UNDERSTANDING THE DETERMINANTS OF FIRM GROWTH IN YOUNG REITs

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Abstract

The main objective of this study is to investigate the determinants of firm growth in young REITs with the view that REITs with its unique operating conditions may have different implications for new venture growth. This study aims to (a) document growth characteristics of REITs, (b) empirically examine different growth determinants of REITs, (c) explore different growth strategies adopted by REITs, and (d) investigate the dual relationship between growth and profitability in REITs. We use GMM-system estimator to test a dynamic panel data model of firm growth that incorporates different influencers of growth in REITs. Using data on 148 US equity REITs that had its IPO during the period 1993-2005, we find that REIT growth is inversely proportional to REIT size, age and leverage and directly related to cash flow and insider ownership. We also find positive persistency in growth rates in young REITs. But, sustained growth among REITs beyond five years is rare. Also, new REITs that experience high growth in its early years are more likely to survive longer and REITs failure rate declines with size and age. Finally, we find a small positive influence of profit rates on subsequent growth and a positive and significant influence of growth on profits.

Keywords: REITs, Firm Growth Determinants, Growth strategy, Growth and profitability

1. Introduction

Real Estate Investment Trusts (REITs) have come a long way from 1960s when it was created in the United States to be passive investment vehicles for real estate. Over the past two decades REITs have grown phenomenally in size and importance and have started functioning as growth oriented real estate operating companies.[1] This unprecedented growth, to a large extent, can be attributed to a host of positive regulatory changes that the REIT structure has undergone after the Tax Reform Act (TRA) in 1986. The "new-REIT" era, as it is called post 1992, has witnessed a plethora of Initial Public Offerings (IPOs) and with it the formation of many new high growth ventures in the REIT sector.[2] The primary objective of many of these young REITs has been to grow aggressively in the initial years of its inception. This is evident from the high asset growth rates of REITs (Figure 1.1) during its nascent years. There can be diverse reasons for the growth motivations of REITs in its formative years like achieving economies of scale earlier (to attain critical size and spread fixed costs) and gaining competitive edge in the market in a shorter time. On the positive side, bigger REIT size encourages institutional ownership and analyst tracking, improves stock liquidity and helps in attracting and retaining top quality employees. But, on the flip side, unbridled growth can also be the result of empire building motives of unethical mangers whose remuneration is often tied to the assets under management and who want to thwart any takeover attempt by growing bigger in size.

Figure 1.1: Average asset growth rates with age

This figure depicts the decreasing rate of asset growth over the years since firm listing. Total assets data is obtained from SNL Financials for REITs that had its IPO from 1993 onwards.

[1] REITs' phenomenal growth in the US is evidenced by the change in its average size of total assets from a mere $193 million in the beginning of 1993 to $3.95 billion by the end of 2010.

[2] According to NAREIT statistics, 90 REITs were incorporated in the years 1993 and 1994 combined. Other waves of REIT IPOs were seen in 1997-98 with 42 new issuances and in 2003-05 with 29 new equity issuances.

Whatever be the growth motivation of a young firm, growth in its nascent years is a vital indicator of its survival. Since, new ventures are subject to "liability of newness[3] and smallness", their survival may be significantly reduced in the absence of growth (Buederal et al, 1992). This is supported by the fact that out of the 90 new REITs that had its IPO in 1993 and 1994 combined, 70 (78%) survived by the end of five years and only 35 (39%) survived after 15 years.[4] Looking at the same cohort, REITs that did not survive the first five years had a three year compound annual growth rate (CAGR) in total assets of 34.45%. The three year CAGR for firms that survived more than 5 years but less than 10 years was 38.88% and for the firms that survived more than 10 years was 42.64%. We find that surviving REITs show a higher compound annual asset growth rate during the early years compared to those that did not survive. Hence, higher growth rate for REITs during the initial years of its birth is crucial for its survival. Hence, we focus our study on the REIT sector, in which young firms face similar investment opportunities and financial constraints, and examine the various predictors of new venture growth. Since, young REITs exhibit a higher asset growth variance (82%) compared to established REITs (38%), we also look at the various determinants of growth in new REITs to address the question of differential growth, i.e., why some new REITs grow more than the others.

Growth, in general, can be defined as the change in size or magnitude from one period of time to another. For a firm, it is an increase in certain attributes such as sales, employment or profit between two points in time and is an important determinant of firms' performance. Firm growth has been addressed both theoretically and empirically in various disciplines including economics, psychology, entrepreneurship and strategy. The focus of the past firm growth studies has predominantly been the manufacturing industry with a limited number of studies undertaken in the service sector. Despite the large number of studies, little work has been done to examine the growth factors and growth strategies in REITs.[5] Most of the REIT's literature, that has some implication for growth, has focused on the size of the firm and the issue of economies of scales by consolidation. It is difficult to make comparisons with earlier firm growth literature as idiosyncrasy in the growth rates and the heterogeneity of firms has made it difficult to generalize across the growth experiences of the firm (Coad, 2009). Audretsch et al. (2004) concluded from their study of the Dutch hospitality industry that the growth dynamics of manufacturing industry may not be applicable to the service industry. Hence, we look at industry specific growth determinants in the REIT sector to understand the growth dynamics of REITs.

[3] The term "liability of newness" was termed by Stinchcombe (1965) to indicate the phenomenon of limited probability of performance (or survival) related to new firms.

[4] A firm is defined as new for the first five years of its existence. This is in line with the OECD definition of new firms for small and medium-sized enterprises.

[5] An et al (2011) is the only study we found in the REIT literature that examines the relationship between corporate transparency and firm growth in REITs.

Also, new venture literature has predominantly looked into the job creation and regional development aspects and has largely disregarded the manner in which firms attain growth. We also do not find any prior REIT research that has empirically looked into the strategic choices available for young REITs to pursue growth and the growth trajectories followed by young REITs. In an effort to fill this void in the existing literature, we examine the growth choices available to young REITs and empirically examine the simultaneous effect of growth on profit rate and vice-versa. Our aim is to document the growth characteristics of REITs and empirically investigate the determinants of growth in young REITs that can possibly explain its differential growth.

Firms adopting REIT status have the advantage of being exempted from paying tax at the corporate level. But this favorable tax treatment comes at a cost in the form of regulatory rules and constraints that apply to REIT's asset ownership, income generation, income distribution and organizational structure. The unique regulatory environment constrains growth oriented REITs financially and forces them to seek external financing quite often. These unique operating conditions may have different implications for firm growth phenomenon and this further motivates us to undertake this study.

Using data from 148 publicly listed REITs which had its IPO during 1993-2005, this study aims to (a) document growth characteristics of young REITs, (b) empirically examine different growth determinants of young REITs, (c) explore different growth strategies adopted by young REITs, and (d) investigate the dual relationship between growth and profitability in REITs. The focus of our analysis is young REITs where growth is imperative for obtaining viability rather than established firms where firm growth is about sustaining viability (Gilbert et al., 2006).

The focus of this study is Real Estate Investment Trusts (REITs) in general and young REITs in particular. We restrict our sample to publicly traded equity REITs in United States. Though a lot of factors affect firm growth, we specifically look for organizational factors that have the greatest impact on firm growth. Our focus is on firm-attributes & firm-specific factors and we do not consider the human factors like managerial motivations and traits that may have an impact on firm growth.

The research questions that we intend to answer through this study are:

(1) What firm-specific factors explain the differential growth of young REITs?
(2) How does firm investment and growth rate react to the current financial performance of REITs?

Studying growth strategies and its enablers is significant as it will help investors and managers to make wiser investment decisions. Understanding the enabling contexts will help managers to formulate growth strategies by looking at the firm's

internal resources and the constraints that the firm has to overcome. It would also help REIT managers to make accurate growth projections to assess the need of external capital due to capital constraints faced by REITs.[6] Investors can also get insights from this study in terms of selecting and investing in REITs that show prudent growth strategies in tune with the demographic affiliations of the firm. This analysis will bring some light in the area of firm growth in REITs and help to fulfill the gaps by providing empirical evidence that contributes to a broader understanding of factors affecting growth of REITs. This understanding will also help REIT managers to anticipate potential problems that the firms can face by adopting a particular growth strategy and help them overcome these problems to preserve the firm performance. The analysis will also help academicians understand the reasons new REITs fail based on firm characteristics and the method adopted by REITs to grow.

The rest of the paper is organized as follows. In section 2 we review the literature on firm growth and examine the theories on firm growth. We also examine various determinants and strategies of firm growth and develop the testable hypotheses for the study. In section 3 we describe the data and estimation methods for the empirical analysis. In section 4 we present the main empirical results & discuss the results. Finally, we conclude the paper in section 5 with some suggestions for future research.

2. Literature review and Research Hypotheses

2.1 Theories on firm growth

Over the years various researchers have postulated different theories of firm growth. These theoretical perspectives can be broadly divided into four groups: (1) classical models; (2) stochastic models; (3) resource based models; and (4) models of learning. According to the neo-classical theory, all the firms within an industry are pushed - by the existence of a U-shaped long-run average cost curve and by the goal of maximizing profit – to expand their size until they reach the scale corresponding to the feasible cost (Geroski, 1999). The process of growth is exhausted as far as the process of optimization is completed, as there is no incentive to grow beyond the optimum size (Hart, 2000). However, this is made under the assumption that firm operates in a homogenous product market and can easily expand or contract to arrive at the optimal output level. In reality, the empirical evidence gives a different story about firm growth which is beyond the profit maximizing mechanism. Thus, the main criticism of the classical economist's school of thought is that it cannot explain the presence of firms whose size is larger than the optimum size and how the process of firm growth actually evolves over time.

[6] The capital scarcity in REITs results due to the mandatory disbursement of 90% (95% before year 2000) of its taxable income as dividends to investors.

One of the earliest explanations of firm growth behavior was given by Gibrat (1931) as the stochastic model of firm growth. In his “law of Proportional effect”, Gibrat laid out the principle that growth of firms is a random process and the expected increase in firm size is proportional to the current size of the firm. While there may be a large number of systematic factors affecting growth, collectively they exercise only a limited influence on firms' proportionate growth (Hay and Morris, 1979). Gibrat’s law has been tested by many researchers with differing results. Some studies support Gibrat’s law in totality (Hart and Prais, 1956; Hart, 1962) and some support a part of the law (Hymer and Pashigan, 1962) about firm growth being independent of firm size. Later studies have found that there is a negative relationship between size and growth of a firm (Kumar, 1985; Evans, 1987). Several studies have also shown that smaller and younger firms grow at a higher rate than the larger and mature firms (Hart, 2000; Glancey, 1998).

Penrose (1959), moved away from the traditional emphasis on the size of the firm to a resource based view of firm growth. The resource based view considers the firm as a collection of resources and the focus is on the activities it can perform with those resources. Penrose (1959) analyzed the process of growth in terms of the speed with which firms could accumulate and assimilate such resources, and the opportunities for further growth which arise when firms’ internal resources are under used. Thus, firms’ resource characteristics were considered to lead to heterogeneity in the firm’s performance. Some behavior economists (Baumol, 1959; Chandler, 1962; Marris, 1964) consider that the differences in firm size (and hence firm growth) are due to the division between the objectives of control and ownership structures. When ownership is separate from firm control, the managers, who control the firm, tend to enhance the firm size to maximize their satisfaction instead of firm value. Thus, these theories suggest that there are different types of firm behaviors which lead to different levels of performance and growth.

More recently, models of learning and selection have appeared in the existing literature. This approach takes into account the dynamics of the firms and their level of efficiency. Thus, firm growth and survival depends on firm’s capacity to learn and adapt its strategies to the changing environment (Geroski, 1995). A model of the evolution of industry was proposed by Jovanovic (1982) by subjecting each firm’s cost curve to randomly distributed, firm specific shocks. He concluded that over time a firm learns about the effects of these shocks on its efficiency. Firms experiencing favorable shocks grow and survive. Others do not grow and may decline and even leave the industry. His model also results in small firms having higher, but more variable growth rates and higher failure rates than large firms. Chandler (1992) emphasized on the management of the resources in terms of organizational capabilities to explain the beginnings and growth of modern industrial enterprises. The literature on organizational capabilities and

core competencies are better able to explain the heterogeneities between firms and offers a plausible, history dependent story of organizational growth and development (Geroski, 1999).

There have been attempts to develop stage theories of firm growth that outline the changes in the optimum size over the life of firms. Greiner (1972) argued that firms evolve through five phases: creativity, direction, delegation, co-ordination and collaboration. Mueller (1972) argued that a strictly profit maximizing firm is likely to enjoy only a finite burst of growth associated with each innovation. Though the stage theories of firm growth are a useful aid for conceptualization, they still fail to explain why different firms enjoy different growth rates in each stage.

The complexity and the uncertainty surrounding the phenomenon of firm growth have led to the emergence of various theories predicting the evolution of firm. However, no single theory can give a complete picture of the impact and evolution of firm growth phenomenon. In the absence of a complete theory of firm growth dynamics, an empirical approach is recommended to seek the stylized facts (Coad, 2009).

2.2 Determinants of firm growth

Various determinants of growth have been put forward by researchers depending on the discipline of study. Researchers from psychology have focused on the behavior of the entrepreneur, whereas those from the economics discipline have focused on the relation between growth and firm size. Firm growth is dependent on the path taken by the organization and is an organizational outcome resulting from the combinations of firm specific resources, capabilities and routines (Coad, 2009). Firm growth also depends on the prevailing macro-economic conditions and on the degree of concentration or competition in the industry. Zhou and Wit (2009) have studied the determinants of firm growth in an integrated way and classified the determinants into three dimensions: individual, organizational and environmental determinants.

Individual determinants depend on the personality traits, growth motivation, individual competencies and personal background of the entrepreneur. Zhou and Wit's (2009) study finds growth motivation, specific skills and need for achievement to be the most important individual determinants of firm growth. Even though the general economic conditions are favorable and firm may be able to exploit the growth in the market with the use of its resource capabilities, manager's ability and managerial ambition plays a reinforcing effect on the firm growth. Several research studies have shown that entrepreneur's willingness to grow their firms (growth orientation) affects the performance and realized growth of the firm (Wiklund, 1998; Zahra, 1991). Motivated managers are able to effectively utilize the resources and select appropriate strategies to improve growth. This is especially true for a small firm where motivation and the

ability related factors of the entrepreneur play an important factor in the success of the firm. In empirical studies, growth motivation of managers is observed to have a positive effect on growth (Delmar & Wiklund, 2008).

The environmental determinants like dynamism, hostility and heterogeneity determine the growth potential of the firms. To some extent growth is externally determined by the environment in which it operates. Various studies have acknowledged the effect of these determinants but don't consider it to be the most influential in determining firm growth. Though, growth to a considerable extent is a matter of willingness and skill, but the fundamental facilitators and obstacles in the environment cannot be disregarded (Davidsson et al, 2005). Beaudry and Swann (2009) in their analysis of the influence of strength of industry cluster have shown that for some industries there is a positive association in the firm growth and own sector employment.

Organizational determinants are found to have the greatest influence on firm growth. These determinants have been discussed in the existing literature in the form of firm attributes, firm specific resources, firm strategies and organizational structure. The most studied firm attribute is age and size. Age of the firm has a negative relation with the growth of the firm and this has been empirically supported by many studies (Evans, 1987; Dunne and Hughes, 1994; Glancey, 1998; Yasuda, 2005). Gibrat´s law has been a much revisited benchmark for research on the determinants of firm growth since its formulation in 1931 (Sutton, 1997). According to the Gibrat's law of proportionate effect, firm growth is independent of firm size at the beginning of the period. Early studies have found no relationship between rate of growth and size of the firm (Hart, 1962; Hymer and Pashigan, 1962). But most of the later studies have found a negative relation between firm size and growth contrary to Gibrat's law (Kumar, 1985; Hall, 1987; Dunne and Hughes, 1994; Almus and Nerlinger, 2000; Bottazzi and Secchi, 2003). Though, empirical literature on the relationship between firm size and growth has for the most part rejected the stochastic model, some have found weak evidence to support Gibrat's law for larger firms (Mansfield, 1962; Evans, 1987). It has also been empirically supported that firm's survivability rises with size and age (Jovanovic 1982; Evans 1987; Yasuda 2005).

Based on the firm specific resources, financial resources and human capital are the most important resources for small business growth (Wiklund et al., 2009). With access to sufficient financial resources, firms are able to pursue growth opportunities. Human capital represents knowledge, skills and experience. This is especially crucial for small firms in rapidly changing industry as they have constraints in available resources and depend on innovation for future growth. Firm strategies include firm's orientation to the market needs and the firm's response to the customer preferences. Firm's strategy is basically dependent on the entrepreneurial orientation of the top

management and its behavior towards being proactive and competitive in the market. Empirical evidence shows that entrepreneurial orientation is positively related to growth (Wiklund, 1998). R&D spending also has a significant impact on firm growth (Griliches and Klette, 2000; Del Monte & Papagni, 2003; Yasuda, 2005). Organizational structure, which is related to the distribution of work and the mechanism of co-ordination like centralization and formalization, has shown to have mixed effects on firm growth. Organizational dynamism like the strategic decision making, R&D expenditure and scalability (preparedness to grow) has a positive effect on firm growth.

Factors that inhibit or hinder growth include the institutional barriers and the financial barriers. Institutional barriers include government policies, legal structure and taxation related issues. Smaller firms face higher obstacles due to institutional policies. Financial barriers represent access to financial resources. Access to financial resources depends on the rate of development of a country's financial sector. As financial development reduces the cost of external financing to financially dependent firms, it has a substantial supportive influence on the rate of firm growth (Rajan and Zingales, 1998). Again larger firms are less constrained for finance as compared to smaller firms (Ayyagari et al, 2008). Other inhibitors include inefficient functioning of financial markets, inadequate security and enforcement of property rights, poor provision of infrastructure, inefficient regulation and taxation, and broader governance features such as corruption (Ayyagari et al., 2008).

Managerial abilities can sometimes constitute the limiting factor for firm growth (Penrose, 1959). As the firm grows and matures, there is a tendency of managers to pursue growth rather than stockholder's welfare. Managers like to grow in sales or total assets at the expense of profitability, especially when their remuneration, perquisites and power are linked to firm size measured by sales. Managers attempt to maximize growth to achieve non-pecuniary rewards like status and power and in order to build their own empires. Growing bigger not only gives the managers a sense of achievement but it is also a mechanism to prevent any hostile takeovers and subsequently their job loss in the future.

2.3 Growth determinants of REITs

Building on past studies, we evaluate the firm growth determinants in REITs using the growth determinants established in non-REITs. We also include some REIT-specific variables that are unique and compelling predictors of REITs' growth.

a) *Firm size and age:* Firm size and age are the most widely studied factors of firm growth. Age of the firm has an inverse relation with growth of the firm and this has been empirically supported by many studies (Evans 1987; Dunne and Hughes, 1994; Glancey 1998; Yasuda 2005). We expect the same

negative relationship to hold for REITs, i.e., younger REITs grow more rapidly than older REITs. Majority of the recent empirical literature on the relationship between firm size and growth has for the most part rejected Gibrat's stochastic model. We also expect to find a negative growth-size relationship as newly formed REITs are small and need to grow rapidly to achieve the minimum efficient size (Almus and Nerlinger, 1999; Audretsch et al., 2004).

b) *REIT Structure:* Umbrella Partnership REITs (UPREIT) enables existing property owners to contribute properties to REITs, on a tax-deferred basis, in exchange for Operating Partnership (OP) units. The UPREIT structure has the tax advantage as compared to traditional structure as they pay lower prices to acquire properties. Also, the OP unit holders have an incentive to actively monitor firm action. At the same time, OP unit holders may face the conflict of interest when it comes to sale of properties contributed by them as this may trigger a large capital gains tax for them (Han, 2006). Thus, UPREITs may have less flexibility in disposing less desired properties, depending on the voting rights of the OP unit holders, and may be constrained to grow. But at the same time, REITs that follow the UPREIT structure engage in tax advantaged acquisitions that helps in increasing its growth. We expect a positive effect of the UPREIT status based on the tax advantage it offers.

c) *Institutional Ownership:* Being active long-term stockholders, Institutional investors are expected to better monitor and evaluate REITs' management decisions than outside investors. Positive monitoring effect may help in firm growth decisions by management rather than managerial entrenchment. In spite of the intuition that Institutional investors should have a positive effect on functioning of REITs, Friday et al. (1999) find no support for monitoring benefits by outside block-holders for REITs. Also, Ghosh and Sirmans (2003) find that institutional ownership fails to serve as an alternate disciplining mechanism, although their presence seems to enhance performance. Greater institutional participation may mean better growth prospects, though the same cannot be ascertained about better monitoring benefits. We expect a positive effect on growth even though institutional investors usually invest in large cap REITs.

d) *Insider Ownership:* Higher proportion of insider ownership by the managers means better alignment of monetary incentives between managers and other shareholders (Jensen and Meckling, 1976). However, higher insider ownership also means increased managerial consumption of perquisites and tendency of managers to build their own empires. Though the research in this area has provided mixed results, most of the studies have found a significant

non-linear relationship between firm performance and insider ownership (Morck et al. 1988; McConnell and Servaes, 1990). Han (2006) takes into consideration the dual ownership structure of common shares and operating partnership units in REITs and finds a similar significant and robust non-linear relation between REIT insider ownership and performance. We would also expect a positive effect on growth at lower levels of insider ownership and a probable change in effect at higher levels.

e) *Geographic Focus:* Some locations are more conducive to firm growth (Storey, 1994). REITs having properties in regions where there is large market demand are likely to experience high growth than REITs owning and managing properties elsewhere. Though Almus and Nerlinger (1999) contend that location is probably of secondary importance as it is closely associated with industry clustering, Davidsson (1989) argues that characteristics of the geographical area are important for industries where firms are bound to the local market. In case of REITs, Ambrose et al. (2000) have argued that geographic concentration does not translate to higher income growth rates. But, we would like to test whether geographic focus as an additional factor contributes to REITs asset growth.

f) *Management Structure (Self-managed):* Most of the present day REITs are self-managed, which means that the management of REITs properties is done by its employees. Thus, self-managed REITs have a better control and supervision on its activities and that may help in the growth of the REITs. Most of the times Self-advised and Self-managed go hand in hand, but we still find some REITs that are self-advised and not self-managed. These REITs that are self-advised but not self-managed are prominently found in the hotel and retail sector. We expect the self-management of REITs to have a positive effect on growth.

g) *Management Style (Self-advised):* Most of the REITs in the nineties changed its management style to self-advise with the passage of the Tax Reform Act (TRA) of 1986 that allowed REITs to have internal advisement. It is argued that since internal advisors have an ownership stake in REIT they advise, their interests are more closely aligned with the other stakeholders of the firm. On the other hand, agency issues are a concern in the case of externally advised REITs. This has been documented in terms of their underperformance, to their internally-advised counterparts, based on stock returns and Tobin's Q (Cannon and Vogt, 1995; Capozza and Seguin, 2000). Thus, internally-advised have a superior ability to raise capital at better terms than externally-advised REITs that are more financially constrained due to weaker capital market access (Ambrose and Linneman, 2001). Hence, we

expect internally advised REITs, with better access to funds, to grow more than the externally advised REITs.

h) *Liquidity/ Cash-flow:* Financial means to grow can be accessed through various sources like retained earnings, short and long term borrowings and issuance of new shares. For REITs, finance is always a hurdle as they have to disburse 90% of its taxable income as dividends and have to look for external sources.[7] But REITs still hold 1.57% of its total assets in cash and its cash holdings are directly related to cost of finance and growth opportunities (Hardin et al. 2009). However, Ott et al. (2005) argue that internally generated capital would be insufficient to fund an aggressive growth strategy and REITs have to necessarily go to external sources for finance. Hence REITs are better off by disbursing cash and reducing the agency cost associated with free cash flow. We still expect a positive relationship with cash-flow as more of it would require REITs to procure a lesser amount from the external providers of finance.

i) *Property Type:* Different property sectors grow at different rates and hence the variation in growth rates can be attributed to the specific nature of the property sector in which the REIT operates. More prominent property types like retail, office and residential are expected to show better growth dynamics.

j) *Financing choice:* REITs need for capital and its unique regulatory environment makes them seek external sources of financing very frequently. Since REITs don't pay corporate taxes, they have no incentive to issue debt. Also, since REITs can't retain most of its earning, debt as a medium to mitigate information asymmetries has no apparent benefit. But still they tend to have persistently high leverage ratio of more than 50 percent (Capozza and Seguin, 2001; Feng et al. 2007). According to Lang et al. (1996), there is a negative relationship between leverage and future growth at firm level for firms with low Tobin's q-ratio. But, they also find that leverage does not reduce growth for firms known to have good investment opportunities. This argument is supported for REITs by Feng et al. (2007) who find that REITs with high growth opportunities and high market valuation raise funds through debt. In a more recent paper Huynh and Petrunia (2010) consider the role of financial variables in the growth of new firms in the Canadian manufacturing industry. They find that controlling for age and size, leverage has a positive effect on growth of new firms. The issuance of debt by REITs is also consistent with Pecking order theory which states that mangers prefer to fund

[7] Though Hardin et al. (2009) assert that this restriction understates REITs actual ability to accumulate cash since the mandatory dividend is calculated as a portion of taxable income that is calculated after depreciation which is a non cash expense.

investment with retained earning first, then debt and equity as the last resort. For REITs that have high asset growth, we expect a negative relationship with leverage.

Other factors that may affect firm growth include market competition, organizational form, capital market access and finite life of REIT. REITs facing less competition may grow faster, REITs that have the backing of a bigger establishment may have better access to resources to grow, REITs having better and easier access to financing have better prospects of growth and REITs having infinite life REITs can grow indefinitely.

2.4 Strategies of firm growths

Firm growth is not static in nature. Firms grow in many different ways and the patterns of growth can vary significantly and have different causes (Delmar et al., 2003). Research on firm growth has identified three major strategic choices for firm growth, viz., undertaking internal expansion, conducting Mergers & Acquisitions and developing trust based network relationships (Peng and Heath, 1996). A firm can grow by expansion of the current activities which is referred as “organic growth”. Firms can also grow by acquiring existing firms. Trust based relationships are based on interpersonal relationships to form networks and alliances. Different types of growth have different implications for the firm managers and also have different impact on the firm performance. Firms that grow organically show a smoother growth pattern over time compared to firms that grow mainly through acquisitions (Penrose, 1959). Firms early in their life cycle and small firms tend to take the organic growth path whereas mature and large firms predominantly grow by acquiring existing businesses (Penrose, 1959: Davidsson et al., 2006). Firms can decide to grow in the domestic market or take their business to the international market when the domestic market gets saturated. International growth is more associated with large firms as they have the wherewithal to compete and to withstand setbacks.

Acquisition strategy is used by firms to rapidly achieve growth and competitive advantage. Acquisitions can translate into economies of scale, improved market reach and visibility through the positive synergies of the two firms. But, from societal point of view, organic growth creates new jobs whereas acquisitions tend to move existing jobs from one firm to another and sometimes may even reduce jobs. Also, growth through acquisitions is faced with various challenges of merging organizational cultures and executive overload. The pitfalls may be severe if the anticipated synergies of the acquisition are not realized and a hefty premium is paid for the acquisition.

Though most of the growth research fails to make the distinction between organic and acquisition growth when conducting empirical analysis, some researchers have

specifically tried to understand the growth patterns in high growth industries. Delmar et al. (2003), find that 10% of the firms in their sample grew primarily via acquisition. Size of the firm also has an influence on the choice to grow organically or through acquisition. Large firms primarily grow by acquiring others whereas small firms grow organically (McKelvie and Wiklund, 2010).

2.5 Growth strategies of REITs

REITs' growth strategy can broadly be divided into two categories: Internal growth and external growth. Internal or organic growth is usually achieved through maintenance and improvement of rental income and occupancy rates of the existing assets as well as the optimization of asset management quality and costs. Internal growth usually takes a longer time as it depends on the availability of resources with the firm (Penrose, 1959). Thus, firms that grow organically show smoother but slower rates of growth. External growth, on the other hand, is achieved primarily through acquiring new income producing properties or developing new properties that can earn income in the future. Though REITs have opportunities to increase cash flow from its existing properties by providing efficient property and lease management, there is a limit to FFO growth that can be achieved by organic growth alone.

Most REITs typically resort to external growth through expansions, acquisitions and property development to achieve faster and substantial growth. REITs generally grow by acquiring properties with yield higher than the REITs' cost of capital. Source of acquisition value comes from increased economies of scale and the potential to improve value of the property by better management. Acquisition can be in the form of a single asset, a portfolio of assets or merging with another REIT or acquiring a private/public real estate company. Traditionally, the strategy of merging with other firms is used by well-established firms as an effective external source of growth as younger and smaller firms lack the wherewithal to acquire other firms. It is generally believed that young firms are acquisition targets and they are rarely considered to be potential acquirers themselves. But, if young REITs want to expand rapidly to attain economies of scale then young REITs should consider acquiring/merging with its competitors as a viable strategic option.

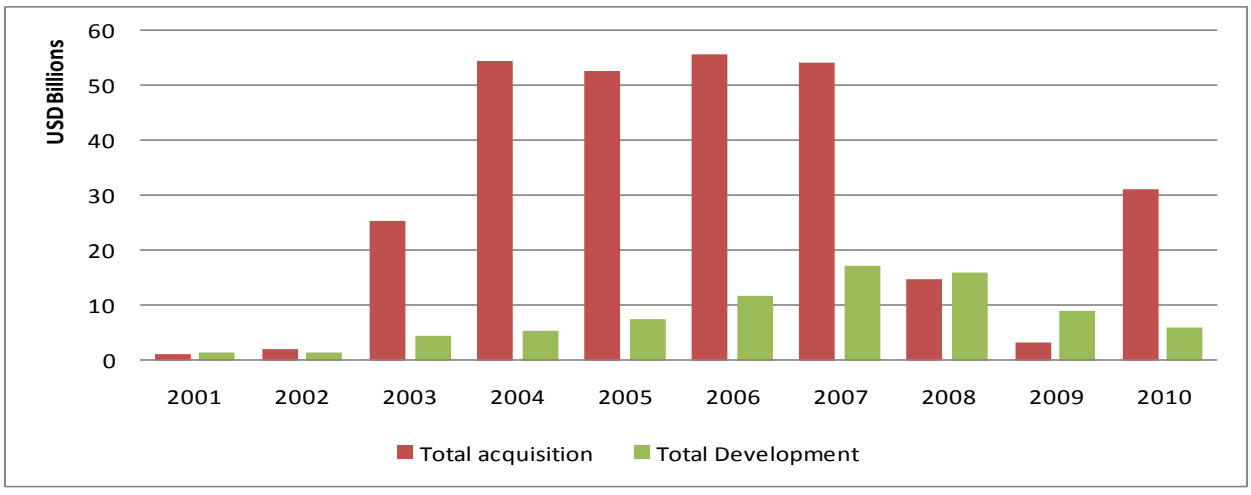
Development on the other hand is considered risky due to construction and leasing concerns. Even if some REITs have pre-leasing commitments for some portion of development, the changed market conditions by the time the property is ready for occupation may result in investments being unprofitable. Though development has the potential to create higher returns due to development profits, it is dilutive to REITs' stock price as it is capital intensive (REITs can't retain much cash) and provides no cash flow to the bottom line in the short term. Development is an option that is irreversible and is expensive and it engenders a higher cost of capital due to increased risk. Though real

estate values are created by development activities, many things can go wrong or change during the period of development as seen in the recent financial crisis. Yields are low during the development period which may affect the revenue targets. Since, development is considered to be increasingly risky, not many REITs undertake this strategy for external growth. Only established REITs with proven history of revenue generation can raise the necessary capital to weather the development process. According to Brounen et al (2000), who study the effects of property development activities on the performance of REITs during the period 1993-1999, property development is undertaken mainly by large REITs as development activities require a certain size in order to generate spin-offs. They also conclude that REITs specializing in outlet centers and regional malls almost always develop property themselves and cite the reason as the scarcity of existing properties in these markets during the time period of their study.

The growth strategy of REITs depends on the prevailing economic condition that has a bearing on the demand and supply of these income producing properties. The growth strategy is also dependent on REIT's capital raising ability from external sources. This proves to be a challenge, especially to young REITs that find it difficult to compete with their well-established counterparts. Growth through acquisition of properties is the most often path taken by REITs to grow externally as compared to growth through development of new properties (Figure 2.1). Property development is considered to be relatively risky and cash intensive activity and hence is limited to more established REITs as compared to young and small REITs. Acquisition on the other hand is relatively less risky and the key is to find a property with yield higher than the REIT's cost of capital.

Figure 2.1: REITs investment through acquisition and development (2001-2010)

This figure depicts that property acquisition is the preferred route for REITs to grow compared to property development. The data for total acquisitions and development is obtained from SNL Financials.



Over the years, REITs have moved from being passive real estate holding companies to firms that cater to various real estate services. REITs have also evolved by strategic tie-ups and joint ventures with developers and real estate operators to add to its asset growth. The REIT modernization Act (RMA) in 2001, allowed REITs to own 100% of stock of a Taxable REIT Subsidiary (TRS) that provides services to REIT tenants. This has provided an avenue for REITs' to increase its real estate services like asset management, property management and development consultancy to related and unrelated parties to generate the most needed additional income to grow.

2.6 Firm growth and profitability

The inter-relationship between growth and profitability is complex and is the reason for the mixed picture provided by the empirical evidences. There are theoretical arguments that growth affects future profitability and profitability supports future growth. But, the exact nature of these relationships and causality remains unresolved. Intuitively, it can be argued that firms with better financial performance will reinvest their profits for further growth. This means that more efficient and profitable firms will have higher growth rates. But, regulations stipulate that REITs distribute 90% of its taxable income as dividends, which leaves them with little retained earnings to reinvest. This makes the relationship between financial performance and expansionary investment even more unique as REITs face the constraint of sourcing external financing for further investment. Even though REITs can't retain majority of its profits for further expansion, profits can act as signal to obtain external finance at favorable terms.

Also, the empirical evidence from the manufacturing sector suggests that the actual positive relationship between performance and growth is generally lower than expected and in some cases even non-existent (Markman and Gartner, 2002). Hence, there is no evidence of universal positive relationship between growth and profitability. This anomaly between the theoretical predictions and the empirical findings needs to be verified for REITs. How does firm investment and growth rate react to the current financial performance of the REIT? Whether the influence of profits on growth is more important than the influence of growth on profits?

2.7 Research Hypotheses

One of the main objectives of this study is to find the firm-specific determinants that have an impact on REITs' growth. Since we consider various determinants that may have a relationship with firm growth, it leads us to make a number of hypothesis which depict positive, negative or no relationship between a determinant and firm growth. Based on literature review, the hypothesized relationships are categorized into the following:

Hypothesis 1: REIT size, age and leverage have a negative relationship with REIT growth.

Hypothesis 2: UPREIT structure, Insider ownership, Institutional ownership, self managed & self advised REIT structure and cash flow have positive effect on REIT growth.

The dual-relationship between growth and profitability is still an unresolved issue in REITs. We would like to find whether financial performance is a good predictor of growth in REITs or whether asset growth leads to more profitable REITs?

Hypothesis 3: REIT's asset growth has a positive relationship with profitability.

Hypothesis 4: REITs' profitability has a positive influence on firm growth.

3. Data and Methodology

3.1 Measurement of firm growth

Diverse metrics of firm growth have been used in the existing literature. Based on extensive literature review, Delmar (1997) and Ardishvili et al. (1998) have compiled a list of possible growth indicators: assets, employment, market share, physical output, profits, stock market value and sales. Sales and employment are the most widely used measures in empirical growth research (Delmar 1997). Since, firm growth is fundamentally a multidimensional phenomenon, researchers have used different growth measures for different forms of growth (Delmar et al., 2003). Sales, seems to be the consensus indicator for the preferred measure of firm growth as it is easily available and applies to all sorts of firms (Ardishvili et al., 1998). But use of sales as a precursor of growth has its shortcomings too. For start-ups like the technology firm, growth in sales may happen at a later stage and assets and employment growth may be a better indicator of growth. Also, sales are sensitive to inflation and currency exchange rates (Delmar et al, 2003). Employment measure may be preferable if the focus of study is the managerial implication of growth (Churchill and Lewis, 1983). But, with technological innovations and with the substitution of capital for labor, a firm may grow considerably in terms of assets and output without any substantial growth in employment. Measuring growth in assets may be problematic if the firms in the sample have different capital intensities and also if intangible assets are as important to the company's growth prospects. Hence, the selection of growth indicator depends on the research question and the type of firms that are included in the sample (Davidsson and Wiklund, 2000).

The two basic approaches used in the literature to measure firm growth are the absolute and relative growth. Absolute growth measures the absolute increase or

decrease in numbers of firm size whereas relative growth measures the growth rate in percentage terms. Firm growth is usually measured by taking the log-differences of size.

$$\log(G_{it}) = \log(S_{it}) - \log(S_{i,t-1})$$

where "S_{it}" is the size of the firm *i* at time *t*.

Using the log differences instead of relative growth helps in minimizing the effect of heteroscedasticity in statistical analysis. But, measuring growth by these two methods can often lead to different results (Sheperd and Wiklund, 2009). Weinzimmer et al. (1998) found a weak correlation between the different formulae for computing growth. Measures of absolute growth are biased towards large firms whereas that of relative growth is biased towards smaller firms. To overcome this problem, Birch (1981) used a combination of absolute and relative growth (known as Birch index) to reduce the impact of firm size. Sometimes, growth rates are also scaled down by average size to reduce the ambiguity in results that can rise if the initial size is too low.

A comparison between the previous studies on firm growth is made difficult with the variations in the growth indicators, the growth formula (absolute or relative) and the time frame (Delmar et al., 2003). The challenge is to develop better knowledge about the relative and combined effects of many predictors under different circumstances (Davidsson et al., 2005). The diversity of measures used in the growth studies has made it difficult to generate a cumulative body of knowledge (Weinzimmer et al., 1998).The interpretation of growth metric also depends on the length of time over which it is measured and due to the possibility of the exit of a firm that may again make comparisons misleading. Since there is no one best measure of firm growth, some researchers have advocated composite measures using multiple indicators (Davidsson, 1989) to measure heterogeneity in firm growth. Using multiple measures helps not only in providing a "big picture" of the empirical relationships but also allow comparisons with the earlier studies.

3.2 Data set and source

The initial sample includes all publicly traded US equity REITs covered by SNL Financial and that had its IPO during 1993 to 2005, both years inclusive. We also match the Equity REITs (EREITs) universe of SNL with those identified by NAREIT to verify the investment focus of REITs. Our sample period starts from 1993 onwards as the new-REIT era (post 1992) is more representative of the present REITs' characteristics and is significantly different in ownership structure and management style to pre-1990 REITs.[8] Also, during the early nineties dramatic changes happened in the REIT

[8] Ott et al (2005) analyzed the differences in the old-REIT (1981-1992) and new-REIT eras (1993-1999) and concluded that the REIT sector experienced rapid growth in the new-REIT era.

regulatory environment and with those changes REITs have predominately become actively managed (Ross and Klein, 1994). Institutional investors had limited role before 1993, but with the "look through" provision passed in 1993, REITs have attracted more investments from Institutional investors.[9] Also, UPREIT structure was first developed in 1992 and various debt-ridden real estate developers, in the early nineties, found this as a tax-deferred strategy to get the REIT status and finance its growth.

We have in our sample all equity REITs that are publicly traded, which includes listed (NYSE, AMEX and NASDAQ) and unlisted REITs.[10] We exclude Mortgage and Hybrid REITs as the number of these types of REITs have declined over the recent years.[11] Also, we are interested to study the growth dynamics in REITs and equity REITs, which own and operate income producing properties, provide a better metric to measure growth than mortgage REITs. In addition to SNL, we also use Bloomberg, COMPUSTAT and firm's SEC filing (10Ks, proxy statements DEF 14A, 13-F filings) from SEC EDGAR database. Institutional ownership data for the sample REITs are collected from the historical 13(F) SEC filings and insider ownership data is computed from the manual tracking of the firm's DEF14A proxy statements yearly from 1993-2010 from each of the sample REITs' webpage.

We start with 167 equity REITs that were incorporated during 1993-2005. We restrict our sample to REITs that had at least three years data during 1993-2010.[12] We eliminate 9 REITs that had only one year of data and further eliminate 10 more REITs that had data for only two years. Following Hartzell et al. (2006), we eliminate 22 REIT-years where asset growth rates are greater than 100%. We do this to mitigate the effect of extreme outliers due to mergers and acquisitions. The merger or take-over of a firm implies a substantial increment to the growth of the acquiring firm. Hence, we eliminate extreme growth rates in our sample. These eliminations reduce our sample to 148 unique public equity REITs with 1505 REIT-year observations. To eliminate survivorship bias, we retain in our sample REITs that were acquired, merged or delisted up to the time of its existence. The final sample consists of 148 equity REITs and is an unbalanced panel dataset.

3.3 Variable definitions and Summary statistics

The variables used for the empirical investigation of determinants of growth in REITs are enumerated below. The summary statistics along with the variable description for the final sample are presented in Table 3.1.

[9] The Omnibus Budget and Reconciliation Act (OBRA) of 1993 relaxed the five-or-fewer ownership rule for Institutional investors.
[10] We have around 60% of our sample firms listed on NYSE.
[11] According to NAREIT statistics, by the end of 2010, over 80% of publicly traded REITs were Equity REITs.
[12] A similar criterion of three years or more of data is used by Himmelberg et al. (1999) in their study on determinants of managerial ownership.

Table 3.1: Variable definitions and Summary statistics

Variable name	Variable code	Definition	No. of Obs.	Mean	Median	Standard deviation	Min.	Max.
Absolute Firm Growth	TA_Gr	Annual total asset growth [ln ($TA_{i,t}$) -ln ($TA_{i,t-1}$)]	1335	0.1457	0.0801	0.2592	-2.927	0.9872
Relative Firm Growth	TA_Gr_rel	Annual % change in Total assets [($TA_{i,t}$- $TA_{i,t-1}$)/$TA_{i,t-1}$]	1278	0.1476	0.0754	0.2365	-0.946	0.9992
Size	TA	Natural log of end of period total assets [ln(TA_t)]	1505	20.769	20.792	1.353	10.954	24.2
	MKTCAP	Natural log of end of period Market Cap [$MKTCAP_t$)]	1505	20.1	20.15	1.415	12.9	24.09
Age	AGE	Natural Log of one plus years since IPO	1505	1.757	1.856	0.733	0	2.94
Cash flow	Sc_FFO	Funds from Operation scaled by Total assets	1460	0.051	0.054	0.027	-0.201	0.1274
Leverage	LEV	Book value of Debt scaled by Total assets	1505	0.5159	0.5111	0.1724	0	1.618
Tobin's Q	TQ	(Market value of equity+ book value of Debt) / Book value of total assets	1505	1.145	1.119	0.2549	0.4865	2.39
REIT Structure	UPREIT	Indicator Variable, Equal to 1 if UPREIT, 0 otherwise	1505	0.8671	1	0.3395	0	1
Management Structure	SELFMAN	Indicator Variable, Equal to 1 if Self managed, 0 otherwise	1505	0.8564	1	0.3567	0	1
Management Style	SELFADV	Indicator Variable, Equal to 1 if internally advised, 0 if externally advised	1505	0.9681	1	0.1757	1	1
Institutional Ownership	INSTIOWN	% of total O/s shares owned by Institutional Investors	1380	0.6	0.6396	0.2742	0.0006	1.281
Insider Ownership	INSIDOWN	% of total O/s common shares and OP units owned by Directors and executive officers as a group	1122	0.1262	0.091	0.1207	0	0.826

Table 3.2 shows the distribution of the sample across the study period, property focus, REIT's operating structure, REIT's management structure and management style. The table details both absolute and relative growth of total assets. The REIT-year observations are highest in the years 1999 and 2000 and are more or less evenly distributed. Based on property focus, Industrial, Healthcare, Hotel and Office show relatively more annual average asset growth over the sample period. The distribution of sample by REIT structure shows that majority of the sample, around 85%, comprised UPREIT structure REITs. Similarly, the distribution of samples by REIT management style and management structure shows that more than 95% of the sample consists of internally advised REITs and more than 85% of the sample comprises of self managed REITs. Running a t-test for mean equality, we fail to reject the null hypothesis of mean equality of total asset growth by REIT structure, advisor type and management style type. This test result suggests that the difference in the growth of REITs is not significantly influenced by those variables.

The correlation matrix for the variables in this study is presented in Table 3.3. The correlations support many of the expected relations. REIT asset growth is significantly and negatively correlated with firm size (proxied by total asset), firm age and leverage. Firm growth is significantly and positively correlated with scaled cash flow (funds from operation/total assets) and Tobin's q. But, ownership by institutional investors has no significant influence on REIT asset growth and insiders hold small positive effect on growth.

Table 3.2 Sample distribution of REITs

1) Time Distribution

		Average Total Assets Growth	
Year	# of Obs	Relative	Absolute
1994	37	0.3353	0.316
1995	78	0.2478	0.2079
1996	80	0.2933	0.2812
1997	84	0.4099	0.4202
1998	96	0.358	0.3535
1999	101	0.1168	0.1134
2000	101	0.0244	0.0061
2001	92	0.0375	0.0333
2002	85	0.0749	0.0599
2003	81	0.0874	0.0934
2004	81	0.1265	0.1048
2005	84	0.2058	0.1968
2006	75	0.1388	0.1506
2007	67	0.1137	0.1207
2008	65	0.0338	0.0281
2009	64	-0.0114	-0.0153
2010	64	0.0372	0.0279

2) Property type Distribution

		Average Total Assets Growth	
Prop Type	# of Obs	Relative	Absolute
Diversified	43	0.1834	0.1578
Healthcare	54	0.1670	0.1834
Hotel	157	0.1462	0.1667
Industrial	69	0.2142	0.1807
Residential	246	0.1513	0.1506
Office	239	0.1318	0.1572
Retail	373	0.1189	0.1061
Specialty	154	0.1893	0.1620

3) REIT Structure Distribution

		Average Total Assets Growth	
REIT Stucture	# of Obs	Relative	Absolute
UPREIT	1161	0.1413	0.1407
Non-UPREIT	174	0.1895	0.1788

4) REIT Management Structure Distribution

		Average Total Assets Growth	
Mgmt Structure	# of Obs	Relative	Absolute
Self-managed	1150	0.1517	0.1499
Ext-managed	185	0.1215	0.1196

5) REIT Management Style Distribution

		Average Total Assets Growth	
Mgmt Style	# of Obs	Relative	Absolute
Self-advised	1293	0.1468	0.1453
Ext-advised	42	0.1728	0.1578

This table presents the distribution of the sample across time, property type, structure, management and style of REITs used in the determinants of firm growth analysis. The sample consist of 1,335 REIT-year observations for 148 publicly traded US equity REITs that had its IPO during 1993-2005 and traded during 1993-2010. REITs are classified into eight property categories by regrouping the SNL classification. The eight categories are Diversified, Healthcare, Hotel, Industrial, Residential (Multi–family), Office, Retail (Regional mall, shopping center and Retail) and Specialty (Storage, Manufactured homes, etc.).

Table 3.3 Correlation of key variables

	Growth	Size	Age	Sc Cashflow	Leverage	Tobin's Q	Insti Own	Insider Own
Growth	1.0000							
Size	`-0.2593***	1.0000						
Age	`-0.3945***	0.5112***	1.0000					
Leverage	`-0.2350***	0.1970***	0.3066***	1.0000				
Scaled Cash flow	0.0683**	`-0.0880***	0.0406	`-0.1922***	1.0000			
Tobin's Q	0.2368***	0.0515*	0.0678**	0.1740***	0.2240***	1.0000		
Institutional Ownership	0.0057	0.5291***	0.2570***	`-0.1479***	`-0.0486***	0.1866***	1.0000	
Insider Ownership	0.0081	`-0.2417***	`-0.1157***	0.2106***	0.0366	`-0.1282***	`-0.4921***	1.0000

This table presents the pair-wise correlations of the variables used in the regression model.
Size and Age are in Natural logs. Size is measured by Total assets. Other definitions of variables are given in Table 3.1.
***, ** and * refer to the statistical significance at 1%, 5% and 10% respectively.

Variables

a) Size: We use annual data of the natural log of Total assets (TA) as our main proxy for firm size. We adjust total assets for inflation. Alternate measures of firm size such as real estate value, total market capitalization and total recurring revenue are also considered in order to check the robustness of our results. The distribution of size measure is log-normal. We lag this measure in the regression equation.

b) Age: Firm age (AGE) is measured as the number of years since the Initial public offer. Firm age is assumed to have a non-linear impact on firm growth. Hence, we include a squared age term in the regression equation. The average age of the sample is 5.86 years. We lag this measure.

c) Firm Growth: We use the absolute measure of firm growth (TA_Gr) as the dependent variable, which is calculated as the change in the logarithm of total assets between the current year and the previous year.

$$TA\_Gr_{i,t} = \Delta \ln (TA_{i,t}) = \ln (TA_{i,t}) - \ln (TA_{i,t-1})$$

where i = 1,….., N are firms' labels and t = 1993,…, 2010 is our sample period

The distribution of asset growth rate is right-skewed across the sample of REITs with a sample mean and median equal to 14.57% and 8.02% respectively. This indicates that several REITs in the sample grow at a high rate relative to others in the sample. The periods between 1993-1999 and 2003-2006 were high growth periods for REITs in terms of asset acquisition. The period during 2006-2009 is characterized by decreasing growth in total assets due to the credit crunch that was created by the financial crisis. The debt exposure of REITs coupled with the increasing cost of funds led many REITs to shelve their asset growth plans soon after the crisis. We also use a relative measure of firm growth (TA_Gr_rel) which is the annual percentage change of total assets.

d) REIT Structure: We use a dummy variable (UPREIT) for the REIT structure. UPREIT is assigned a value of one if the REIT is an UPREIT, zero otherwise. We identify REIT as an UPREIT or non-UPREIT at the time they enter the sample and change the code if the REIT changes it structure midway. Most of the REITs entering in the new-REIT era are UPREITs. By the end of 2010, we had over 80% of REITs that had the UPREITs structure in our sample.

e) Institutional Ownership: We take the percentage of the total shares owned by institutions according to 13F filings. Due to options and OP units the sum of shares owned by institutions may appear greater than 100%. Average ownership by Institutional owners (INSTIOWN) by the end of year 2010 was 81.34%.

f) Insider Ownership: We measure insider ownership (INSIDOWN) as the common shares owned by all insiders i.e., all Directors and executive officers divided by the total common shares outstanding. The security ownership details of the company management are obtained from Definitive Proxy Solicitation Material **(**DEF14A) proxy statements filed by the company with the Securities and Exchange Commission (SEC). The average insider ownership by the year end 2010 for our sample of REITs was 9.01%.

g) Management Structure (Self-managed): Self-managed (SELFMAN) is a dummy variable which is equal to 1 if it is internally managed and 0 otherwise. Around 85% of our sample by the end of 2010 comprises of self-managed REITs.

h) Management Style (Self-advised): Self-advised (SELFADV) is again a dummy variable equaling 1 if internally advised and 0 otherwise. The majority of the sample, slightly more than 95%, comprises of internally advised REITs and gives support to Ambrose and Linneman's (2001) findings that the externally advised REITs are on the decline. Public and listed REITs are typically self-managed and self-advised, whereas public but non-listed REITs are typically externally managed and advised.

i) Liquidity/Cash-flow: We use Funds from Operation (FFO) to measure the liquidity of REITs. We take the FFO value as reported by the company for the period, which is typically calculated as GAAP net income excluding gains or losses from sales of properties or debt restructuring, and adding back real estate depreciation. FFO can be highly correlated with size measures such as total assets and hence we reduce this effect by scaling the cash measure by total assets (Sc_FFO) and lag this measure in the regression equation.

j) Property Type: Since, growth rates of REITs differ based on the property focus, we control for different property sector effects. As REITs specialize in different property markets we classify REITs into eight property categories by regrouping the SNL classification. The eight categories are Diversified, Healthcare, Hotel, Industrial, Residential (Multi–family), Office, Retail (Regional mall, shopping center and Retail) and Specialty (Storage, Manufactured homes, etc.). Diversified is used as the reference case in the regression.

k) Financing choice: Leverage (LEV) is measured as the ratio of firm's total debt to total assets. We lag this measure to examine the effect of leverage at the beginning of the year on firm growth. Average leverage for our sample is 51.59%.

l) Tobin's Q: We use the Tobin's *Q* (TQ) as a proxy for growth opportunities. We adopt Perfect and Wiles (1994) measure of Tobin's Q, which is calculated as the sum of the market value of equity and the book value of debt, divided by the book value of the firm's total assets.[13] We lag this measure so that investment opportunities available at the beginning of the year can be used to predict investment during the year. The average value of the proxy for Tobin's *Q* is 1.145.

Consistent with previous studies, we control for firm and year fixed effects for some models.

[13] Perfect and Wiles (1994) measure of Q has a correlation of 0.93 with that estimated using Linderberg and Ross (1981) approach which takes the replacement costs of assets into consideration. The latter approach though more accurate is more cumbersome to compute.

3.4 Research design

Based on Hall (1987) and Evans (1987), we begin our empirical tests with standard growth size regressions and compare models obtained by adding covariates. The growth equation is a function of initial firm size, age and a stochastic error term.

$$TA\_Gr_{i,t} = \beta_0 + \beta_1 \ln(TA_{i,t-1}) + \beta_2 \ln(AGE_{i,t-1}) + \beta_3 \ln(AGE_{i,t-1})^2 + \varepsilon_{i,t} \quad (1)$$

and $\varepsilon_{i,t} = \rho\varepsilon_{i,t-1} + \mu_{i,t,}$ where $\mu_{i,t}$ is a random disturbance assumed to be iid and ρ captures persistence of chance or serial correlation in $\mu_{i,t}$. We include the squared age term variable to reflect the non-linear impact of firm age on firm growth.

Model 1 is a simple model in which firm growth is regressed on logarithm of lag of total assets and logarithm of lag of age. We take the lag of both size and age variables as we want the beginning of period values in our regression equation and the data we have is for the end of period. The following empirical model serves as the baseline model to study the impact of other determinants on firm growth:

$$TA\_Gr_{i,t} = \beta_0 + \beta_1 \ln(TA_{i,t-1}) + \beta_2 \ln(AGE_{i,t-1}) + \beta_3 \ln(AGE_{i,t-1})^2 + \beta_4(LEV_{i,t-1}) + \beta_5(Sc\_FFO_{i,t-1}) + \beta_5(TQ_{i,t-1}) + \beta_j(\text{Control Variables}_{j,t}) + \varepsilon_{i,t} \quad (2)$$

Next, the effect of Institutional and insider ownership on firm asset growth is examined by including these variables in the baseline equation.

We use panel data regression instead of OLS to avoid heterogeneity bias as the variation in REIT asset growth is partially caused by REIT specific unobservable factors. We employ Hausman's specification test to examine whether the unobservable heterogeneity is correlated with independent variables and to determine whether fixed effects model is preferable to random effects model. The test produces a chi-squared statistics of 33.89 with a p-value of zero. The Hausman test result suggests that fixed method model specification is preferable for our data. Time-invariant variables like UPREIT, property type and advisor type are dropped from the fixed-effects model. In order to include the time-invariant variables in the model, we also report the results using the random-effects methodology. Annual dummy variables controlling for time-effects are included in both fixed and random effects model. We select the robust standard errors in Stata to calculate t-statistics corrected for serial correlation and heteroskedasticity.

To account for the serial correlation between the lagged regressor and the error term, we make use of the Generalized Method of Moments (GMM)-system estimator, which is a dynamic panel data technique developed by Blundell and Bond (1998). "System GMM" panel data estimator controls for the presence of unobserved firm

specific effects and gives unbiased and consistent estimates in presence of endogenous explanatory variables.

3.5 Growth and Profitability

A final test would be to examine the relationship between profitability and growth. Again, we resort to GMM-system estimator as the explanatory variables here are endogenous, i.e. there is a bi-directional causation between the dependent and independent variable. In such a condition OLS regression yields biased and inconsistent estimates as it requires the explanatory variables to be orthogonal to the residual error term. The problem of endogeneity can also be resolved by using instrumental variables that are uncorrelated with the error term but are correlated with the explanatory variable. But, if the instrument variables are weak, then the regression estimates are again biased and inconsistent. To overcome this problem, Arellano and Bond (1991) proposed a GMM estimator for panel data in which regression equations are expressed in terms of first differences (eliminating time-invariant firm-specific effects) and endogenous explanatory suitable variables are instrumented with suitable lags of their own levels. Though this estimator can give far better results than the previously used methods, it has its shortcomings if used for our purpose. The high persistence in profitability can give rise to weak correlation between the lagged levels of the endogenous variable and differences of the explanatory variables. In such a case the instruments included by the estimator are not useful and this leads to large finite sample bias. Hence, an improved panel data estimator proposed by Arellano and Bover (1995) and further developed by Blundell and Bond (1998) is used. Arellano and Bover (1995) constructed a panel data GMM estimator in which the regression equations are in levels and the additional instruments are expressed in lagged differences. Blundell and Bond (1998) further developed this by augmenting the original differences GMM estimator with the level equation estimator to form a system of equations known as “System-GMM”. In the context of our study, system GMM is best able to deal with endogeneity and firm-specific effects and can give unbiased and consistent estimates.

4. Results and Discussions

4.1 Growth characteristics of REITs

This study provides the first comprehensive study of firm growth rates in publicly listed US equity REITs. We undertake this study to examine the heterogeneity of REITs’ growth dynamics by plotting the distribution of firm growth rates. We document the growth rates of REITs using different growth indicators and describe their distribution across age, size and property types over different time periods. Since firm growth is a dynamic measure of change over time and a multi-dimensional phenomenon (Delmar et al, 2003), we use different growth measures that are suitable to the REIT sector. We

use growth indicators in terms of inputs (Real estate investment), in terms of the value of the firm (total assets, market capitalization and Enterprise value) and outputs (Recurring revenue and Funds from Operation). We also use the data to examine the survival and growth profile of a cohort of new REITs over ten years. A detailed examination of the evolution over a decade of 90 REITs founded in 1993 and 1994 is conducted and its pattern of asset and revenue growth is analyzed. We identify the pattern of growth for all firms and categorize their growth is episodic or continuous. We compare the survival of high growth firms with those of slower- growth firms. While roughly one half of all firms founded in 1993-94 survived the ten year period, the survival rate of high growth firms for the same ten year period was 90%.

To examine the characteristics of REITs with different asset growth rates, we classify the observations into 3 groups (low, moderate and high growth), based on average asset growth over two consecutive years. Table 4.1 reveals that REITs with high growth rates have lower asset base compared to REITs that show low growth rates. This confirms that smaller REITs (based on total assets) grow faster than larger REITs. Also, from table 4.1 we can see that the mean age of REITs growing at a higher rate is 2.75 years as compared to 8.77 years for REITs that grow at a lower rate. We also look at the characteristics of young and established REITs separately in table 4.2. When we check the mean (median) growth rate of REITs based on REITs age below five years (young) and more than five years (mature), we find that younger REITs grow at a higher rate of 30.41 percent (24.09%) as compared to the mature REITs that grow at a rate of 6.72 percent (3.62%). This again confirms the stylized fact that younger REITs grow at a faster rate. We also perform the t-test of difference in means and find that all the variables except scaled cash flow are statistically significant.

Table 4.1 Growth characteristics of REITs by growth rate

	Full Sample	Young Firms Age<=5 years	Established Firms Age>5 years	Mean Difference
Asset Growth	0.1647	0.3041	0.0672	`-0.2369***
Log (Total assets)	20.7698	20.1426	21.3239	1.1812***
Log (Market Cap)	20.1012	19.569	20.5714	1.0023***
log(Real estate inv)	13.8086	13.1834	14.3615	1.1781***
Log (Recurring rev)	11.911	11.1889	12.5482	1.3592***
Scaled FFO	0.05186	0.0529	0.0505	`-0.0021
Debt/Tot assets	0.5159	0.4722	0.5545	0.0822***
Equity/Tot assets	0.3839	0.4241	0.3485	`-0.0755***
Institutional ownership	0.6006	0.5432	0.6446	0.1013***
Insider Ownership	0.1262	0.1409	0.1199	`-2.09226**

This table provides the sample characteristics of young and established REITs.

REITs below the age of 5 years are considered young. The mean values are shown for the variables.

The definition of variables is given in Table 3.1

Table 4.2 Growth characteristics of REITs by age

	Full Sample	Young Firms Age<=5 years	Established Firms Age>5 years	Mean Difference
Asset Growth	0.1647	0.3041	0.0672	`-0.2369***
Log (Total assets)	20.7698	20.1426	21.3239	1.1812***
Log (Market Cap)	20.1012	19.569	20.5714	1.0023***
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Insider Ownership	0.1262	0.1409	0.1199	`-2.09226**

This table provides the sample characteristics of young and established REITs.

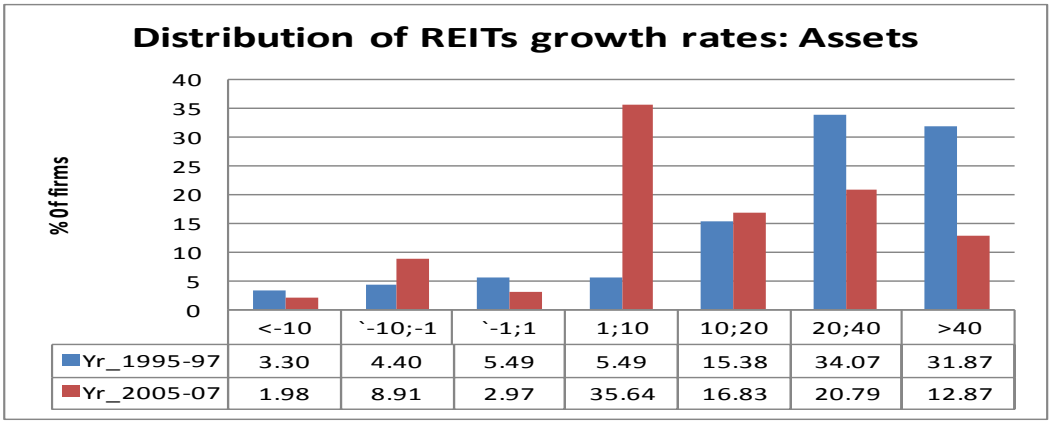
REITs below the age of 5 years are considered young. The mean values are shown for the variables.

4.1.1 Growth rate distribution

We start with an analysis of the distribution of growth rates in the entire population of REITs operating over specific time periods. Using the data from this distribution, we delve on growth characteristics of young REITs. To analyze the growth rate, we allocate the firms in one of the seven growth intervals from less than -10% to more than +40% annualized growth rate per annum. Since, we are interested in the growth profile in the new REIT era, we focus on three year period, viz, 1995-1997 and 2005-2007 in each of the last two decades.[14] We choose these two periods for the following reason: during 1993-94 and 2003-04, the REIT industry saw a wave of REIT IPOs. Since, our focus is young REITs, choosing this time period will enable our sample to be well represented by new REITs. In these two periods, we have included only those firms that were in existence at the beginning of each period and have not included the firms that were born in the first year of each period. We identify 91 and 101 REITS surviving over each period 1995-97 and 2005-07 respectively. Specifically, we look at the distribution of growth rates in total assets and revenue for the firms over the two three-year periods, 1995-97 and 2005-07, breaking it down by firm size, age and property type.

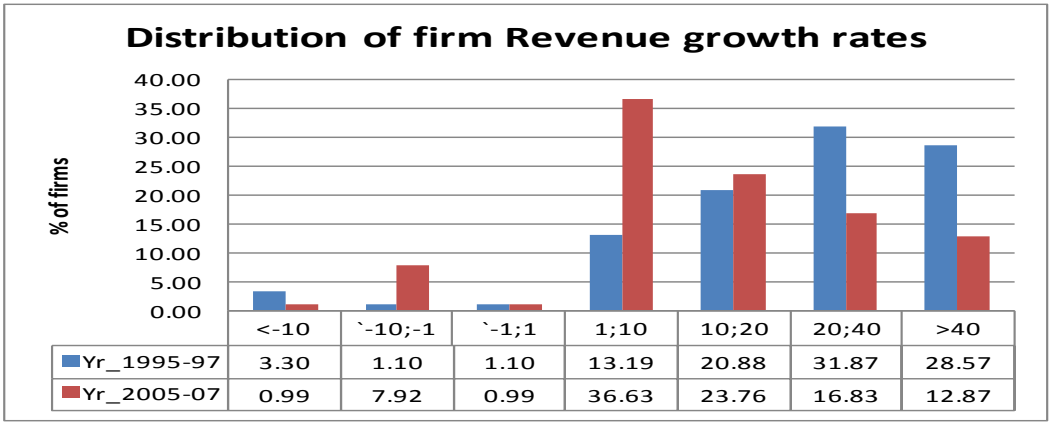
[14] We use growth rates over three years to be consistent with the organization of economic cooperation and development's (OECD) definition of high-growth firms.

Figure 4.1: Distribution of Firm growth rates by Total assets



	<-10	`-10;-1	`-1;1	1;10	10;20	20;40	>40
Yr_1995-97	3.30	4.40	5.49	5.49	15.38	34.07	31.87
Yr_2005-07	1.98	8.91	2.97	35.64	16.83	20.79	12.87

Figure 4.2: Distribution of Firm growth rates by Revenue



	<-10	`-10;-1	`-1;1	1;10	10;20	20;40	>40
Yr_1995-97	3.30	1.10	1.10	13.19	20.88	31.87	28.57
Yr_2005-07	0.99	7.92	0.99	36.63	23.76	16.83	12.87

Figure 4.1 and Figure 4.2 present the distribution of the three year firm growth rates in terms of total assets and recurring revenue respectively. Looking at the two graphs, it is evident that growing firms are overrepresented in REITs sector which supports the conclusion of Gallagher and Miller (1991) who confirm the overrepresentation of growth firms in certain industries like services, finance and distribution. For total assets, we see that for the sub-period 1995-97, bulk of the distribution (around 66%) is concentrated in the over 20% growth interval compared to around 33% in the same growth interval of the sub-period 2005-07. Furthermore, the distribution is different between the two time periods. In the earlier 1995-97 period just over 5 % of the REITs exhibited low growth (growth interval 1-10%). However, in the more recent 2005-07 period, the proportion of firms registering a small growth in total assets in the same growth interval shot up to around 35 percent. The shape of the distribution in terms of revenue looks similar in both the sub-periods to that of the shape of the asset growth distribution. Overall, in 2005-07 we observe that there is a significant rise in the number of firms experiencing low growth in total assets as well as revenue. Probably, the REIT sector is witnessing a shift from being high growth industry

to a more mature industry. We try and dissect the reason for the low levels of growth in the latter sub-period and find that the average age of the firms in the earlier period was 7.3 years as compared to the average age of 14.13 years in the latter sub-period. This supports the stylized fact in firm growth literature that younger firms grow faster than older firms. Since, our focus is young REITs, we further investigate the characteristics of the high-growth REITs in its early years.

According to OECD, a high-growth firm is defined as a firm with an average annualized employment or turnover growth rate exceeding 20 percent per annum over a three year period and with ten or more employees at the start of the period. Therefore, we now look at firms that have annual revenue growth rates that exceed 20% over each of the three year periods. The revenue profile of the high-growth firm shows that majority of the high growth firms are smaller in size in both sub-periods. This again supports the stylized fact that smaller firms grow at a faster rate. When we look at the share of gazelles in the high-growth firms, we find that their share has drastically come down from 73% in 1995-97 to 27% in 2005-07.[15] Since, majority of high growth firms in the sub-period 2005-07 are well established firms, we can say that gazelles are not a common feature of the high growth firms in the latter sub-period. This is probably due to more number of young REITs in the earlier period sample. But, this brings us to the next important question of survival of these young and high growth firms. What happens to these gazelles after their intensive growth period? Do they continue on their growth surge or slow down, stagnate or decline? When we take a look at the 40 firms that were gazelles in the sub-period 1995-97, we find that 36 firms (90%) survived till the sub-period 2005-07 and out of 40 REITs that were gazelles in 1995, only 2 maintained its high-growth status in 2005. Thus, firms growing at high rates in early years survive longer, but rapid growth is not sustainable in the longer run. For US small businesses, Headd and Kirchhoff (2007) found that the year after fast growth, 55 percent of fast growers declined in employment versus the universe's 25 percent. This gives us a fair idea that rapidly growing REITs may not be able to sustain its growth levels for a long time and hence the growth trajectories of young REITs requires further exploration.

4.1.2 Growth trajectories and Persistence

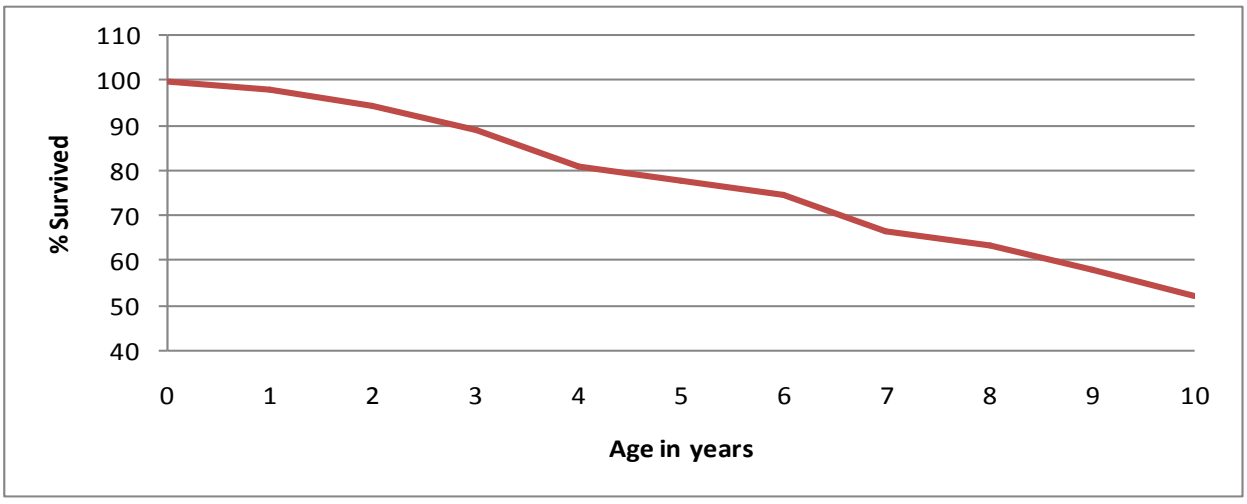
Since, the analysis of growth over the three year period does not give a full picture of the development path of REITs, we conduct a detailed examination of the 1993 and 1994 cohort of new REIT entrants. We focus on the dynamic evolution of the cohort of REITs over ten years after firm incorporation and examine how they have actually achieved growth. Out of the 90 equity REITs that had its IPO in 1993 and 1994, only 50 survived their ten years of operation. Using the annual growth rate in total

[15] Gazelles are a subset of high-growth firms with less than five years in business at the beginning of the three-year time period. This term was coined by Birch (1981).

assets of these 50 surviving REITs, we analyze its growth for each year for the next 10 years. We also look at the timing of the high growth instances in those ten years to ascertain whether the high growth occurs immediately after the IPO listing or whether it occurs when REITs are more established. To examine the high growth instances of the cohort, we code the growth rates for each year into four categories: High growth (year-on-year asset growth, Gr >30%), Moderate growth (5%<Gr<30%), Low growth (0%<Gr<5%) and Negative growth (Gr<0%). Out of 50 new surviving REITs in the 1993-94 cohort, 45 (90%) recorded one or more annual instances of high-growth in the 10 year period after its inception. The first five years of the REIT incorporation also witnessed multiple annual high growth instances and these episodes drastically reduced beyond five years of REITs' existence. Also, achieving high growth in consecutive years was not rare in young REITs (less than five years old) whereas it was rare for better established REITs. Timing wise, REITs experience an annual spurt of high growth when they are young i.e, they are less than five years old and high growth instances are comparatively less in more established REITs. Thus, REITs grow extremely fast when they are young. For the first three years the surviving REITs grew by 42.16 percent on an annualized basis. After the initial spurt, the growth slowed and over the latter seven years the 1993-94 cohort of REITs averaged about 14.6 percent annualized growth per year. This observation also supports the negative relationship between age and growth presented in the existing literature.

Figure 4.3: Survival of REITs: 1993-94 cohort

The figure shows the survival rate of the cohort of 1993-94 listed REITs over the years. Data for the REITs survival is obtained from SNL Financials.



We trace new REITs' growth trajectories to examine if any typical growth trajectory exists for these young REITs. To map the growth path we again make use of the 1993-94 cohorts of young REITs surviving over the 10 year period. The survival rate (figure 4.3) of 52% over a decade shows relatively good survival performance of US

equity REITs compared to the 30% survival rate of US manufacturing firms found by Phillips and Kirchhoff (1989) for 1980s and Headd (2003) for the 1990s for a ten year period.

Data points were obtained for total assets growth by coding for growth reduction greater than 5%, for increase in growth greater than 5% and for change in either direction of less than 5 percent. Depending on the key turning points, the growth patterns were categorized as a) Continuous growth; b) Growth setback; c) Early growth and/or Plateau; d) Delayed take-off; and e) Erratic growth.[16] From table 4.3, it is evident that in the early years around 51% of the surviving REITs grew continuously over the five year period. Another 6% grew continuously after a delayed start and another 24% stagnated after an initial growth period, while the remaining 15% faced growth setbacks during their early life cycle. The 10 years growth trajectory shows a stark difference compared to the early stage of growth. Majority (around 45%) of REITs had a growth setback and another 30% stagnated after an initial growth period. There were very few REITs (around 14%) that could sustain a continuous growth.

Table 4.3 Growth trajectories of REITs over 5 and 10 years

	5 years			10 years		
Growth Trajectory	1993 Cohort	1994 Cohort	All REITs	1993 Cohort	1994 Cohort	All REITs
Continuous growth [C]	69.57	34.62	51.02	21.74	7.69	14.29
Growth setback [S]	8.70	19.23	14.29	47.83	42.31	44.90
Early growth and Plateau [P]	13.04	34.62	24.49	21.74	38.46	30.61
Delayed take-off and growth [D]	4.35	7.69	6.12	4.35	7.69	6.12
Erratic growth [E]	4.35	3.85	4.08	4.35	3.85	4.08

This table traces the growth path taken, over 5 and 10 years, by a cohort of REITs that had its IPO in 1993 and 1994.
The numbers denote the percentage of REITs in the each cohort that had a particular trajectory of growth.

The following analysis clearly shows that new firm growth is uneven and rapid growth in the early years of REITs is liable for reversal in the long run. Growth surges are more commonly seen in the early years when REITs are under pressure to attain economies of scale and setbacks are likely when the same REITs run into resource shortages and other growth induced problems. Also, over the longer term, sustained growth is rare as can be seen by the growth trajectories of REITs over the ten year period. Though, during the early years REITs typically show continuous growth trajectory, there is no typical growth trajectory followed by majority of REITs over the long term. However, it does not follow that growth happens as a result of chance factors, but there are some consistent factors that can explain the growth path undertaken by REITs.

[16] We adopt the growth pattern methodology and nomenclature developed by Garnsey et al (2011).

To check whether there is persistence in growth, we look at the "growth-growth" formation, i.e., a year of growth followed by another year of growth in our 1993-94 cohorts. We see that the G-G sequence was the most common sequence representing 48% of all two paired sequences in the sample. Also, around 78% of the sequences beginning with an incidence of growth were followed by a second period of growth, whereas only 38% of sequences beginning with a plateau were followed by growth. This clearly reflects that growth is conducive to further growth. We will return back to the question of persistence of growth in more detail in the empirical analysis section.

4.2 Growth determinants: Panel regression results

Table 4.4 presents the panel data regression results for the determinants of REITs' growth. Model 1 estimates the equation (1), while models 2 through 5 estimate equation 2 and its variations using both fixed-effects. Since, Weinzimmer et al. (1998) suggest relative or percentage change in firm size to be a better method to measure firm growth, we also run our panel regressions with the relative measure of growth as the dependent variable (not reported in the paper). Results from panel regressions show that the estimated coefficient of firm size (as measured by total assets) and firm age, in all the models, are significantly and negatively related to firm growth. These finding suggest that smaller and younger REITs grow faster than the larger and older ones. These results are consistent with the stylized facts found in the firm growth literature and rejects Gibrat's law of proportional effect. The negative growth-age relationship in our sample is consistent with the theory of firm learning (Jovanovic, 1982). We also include a squared age variable in the models to examine the non-linear impact of age on firm growth. The positive coefficient on the age squared variable suggests a non-linear relationship between age and growth which means that younger firms experience faster growth than their older counterparts, but up to some threshold age.

The results provide strong evidence of an inverse relation between asset growth and leverage. Leverage is significantly and negatively related to growth, suggesting that firms with high leverage would not be able to take advantage of growth opportunities. This result is similar to many studies on capital structure that have shown that increased leverage reduces firm's ability to raise additional funds to invest (Myers, 1977; Auerbach, 1985; Lang, 1996).[17] But, our results are not consistent with the positive and significant relationship between leverage and firm growth found by An et al. (2011) in their study of corporate transparency and firm growth in REITs.

The results further show that REITs' asset growth is positively and significantly related with cash flow. This finding suggests that REITs, which are usually financially

[17] Unlike Titman and Wessels (1988), we do not make any distinction between long-term, short-term and convertible debt.

constrained, value its excess funds from operation and utilize it to further its growth objectives. [18] Tobin's q also shows a similar significant and positive relationship with firm growth. REITs having more growth opportunities grow more. We use Tobin's q in the regression to control for the growth opportunities. In models 3 to 5, insider ownership shows a weak positive effect on total asset growth in REITs. This result supports Han (2006) findings that the relationship between REIT's insider ownership and Tobin's q is positive at low levels and turns negative at high level. Institutional ownership also influences the REIT's growth positively and is statistically significant as shown in models 3 to 5.

We use indicator variables to test for the effect of UPREIT status, self advisement style and self management structure of REITs in model 4 and model 5. UPREIT structure and self advisement structure do not seem to influence growth of assets in REITs. The insignificant and negative coefficient for self advisement structure in model 4 is contrary to our expectation that self advised REITs with less agency issues will be able to finance its capital at lower cost and grow more. Self management structure of REITs has a positive and significant influence on asset growth. Dummy variables categorizing property types are used in model 5 to control for the different property type effects that may impact the growth rates. Since, we use an intercept in our model we leave diversified property type out of the model. The results are not conclusive as compared to the reference group (diversified property type) none of the other property types significantly impact asset growth in REITs. The panel regression results are similar when relative measure of firm growth is taken as the dependent variable, except that the scaled cash flow variable becomes insignificant. We check for the robustness of the results by taking market capitalization as the proxy for firm size. The results are quantitatively similar to what we find with the full sample and hence the results are not reported.

Since, our interest is in young REITs, we conduct the panel data regressions for the sample of REITs that are less than 5 years of age (table 4.5). All the variables have the same influence on firm growth for young REITs except that age becomes insignificant. Size and leverage has a negative relationship with growth. Whereas, cash flow, institutional ownership and insider ownership show a positive relationship. Upreit and self-advisement structure do not have any significant influence and self management structure is positively and significantly related to growth. None of the property types show any significant influence on firm growth of young REITs.

[18] Hardin and Hill (2008) suggest that REITs that generate excess funds from operation pay out more dividends. Since, REITs necessarily require additional capital from both equity and debt market for future growth, by paying excess dividends from excess FFO it reduces the agency costs which in turn reduce its cost of capital.

Table 4.4: Panel Data regression results (entire sample)

Dependent Variable: Absolute Growth in Total assets						
Explanatory Variable	Predicted	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	(+/-)	2.5804***	2.8210***	3.1759***	1.848***	1.1157***
		[0.6194]	[0.4354]	[0.6131]	[0.2463]	[0.2465]
Size	(-)	-0.1159***	-0.1365***	-0.1403***	-0.0501***	-0.0534***
		[0.0314]	[0.0210]	[0.0282]	[0.0112]	[0.0112]
Age	(-)	-0.2225**	-0.2070**	`-0.1966	-0.2280***	-0.2740***
		[0.0987]	[0.0878]	[0.1919]	[0.0723]	[0.0725]
Age ^{2}	(+)	0.0004	0.0487	0.0292	0.0397*	0.0607***
		[0.0737]	[0.0668]	[0.1169]	[0.0220]	[0.0225]
Leverage	(-)	-	`-0.3770***	-0.4335***	-0.4042***	-0.3549***
			[0.0757]	[0.1007]	[0.0719]	[0.0722]
Cashflow	(+)	-	0.0637*	0.8448**	0.6702*	0.6831**
			[0.3572]	[0.3393]	[0.3486]	[0.3459]
Tobin's q	(+)	-	0.2912***	0.2523***	0.2578***	0.2687***
			[0.0469]	[0.0657]	[0.0441]	[0.0437]
Institutional Ownership	(+/-)			0.1383*	0.1106***	0.1297***
				[0.0822]	[0.0413]	[0.0415]
Insider Ownership	(+/-)			0.0018	0.0016**	0.0018**
				[0.0020]	[0.0008]	[0.0007]
UPREIT	(+/-)	-	-	-	0.0281	0.0439
					[0.0438]	[0.0447]
Self-managed	(+)				0.1072***	0.3688***
					[0.0412]	[0.0655]
Self-advised	(+)				`-0.0741	`-0.2863**
					[0.0786]	[0.0884]
Healthcare	(+/-)					`-0.0526
						[0.0650]
Hotel	(+/-)					0.2948
						[0.0661]
Industrial	(+/-)					-0.055
						[0.0633]
Residential	(+/-)					-0.0086
						[0.0492]
Office	(+/-)					-0.0123
						[0.0450]
Retail	(+/-)					-0.0549
						[0.0434]
Specialty	(+/-)					-0.1215
						[0.0880]
Fixed/Random Eff		FE	FE	FE	RE	RE
Observations		1335	1299	920	920	920
R-squared		0.3748	0.4898	0.4135	0.3936	0.3958

This table presents fixed-effects and random-effects regression results for the determinants of firm growth in REITs. The dependent variable is the absolute growth in total assets measured as the change in the logarithms of total assets between the current year and the previous year. The definitions of the independent variables and the control variables are given in Table 3.1. For both random and fixed-effects models, annual dummy variables are used to control for time effects. Robust standard errors are reported in paranthesis. Statistical significance is displayed by the use of one (10%), two (5%) and three (1%) asterisks.

Table 4.5: Panel Data regression results (Young REITs)

Dependent Variable: Absolute Growth in Total assets						
Explanatory Variable	Predicted	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	(+/-)	6.067***	3.6733**	7.9400***	0.9588*	1.1333*
		[1.8410]	[2.3566]	[2.4160]	[0.6592]	[0.6666]
Size	(-)	-0.3004***	-0.2031**	-0.4390***	-0.0634**	-0.0813**
		[0.0685]	[0.0913]	[0.1118]	[0.0292]	[0.0290]
Age	(-)	`-0.0509	`-0.2861	`-0.0877	`-0.0751	`-0.8860
		[0.2467]	[0.2632]	[0.3885]	[0.2995]	[0.2924]
Age ^{2}	(+)	`-0.0106	0.0026	0.103	0.069	0.0758
		[0.4190]	[0.4298]	[0.7383]	[0.1458]	[0.1434]
Leverage	(-)	-	`-0.4890***	`-0.2370**	-0.4498**	-0.2766**
			[0.1251]	[0.1007]	[0.2292]	[0.2301]
Cashflow	(+)	-	1.7936*	4.1698**	3.0469	2.6368*
			[0.9167]	[1.8000]	[1.4054]	[1.4090]
Tobin's q	(+)	-	0.4389***	0.6134***	0.4196***	0.5014***
			[0.1106]	[0.1585]	[0.1611]	[0.1602]
Institutional Ownership	(+/-)			0.4789*	0.3348***	0.4152***
				[0.2585]	[0.1269]	[0.1342]
Insider Ownership	(+/-)			0.0039	0.0045**	0.0052**
				[0.0030]	[0.0022]	[0.0022]
UPREIT	(+/-)	-	-	-	0.0182	0.0469
					[0.1110]	[0.1111]
Self-managed	(+)				0.2029**	0.5304***
					[0.0932]	[0.1350]
Self-advised	(+)				`-0.2202	`-0.5195
					[0.1756]	[0.2056]
Healthcare	(+/-)					`-0.1002
						[0.2536]
Hotel	(+/-)					0.1732
						[0.2612]
Industrial	(+/-)					-0.0781
						[0.2744]
Residential	(+/-)					-0.0164
						[0.2562]
Office	(+/-)					-0.133
						[0.2487]
Retail	(+/-)					-0.2807
						[0.2431]
Specialty	(+/-)					-0.2056
						[0.2549]
Fixed/Random Eff		FE	FE	FE	RE	RE
Observations		538	517	178	178	178
R-squared		0.3824	0.4466	0.6466	0.5459	0.5686

This table presents fixed-effects and random-effects regression results for the determinants of firm growth in young REITs. The dependent variable is the absolute growth in total assets measured as the change in the logarithms of total assets between the current year and the previous year. The definitions of the independent variables and the control variables are given in Table 3.1. For both random and fixed-effects models, annual dummy variables are used to control for time effects. Robust standard errors are reported in paranthesis. Statistical significance is displayed by the use of one (10%), two (5%) and three (1%) asterisks.

We also run an ordered probit by taking the ordinal form for firm growth rates (TAGR_PROB) as shown below:

1. when tagr<0%
2. when 0<tagr<25%
3. when 25<tagr<50%
4. when 50<tagr<100%
5. When tagr>100%

We regress the data using ordered probit (Table 4.6) and the results are consistent with those using panel regression. This is a maximum likelihood estimation problem and it takes 4 iterations until the algorithm converges. It reinforces the results that smaller and younger firms grow faster and leverage has a negative impact on the growth rate of the REITs.

Table 4.6: Ordered Probit analysis

	Dependent variable
Explanatory variables	TAGR_PROB
Size	-0.1041***
	[0.0370]
Age	`-0.6359***
	[0.0965]
Leverage	-1.7937***
	[0.3208]
Cashflow	3.133
	[1.9727]
Tobin's q	1.7888***
	[0.2153]
Insider Ownership	0.0074***
	[0.0034]
Log likelihood	`-881.48
Pseudo R-square	0.1725

This table presents the estimation results of ordered probit analysis. We take the ordinal form for growth rates.
*** indicates significance at 1% level.
Standard error are repported in paranthesis

We also check for the persistence of firm growth as measured by “ρ” (rho) and previously mentioned in equation 1. We use the test statistics of ρ = 0 as suggested by

Baltagi and Wu (1999). We find the coefficient of ρ = 0.393>0 and Baltagi-Wu LBI (Locally Best Invariant) test statistic equal to 1.86. The Baltagi-Wu LBI statistic is equivalent of the Durbin-Watson statistic and is a relevant test for serial correlation. Since the Baltagi-Wu LBI statistic is not very much below 2, it indicates slight positive persistence in growth rates i.e., above average growth in one period tends to persist into the next.

4.3 Growth determinants: GMM-System results

Table 4.7 presents the GMM system results for the whole sample. Column 1 gives a different picture than the results of our panel regressions. The estimated coefficient of size is negative and significant (-0.3439), indicating that smaller firms grow faster than larger ones during our sample period. However, the coefficient of age is positive and significant. This is in contrast to our earlier result of an inverse relationship between age and growth. Hence, we split the sample by firm age (young firms < 5 years) and report the GMM-sys results in column 2 and column 3 of Table 4.7. The results clearly show that there is difference in behavior between young and mature REITs. In the case of young REITs we find that age is inversely related to growth whereas for mature REITs the relationship becomes positive. This supports the idea that age-growth relationship is non-linear and the negative relationship holds up to some age. Looking at the persistence (coefficient of $growth_{it-1}$), we find that for younger firms growth encourages growth i.e., firms that grew faster in the past will grow faster in the present. In the case of mature firms growth in one period may or may not tend to persist in the next period. When we look at the significance of cash flow for both young and old firms, we find that the estimated coefficient for the cash flow is higher for younger firms. This signifies that the cash flow plays a much more important role in the younger firms than in other firms. This is especially true for younger REITs that can't hold on to most of its earnings and are more often constrained to grow due to capital constraints.

Table 4.7: GMM-system results

	Full Sample	Young Firms (<= 5 years old)	Mature Firms (> 5 years old)
Intercept	7.3958***	3.7240***	6.8891***
	[0.3404]	[0.7370]	[0.3645]
$Growth_{i,t-1}$	0.0634***	-0.1725**	0.0979***
	[0.0197]	[0.0864]	[0.0208]
Size	-0.3439***	-0.1336***	-0.3266***
	[0.0173]	[0.0365]	[0.0184]
Age	0.0870***	-0.3589**	0.1170***
	[0.0230]	[0.1523]	[0.0250]
Leverage	-0.3204***	-0.9878***	-0.1850*
	[0.0994]	[0.3394]	[0.1065]
Cashflow	0.7577**	2.6176**	0.9186***
	[0.2990]	[2.5366]	[0.2980]
Insider Ownership	-0.0061***	-0.0008	-0.0063***
	[0.0011]	[0.0038]	[0.0011]
W_{js} Chi2 (6)	806.300	51.150	566.500

This table presents the GMM-sys results for the whole sample and the split sample by firm age. The definitons of the independent variables and the control variables are given in Table 3.1. All estimates include a full set of time dummies as regressors and instruments. Null hypothesis that each coefficient is equal to zero is tested using robust standard errors (reported in paranthesis).
Wjs is the Wald statistic of joint significance of the independent variables.
Statistical significance is displayed by the use of one (10%), two (5%) and three (1%) asterisks.

4.4 Growth and Profitability – Dual relationship

We first investigate the effect of profitability (Return on average assets) on subsequent growth by estimating the following regression:

$$TA\_Gr_{i,t} = \beta_0 + \beta_1(RoAA_{i,t-1}) + \beta_2(Control_{i,t-1}) + \varepsilon_{i,t}$$

where β_0, β_1 and β_2 are parameters to be estimated and $\varepsilon_{i,t}$ are i.i.d. error terms. RoAA represents the return on average assets of firm *i* in year *t*. The control variables are lagged firm size , lagged RoAA and year dummies. We also add leverage as a control variable to control for method of financing.

We report the system-GMM estimates in table 4.8. [19] We first test the validity of the instruments used by reporting Hansen 'J' statistic of the over-identifying restrictions. The corresponding p-value for the Hansen statistic are high (0.338), hence we fail to reject the null hypothesis that the instruments are exogenous. Another key identifying assumption is that there is no serial correlation in the $\varepsilon_{i,t}$ disturbances. This can be examined by testing for no second order serial correlation in the first differenced residuals. Although first order autocorrelation is present, we fail to reject the null hypothesis of no AR(2) serial autocorrelation as the p-value is 0.411. Thus, System GMM is considered suitable for this study. From the results we detect a small positive (0.03) and statistically significant influence of profits on the asset growth. The lower value of the coefficient maybe due to the fact that REITs have to disburse most of its profits as dividends and have to necessarily go to external sources for financing growth.

Table 4.8: System GMM regression results- Effect of profit rate on growth

Dependent Variable: Asset Growth(t)		
		p-values
Profit rate (t-1)	0.0297***	0.0108
AR(1) z-stat and p-value	-4.99	0.0000
AR(2) z-stat and p-value	-0.82	0.4110
No.of instruments	44	
Hansen J stat	29.47	
d.f and p-value	27	0.3380
Observations	1051	

This table presents the GMM-sys regression results for the profit indicator RoAA and growth indicator of total asset growth.
*** refers to the statistical significance at 1% level.

"Penrose effects" (1959) suggests that growth may lead to reduction in profit rate as managers may start focusing on exploiting the growth opportunities which diverts their attention from keeping the operating costs down. Whereas 'increasing returns' predicts that growth will lead to higher profit rate due to economies of scale that reduces the unit cost. Also, from resource-based view, growth may lead to increases in profit if organizational slack that was under-utilized previously is used. Thus, we would like to verify the influence of growth on profitability in REITs. The system-GMM estimator is not

[19] We acknowledge Roodman (2006) for writing the code "xtabond2" of system-GMM for Stata and making it available to all users. A similar code "xtdpdsys" is now available in Stata 11.

appropriate here as it is difficult to find suitable instruments for growth rates as they are quite random. Hence, we estimate the following regression using fixed effects:

$$RoAA_{i,t} = \beta_0 + \beta_1(TA\_Gr_{i,t-1}) + \beta_2(Control_{i,t-1}) + \varepsilon_{i,t}$$

We use similar control variables as before. The fixed-effects regression results (table 4.9) indicate a small but positive and significant influence of growth on profit rates. According to the estimates, an increase in the growth rate of assets of 1% over the period t-1: t leads ceteris paribus to an increase in profit rate at time t of about 0.011%. Thus, growth produces increasing returns that has a slight positive influence on subsequent profit rates. Though our results show a positive association between firm growth and profitability, the question of causality is yet to be determined.

Table 4.9: Fixed effect regression results- Effect of growth on profits

Dependent Variable: Profit (t)	
Growth (t-1)	0.011***
R-squared overall	0.24
F-stat	15.24
p-value	0
Observations	1205

This table presents the fixed-effects estimate of the effect of growth on profits.
*** refers to the statistical significance at 1% level.

5. Conclusions

A plethora of empirical studies on firm growth have found evidence linking firm growth to firm attributes such as size and age. Proving or disproving Gibrat's law has been the hallmark of most of these growth studies. Previous studies have focused on firm specific attributes in the manufacturing sector to explain the observed heterogeneity of growth rates. This study provides econometric evidence on the relationship of firm growth to firm specific attributes in the REIT sector using the GMM-system estimator technique. We also look at the unresolved issue of growth and profitability using the GMM estimator. System-GMM estimators are well suited for our study as it overcomes problems of endogeneity, persistence and unobserved firm-specific effects.

Examining the growth characteristics of REITs, we find that high-growth REITs are smaller and younger than other REITs. Also, new REIT growth is uneven and there

are turning points in new REITs' growth path that may lead to growth stagnation or growth reversals. New REITs that experience high growth in its early years are most likely to survive longer, but sustained growth among REITs beyond five years is rare. REITs failure rate declines with size and age and growth is conducive to further growth.

Looking at the growth strategies of REITs, we document that REITs achieve growth in a number of different ways (organic, acquisition, development etc.) and the pattern of growth differs across REITs based on demographic characteristics, financing choices and ownership structure. The firm specific determinants of growth in REITs include size, age, leverage and cash flow. We also document the influence of management structure, management style and UPREIT status on firm growth. These results are robust to different econometric methodologies.

Our results are in close agreement with the previous empirical findings. Our findings support path dependency feature of firm growth (Coad, 2009). Gibrat's law that postulates independence between firm growth and size is rejected and Jovanovic's model that predicts a negative relationship between firm growth and age holds for our sample. The inverse relationship between growth and leverage is consistent with many capital structure studies. Our findings are consistent with the idea that small and young firms that face liquidity and financing constraints are more sensitive to the availability of cash flow. We also identify a small positive effect of profit rates on subsequent growth and the influence of growth on profit rates. The results are also valid for different specifications that account for ownership structure and REIT structure.

Firm growth in REITs has never been examined in the existing literature like we have done by documenting the growth characteristics and its determinants. This study is a starting point that provides a better understanding of the phenomenon of firm growth in the REIT sector. We study the growth dynamics of REITs by mapping the growth trajectories and growth persistency in young REITs. This study makes an empirical contribution to the growth literature by finding the organizational determinants that are found to be most important for REITs' growth. Our empirical findings should be treated as a new beginning to develop a more complex model that incorporates other managerial determinants to REITs' growth. This study also contributes to the literature of firm growth and profitability.

This study has implications for managers and investors alike. This would help managers to make investment decisions that would be beneficial to improve the firm value for the shareholders. This would also help managers to make prudent growth strategies depending on the firm resources. Investors can also benefit from this study in terms of making better informed investment decisions. The study has some implications for regulators who can frame policies to help firms survive in difficult market and also to safeguard the interests of the investors. For academicians, this study will also give a

push for growth studies in the real estate sector and open the floodgates for further research on issues like corporate governance, capital structure, etc., that would incorporate firm growth as an important parameter.

The present study is not without limitations. Firm growth is a complex phenomenon and it can't be explained by one particular dimension or determinant. Since, we focus on the firm specific determinants only, the characteristics of managerial traits like work experience, educational background and motivations are not considered in this present study. Though these managerial attributes are equally important to a firm's growth, we reserve his issue for further research in the future. Also, we focus our study to empirical investigations of growth in publicly listed equity REITs. Public REITs may face certain pressure from investors to grow larger as is the case with most of the publicly listed firms. Thus, in our sample larger firms may be overrepresented leading to certain sample bias. We also do not investigate the interlinks between the different growth indicators.

In future, the effect of external growth strategies (acquisition vs. development) on the performance of small and young REITs that face financial constraints can be studied further. An in-depth empirical examination of the differential impact of various growth strategies on growth and performance can be undertaken. Given the importance of managers in new venture growth, inclusion of manger's characteristics into our study would be more fruitful. The relationship between firm asset growth and subsequent stock returns is another area to look into. We can study if asset growth rates are strong predictors of future abnormal stock returns. Finally, our research is a beginning step to the firm growth study in REITs, even though it focuses on REITs growth in USA. The application of the results to other emerging REIT markets would provide further insights into growth dynamics of REITs worldwide.

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