-outs to improve IPO pricing.

The initiating firm for equity carve-outs maintains controlling interest of the company after the IPO offering, and the value of the IPO ties to the price of the controlling firm's shares. The return to the parent firm during pre-pricing and pre-issuing is significant and positively related to the price, and on average the parent firm owns 74% of the IPO after the offering (Ghosh, Petrova, Feng, & Pattanapanchai, 2012). In this type of offering, underpricing improves the equity gains of the parent firm and is an example that benefits primary shareholders. Underpricing an IPO can lead to additional offerings within a short time.

Underpricing may also signal an SEO. Initial public offerings in segmented markets with larger underpricing are more likely to issue an SEO, issue the SEO quicker, and experience a stock price drop after the SEO announcement (Francis, Hasan, Lothian, & Sun, 2010). This leads to the view that returns achieved after an IPO are a better predictor of SEO activity (Francis et. al., 2010). This aspect of SEOs leads in a different direction from this study but does signify the importance of an IPO in the life cycle of a firm. Predicting future performance is a challenge, but some signals exist within the information concerning the IPO that researchers can use to help predict future performance. Financial history is one signal that can play a role in underpricing.

The financial history of a firm can have an impact on the underpricing phenomenon. Initial public offerings with a credit rating have significantly less underpricing than firms without a credit rating (Chan & Lo, 2011). Having less

underpricing indicates the importance of accounting information and financial ratios on new firms and indicates investors consider this information when investing in new issues.

Researchers have also explored IPO performance with concerns of international activity. More underpricing occurs with IPOs that have an international presence, and from an underpricing perspective, it is better for firm leaders to pursue international activities after an IPO (LiPuma, 2012). Additionally, new ventures with high levels of international activity, 25% or more, perform 41% lower than their counterparts that operate only domestically (LiPuma, 2012). In contrast, being multinational is a highly significant positive effect on IPO long-term returns, and the number of regions the firm operates in is highly significant and positive (Mudambi, Mudambi, Khurshed, & Goergen, 2012). The difference between the two studies is that one reflected the U.S. market (LiPuma 2012), and the other reflected the United Kingdom (Mudambi et al., 2012). This difference identifies the continuing theme that factors have a different impact on different financial markets.

Financial Models and Ratios

In the business world, ratios define a firm's performance in a quantitative way that researchers can use to measure performance improvements. Informal Wall Street wisdom, theoretical motivation based on risk-return model variants, behavioral biases of investors, and illiquidity or arbitrage constraints motivate the predictive variables (Subrahmanyam, 2010). Businesses owners, stakeholders, shareholders, and investors can use various ratios to determine if a firm is meeting expectations or if projections may

need adjusting. Researchers have also investigated financial fundamentals and ratios on performance for IPOs.

Balance sheets and accounting ratios. Financial ratios derived from firms' accounting data and the balance sheet contain relevant information on a firm. Financial projections and decisions made with this information are crucial, so it is a critical aspect for every company. Bank loan officers will evaluate the financial records prior to approving any loan. These same tools can identify and explain returns of IPOs. By explaining how the returns occurred, investors have a better understanding of how the firm operates and gathers revenue. However, some misleading information occurs with IPOs to make them more attractive to investors by manipulating accounting methods and implementing cost-cutting techniques (Mousa, Marlin, & Ritchie, 2013; Ross & Hopkins, 2011). As mentioned earlier, IPOs do not have a long financial history, which makes it difficult for stakeholders and shareholders to understand the business.

Factors within the balance sheet can help explain returns beyond company earnings. Two models and three balance sheet factors, which were profitability change, contemporaneous capital investment, and previous period capital investment, identified that the balance sheet information plays a greater role in explaining returns in situations where earnings are less useful (Huang & Zhang, 2012). These measurements were useful for young companies with little trading history in the early stages of the life cycle, such as IPOs.

The balance sheet and accounting fundamentals are vital to every firm. During the Internet bubble of 2001, Internet IPO firms with weak accounting fundamentals at the

time of the IPO had difficulty surviving (Bhattacharya, Demers, & Joos, 2010), which indicated that business owners and investors ignored basic accounting fundamentals. In addition, accounting information is significant for identifying the financial stress of a firm and provides indicators of bankruptcy (Hill, Perry, & Andes, 2011). Investors' emotional action of overlooking accounting weaknesses is difficult to explain in IPO research.

Accounting information is another factor that can have an impact on underpricing of IPOs. Indonesia is an emerging market, and as such, may be susceptible to IPO underpricing. On average, IPOs in Indonesia achieve a 53% return on first-day trading, and these high returns positively relate to the financial distress of the firm and negatively relate to profitability (Hasan, Hadad, & Gorener, 2013), which aligned with other research that indicated developing markets experience a higher incidence of underpricing (Fauzi et al., 2012). Financial history and financial ratios also have an impact on underpricing of IPOs (Chan & Lo, 2011). The indication from the findings of these three studies is that the underpricing phenomenon of IPOs occurs more in developing markets and relates to the financial conditions of the IPO.

Financial audits are another possible indicator for IPO performance, and these audits can occur within firms for various reasons, one of which is the quality of accounting methods. New IPOs with significantly high levels of audit fees in the first few years link to the accounting quality of the firm and to unexplained audit fees (Hribar, Kravet, & Wilson, 2011). The actions of management can affect the valuation of a firm (Roychowdhury et al., 2012). The findings between these two studies align with an

earlier discussion that the management of the firm has an impact on a firm's performance based on the decisions and actions the team takes. Audit fees are an interesting approach to identifying hidden financial issues that a firm is facing. Firms that report financial figures can also affect the market.

Investment growth is another factor that can influence the equity value and accounting variables. The prospective investment growth and past investment activity can change accounting data that influence the value of a firm (Hao, Jin, & Zhang, 2011). The past activities of a firm elucidate how other factors affect the accounting data and in turn affect the market value of a firm.

One common theory is the efficient market theory. In efficient market theory, stock prices rise and fall for every firm according to the release of accounting figures only if this information is new and concerns unanticipated changes (Florou & Chalevas, 2008). Researchers have not fully accepted this model, and there is an alternate hypothesis. The alternate hypothesis states that investors fixate on reported profits and do not take into consideration what accounting methods a firm uses to obtain those figures (Florou & Chalevas, 2008). A positive association exists between return on sales and stock returns in the Greek market (Florou & Chalevas, 2008), which indicates that the Greek market is not consistent with efficient market theory, and it is not wholly efficient. Overlooking accounting methods and the financials of a firm adds a speculative nature to investing. Forecasting future performance is a challenge for firms and investors, but researchers have not explored this area with IPOs.

Forecasting future sales for any firm is crucial for predicting future performance on expected goals. These forecasts affect a firm's decisions as well as stakeholder decisions. When firm leaders want to improve cost and delivery performance, they should focus on the elements that define their forecasting process (Danese & Kalchschmidt, 2011). Forecasting future performance is challenging, but the factors of how managers calculate the forecast are essential (Danese & Kalchschmidt, 2011), which aligns with other research that indicated how managers' report profit is important (Florou & Chalevas, 2008). Danese and Kalchschmidt (2011) and Florou and Chalevas (2008) returned to the foundation of what factors could be critical when making calculations that affect important decisions. In addition, when company leaders design their forecasting system, they should pay attention to their environment rather than simply the techniques of the forecasting model (Kalchschmidt, 2012), which seems to add a human element to the forecasting process.

Financial statements provide information concerning a firm's performance, future prospects, and stability. Financial ratios are tools used to analyze the condition of the company and are useful indicators of the firm's performance and financial position (Lestari, 2013). When using financial ratios for analysis, it is a more complex process if both firms operate in different industries (Collier, Grai, Haslitt, & McGowan, 2011). The various ratios included in the financial statement allow for analysis and interpretation of any trends that will provide owners, shareholders, and stakeholders insight into the firm's financial status (Yap, Yong, & Poon, 2010). The analysis involves comparing the relationships between the various figures on the financial statement. Financial ratios

indicate how all firms perform, and the ratios contribute to the research on IPO performance.

Profitability ratios play a role in analyzing the economic and financial performance of a firm. They enable space and time comparisons that increase the accuracy of decision-making. The analysis involves examining the profitability and risk (Armanca, 2012). Researchers favor the financial probability rate in analysis information and correlate it to economic probability (Armanca, 2012). Using financial probability is an example of the usefulness of financial information to determine company performance.

Analyzing financial ratios in IPO performance is another area of research to explore. Fundamental analysis considers the company's earnings and expenses, assets, liabilities, management experience, profits, and industry dynamics while technical analysis considers market data such as stock price, changes in stock price, volume of stock traded, and market trends (Iqbal, Khattak, & Khattak, 2013). The technical analysis does not consider the company as a whole, as it overlooks the fundamental aspects of the company's operation. Financial ratios evaluate those fundamentals and consider the company more holistically.

Each ratio serves a different purpose in the analysis process, and several ratios exist that researchers could use to evaluate firm performance. The ratios represent key constructs of a firm's financial statement such as profitability, liquidity, efficiency, and debt (Ak et al., 2013). The choice of ratios is dependent on the purpose of the analysis. For example, 48 ratios exist for performance analysis of a firm (Yap et al. 2010). Each

ratio provides specific data to the analyst, and there are many from which to choose. From a research perspective, choosing the correct ratio depends on the intent of the researcher.

Financial ratios can indicate the level of financial stress of a firm and predict failure (Tsai & Chang, 2010). In the Malaysian market, the use of seven ratios served to predict 90% of firm failures (Yap et al., 2010). Similarly, ROA, asset rotation speed, own equity, debt rate, current asset ratio, liquid assets, total balance sheet, and net income were significant in predicting bankruptcy in the Romanian market (Ildikó et al., 2011). Using the Altman *Z* score was suitable to develop a new model to determine if troubled firms could recover and avoid bankruptcy, but the findings were inconclusive (Poston, Harmon, & Gramlich, 2011). The Altman *Z* is a complex method to identify financially challenged firms, but the basic financial ratios are strong indicators of financial stress.

Aside from focusing on bankruptcy alone, other researchers focus on the effects of future performance. Short-term debt, firm size, financial risk, tax, and non-debt tax shield have a significant effect on a firm's performance in the Pakistan market (Abbas et al., 2013). In addition, the financial ratios explained approximately 20% of the changes in firm value (Karaca & Savsar, 2012). Firm value takes into consideration the market value of the firm. Additionally, financial ratios have an impact on market value and in some cases at the early stages of the IPO process.

The initial pricing of an IPO can be difficult, and different methods and risk factors influence the initial offer. In Indonesia, underwriters use financial ratios to determine a company's IPO price and as part of the valuation process (Lestari, 2013). Net

profit margin, ROA, and ROE have a positive and significant effect on IPO price (Lestari 2013), which illustrates an additional use that financial ratios have in IPO research.

Two primary financial ratios used to measure a firm's performance are ROE and ROA. Corporate finance and investors use these ratios to estimate a rate of return for investments. Return on equity is an indication of the profits of a firm compared to the shareholder equity. The formula is net income divided by equity. The extended version of ROE is the DuPont analysis developed by F. Donaldson Brown (Mainul Ahsan, 2012). Return on assets also indicates profit, but it compares profits with total assets. Both ratios can evaluate profitability of a firm. Return on equity and ROA are popular among investors because they link the balance sheet to the income statement. In research, these ratios serve different uses when evaluating firm performance.

ROE and ROA research. Return on equity indicates how well company leaders use investment funds to create growth for shareholders and measure the efficiency of generating profits based on shareholder equity. Return on assets has a different purpose but is also an important performance indicator, as it indicates how well a company's assets generate profits for the company. Both ROE and ROA derive from the DuPont model developed by F. Donaldson Brown in 1914 (Mainul Ahsan, 2012). Although each ratio indicates different performances of a company, researchers have used them as individual ratios but also together in their research.

Return on equity, return on assets, economic value added, and market value added have a significant impact on the stock prices of firms on the Amman Stock Exchange in Jordan (AlOmoush & AL-Shubiri, 2013). Return on equity has a positive correlation to

the market-to-book ratio for firms in Jordan (Al-Debi'e & Mustafa, 2011). In a study of the Stock Exchange of Thailand and the SET 50, ROE was not a strong indicator of performance for SET 50 stocks, but low ROE for non-SET-50 stocks was a significant indicator of positive performance (Chaopricha & Chan, 2010), which led to the possibility of a recovery for smaller companies with negative ROE. Negative ROE is also an indication of weakness within a firm.

Bankruptcy is a concern for firms and investors, and some researchers use financial ratios to evaluate the stability of a firm. An evaluation of 18 financial ratios to determine their usefulness in predicting bankruptcy in Romania indicated that only eight were reliable indicators of bankruptcy, one of which was ROA (Ildikó et al., 2011). The findings did not indicate ROE was a reliable indicator of bankruptcy in Romania (Ildikó et al., 2011). However, in Serbia, an ROE of 20% to 25% for a banking institution emerged as a potential indication of financial trouble because it indicates that the bank resorted to extremely large borrowing in the financial market (Stanković, Janković-Milić, & Radukić, 2013). The operating expense ratio, write-off ratio, and cost per borrower are statistically significant predictor variables in determining ROE in microfinance institutions in Sri Lanka (Dissanayake, 2012). In this study, ROE was the dependent variable. In addition, using ROE in microfinance institutions determined which companies to remove from their investment portfolios (Dissanayake, 2012). Return on equity and ROA are useful when determining the financial solvency of a firm, but their usefulness may vary between the business segments the firms compete within, and the investors can have an effect on ROE and ROA.

Investors of a firm can also have an effect on the financial ratios. Business angel investors have a positive effect on ROA, whereas venture capital investors have a negative effect on ROA (Bruton et al., 2010). This finding is an indication of how private investors' influence affects the financial decisions of the firms. In addition, ROE and ROA indicated the financial health of the company, which attracts institutional investors (Dhaliwal et al., 2010). Return on equity for a good company should be higher than government bonds and higher than the ROA ratio (Hajek et al., 2013). Investors can have an influence on ROE and ROA, and the two ratios are useful in businesses within the United States and in other markets.

Return on assets and ROE had a significant relationship with firms that transitioned from publicly traded firms on the Tehran stock exchange to private firms (Panahian & Akbarzadeh, 2010). In another study, ROE and ROA had a significant effect on stock return on the Tehran exchange, with a 95% confidence level (Haghiri & Haghiri, 2012). A methodology used in another study linked the economic measures and the accounting measures of ROA and ROE with stock returns to evaluate the firm's performance in Bursa Malaysia, but the results were inconclusive (Nakhaei et al., 2013). Financial ratios can identify possible future challenges facing firms, and a higher ROE shows that a firm can earn a higher return on shareholder equity, which has a positive correlation with return in the Indonesian market (Martini & Rahfiani, 2009). These findings supported the importance of ROE and ROA with regard to the financial performance of a firm.

Stock return is a measurement of performance, and different models can evaluate stock performance. The Fama French three-factor model discussed earlier is one of those models. The Fama French three-factor model serves as a baseline for evaluating firm performance. The researchers of several studies within this paper used the model as a baseline for additional research. A new model incorporated ROA into the Fama French three-factor model and outperformed the traditional asset pricing models when explaining a wide range of anomalies in cross-section returns (Chen et al., 2011). Expanding on the model developed by Chen et al. (2011) and combining it with the variables with the Fama French three-factor model revealed that ROE is a significant price determinant but not significant as a predictive power for growth in gross domestic product (Wang, 2013).

The predictive power of ROE remains relatively unexplored (Chaopricha & Chan, 2010; Wang, 2013). A focus on ROE as a performance indicator led to a negative relationship between ROE and abnormal return, and companies with negative ROE ratios had the best-performing portfolios (Mainul Ahsan, 2012). On the Tehran stock exchange, ROE and ROA had significant effects on stock return for the review period of a study with a 95% confidence level (Haghiri & Haghiri, 2012). No researchers have devoted themselves to understanding the link between intrinsic value and future market value of a firm for IPOs (Ragupathy, 2011). Researchers have explored the relationship of ROE and ROA within various markets and have had different results. The predictive powers of ROE and ROA are under exploration for the performance of established companies and markets, but a gap linked ROE and ROA to the performance of an IPO.

Summary and Transition

The relationship between ROE and ROA with IPO performance is of interest among practitioners in the business community. Section 1 was an introduction to the problem associated with IPO performance and the implications when IPOs fail. The literature review included information on entrepreneurs and early investors' impact on firm performance. The review included an analysis of corporate governance influences and the internal and external communications of a firm. A large portion of the section was a review of existing research on taking a firm public, with an emphasis on financial ratios and firm performance. I identified gaps in the research, and the body of knowledge supported the need for additional research concerning ROE and ROA and long-term performance of IPOs.

Section 2 includes information on the process and additional aspects of this quantitative study. The section includes a discussion of the overall project as it relates to the research question. Specific areas in in the next section address the data collection process, analysis of the data, and how the hypotheses are tested.

Section 2: The Project

Introduction

Section 2 includes an overview of the project, and the main points within this section include discussions of the research method, research design, population, and sample size. This section also includes a description of the data collection process and the analysis of that data in the two main sections. The description includes greater insight regarding whether a relationship exists between ROE and ROA with the growth in market capitalization of an IPO.

In Section 1, I provide high-level information on the study and detailed information on previous research surrounding IPO performance and financial ratios with emphasis on ROE and ROA research. In this next section, I expand on the study and answer some of the questions identified in Section 1. This section includes detailed information on the overall project.

Purpose Statement

The purpose of this quantitative correlational study was to investigate whether a relationship exists between ROE and ROA at the time a firm goes public and its growth in market capitalization from Day 1 through the 5th year. The population was firms traded on the New York Stock Exchange and the NASDAQ that went public from 2007 to 2009 and were active on the exchange for 5 years. Prospectuses for IPOs include initial financial data; the SEC has these records from the initial IPO application. The ROE and ROA on the first day of trading for the IPO were the independent variables. The dependent variable was the growth in market capitalization after 5 years from the first

day of trading. This study included the economic collapse that occurred in 2008 and offered insight into the relationship between ROE and ROA with firm performance, regardless of market trend. In addition, I evaluated the impact of ROE and ROA within the business segments. The results of this study include new information for professional investors, private investors, and business owners considering taking their firm public.

Role of the Researcher

In this quantitative correlational study, my role as the researcher was to collect, organize, analyze, and interpret the data. Conducting the study was an extensive process, as hundreds of companies comprised the population. For this study, there were no participants, and the data were from secondary sources. I standardized the data to determine if a relationship existed between the two variables, and I used SPSS to perform the statistical calculations and generate tables to serve as visual representations of the data. No bias was possible for this large number of businesses because I had no professional relationship with them.

My main role as a researcher was to avoid researcher bias. As an investor, I used financial ratios as a key method for researching companies prior to investing in them. Using financial ratios was helpful in the analysis of the data, and I remained conscious of my personal beliefs in the strength or weakness of the ratios under study.

Participants

Thomson Financial Securities Data Corporation (SDC) database was the source for the IPOs from 2007 to 2009, and I cross-referenced the IPOs with Compustat to ensure accounting data were available. The Compustat database also served as a source of

data for firms selected for this study. Following other IPO researchers who used the same data sources (e.g. H.-E. Hsu, 2010; Johnson & Sohl, 2012a, 2012b; Krishnan et al., 2011), I removed IPOs that were limited partnerships, unit offerings, dual stock, mutual funds, foreign firms, real estate investment trusts, financial firms, utility companies, and American depository receipts.

From 2007 through 2009, 342 firms went public and represented the population for the study. After removing firms that did not last 5 years, limited partnerships, unit offerings, dual stock, mutual funds, foreign firms, real estate investment trusts, financial firms, utility companies, and American depository receipts, 174 firms remained out of 342. This was the sample utilized for this study. Confidentiality and consent forms were not applicable because the study did not involve individual participants.

Research Method and Design

Method

The method chosen for this study was quantitative, which served as a better foundation for understanding the relationship between ROE and ROA with long-term performance of an IPO. In this study, ROE and ROA were the independent variables, and the dependent variable was market value. A correlational design fit well with the purpose of the study (Green & Salkind, 2011).

Long-term return anomalies can be due to the methodology chosen for studies, and most anomalies tend to disappear with the use of different methods (Erdogan, 2010). This study involved comparing ROE and ROA with market capitalization 5 years after the IPO to determine if a relationship existed between the variables. A higher ROE

indicates a highly efficient spending practice on money invested, and stock returns reflect profit growth (Setiawan & Oktariza, 2013). In addition, some researchers have investigated the performance of firms within specific sectors (Jeon & Kim, 2011; Stanković et al., 2013; Williams et al., 2010). Return on equity is a predictor of performance among industrial companies, but has fewer predictive powers for service industries (AlOmoush & Al-Shubiri, 2013). It was worth investigating the additional attribute of separating all the firms selected for this study based on the business sector. The quantitative method is appropriate for deductive testing. When using quantitative analysis, the purpose is to focus on patterns within the variables and search for stability within the patterns (Fairweather & Rinne, 2012). This method fit the purpose of the study better than alternate methods.

A phenomenological study was an option for this study to gather information based on the experiences of individuals to gain a better understanding regarding why a particular problem exists (Farrelly, 2013b). Qualitative studies involve interviews that contain open-ended questions, are exploratory, and lead to the development of a hypothesis. Arnold et al. (2010) used a qualitative method to determine how the language in the prospectus of an IPO influences individual perceptions of the firm. Hajek et al. (2013) also used a qualitative method to determine how investor sentiment forecasted future stock prices of a firm. Using this method would elicit individual views from industry experts on how ROE and ROA affect firm performance. However, the purpose of this study was to compare the ROE and ROA ratios prior to the IPO stage to the

growth in market capitalization of a company, and individual views were not a factor; therefore, interviews were not a good fit for the study.

A mixed methods study includes the strengths of both qualitative and quantitative methods to investigate complex problems, which is useful in presenting usable and defendable findings (Frels & Onwuegbuzie, 2013). Mixed methodology was suitable to investigate how accounting manipulation and cost-cutting techniques used by firms affect IPO pricings (Ross & Hopkins, 2011). Mixed methodology was also suitable to investigate how the adaptability of the management team in a changing business world affects a firm's performance (Junni, Sarala, Taras, & Tarba, 2013). The Ross and Hopkins study and Junni, Sarala, Taras, and Tarba study are complex and involve individual interviews and the financial data of the firms. The purpose of the current study was to examine the relationship between ROE and ROA at the time of the IPO and the market capitalization of the firm after a 5-year period, which was not a complex study. The level of investigation for a mixed methods study was beyond the needs for the current study.

I could use either method for the study, but the purpose was to investigate the relationship between ROE and ROA with the long-term performance of an IPO. Previous research regarding performance measures for a firm has included a quantitative method (Bayar & Chemmanur, 2011; Danese & Kalchschmidt, 2011; Francis et al., 2010; Guo, 2011). Based on the research and scope, neither qualitative nor mixed methods were suitable for the purpose of this study, which is why I selected a quantitative method.

Research Design

This study included a correlational design to examine the relationship between ROE and ROA with financial performance. A survey sent to professional investors was an alternate design for this study. Conducting a survey also involves gathering information from the population and is another design appropriate for correlational research (Farrelly, 2013a). The survey would involve gathering the opinions of professionals, which was not the purpose of this study. The best way to examine the questions posed in this study was using a correlational design with secondary data. A correlational study involves examining the relationship between two or more variables (Farrelly, 2013a). The correlational design was appropriate for this study because the objective was to examine the relationship between two or more variables, and I correlated ROE, ROA, and the growth in market capitalization to determine if a relationship existed. Previous research on ROE and ROA related to long-term performance also included a correlational design (Al-Debi'e & Mustafa, 2011; Koerniadi & Tourani-Rad, 2012; Martini & Rahfiani, 2009; Nakhaei et al., 2013). The design of this study was similar to other research that involved investigating independent variables to financial performance (Kalchschmidt, 2012). Researchers conducting correlational studies do not determine cause but rather identify that a relationship does or does not exist between variables. By comparing ROE and ROA at the time of the IPO to the growth in market capitalization of the company 5 years later, I was able to identify if a relationship existed between the two variables. The additional step of separating all the participating firms by the business sector also provided targeted information concerning those business categories. Given the

likely wide fluctuations and non-normal distributions in the data, Spearman rank-ordered correlations were more suitable than the more common Pearson product–moment correlations.

Population and Sampling

Investigating IPO performance required studying a sample of companies using historical data. The purpose of this study was to examine the relationship between the ROE and ROA of an IPO on the first day of trading and the growth in market capitalization of that firm after 5 years of trading on the public market. Previous IPO researchers examined firms within a defined period of time and in specific markets or sectors. The focus of one study was 233 IPOs that occurred between 2000 and 2002 in the United States (H.-E. Hsu, 2010). The focus of another was 126 IPOs that went public on the Istanbul Stock Exchange over a 5-year period (Erdogan, 2010). The principles used in this study were the same as those followed by Erdogan. A correlational study includes prior information to examine the relationship of the variables. The population of previous research varied among studies and was dependent on the purpose and demographics of the study.

The overall population of IPOs covers a broad spectrum of time that goes back to when public trading of businesses began. Every company traded on the open market in all stock market exchanges went through the IPO process at some time. As mentioned earlier, the focus of previous research included a specific market over a set time. Thus, a 3-year window from 2007 to 2009 on the New York Stock Exchange and the NASDAQ was appropriate, as it included the most current companies newly added to the exchanges

that had 5 years of activity. This was also a purposive sampling approach to the population and covered the purpose of the research questions. The criteria for the purposive sample were to include all companies that entered the New York Stock Exchange or the NASDAQ between January 1, 2007, and December 31, 2009.

The sample consisted of the entire IPO market within all business sectors, but as mentioned in a previous section, I removed IPOs that were limited partnerships, unit offerings, dual stock, mutual funds, foreign firms, real estate investment trusts, financial firms, utility companies, and American depository receipts. Removing these types of IPOs followed the standard practice of previous research (H.-E. Hsu, 2010; Johnson & Sohl, 2012a, 2012b; Krishnan et al., 2011). From 2007 to 2009, 222 - firms went public (Ritter, 2011). Based on sample calculations from Creative Research Systems (2014), with a population of 222, a confidence level of 99%, and a confidence interval of four, the sample size needed would be 183. For this study, I used all IPOs that went public over the given period that did not fall into the categories discussed in the Research Method section. The strength of this method was that the entire population was part of the study. The population size adjusted during this study as the population decreased due to delisting. Within the first 5 years, 47% of firms delist from the exchange (Kooli & Meknassi, 2007). After 10 years, only 29% of the firms are still operating (Kenney et al., 2012). Some companies that went public from 2007 to 2009 had undergone delisting or acquisition and did not have 5 years of trading history. This changed the available population, but I used the entire available population in this study. A weakness of this

method was that the period sampled could have had results that might not generalize to the future.

The strength of this approach was that it was clear for the reader which population I was generalizing. Separating the IPOs by the business sector added an additional layer to this generalization. However, a weakness to this approach was that the period selected, from 2007 through 2009, might or might not have been representative of the entire history of the stock market and would potentially limit the generalizability of the findings in unknown ways.

Ethical Research

The data for this study were from the Thomson Financial SDC database, and Compustat. Compustat was the source for historical data on security prices and returns and is for academic purposes. Thomson Financial SDC was the source for a list of IPOs that went public from 2007 through 2009, and Compustat was the source of the financial data. The data needed for this study were historical data compiled in the Compustat database. Other researchers have used all the sources previously (H.-E. Hsu, 2010; Johnson & Sohl, 2012a; Krishnan et al., 2011). New securities were the participants in this study and the information used was publicly available; therefore, there were no individual participants in this study, so a consent form was not necessary. I will maintain all the data gathered and analyzed for this study for 5 years. At that time, the data will no longer be current and there is no reason to maintain the data.

Data Collection

The data for this study consists of archived data collected from publicly accessible databases. The data collection process establishes the instrumentation used and how the data is gathered. This section includes a discussion on the instrument and the data collection technique.

Instrumentation

The data for this study were public information contained in archived databases. The data collection process is critical to research and must have a clear definition prior to beginning the research. The data for this study were historical and were from a variety of sources. Potential sources identified for this study were the SDC new issues database, Center for Research of Stock Prices, and Standard & Poor's Compustat dataset. All the databases used in this study contain reliable information, and researchers have used them as subjects in many scholarly research studies concerning both IPO performance and financial ratio research.

The SDC new issues database provided information on new IPOs from 2007 to 2009. With the potential pool of new IPOs identified, the number of firms decreased after removing limited partnerships, unit offerings, dual stocks, mutual funds, foreign firms, real estate investment trusts, financial firms, utility companies, and American depository receipts. Removing these types of firms from the pool of IPOs aligns with previous research methods with the same data sources (H.-E. Hsu, 2010; Johnson & Sohl, 2012a; Krishnan et al., 2011).

The ROE and ROA are both ratio variables. The growth in market capitalization appears in U.S. dollars, which is also a ratio variable. These were also scaled variables for the study. The business segment for each selected firm was a nominal variable and all data appear in Section 3.

Data Collection Technique

For this quantitative study, I collected data using historical data from existing databases. The SDC new issues database provided the population for the study, and the data for analysis were from Compustat. Previous researchers have used these sources of data to examine firm performance and financial ratios (Bhattacharya et al., 2010; Chan & Lo, 2011; Chen et al., 2011). The date range for the IPOs was from January 2007 through December 2009, which allowed for 5 years of activity from the IPO date.

The data for the study was from the Compustat database, which contains information on individual New York Stock Exchange and NASDAQ traded securities such as market capitalization, historical prices, trading volume, corporate actions, and security delisting information (CRSP, 2014). Compustat had the market capitalization at the time of the IPO and 5 years later, as well as the financial ratios ROE and ROA at the time of the IPO. I placed the company name, ROE, ROA, growth in market capitalization, and business segment data for the analysis on an Excel spreadsheet and transferred the data to SPSS for analysis.

Data Analysis

The data collected from the CRSP database and Compustat underwent analysis with regard to the research questions and hypotheses. The research question for this study is as follows:

Is there a statistically significant relationship between the ROE, ROA, business sector, and market capitalization of IPOs?

The related null and alternative hypotheses for these research questions were as follows:

$H1_0$: There is not a statistically significant relationship between the Day 1 ROE and the change in market capitalization of the IPO from Year 1 to Year 5.

$H1_a$: There is a statistically significant relationship between the Day 1 ROE and the change in market capitalization of the IPO from Year 1 to Year 5.

$H2_0$: There is not a statistically significant relationship between the Day 1 ROA and the change in market capitalization of the IPO from Year 1 to Year 5.

$H2_a$: There is a statistically significant relationship between the Day 1 ROA and the change in market capitalization of the IPO from Year 1 to Year 5.

$H3_0$: In none of the nine business sectors, the Day 1 ROE metric will relate to the change in market capitalization of the IPO from Year 1 to Year 5.

$H3_a$: In at least one of the nine business sectors will the Day 1 ROE metric relate to the change in market capitalization of the IPO from Year 1 to Year 5.

$H4_0$: In none of the nine business sectors, the Day 1 ROA metric will relate to the change in market capitalization of the IPO from Year 1 to Year 5.

$H4_a$: In at least one of the nine business sectors will the Day 1 ROA metric relate to the change in market capitalization of the IPO from Year 1 to Year 5.

Quantitative analysis involves searching for alignments or patterns within variables (Fairweather & Rinne, 2012). Based on the data for this study, Spearman rank ordered correlations were the choice for analyzing the various relationships. The data for this study had a skewed non-normal distribution, and Spearman rank ordered correlations were more suitable for this type of distribution (Simon & Goes, 2013). In addition, Spearman rank order works well with smaller samples, which existed when examining the business sectors.

Multiple regression analysis was possible to analyze the data for this study, but due to the underlying assumptions, this analysis method would not have been trustworthy. For a multiple regression correlation, there is an assumption that the data have a normal distribution, but I expected this study to have a non-normal distribution, which would have reduced the power of this test (Green & Salkind, 2011). Another option was the Pearson correlation, which assesses the linear degree of relationship between variables. Pearson correlation also has an underlying assumption that requires normality among the data, so this analysis was not appropriate for this study. In addition, given the likely wide fluctuations and non-normal distributions in the data, Spearman rank-ordered correlations were more suitable than the more common Pearson product–moment correlations (Green & Salkind, 2011).

When SEC personnel audit the data for an IPO for accuracy, minimal data cleaning was necessary. Previous research findings indicated that 47% of firms delist

within the first 5 years (Kooli & Meknassi, 2007). Data were not available for these firms and, following the practice of previous research, I removed any delisted firms from the study, which addressed any concern of missing data for the statistical analysis (Ak et al., 2013; Chaopricha & Chan, 2010; H.-E. Hsu, 2010; Johnson & Sohl, 2012a; Krishnan et al., 2011).

The statistical analysis for this study followed two assumptions. The assumptions for Spearman correlations were at least ordinal level data, which I met through the definition of the type of financial data, and a monotonic relationship between the variables (Spearman, 1904). A monotonic relationship is where (a) as the value of one variable increases, so does the value of the other variable, and (b) as the value of one variable increases, the other variable decreases. Examining scatterplots was suitable to assess the assumption of a monotonic relationship The Spearman correlation coefficients had an alpha level of $\alpha < .01$ to reduce the likelihood of a Type 1 error (Green & Salkind, 2011).

Reliability and Validity

Reliability

The instrument in a scholarly study must be reliable and present accurate data for evaluation. Parallel reliability indicates how consistent a measure is, in that a researcher can give the same test or questionnaire to two groups and correlate them to determine whether there are consistent results (Phelan & Wren, 2006). The CRSP database provides research data for rigorous testing by researchers and has been in use for more than 50 years (CRSP, 2014). Chen et al. (2011), Demers and Joos (2007), Reutzel (2012),

Bhattacharya et al. (2010), Chan and Lo (2011), and Hill et al. (2011) used CRSP and Compustat to investigate IPO and firm performance. Analysts update the data in CRSP and Compustat databases as new financial information is publicly available and new companies enter the market. Practitioners have shown CRSP and Compustat are reliable sources over the past 50 years. With a proven record of use within the research community, the CRSP and Compustat databases provided reliable data for this study. These databases strengthened the reliability of the study and ensured this study would be repeatable in the future.

Validity

The construct validity of an instrument ensures the tool is measuring what the researcher intended (Phelan & Wren, 2006). A second type of validity is criterion-related validity, which involves assessing the ability of a chosen instrument to predict future or current performance of a criterion (Phelan & Wren, 2006). The third type is face validity, which identifies if the measure is evaluating the construct under study (Phelan & Wren, 2006). Researchers can support the findings of a valid quantitative method (Frels & Onwuegbuzie, 2013). The CRSP and Compustat databases contain information gathered from publicly accessible data provided by firm leaders within the public market. Scandals within the business community in the early part of the 21st century, such as Enron and MCI, led analysts and investors to ask how valid that information may be. The Sarbanes-Oxley Act of 2002 changed the way companies interact with the marketplace, and the leaders of firms going public must provide detailed financial information with full disclosure prior to the IPO (Gao et al., 2013). The Sarbanes-Oxley Act added additional

measures to the validity of the data contained in CRSP and Compustat. Previous researchers used this database for many different studies, and the data collected served as valid data for this study.

Internal validity is dependent upon how well a researcher controls the minor variables, and external validity is the generalizability of the results to the participants and outside of the study (Simon & Goes, 2013). This was a correlational study using secondary data, which means it was not possible to control for minor variables. A Type 1 error refers to identifying an effect that is not present. For the four hypotheses, I calculated 20 Spearman correlations. In an effort to minimize the likelihood of a Type 1 error, the alpha level for this study was $\alpha = .01$ (Green & Salkind, 2011). This study is generalizable to a larger population within the stock market and the data consisted of a large sample. However, the SEC continues to make considerable regulatory changes pertaining to reporting processes for IPOs (IPO Task Force, 2011). Any future changes made by the SEC could cause any findings from the study years 2007 through 2009 not to generalize for future periods.

Summary and Transition

Section 2 included a restatement of the purpose of this study and an explanation why the study took place. This section included a description of the participants for the study, the research method and design, and the selection process for specific participating firms. All these sections tied back to the overall research questions of the study and the hypotheses. Section 3 will include the findings of the data analysis, indicate how the results affect the professional community, and include the implications for social change.

There will also be recommendations for future research, a summary, and conclusions for the study.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to investigate the relationship between ROE and ROA of firms prior to an IPO and the firms' market value after 5 years. The specific problem addressed was the fact that some business leaders do not know whether the financial ratios of their firms at the time of the IPO are predictors of future financial performance. This study involved examining the relationship between ROE and ROA with the market capitalization of an IPO. It included Spearman rank-ordered correlations to examine the financial data of 174 IPOs issued from 2007 through 2009. The sole research question addressed in this study was as follows:

Is there a statistically significant relationship between ROE, ROA, business sector, and market capitalization of IPOs?

The study results indicated that three of the null hypotheses were true and were therefore accepted. One null hypothesis tended to be false and there was partial support for the alternate hypothesis. I determined three alternate hypotheses were true and did not reject them.

Section 3 includes specific information about how I conducted this study, a presentation of the findings, the applicability to business practice, and the implications for social change. In addition, a discussion of recommendations for action includes who will gain insight from the results, recommendations for future research, my personal reflections of the DBA process, and an overall conclusion.

Presentation of the Findings

To address the research question about whether a significant relationship exists between ROE, ROA, and market capitalization of IPOs, the statistical test selected for the variables was the Spearman rank-ordered correlation. Scattergraphs for the ROE, ROA, and change in market capitalization are in Appendix A. As expected, the sample sizes were small and the data were of non-normal distribution; therefore, the Spearman rank-order correlation was the correct choice for analyzing the hypothesis. The analysis included the financial ratios and market capitalization for 174 U.S.-based firms. The firm leaders pursued an IPO from January 2007 through December 2009.

Table 1 contains the descriptive statistics for the entire data set. In the table, *n* represents the number of IPOs that had the data in the vertical column of variables. For example, on Day 1 only 135 IPOs had a value for ROE. The column under M contains the mean of the dataset. The column SD is the standard deviation of the data for that particular variable. The columns under Low and High represent the highest and lowest value for the variables.

The descriptive statistics for ROE and ROA are ratios, so the value is in thousands, but market capitalization is in millions. The ROE on Day 1 was not calculable for several of the IPOs, which resulted in a sample size of 135. The ROE ranged from -91,308.76 to 621.97 with a mean of -699.14, and the standard deviation was 7,857.84. The ROE in Year 5 was from a sample of 165 and ranged from -9,396.37 to 3,105.25 with a mean of -71.15 and a standard deviation of 845.72. The standard deviation for ROE is larger than the mean, which indicates that the data points are scattered. Data that

has a standard deviation greater than the mean could indicate that the data is not normally distributed (Green & Salkind, 2011). Finding this difference between the standard deviation and the mean indicated that the data was non-normally distributed.

All the IPOs had data for ROA on Day 1, which ranged from -688.47 to 52.07 with a mean of -13.66 and a standard deviation of 67.07. ROA in Year 5 ranged from -2,479.01 to 26.07 with a mean of -26.28 and a standard deviation of 198.15. Similar to ROE, the standard deviation is larger than the mean, which indicates the data is not normally distributed.

Market capitalization was available for 173 firms and ranged from 5.40 to 47,805.79. The mean was 1,454.36 million, and the standard deviation was 5,571.96. Market capitalization in Year 5 ranged from 0.02 million to 112,442.04 million with a mean of 2,660.91 million and a standard deviation of 9,300.35. The change in market capitalization for 165 firms ranged from -7,078.20 million to 62,636.25 million with a mean of 1,231.44 million, and the standard deviation was 5,571.96. Unlike ROE and ROA, market capitalization is normally distributed.

Research Hypothesis 1 and 2

Research Hypothesis 1 predicted that Day 1 ROE would not have a statistically significant relationship with the change in market capitalization of the IPO from Year 1 to Year 5. Research Hypothesis 2 predicted that Day 1 ROA would not have a

Table 1

Descriptive Statistics for Selected Variables

Variable	*n*	*M*	*SD*	Low	Height

ROE Day 1	135	-699.14	7,857.84	-91,308.76	621.97
ROA Day 1	174	-13.66	67.07	-688.47	52.07
Market capitalization Day 1	173	1,454.36	4,296.62	5.40	47,805.79
ROE Year 5	165	-71.15	845.72	-9,396.37	3,105.25
ROA Year 5	174	-26.28	198.15	-2,479.01	26.07
Market capitalization Year 5	174	2,660.91	9,300.35	0.02	112,442.04
Change in market capitalization	165	1,231.44	5,571.96	-7,078.20	64,636.25

statistically significant relationship with the change in market capitalization of the IPO from Year 1 to Year 5. To test these hypotheses, the results of a Spearman intercorrelation for all the primary variables of the study are in Table 2.

Table 2

Spearman Intercorrelation Matrix of the Primary Study Variables

Variable	1	2	3	4	5	6	7
1. ROE Day 1	1.00						
2. ROA Day 1	.36****	1.00					
3. Market Capitalization Day 1	.04	.21***	1.00				
4. ROE Year 5	-.01	.44****	.22***	1.00			
5. ROA Year 5	.01	.47****	.24****	.88****	1.00		
6. Market Capitalization Year 5	.01	.25****	.64****	.55****	.53****	1.00	
7. Change in Market Capitalization	-.07	.15	.07	.57****	.52****	.72****	1.00

* $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.

For Hypothesis 1, there was no significant relationship between Day 1 ROE and the change in market capitalization, $r = -.07$, $p = .43$, and I accepted the null hypothesis. For Hypothesis 2, there was a relationship between Day 1 ROA and the change in market capitalization, $r = .15$, $p = .06$, and there was partial support for the alternate hypothesis.

Research Hypothesis 3

Research Hypothesis 3 predicted that in none of the nine business sectors, the Day 1 ROE metric would relate to the change in market capitalization of the IPO from Year 1 to Year 5. The result of a Spearman correlation for ROE based on business sector is in Table 3. Two sectors, consumer goods and utilities, had very small sample sets, and I

could not analyze them. In addition, none of the IPOs in the sample set was part of the conglomerate sector. For Hypothesis 3, no significant relationship existed between Day 1 ROE and the change in market capitalization in at least one of the nine business sectors, and I accepted the null hypothesis.

Table 3

Spearman Correlations for ROE with Change in Market Capitalization Based on Sector

Sector sample	*n*	r_s
Entire sample	126	-.07
Financials only	17	-.08
Health care only	13	-.42
Industrials only	19	-.14
Materials only	25	.01
Services only	18	.08
Technology only	28	-.08

* $p < .05$.

Research Hypothesis 4

According to Research Hypothesis 4, the Day 1 ROA metric would not relate to the change in market capitalization of the IPO from Year 1 to Year 5 in none of the nine business sectors. To test this hypothesis, Table 4 displays the results of a Spearman correlation for ROA based on business sector. Two sectors, consumer goods and utilities, had very small sample sets, and I could not analyze them. In addition, none of the IPOs in the sample set was part of the conglomerate sector. For Hypothesis 4, there was no significant relationship between Day 1 ROA and the change in market capitalization in at least one of the nine business sectors, and I accepted the null hypothesis.

Table 4

Spearman Correlations for ROA With Change in Market Capitalization Based on Sector

Sector sample	*n*	r_s
Full sample	165	.15
Financials only	18	-.12
Health care only	33	.09
Industrials only	19	-.03
Materials only	28	.23
Services only	18	.18
Technology only	43	.14

* $p < .05$.

The overarching research question for this study was whether a significant relationship exists between ROE, ROA, and market capitalization of IPOs. Based on the findings for this study, no significant relationships exist. These results align with previous research, but other studies had differing results.

Previous research had similar results. An evaluation of the Romanian market using ROE and ROA as predictors for bankruptcy resulted in ROE not being a useful predictor, although ROA did have a minor significance (Ildikó et al., 2011). In another study that involved incorporating ROA into the variables, ROA emerged as a positive and significant indicator of performance (Iqbal et al., 2013). Although the results indicated a significant correlation, my study for IPOs only had a minor correlation. With the incorporation of ROA into the Fama French model, the model improved at explaining a wide range of anomalies in cross-section returns (Chen et al., 2011). For the Tehran stock exchange, ROE and ROA had a significant effect on stock returns (Haghiri & Haghiri, 2012), but the ROE findings did not align with this study. Similarly, ROE was a predictor of financial performance within the Indonesian market (Setiawan & Oktariza, 2013), but

those findings also did not align with the findings of this study. Aside from the market as a whole, the business sectors have different results concerning ROE and ROA.

Each business sector has unique competition situations and as the market as a whole fluctuates, each business sector may react differently. Return on equity was significant in company performance for manufacturing firms in the Indonesian Stock Market (Martini & Rahfiani, 2009). This contradicted the findings within this study where no significant relationship of ROE or ROA existed for any business sectors in the U.S. market for IPOs.

As mentioned earlier, firms are susceptible to some misleading information prior to the IPO so they are more appealing to investors (Mousa et al., 2013). An additional finding in this study was the significant positive correlation between ROE Day 1 and ROA Day 1, $r = .362$, $p = .000$. The correlation indicated a relationship at the early stages of a firm when it pursues an IPO, which could relate to encouraging investors to look positively on the new firm.

Applications to Professional Practice

This quantitative research involved examining the relationship between ROE, ROA, and market capitalization by examining 174 IPOs that occurred from 2007 through 2009. The change in market capitalization from Day 1 to the end of Year 5 is the measurement for long-term performance. The analysis of the IPOs included analyzing them as one full group and then separated into different business sectors, which were basic materials, conglomerates, consumer goods, financial, health care, industrial goods, services, technology, and utilities. The results of the study indicated that ROE did not

have a significant relationship with market capitalization for IPOs or within the business sectors. ROA had partial support for a relationship for IPOs, but not for any of the business sectors.

The lack of a statistically significant relationship between ROE and market capitalization adds value to the decisions made by investors and business owners. Financial ratios serve a purpose when considering the overall performance of a firm and a new firm does not have enough performance history on which to base decisions. According to the results of this study, ROE does not need to be a consideration when pursuing an IPO for owners or future investors. However, ROA is a ratio to pay some attention to in the future.

With a minor correlation between ROA and market capitalization, investors and owners could consider ROA a minor predictor of performance. The correlation is small, but understanding the relationship could affect the decision to pursue an IPO or not. Investors of new public entities should also understand the correlation of ROA to financial performance. Based on the findings of this study, the next section includes an exploration into the implications for social change.

Implications for Social Change

Section 1 indicated that this study would provide additional information that could improve the survivability of IPOs and bolster the economy. With only a minor correlation for ROA and no correlation for ROE to the change in market capitalization, the implications are still relevant to driving social change. As new firms expand and create new jobs, the survivability of the firm might create the opportunity for social

change. The evaluation of the findings of this research may add additional information to the knowledge base concerning survivability and monetary gain for new firms entering the public market. This in turn may aid smaller firms so that they can continue to be the building blocks of the local and national economy.

Recommendations for Action

The evaluation of the findings provided a platform of recommended actions for business owners and investors pursuing an IPO for their firms. One action is to acknowledge that the variables ROE and ROA do not have predictive ability for the future performance of new firms. Chief executive officers, venture capital investors, and private investors could therefore focus on other measurements of performance that may provide better indications of future profits and growth. Many other performance ratios exist that may be better suited to predicting performance for new firms. That is not to say that ROA and ROE are not useful once a firm stabilizes in the marketplace and has several years of market performance. Publishing the results of this study would share the findings with a larger population outside the academic community. With a broader population, the findings could provide a benefit within the business community. Additional knowledge concerning the survivability and expansion of new firms may have an impact on shareholders and communities.

Recommendations for Further Study

With a minor correlation of ROA for IPO performance, additional research is possible when exploring financial ratios and firm performance in other areas. Future researchers could investigate ROE and ROA with regard to the entire U.S. market but

focus specifically on firms traded for more than 5 years. This would remove the firms that statistically fail in the early years after going public. It may also be interesting to focus ROE and ROA research on one business sector of the U.S. public market.

The data collected for this study did not identify any significant relationships, but a small sample size due to the market collapse in 2008 limited the available data. Future researchers could conduct a similar study on the same variables but only on a group of IPOs after 2009, which would remove the limitations identified for this study. These studies could provide additional information to business managers and CEOs concerning how their financial ratios relate to the firm's performance. Private investors could also benefit by investing in new emerging firms.

Reflections

This study involved examining the relationship of financial ratios and the long-term performance of new firms. This study was rewarding in three ways. First, the results provided additional insight on the predictive powers of financial ratios for IPOs and provide information to business owners, venture capital investors, and private investors. Second, the lack of a significant relationship revealed that early financial ratios are unreliable when evaluating new firms, so caution is necessary when estimating future performance based on those ratios. Finally, my personal knowledge on the overall process of conducting scholarly research increased. As an investor, I believed that the ratios evaluated are important considerations when investing in a firm, and while these ratios may be useful for evaluating established firms, they are not a reliable indicator for new firms.

Summary and Study Conclusions

The relationship between financial ratios and financial performance of IPOs is relevant considering that these new companies add new employment opportunities to the U.S. economy. The initial goal of this research was to determine if a relationship existed between the two variables and the change in market capitalization for 174 new IPOs from 2007 to 2009 in U.S. markets. The purpose of the data analysis was to investigate if a correlation existed between ROE, ROA, market sector, and the change in market capitalization. The results revealed no relationship existed regarding ROE and the change in market capitalization, nor did a relationship exist with ROE, ROA, and the change in market capitalization when separated by business sector. However, there tended to be a minor correlation with ROA and the change in market capitalization for the IPOs in the sample. The results of the study addressed whether a relationship exists between financial ratios and market capitalization. Only a minor correlation exists for one financial ratio and market capitalization.

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Appendix A: Scattergraphs for ROE and ROA with Change in Market Capitalization