Investment Policies and Excess Returns in Corporate Spinoffs:

Evidence from the U.S. Market

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Abstract

Stemming from the most recent contributions of financial literature on internal capital markets efficiency and the relationship between investment policy and stock returns, this article analyzes excess returns generated by corporate spinoffs with respect to changes in investment policies of the spun off companies. Following the spinoff, subsidiaries tend to register a substantial decrease in the level of investment. A significant reduction in investment is registered for the best performing spun off companies with low growth opportunities, measured through the Tobin's Q, while the best performing high-growth spun off companies tend to increase or maintain the previous level of investment. Results provide evidence on the existence of a direct relationship between the size of the change in the level of investment, the Tobin's Q, and the dimension of the excess return, measured through the Fama and French model (1993).

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I. Introduction

To date, there has been substantial research on corporate spinoffs and different bodies of literature have been developed. Empirical literature largely documented positive excess returns, both for parents and subsidiaries, associated with the announcement of the spinoff (Hite and Owers, 1983; Schipper and Smith, 1983). More recently, Cusatis et al.(1993) found significant long-run abnormal returns in either parent companies that undertake spinoffs or in the spun off companies themselves, over a time horizon of three years after the spinoff. Stemming from the theories on the workings of internal capital markets, Gertner et al. (2002), Ahn and Denis (2003), and Dittmar and Shivdasani (2003) analyzed the excess returns associated with spinoffs with respect to changes in the investment policies of the companies involved in the operations. In these studies, corporate spinoffs have been considered "natural experiments", since they represent interesting examples of relaxing of the financial constraints typically detected in the big multi-businesses corporations and considered responsible for the well-known diversification discount (Rajan, Servaes and Zingales, 2000; Scharfstein and Stein, 2000).

According to Ahn and Denis (2003), prior to the spinoff, diversified firms are valued at a discount relative to comparable single-segment companies. Following the spinoff, they register a significant increase in the investment efficiency and the diversification discount is eliminated. The authors provide evidence that the reduction in the diversification discount is positively related to changes in measures of investment efficiency. Gertner et al. (2002) show that, after the spinoff, subsidiaries tend to cut investment in segments with poor growth opportunities (low-Q) and, by contrast, to increase investment in high growth opportunities industries (high-Q).

A different body of literature focused on the effects of investment decisions on stock prices. A number of studies explored the effects of investment choices on stock returns (Fazzari, Hubbard and Petersen, 1988; McConnell and Muscarella, 1985; Morck, Shleifer and Vishny, 1990). In these studies, correlation between stock prices and investment policy has been documented in two ways: on the one hand, firms tend to invest more following increases in their stock prices (Fazzari et al., 1988; Morck et al., 1990), on the other hand, it is also the case that stock prices tend to respond favorably to announcements of major capital investments (McConnell and Muscarella, 1985). Furthermore, a significant positive relationship between the magnitude of the stock market reaction to capital investment announcements and the level of new investment has been documented (Blose and Shieh, 1997).

In contrast with the main findings of the above studies, Titman, Wei and Xie (2003) registered an inverse relationship between increase in capital investments and stock returns. Adopting Jensen's approach, the authors accept that managers can be "empire builders", and invest for their own benefits rather than for the benefits of the firm's shareholders (Jensen, 1986), with negative consequences on stock prices. The authors show that firms that increase capital investments the most tend to underperform their benchmarks over the following five years.

In light of these different branches of financial literature, this article analyzes excess returns related to corporate spinoff with respect to changes in investment policies of the spun off companies (subsidiaries). Spun off companies gain substantial excess returns on the three years following the spinoff and, at the same time, they show a general decrease in the level of capital investments. Moreover, following the spinoff, a substantial increase in investment efficiency can be documented for the well performing companies. Investment in low-Q subsidiaries strongly decreases and investment in high-Q tends to increase or remain substantially unchanged. Results provide evidence on the existence of a direct relationship between the size of the change in the level of investment, the Tobin's Q, and the dimension of the excess return.

The remainder of the paper is organized as follows. Section II defines corporate spinoffs and describes their main characteristics. Section III summarizes the main literature contribution on the relationship between investment policies and corporate spinoffs. Section IV describes the sample and illustrates the methodology adopted for the analysis. Section V presents and discusses the main results. Section VI concludes.

II. Corporate spinoffs: main characteristics and documented returns

This section briefly describes the main technical features of corporate spinoffs in the U.S. market and provides some basic evidence on the well-documented long-run excess returns related to these operations. A corporate spinoff divides the existing asset base of a corporation into two (or more) separate parts. The shareholders of the divesting company (that is typically referred to as the parent company) receive a pro rata distribution of separate equity claims on the assets of each new corporate entity, the subsidiaries[1]. On the U.S. market, spinoffs have been regulated in 1969. Before that date, SEC did not require spinoff to be registered or disclosed, and spinoffs were used as a way to circumvent disclosure requirement for going public. Hence, from 1969 on, it has been possible to examine the stock price reaction and economic performance of spinoffs in a systematic way.

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[1] A spinoff differs from the other forms of asset divestiture because it does not provide cash inflow to the parent company. The parent company creates a new corporation (the spun off company or subsidiary) and allocates to it a part of its assets; then, the parent company distributes pro rata the shares of the newly generated company to its previous shareholders. Pure spinoffs are tax-free distribution on the U.S. market. For a distribution to be tax-exempt, the Internal Revenue Code (or Tax Code), Section 355, and the Securities Exchange Commission (SEC) require to meet specific criteria.

To be tax-free, a spinoff must be motivated by business considerations and not by tax avoidance. In addition:

- parent and subsidiary have to be actively engaged in business activity for at least five years,
- with the spinoff, the parent has to distribute at least 80% of the subsidiary's stock and, any shares retained by the parent must not constitute practical control over the subsidiary,
- finally, no pre-arranges plans are allowed for shareholders to sell the subsidiary stock subsequent to the distribution.

Failure to satisfy one or more of these conditions implies that the spinoff shares will be considered as dividend income to the shareholders of the parent company and therefore it will be treated as a tax relevant operation. Moreover, financial literature suggests that spun off companies tend to have similar financial leverage and cash levels to those of the parent company (Parrino, 1997; Gertner et al., 2002).

Spinoff differs from partial sales of assets (or asset divestments), from split-off, from slit-up and equity carve-out. A spinoff differs from a divestiture because of the receipt of assets by the divesting firm in exchange for money and the change in ownership of the divested assets. In a split-off, one or more of the parent company's shareholders receive shares of the subsidiary in exchange for the parent company shares. Like in a spinoff, in a split-up the parent company generates separate firms with the same owners, separating the firm in several parts and distributing stock of each part to previous shareholders, but after this allocation the parent company ceases existence. Finally, an equity carve-out differs from a corporate spinoff because the shares of the newly generated company are sold on the financial market for cash through an initial public offering (IPO).

A broad body of financial literature well documented the existence of excess returns related to corporate spinoff. The first contributions mainly focused over short run returns and wealth effects associated with spinoff announcements. More recently, a number of studies explored the long-run returns associated with these operations. Since the positive excess return reported for the parent company around the announcement date (Hite and Owners, 1983; Shipper and Smith, 1983; Miles and Rosenfeld, 1983) is supposed to reflect expectations about the prospective performance of spinoffs, no post-spinoff abnormal return should be expected in an efficient capital market. However, Cusatis et al. (1993), Daley et al. (1997), Desai and Jain (1999), and Gertner et al. (2002) documented positive long-run excess return related to corporate spinoffs for up to three years beyond the spinoff announcement date. These results have often been considered as a proof of capital markets inefficiency.

A large branch of literature used corporate events to test the efficient capital market hypothesis. Among the most widely discussed corporate operations, it is possible to find earning announcement (Ball and Brown, 1968; Bernard and Thomas, 1990), mergers and acquisitions (Rau and Vermaelen, 1998; Loughran and Vijh, 1998), and initial public offerings (Ritter, 1991; Loughran and Ritter, 1995; Lee, 1997; Brav and Gompers, 1998; Schultz, 2003). A recent study by Schultz (2003) suggests that the widely documented long-run underperformance related to initial public offerings can be interpreted as a measurement problem and not as a proof of capital market inefficiency. The author shows that, moving from an event time approach to a calendar time one, the negative excess return on the twelve months following the IPO tends to zero[2].

[2] Much of the empirical work devoted to measure long-run performance following corporate events is based on event time returns. With this technique, performance is calculated across stocks for periods of time following the event even though single corporate events took place at different times. In practice, this approach weights corporate events equally and implicitly tests the strategy of investing an equal amount in each operation. By contrast, calendar time approach calculates performance using calendar months. That is, this technique weights months equally, allowing clustering of operations in time and implicitly tests a strategy of investing equal amounts of money in the analyzed event each month. This approach recently generated new interest because it is consistent with the view of behavioralists in corporate finance. For further details, see Schultz (2003).

To verify the existence of positive long-run excess returns related to corporate spinoffs, I tested Schultz hypothesis (*Pseudo Market-Timing Hypothesis)* and calculated the abnormal returns generated by corporate spinoffs on a time horizon of five years preceding and following the operations, both with an event time and a calendar time approach. Table 1 reports the distribution of corporate spinoffs over time and provides the cumulative abnormal returns (CAR) on the six and twelve months preceding the spinoff announcement, calculated on two benchmark portfolios that capture stock characteristics such as industry and size and book to market and size. Event time and calendar time abnormal monthly returns registered by parent and subsidiaries before and after the spinoff respectively are reported in Panel A and Panel B of Table 2. Results support the evidence provided by McConnell and Ovtchinnikov (2004)[3], documenting positive excess returns for spun off companies.

Excess returns in Panel A are calculated in the period preceding the spinoff, hence analyzed companies are the conglomerates (parent and subsidiary). Panel B focuses on subsidiary companies in the period after the spinoff. In both the panels of the table, performance has been calculated on a time horizon equal to the five years preceding and following the spinoff. In addition to the raw returns, the table shows returns against five different benchmarks: the equally weighted and value weighted CRSP index (*Center for Research in Secutrity Prices*)[4], the S&P 500, the industry and size matched benchmark and the book-to-market and size matched benchmark. Examining Panel A of Table 2 it is possible to verify that negative returns persist with a calendar time approach in the period preceding the spinoff. The abnormal returns on the two benchmarks remain negative, but of smaller magnitude[5]. Looking at Panel B of Table 2, it is clear that post-spinoff performance remains significantly positive under both the event time and

[3] On the one hand, the authors document positive and statistically significant excess returns for subsidiary companies over the three years following the spinoff. On the other hand, they show that parent companies produced largely positive but economically insignificant excess return. Moreover, when they omit an outlier from the sample, excess returns are no longer statistically different from zero.
[4] *CRSP Monthly Master File*.
[5] This phenomenon is well known in literature. Schultz (2003) affirms: "*It is well established that underperformance is much greater in event-time*".

the calendar time approach. Stemming from this evidence, the rest of the paper will be devoted to explore the reasons for the documented overperformance.

III. Corporate spinoffs and investment policies

A number of studies (e.g. Comment and Jarrell, 1995) show a systematic trend to refocusing among U.S. firms. These corporate choices tend to be associated with positive stock price reactions that consistently decrease the diversification discount. Rajan, Servaes and Zingales (2000) and Scharfstein and Stein (2000) assume that investment inefficiency is the main reason why diversified groups destroy value. More in detail, their main hypothesis is that diversified firms invest inefficiently, allocating too much capital to some segments and too little to others. Rajan, Servaes and Zingales (2000) define a model of internal capital allocation that shows how diversity in resources and opportunities generates transfer of funds "in the wrong direction", leading the company to inefficient investment and reducing the value for shareholders. Under this approach, diversified companies are not able to properly allocate funds to the segments with more growth opportunities: an agency problem emerges between headquarter and company's business units. Similarly, Shin and Stulz (1998) show that corporate resources tend not to be directed to the segments with the highest investment opportunities. If the source of the diversification discount can be attributed to the internal capital markets inefficiency (Gertner et al., 2002; Ahn and Denis, 2003; Dittmar and Shivdasani, 2003), spinoffs represent the ideal natural experiment to verify if the relaxing of the constraints associated with internal capital markets is able to reduce the diversification discount and generate better returns for shareholders.

Corporate spinoffs could relax financial constraints at the origin of investment inefficiency in two different ways. On the one hand, spinoffs can reduce information asymmetry by transforming the divisions of a company into self operating firms. Therefore, they allow high growth segments to raise external capital in a more efficient way and better finance the capital investments (Krishnaswami and Subramaniam, 1999). On the other hand, spinoffs can help divisions to adopt specific financial policies that allow them to define their capital structure in a more efficient way, using an amount of debt that fit the segment growth opportunities (Lang, Ofek and Stulz, 1996). On the same lines, Gertner et al. (2002), Ahn and Denis (2003), and Dittmar and Shivdasani (2003) explore corporate spinoffs with the objective to verify a relationship between market values and investment policies. If the diversification discount can be (at least partially) attributed to an inefficient investment policy, the different organizational model deriving from a corporate spinoff can lead to improved investment efficiency and therefore to a reduction in the discount.

Ahn and Denis follow this route and analyze 106 corporate spinoffs completed by diversified companies between 1981 and 1996 combining the data of parents and subsidiaries after the spinoff "as if the firm were still a conglomerate" (Ahn and Denis, 2003). The authors verify that through the spinoff the diversification discount is entirely eliminated and a significant increase in measures of investment efficiency is registered. Before the spinoff, investment in high-Q segments are significantly below the industry average of single segment firms, while no difference is registered with respect to the low-Q single segment firms industry average. Following the spinoff, the investment level in high-Q segments significantly increases, together with the investment efficiency, measured through the Relative Investment Ratio (RINV) and the Relative Value Added (RVA) used by Rajan, Servaes and Zingales (2000).

Dittmar and Shivdasani (2000) examine the effects of divestitures of specific business segments on the investment policy of the parent company. Over a sample of 278 divestitures (15 of which are pure spinoff) completed by 235 firms from 1983 to 1994, the authors verify a correlation between the decline in the diversification discount around the divestiture and the change in the investment policy of the firms' remaining segments. The level of investment in segments that underinvest relative to single segment firms increases after the divestiture, while the level of investment in segments that overinvest declines.

With the same approach, Burch and Nanda (2002) show that an increase in corporate focus partly explains the increase in the value of the firm. Similarly, Gertner et al. (2002) show that changes in the investment behavior of the spun off companies explain the gains on the financial market. After the spinoff, the authors register a higher investment sensitivity to measures of investment opportunities such as the Tobin's Q. The increase in investment sensitivity tends to be higher for unrelated subsidiaries. In addition, they provide evidence that, after the spinoff, subsidiaries tend to cut investment in low-Q segments and to increase investment in high-Q businesses.

Studies presented up to this point are mainly focused on long-run returns. However, a number of articles analyze the excess return associated with the spinoff announcement. Miles and Rosenfeld (1983) and Daley et al. (1997) verify a correlation between announcement return and investment policy of the parent company, interpreting the spinoff as the chance to eliminate "negative synergies" generated by a management unable to replicate the role of financial markets. McNeil and Moore (2001) document higher announcement return when parent companies allocate capital in a clearly inefficient way to business segments[6].

Investment policies seem to be an important factor in determining the stock performance. With a more general perspective, investment choices are documented to play an important role in explaining returns of all the listed companies. Titman et al. (2003) provide a significant contribution to the debate on capital investments and stock returns. Differently from what previously documented (McConnell and Muscarella, 1985; Blose and Shieh, 1997), the authors verify the existence of a negative relation between increase in capital investments and subsequent excess returns, measured through the Fama-French-Cahart α (Cahart, 1997). This negative relationship is shown to be stronger for firms with greater investment discretion (firms with higher cash flows and lower leverage ratios).

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[6] Investment efficiency is measured by the authors through a ratio (*INVEFF*) defined as the difference in division and parent investment opportunities scaled by the capital subsidy flowing to or from the divested division.

Linking together the financial literature on the changes in investment policies after corporate spinoffs and on the effects of investment decisions on stock prices (Titman et al., 2003), this article provides evidence on the relationship between the dimension of the excess returns subsequent to the spinoffs, measured through the Fama and French alpha (Fama and French, 1993), and the changes in investment behavior in the spun-off companies. This issue is addressed in the next sections of the article.

IV. Sample and methodology

The sample includes 311 pure spinoffs[7], completed by 267 companies between 1964 and 2000. The starting and ending points for the sample period are due to data availability. No spinoffs were identified prior to January 1964. To compile the sample, data has been collected by *Moody's Dividend Record* and *CRSP (Center for Research in Security Prices) Monthly Master File*. *CCH Capital Changes Reporter* has been used to identify stock distributions. For the whole sample period, 1459 distributions have been identified. From these, all taxable distributions (576), distributions classified as returns of capital (144), non-voluntary distributions (19), and distributions for which no information on their nature is available in *CCH Capital Changes Reporter* (184) have been excluded. Under this approach, 536 tax-free distributions for which full information is available remain. Further, 31 distributions that were trading prior to the announcement of the spinoff and 194 distributions for which no return data is available on *CRSP* have been excluded. Table 1 shows that the number of spinoffs relatively increased in the recent past.

The returns for parents and spun off companies have been collected from *CRSP*. Excess returns have been measured against two sets of benchmarks commonly accepted in the financial literature. The first benchmark (*industry & size benchmark*) has been defined as the portfolio of

[7] Pure spinoffs, or tax-free spinoffs, are defined according to the requirements presented in section I.

companies with the same four-digits SIC code as the parent/subsidiary and with size within +/-25% of the market value of equity of the parent or subsidiary. The second benchmark (*BTM & size benchmark*) has been defined as the portfolio of companies in the same book-to-market quintile and with size within +/-25% of the market value of equity of the parent or subsidiary. The average monthly excess return has been measured as the difference between the average monthly return for the parent or the subsidiary and the average monthly return for the benchmark.

After documenting the positive excess return registered by subsidiaries on the time horizons included between 6 months and 5 years after the spinoff, the analysis has been dedicated to explain excess returns through changes in firms' investment policies. With this purpose, the approach used by Titman et al. (2003) has been adopted. Risk-adjusted excess returns have been measured through the Fama and French alpha (FF α) and have been estimated through the following model:

$$ER_{p,t} = \alpha_p + \beta_{HML,p} R_{HML,t} + \beta_{SMB,p} R_{SMB,t} + \beta_{Mkt,p} (R_{Mkt,t} - R_{ft}) + \varepsilon_{p,t} \quad (1)$$

where, $ER_{p,t}$ is the average excess return on the risk free rate for the subsidiary *p*; R_f is the risk free rate; $R_{HML,t}$, $R_{SMB,t}$ e $R_{MKT,t}$ are the three factors suggested by Fama and French (1993). More specifically, $R_{HML,t}$ is the *book-to-market (BTM) factor* and is calculated as the difference between the return on a portfolio of high (the top 30%) book-to-market stocks and the return on a portfolio of low (the bottom 30%) book-to-market stocks (*HML, High minus Low*). $R_{SMB,t}$ is the *size factor* and is the difference between the return on a portfolio of small (the bottom 50%) stocks and the return on a portfolio of large (the top 50%) stocks (*SMB, Small minus Big*). $R_{MKT,t}$ is the market factor and is the return on the market portfolio. The FF α represents the daily excess return estimated on the three factors included in the model. On the daily abnormal return registered by the subsidiaries in the periods equal to one, two or three years after the spinoff, the sample has been partitioned in three portfolios, defined for descending alpha (*highest FF α, middle FF α* and *lowest FF α*).

The relationship between FF α and investment policies has been examined with the objective to verify the existence of a relationship between the excess return and the change in the level of investment. As investment level, both the absolute capital investments and the industry-adjusted capital investments have been considered. The investment ratio has been calculated as the ratio between the capital investments (raw or industry-adjusted) of the firm and the total amount of its assets. The industry-adjusted investment ratio has been determined as the firm-specific investment ratio less the industry average investment ratio, where the industry has been defined on the four-digits SIC code.

Adopting Titman et al. (2003) as a starting point, the companies in the sample have also been partitioned in high-Q and low-Q firms. Financial literature on investment theory predicts that the level of capital investment is positively correlated with the growth opportunities of the firm. On an empirical basis, this lead to Tobin's Q model, where Q is used as a proxy to measure the firm's investment opportunities and is calculated as the ratio of market value of assets to book value of assets. According to this view, the higher the Q, the higher the capital investment. The formula to calculate Tobin's Q has been reported in equation (2).

$$Q = \frac{(Sh \cdot P + BV_{Assets} - BV_{Equity})}{BV_{Assets}}. \tag{2}$$

Tobin's Q has been calculated on the data provided by Compustat. The market value of assets has been calculated adding the market value of equity [calculated as common shares outstanding (item 25) times fiscal year closing price (item 199)] to the difference between the book value of assets (item 6) and the book value of equity (item 60). Book value of assets is total assets (item 6).

The same approach used by Ahn and Denis (2003) has been adopted. At times, the companies in the sample have been divided in high- and low-Q firms. High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff. Again, the industries are defined on the four-digits SIC code of the subsidiary. High-Q subsidiaries are defined as the companies operating in industries whose median Q is higher than the parent company's Q. Conversely, low-Q subsidiaries are defined as the firms operating in industries whose median Q is lower than the parent company's Q[8].

To measure changes in investment policies for subsidiary companies, data has been collected manually. In the U.S. market, the spun off companies have to include in their first public annual report the income statement, balance sheet and the cash flow statement for up to three years before the spinoff. This data allows to determine the level of investment preceding and following the spinoff. To solve the problem of missing data, the analysis focuses over the period between the year immediately preceding the spinoff and the three years following the operation[9]. Information taken from the annual report of the subsidiaries has been combined with data from Compustat, where the accounting figures for the years following the spinoff have been collected. The pro-forma information and the data from Compustat are put together into an event

[8] To conduct a complete analysis, subsidiaries have also been partitioned according to their firm-specific Q, determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the Q for the subsidiary in the year immediately following the spinoff. Unfortunately, this methodology seems to be inappropriate. The positive average stock price performance registered in the period immediately after the spinoff could be misleading in the calculation of Tobin's Q, reducing the capacity for Q to correctly proxy the company's growth opportunities. In other words, the analysis could be biased because of incorrect classification of companies with low growth opportunities as high-Q firms. Results provide detail on the evidence related to the two different methodologies.

[9] Unfortunately, the pro-forma annual report was available for the years before the one immediately preceding the spinoff only in limited cases. Therefore, post-spinoff investment levels have been compared with the investment levels in the year immediately before the spinoff. Since, on average, a declining trend in the investment levels can be registered during the three years before the spinoff, the choice made by the author can only reduce the possibility to find significant empirical evidence. This supports the reliability of results.

time panel of years –1 to +3, where year zero is the fiscal year when the spinoff takes place and year 1 is the first year of complete independence for the subsidiary. Hand collection of data significantly reduced the number of spinoffs in the sample: 84 annual reports were not available and so have been drop out of the sample[10]. Finally, 26 financial institutions were excluded. Thus, the final sample includes 201 subsidiary companies.

Gertner et al. (2002) use the same kind of data on a smaller sample of spinoffs (160 operations) in order to analyze the investment sensitivity to the growth opportunities of the firm before and after the spinoff. After the spinoff, the authors document an increase in the sensitivity of investment to measures of investment opportunities such as Tobin's Q. Stemming from their approach, this work uses capital expenditure data to verify the existence of a relationship between the excess return gained by the subsidiary's stocks after the spinoff and the change in the investment policy of the company, according to what suggested by Titman et al. (2003). Further developing Titman's approach, this article analyzes changes in investment, controlling for growth opportunities.

V. Results

V. A Baseline results

This section presents the analysis of the excess returns registered by the spun off companies in the three years after the spinoff. Excess returns are analyzed with the objective to verify their relationship with any change in the corporate investment policy. The methodology adopted is an event time analysis, with a time horizon between year zero (the year of the spinoff) and year three. Variations in investment levels, both raw and industry-adjusted, are measured over the periods equal to (-1 year, +1 year), (-1year, +2 years), (-1 year, +3 years). Results are consistent for the two measures of change in investment policy. Tables from 3 to 5 report the

[10] More specifically, annual reports of companies spun off before 1969 have not been found.

results related to both the raw and the industry-adjusted investment variation. Table 6 provides details on the relationship between the excess return and the raw variation in investment policy. Table 7 documents the relationship between the excess returns and the change in the industry-adjusted investment, with reference to the three years following the spinoff. Figures from 1 to 6 show the results for the industry-adjusted investment variation.

Table 3 reports descriptive statistics on monthly excess returns, change in raw investment and change in industry-adjusted investment. At a first glance, it appears that monthly excess returns on the three years following the spinoff are economically significant. Monthly abnormal returns are equal to 0.99% for the first year, 0.86% for the first two years and 0.69% on the first three years. Consistent with the findings of Gertner et al. (2003), a strong average reduction in the investment ratio (raw and industry-adjusted) is registered. The path is particularly pronounced during the first year after the spinoff.

Partitioning the sample in high- and low-Q firms on the basis of the industry median Q, the monthly excess return results higher for low-Q firms than for high-Q firms in the first year after the spinoff, although strongly positive in both cases, and higher for high-Q firms than for low-Q companies in the first two and three years[11]. The investment ratio (raw and industry-adjusted) dramatically decreases during the first year after the operation, and the reduction is stable on the longer time horizon of the first three years. The reduction of the investment appears to be stronger for low-Q than for high-Q firms, although weakly statistically significant.

Table 4 reports descriptive statistics calculated double partitioning the sample in high- and low-Q firms, and in companies that increase capital investments versus companies that decrease capital investments over the first year after the spinoff (time horizon between year –1

[11] Partitioning the sample in high- and low- firm-specific Q, the monthly excess return in the first year of the analysis is positive for high-Q firms and close to zero for low-Q firms (although not statistically significant). This result seems to suggest the arising of an endogeneity problem when the sample is divided according to the firm-specific Q. As known, adopting a firm specific measure of growth opportunities like Q in a moment of high volatility in stock returns of analyzed companies lead to the risk of wrong attribution of firms to the one or the other category, with unreliable results.

and year +1). The table shows that both high- and low-Q firms that increase capital investments in the first year after the spinoff register positive excess returns. The monthly excess return is equal to +1.99% for high-Q firms and to +1.65% for low-Q companies. Their stock performance remains positive along the three years. Conversely, the returns of high- and low-Q firms reducing capital investments in the first year after the spinoff are much smaller and statistically insignificant. In addition, it appears clearly that the excess return of high-Q firms that reduce capital investments in the first year after the spinoff starts to grow in the following years, together with the investment level. The market appears to appreciate an increase in investment, both for high- and low-Q firms. In general, the market seems to be unable to recognize immediately low-Q firms after a spinoff.

Table 5 reports the correlation analysis between changes in investment and subsequent excess returns. The correlation between changes in investment on the selected time horizons [(-1,+1), (-1,+2), and (-1,+3)] and the subsequent excess returns is strong and positive for high-Q firms. However, the correlation is negative, small and statistically insignificant for low-Q firms, on the three years after the spinoff. Again, this suggests that the market is unable to properly recognize low-Q stocks after a spinoff.

Results on the relationship between changes in investment and excess returns are reported in Table 6. Companies in the sample are divided in three portfolios, defined for decreasing excess returns (measured with the daily FF α), recorded over the time horizons equal to 3, 2 and 1 year after the spinoff. Intercepts have been calculated through the Fama and French procedure (Fama and French, 1993), shown in equation (1). In Panel A of Table 6 portfolios have been defined on the basis of the three-years FF α, in Panel B on the two-years FF α and in Panel C on the one-year FF α.

The results shown in Panel A of Table 6 differ from the results in Titman et al. (2003): according to the first three rows of the panel, companies that decrease capital investments the most register the worst stock performance. Raw investment ratio decreases of 0.17% in the period (-1,+2) for companies that gain the highest FF α (FF α = 0.17%), while in the same period it decreases of 3.82% in firms that gain the smallest excess return (FF α = -0.08%). A deeper analysis, developed partitioning the sample in high- and low-Q firms according to the industry median level of Q, shows the relationship between investment choices, growth opportunities and excess returns. From column six of Panel A it appears clearly that the changes in the investment levels differ substantially among the three portfolios, controlling for Q. More in detail, on the time horizon included between the year immediately preceding the spinoff and the two-years after the spinoff, high-Q firms that register the highest 3-years FF α (FF α = 0.18%) increase capital investments of 6.08%, high-Q firms that register less positive performance (FF α = 0.02%) increase capital investments of 2.38% and high-Q firms that register the worst stock performance (FF α = -0.08%) reduce capital investments of about 5.42%. At the same time horizon, investment of low-Q firms that register the best stock performance over the three years (FF α = 0.15%) decreases of 6.89%, investment of low-Q firms that register less positive performance (FF α = 0.03%) decreases of 3.36% and investment of low-Q firms with the worst stock performance (FF α = -0.08%) decreases only of 2.06%. Results from Table 6 indicate that the mean excess returns for high-/low-Q firms monotonically increase/decrease with capital investments. These results find additional support in Table 7, where the relationship between 3-years FF α and changes in industry-adjusted investment ratio is widely documented.

Similar conclusions can be made observing Panel B and C of Table 6. Looking at the whole sample, partitioned in three portfolios on the basis of the 2-years FF alpha (Panel B), companies that more decrease capital investments in the period between year –1 and year +2 register the worst stock performance in terms of excess return over the two years following the spinoff. The investment ratio increases of 2.51% in the period (-1,+2) for companies that gain the highest FF α (FF α = 0.22%), while in the same period it decreases of 7.97% for companies that gain the worst excess return (FF α = -0.15%). Looking at Panel C, it results clear that the companies that reduce more capital investments on the time horizon between year –1 and year +1 register the worst 1-year FF alpha. The investment ratio decreases of 2.57% in the period (-1,+1) for companies that gain the highest FF α (FF α = 0.29%), while in the same period, it decreases of 7.20% in companies that register the worst excess return (FF α = -0.18%). The analysis of industry-adjusted investment changes provides additional support to these results[12]. Figures 1, 2, and 3 support these main findings, presenting the same results with reference to the changes in industry-adjusted investment levels.

However, observing in detail the sample partitioned on the industry median Q, it is possible to confirm that, after a spinoff, the market seems not to be able to properly recognize low-Q firms. On the two years immediately after the spinoff, investment levels show a negative trend, which also affects high growth companies. Nevertheless, high-Q firms continue to show a monotonic relation between changes in investment and excess returns (FF α): the bigger the decrease in investment, the lower the return. Companies with the highest excess return (2-years FF α = 0.25%, 1-year FF α = 0.32%) decrease capital investments less than companies with the lowest excess returns (2-years FF α = -0.15%, 1-year FF α = -0.18%). For the highest 2-years and 1-year alpha portfolios, the variation in investment is equal to –2.16% and –0.73%, and for the lowest 2-years and 1-year alpha portfolios the change in investment is equal to –7.64% and –9.63% respectively.

The subsidiaries with small growth opportunities compared to the parent companies (low-Q firms) that gain the best stock returns on the market reduce capital investments more than low-Q subsidiaries that register negative stock performance. Low-Q companies from the highest 2-years and 1-year alpha portfolios reduce capital investments of about –4.28% and –4.36% respectively. Low-Q companies from the lowest 2-years and 1-year alpha portfolios reduce capital investment of about –3.64% and –4.05% respectively. However, differences tend to be smaller and the relationship becomes not monotonic. Figures 4, 5, and 6 graphically show results

[12] Due to space constraints, detailed results on industry-adjusted investments are not reported in the paper. The unreported results confirm the main findings presented in Tables from 3 to 6. Additional untabulated results are available on request.

referred to industry-adjusted investment levels and provide additional evidence to the main findings discussed before. For the completeness of the analysis, it is worth paying attention to the levels of the investment ratios registered by the companies in the year immediately preceding the spinoff. Confirming what already documented in financial literature, Table 7 clearly shows that, for subsidiaries, the level of industry-adjusted investment registered before the spinoff tends to be higher in low-Q than in high-Q businesses.

Table 8 shows results obtained partitioning the sample according to two criteria: the positive or negative 3-years alpha and the high- or low-Q nature of the business. Analyzing changes in investment ratios it is possible to observe that companies with high growth opportunities (high-Q) that register positive excess returns on the 3-years following the spinoff increase capital investments of about 4.58% over the time horizon between year –1 and year 2. Conversely, companies with high growth opportunities (high-Q) that register negative excess returns on the 3-years following the spinoff reduce capital investments of about 6.76% over the time horizon between year –1 and year 2. In addition, companies with low growth opportunities (low-Q) that register positive excess returns on the 3-years following the spinoff reduce capital investments of about 3.94% over the time horizon between year –1 and year 2, and companies with low growth opportunities (low-Q) that register negative excess returns on the 3-years following the spinoff reduce capital investments of about 4.96% over the time horizon between year –1 and year 2.

The analysis of differences in averages shows that statistically and economically different investment behaviors exist between high-Q and low-Q firms that register positive FF α (p-value = 0.006) and between high-Q firms that register positive and negative excess returns on the three years following the spinoff (p-value = 0.002), but does not exclude a similarity in investment behaviors of low-Q firms registering positive and negative excess returns (p-value = 0.943). At a general level, this result provides additional support to the relevance of investment decisions to determine stock returns for high-Q firms and, in particular, suggests the capacity of the market to appreciate capital investments increases in companies with high growth opportunities. With respect to low-Q firms, investment choices appear to be less relevant in determining stock performance.

V. B Additional results

In addition to the evidence provided before, this section shows the result of an additional regression analysis conducted with the objective to explain excess returns through changes in the investment policy. Again, the analysis stems from the contribution of Titman et al. (2003). The authors document a negative relationship between stock returns and abnormal capital investments, and show that this relationship tends to be more evident for companies with greater investment discretion (i.e. companies with lower leverage ratios). Adopting Jensen's view, based on agency costs and on the overinvestment problem (Jensen, 1986), companies with higher debt to asset ratios should be less favorable to waist resources overinvesting in non-profitable projects.

To verify the relevance of investment choices in corporate spinoffs, a regression analysis has been conducted through the following models:

$$FF\alpha_{i,3} = \lambda_0^{(1)} + \lambda_1^{(1)}\,\Delta CAPEX_{i,3} + \lambda_2^{(1)}\,\Delta LEV_{i,3} + \varepsilon_{i,t} \tag{3}$$

$$FF\alpha_{i,3} = \lambda_0^{(2)} + \lambda_1^{(2)}\,\Delta CAPEX_{i,2} + \lambda_2^{(2)}\,\Delta LEV_{i,2} + u_{i,t} \tag{4}$$

$$FF\alpha_{i,2} = \lambda_0^{(3)} + \lambda_1^{(3)}\,\Delta CAPEX_{i,2} + \lambda_2^{(3)}\,\Delta LEV_{i,2} + v_{i,t} \tag{5}$$

$$FF\alpha_{i,2} = \lambda_0^{(4)} + \lambda_1^{(4)}\,\Delta CAPEX_{i,1} + \lambda_2^{(4)}\,\Delta LEV_{i,1} + \nu_{i,t} \tag{6}$$

where $FF\alpha$ is the daily excess return registered by the spun off company over the three ($FF\alpha_{i,3}$), and two ($FF\alpha_{i,2}$) years after the spinoff. $\Delta CAPEX_{i,3}$, $\Delta CAPEX_{i,2}$ e $\Delta CAPEX_{i,1}$ are the changes in the investment ratios on the time horizon between the year immediately preceding the spinoff and the three, two and one year after the spinoff respectively. ΔLEV is the variation in the leverage ratio, measured as the ratio between long-term debt and total assets. The change in leverage is calculated on the time horizon between the year immediately preceding the spinoff and the three ($\Delta LEV_{i,3}$), two($\Delta LEV_{i,2}$), and one($\Delta LEV_{i,1}$) year after the spinoff respectively. Further developing Titman's approach, the sample ha been partitioned in high- and low-Q firms. Companies have been classified by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff. Results are presented in Table 9.

The statistical and economic significance of investment policies in explaining the long-run overperformance of high-Q subsidiaries after the spinoffs is documented when analyzing Panel A of Table 9. For high-Q companies, the regression coefficients on changes in the investment ratio (ΔCAPEX) are positive and significant. Surprisingly, coefficients on the variation in the leverage ratio are positive but insignificant. This means that the market does recognize a premium to subsidiaries that increase capital investments but does not consider the debt as an instrument for management control against overinvestment. When looking at low-Q firms (Panel B, Table 9), the situation appears completely different. Regression coefficients on both the changes in the investment ratio and the changes in the leverage ratio are negative and poorly statistically significant. The market appears to weakly appreciate low-Q firms cooling the investment and keeping under control their financial exposure.

Summing up, the results presented in Table 9 confirm the evidence previously documented. An increase in capital investments generates positive excess returns for high-growth subsidiaries in the three-years period following the spinoff. Conversely, market does not properly recognize low-Q firms. Although the sign of regression coefficients seems to suggest that the market appreciates when low-Q firms reduce capital investments, their statistic and economic significance is limited. This could be likely explained with the noise in the data: financial literature on long-run returns suggests that the variance of long-run returns increases with the horizon on which returns are calculated (McConnell and Ovtchinnikov, 2004). Noise in the data could be a likely explanation for the limited explanatory power of changes in capital investments for low-Q subsidiaries.

VI. Conclusions

This paper documents a significant change in the investment policies following corporate spinoffs and suggests the existence of a relationship between the dimension of the change in the investment levels, both raw and industry-adjusted, and the size of the excess returns, measured through the α of the Fama and French model (1993). In the three years following the spinoff, investment efficiency dramatically increases in the subsidiaries that register high positive excess returns. Subsidiaries with strong growth opportunities (high-Q firms) tend to increase and subsidiaries with low growth opportunities (low-Q firms) tend to reduce capital investments. As previously documented by Gertner et al. (2002) and by Ahn and Denis (2003), investment efficiency increases after the spinoff. However, results differ from what documented by Titman et al. (2003): from the analysis of the spinoffs included in the sample, a direct inverse relationship between capital investments and excess returns cannot be found. Growth opportunities turn out to be extremely important to explain market reactions to increase or reduction of capital investments.

In financial literature, increased capital investments in companies with high growth opportunities represent favorable information for the market. Conversely, increased capital investments in companies with low growth opportunities generate overinvestment risk and tend to be considered negative information for the stock market. This theoretical framework finds support in the presented results. Partitioning the sample in three portfolios defined for descending daily abnormal returns registered by the subsidiaries in the periods equal to one, two or three years after the spinoff, a direct monotonic relationship between increase (reduction) of capital investments and excess returns is documented for high-Q (low-Q) firms. In other words, high-Q (low-Q) companies registering the best performance on the time horizon equal to the three years following the spinoff (FF $\alpha = 0.17\%$) increase (decrease) the investment. Vice versa, high-Q (low-Q) companies that register the worst performance on the time horizon equal to the three years following the spinoff (FF $\alpha = -0.08\%$) reduce (increase) capital investments.

The results show that changes in investment policies play a significant role in determining excess returns related to corporate spinoffs. Certainly other factors contribute to explain the stock prices patterns. Financial literature largely investigated this issue, identifying several explanations for the excess returns generated by corporate spinoffs, both on the short and the long-run. Among them, just to quote some: tax and regulatory benefits (Schipper and Smith, 1983), wealth transfer from bondholders to shareholders (Hite and Owers, 1983; Parrino, 1997; Maxwell and Rao, 2003), recreation of wealth previously destroyed through an acquisition (Allen et al., 1995), increased future contracting efficiency (Hite and Owers, 1983; Schipper and Smith, 1983), increased corporate focus (Daley, Mehrortra and Sivakumar, 1997), and less information asymmetry (Gilson et al., 1997; Krishnaswami and Subramaniam, 1999).

Further developing previous research (Ahn and Denis, 2003; Gertner, Power and Scharfstein, 2002) through the documentation of a direct relationship between changes in investment policies and excess returns, this study supports the view of investment efficiency as an additional element in explaining value creation processes through corporate spinoffs. Efficiency in allocating capital investments significantly increases after spinoffs. Changes in investment policies have strong impact on stock returns. Which of the factors identified by financial literature most heavily affects excess returns in spinoffs is a question for future research.

References

Abarbanell. J., B. Bushee, and J. Raedy (2003), Institutional Investor Preferences and Price Pressure: The Case of Corporate Spinoffs., *Journal of Business* 76, 233 – 261.

Allen, J., S. Lummer, J. McConnell, and D. Reed (1995), Can Takeover Losses Explain Spinoff Gains?, *Journal of Financial and Quantitative Analysis* 30, 465 – 485.

Allen, J., and J. McConnell (1998), Equity Carve-outs and Managerial Discretion., *Journal of Finance* 53, 163 – 186.

Ahn, S., and Denis D. (2003), Internal Capital Markets and Investment Policy: Evidence from Corporate Spinoffs., *Journal of Financial Economics* 71, 489 – 516.

Aron, D. (1991), Using the Capital Market as a Monitor: Corporate Spinoffs in an Agency Framework., *RAND Journal of Economics* 22, 505 – 518.

Badrinath, S., and W. Lewellen (1997), On the Measurement of Tobin's Q., *Journal of Financial Economics* 44, 77 – 122.

Ball, R., and P. Brown (1968), An Empirical Evaluation of Accounting Income Numbers., *Journal of Accounting Research* 6, 159 – 178.

Berger, P., and E. Ofek (1995), Diversification's Effect on Firm Value., *Journal of Financial Economics* 37, 39 – 65.

Bernard, V., and J. Thomas (1990), Evidence that Stock Prices Do Not Fully Reflect the Implications of Current Earnings for Future Earnings., *Journal of Accounting and Economics* 13, 305 – 340.

Blose, L., and J. Shieh (1997), Tobin's Q Ratio and Market Reaction to Capital Investment Announcements., *Financial Review* 32, 449 – 476.

Brav, A., and P. Gompers (1998), Myth or Reality? The Long Run Underperformance of Initial Public Offerings: Evidence from Venture and Nonventure Capital-backed Companies., *Journal of Finance* 52, 1971 – 1821.

Burch, T., and V. Nanda (2003), Divisional Diversity and the Conglomerate Discount: The Evidence from Spinoffs., *Journal of Financial Economics* 70, 69 – 98.

Carhart, M. (1997), On Persistence in Mutual Fund Performance., *Journal of Finance* 52, 57 – 83.

Chemmanur, T., and A. Yan (2004), A Theory of Corporate Spinoffs., *Journal of Financial Economics* 72, 259 – 290.

Comment, R., and G. Jarrell (1995), Corporate Focus and Stock Returns., *Journal of Financial Economics* 37, 67 – 87.

Cusatis, P., J. Miles, and J. Woolridge (1993), Restructuring through spinoffs: The stock market Evidence., *Journal of Financial Economics* 33, 293 – 311.

Daley, L., V. Mehrotra, and R. Sivakumar (1997), Corporate focus and value creation: Evidence from spinoffs., *Journal of Financial Economics* 45, 257 – 281.

Denning, K., and K. Shastri (1993), Changes in Organizational Structure and Shareholder Wealth: The Case of Limited Partnerships., *Journal of Financial and Quantitative Analysis* 28, 553 – 564.

Desai, H., and P. Jain (1999), Firm Performance and Focus: Long-run Stock Market Performance Following Spinoffs., *Journal of Financial Economics* 54, 75 – 101.

Dittmar, A, and A,. Shivdasani (2003), Divestitures and Divisional Investment Policies., *Journal of Finance* 58, 2711 – 2743.

Fama, E., and K. French (1993), Common Risk Factors in the Return on Stocks and Bonds., *Journal of Financial Economics* 33, 3 – 56.

Fazzari, S., R. Hubbard, and B. Petersen (1988), Financing Constraints and Corporate Investment., *Brooking Papers on Economic Activity* 1, 141 – 205.

Frank, K., and W. Harden (2001), Corporate Restructurings: A Comparison of Equity Carve-outs and Spinoffs., *Journal of Business Finance & Accounting* 28, 503 – 529.

Gertner, R., E. Powers, and D. Scharfstein (2002), Learning about Internal Capital Markets from Corporate Spinoffs., *Journal of Finance*, 57, 2479 – 2506.

Gilson, S., P. Healy, C. Noe, and K. Palepu (1997), Information Effects of Spinoffs, Equity Carve-outs, and Targeted Stock Offerings., *Working Paper*, Harvard University.

Hite, G., and J. Owers (1983), Security Price reactions around Corporate Spinoff Announcements., *Journal of Financial Economics* 12, 409 – 436.

Ikenberry, D., J. Lakonishok, and T. Vermaelen (1995), Market Under-reaction to Open Market Share Repurchases., *Journal of Financial Economics* 39, 181 – 208.

Jensen, M. (1986), Agency Costs of Free Cash Flow, Corporate Finance, and Takeover., *American Economic Review* 76, 323 – 329.

John, T. (1993), Optimality of Spinoffs and Allocation of Debt., *Journal of Financial and Quantitative Analysis* 28, 139 – 160.

John, K., and E. Ofek (1995), Asset Sales and Increase in Focus., *Journal of Financial Economics* 37, 105 – 126.

Krishnaswami, S., and V. Subramaniam (1999), Information Asymmetry, Valuation, and the Corporate Spinoff Decision., *Journal of Financial Economics* 53, 73 – 112.

Lamont, O. (1997), Cash Flow and Investment: Evidence from Internal Capital Markets., *Journal of Finance* 52, 83 – 109.

Lamont, O., and C. Polk (2002), Does Diversification Destroy Value? Evidence from Industry Shocks., *Journal of Financial Economics* 63, 51 – 77.

Lang, L., E. Ofek, and R. Stulz (1996), Leverage, Investment, and Firm Growth., *Journal of Financial Economics* 40, 3 – 29.

Lee, I. (1997), Do Firms Knowingly Sell Overvalued Equity?, *Journal of Finance* 52, 1439 – 1466.

Loughran, T., and A. Vijh (1997), Do Long Term Shareholders Benefit from Corporate Acquisitions?, *Journal of Finance* 52, 1765 – 1790.

Loughran, T., and J. Ritter (1995), The New Issues Puzzle., *Journal of Finance* 50, 23 – 51.

Maxwell, W., and R. Rao (2003), Do Spinoffs Expropriate Wealth from Bondholders?, *Journal of Finance* 58, 2087 – 2108.

McConnell, J., and C. Muscarella (1985), Corporate Capital Investment Decisions and the Market Value of the Firms., *Journal of Financial Economics* 14, 399 – 422.

McConnell, J., M. Ozbilgin, and S. Wahal (2001), Spinoffs, ex ante., *Journal of Business* 74, 245 – 280.

McConnell, J., and A. Ovtchinnikov (2004), Predictability of Long-term Spinoff Returns., *Journal of Business*, forthcoming.

McNeil, C., and Moore W. (2001), Spinoff Wealth Effects and the Dismantling of Internal Capital Markets., *Working Paper*, University of South Carolina.

Miles, J., And J. Rosenfeld (1983), An Empirical Analysis of the Effects of Spinoff Announcements on Shareholder Wealth., *Journal of Finance* 38, 1597 –1606.

Morck, R., A. Shleifer, and R. Vishny (1990), The Stock Market and Investment: Is the Market a Side-show?, *Brooking Papers on Economic Activity* 2, 157 – 215.

Parrino, R. (1997), Spinoffs and Wealth Transfers: The Marriott Case., *Journal of Financial Economics* 43, 241 – 274.

Perfect, S., and K. Wiles (1994), Alternative Constructions of Tobin's Q: An Empirical Comparison., *Journal of Empirical Finance* 1, 313 – 341.

Rajan, R., H. Servaes, and L. Zingales (2000), The Cost of Diversity: The Diversification Discount and Inefficient Investment., *Journal of Finance* 55, 35 – 80.

Rau, P., and T. Vermaelen (1998), Glamour, Value and the Post-Acquisition Performance of Acquiring Firms., *Journal of Financial Economics* 49, 223 – 254.

Ritter, J. (1991), The Long-run Underperformance of Initial Public Offerings., *Journal of Finance* 46, 3 – 28.

Rosenfeld, J. (1984), Additional Evidence on the Relation Between Divestiture Announcements and Shareholder Wealth., *Journal of Finance* 39, 1437 – 1448.

Scharfstein, D., and J. Stein (2000), The Dark Side of Internal Capital Markets: Divisional Rent-seeking and Inefficient Investment., *Journal of Finance* 55, 2537 – 2564.

Schipper, K., and A. Smith (1983), Effects of Recontracting on Shareholder Wealth: The Case of Voluntary Spinoffs., *Journal of Financial Economics* 12, 437-467.

Schultz, P. (2003), Pseudo Market Timing and the Long-Run Underperformance of IPOs., *Journal of Finance* 58, 483 – 517.

Seward, J., and J. Walsh (1996), The Governance and Control of Voluntary Corporate Spinoffs., *Strategic Management Journal* 17, 25 – 39.

Shin, H., and R. Stulz (1998), Are Internal Capital Markets Efficient?, *Quarterly Journal of Economics* 113, 531 – 553.

Slovin, M., M. Sushka, and S. Ferraro (1995), A Comparison of the Information Conveyed by Equity Carve-outs, Spinoffs, and Asset Sell-offs., *Journal of Financial Economics* 37, 89 – 104.

Titman, S., K.Wei, and F. Xie (2003), Capital Investments and Stock Returns., *Working Paper*, National Bureau of Economic Research.

Whited, T. (2001), Is it Inefficient Investment that Causes the Diversification Discount?, *Journal of Finance* 56, 1667 – 1692.

Willens, R. (1980), Section 355: The Minefield of Subchapter C., *CPA Journal* 50, 23-27.

Woo, C., G. Willard, and U. Daellenbach (1992), Spinoff Performance: A Case of Overstated Expectations?, *Strategic Management Journal* 13, 433 – 447.

Table 1

Pre-spinoff announcement cumulative abnormal returns (CARs) per year (parent companies)

(This table reports the distribution of spinoffs over time and provides cumulative abnormal returns (CARs) on the six and twelve months preceding the spinoff announcement. Benchmarks are defined as industry and size and book to market and size.)

Year	# spinoff	6-months CAR against industry & size matched firms	6-months CAR against BTM & size matched firms	12-months CAR against industry & size matched firms	12-months CAR against BTM & size matched firms	Year	# spinoff	6-months CAR against industry & size matched firms	6-months CAR against BTM & size matched firms	12-months CAR against industry & size matched firms	12-months CAR against BTM & size matched firms
1964	1	-15.08%	0.85%	32.29%	10.35%	1985	14	-3.25%	-4.17%	-4.24%	-2.54%
1966	1	83.03%	52.02%	102.70%	71.13%	1986	13	-3.30%	-2.25%	-12.81%	-8.13%
1972	3	-2.14%	-3.98%	-24.41%	-8.27%	1987	12	4.97%	2.25%	16.92%	18.45%
1973	1	-21.02%	-28.81%	5.06%	-18.81%	1988	15	4.58%	0.16%	0.43%	2.49%
1974	2	-27.76%	8.98%	-32.98%	8.70%	1989	18	-1.95%	-7.53%	-6.29%	-6.65%
1975	9	19.66%	8.81%	15.02%	8.01%	1990	12	-9.92%	-6.89%	-35.93%	-12.84%
1976	3	9.08%	5.02%	26.65%	19.88%	1991	6	-0.71%	15.52%	-3.08%	-0.57%
1977	6	21.44%	15.23%	32.63%	34.68%	1992	8	18.19%	9.98%	12.92%	7.97%
1978	9	-6.80%	2.54%	-8.96%	1.09%	1993	16	12.90%	11.39%	34.24%	27.65%
1979	11	-13.23%	3.18%	-20.88%	16.55%	1994	17	-3.87%	-0.01%	-0.25%	-4.51%
1980	9	6.27%	4.98%	19.62%	20.51%	1995	22	7.63%	6.83%	1.18%	7.77%
1981	16	-2.51%	-9.27%	2.50%	-6.25%	1996	16	-24.13%	-3.88%	-34.71%	-2.15%
1982	4	-4.80%	9.00%	-26.44%	10.17%	1997	11	11.19%	11.68%	7.72%	12.99%
1983	8	14.58%	8.67%	15.98%	0.28%	1998	13	-1.09%	0.54%	4.37%	4.61%
1984	14	-7.13%	-10.78%	-8.22%	-9.26%	1999	13	-13.44%	-9.63%	-36.53%	-24.72%
						2000	8	-19.84%	-1.18%	-91.17%	-24.43%

Table 2 -Panel A

Event time pre-spinoff monthly abnormal returns (parent companies)

(This table reports the event time and calendar time abnormal returns before and after the spinoff. In addition to the raw returns, the table shows returns against five different benchmarks: the equally weighted and value weighted CRSP index, the S&P 500, the industry and size matched benchmark and the book-to-market and size matched benchmark.)

	Equally Weighted	t-stat	Value Weighted	t-stat		Equally Weighted	t-stat	Value Weighted	t-stat
Prior 6-months holding period					***Prior 36-months holding period***				
Raw return	2.04%	6.957	1.53%	4.985	Raw return	1.65%	15.611	1.26%	16.867
CRSP Value Weighted	0.52%	1.919	-0.11%	-0.382	CRSP Value Weighted	0.36%	3.455	-0.16%	-2.211
CRSP Equally Weighted	0.41%	1.614	0.30%	1.123	CRSP Equally Weighted	0.26%	2.600	-0.02%	-0.253
S&P 500	0.78%	2.809	-0.03%	-0.098	S&P 500	0.64%	5.721	-0.02%	-0.273
Industry & Size	-0.11%	-0.320	-1.47%	-5.328	Industry & Size	-0.34%	-2.282	-0.87%	-7.290
BTM & Size	0.16%	0.608	-0.29%	-1.160	BTM & Size	-0.15%	-1.724	-0.68%	-10.466
Prior 12-months holding period					***Prior 48-months holding period***				
Raw return	1.81%	8.909	1.41%	9.489	Raw return	1.69%	19.119	1.28%	21.939
CRSP Value Weighted	0.51%	2.620	-0.09%	-0.645	CRSP Value Weighted	0.42%	4.624	-0.12%	-2.058
CRSP Equally Weighted	0.49%	2.709	0.15%	1.102	CRSP Equally Weighted	0.27%	3.207	-0.09%	-1.482
S&P 500	0.76%	3.775	0.01%	0.083	S&P 500	0.70%	7.325	0.06%	0.923
Industry & Size	-0.36%	-1.298	-1.06%	-5.004	Industry & Size	-0.27%	-2.184	-0.72%	-7.080
BTM & Size	0.17%	0.952	-0.36%	-2.733	BTM & Size	-0.12%	-1.623	-0.67%	-12.576
Prior 24-months holding period					***Prior 60-months holding period***				
Raw return	1.64%	12.987	1.47%	16.002	Raw return	1.76%	21.586	1.42%	21.869
CRSP Value Weighted	0.33%	2.579	-0.13%	-1.358	CRSP Value Weighted	0.53%	6.516	0.07%	1.105
CRSP Equally Weighted	0.25%	2.185	0.13%	1.503	CRSP Equally Weighted	0.38%	4.849	0.07%	1.057
S&P 500	0.59%	4.451	-0.01%	-0.068	S&P 500	0.81%	9.538	0.26%	4.093
Industry & Size	-0.27%	-1.482	-0.89%	-5.662	Industry & Size	-0.22%	-1.956	-0.57%	-5.706
BTM & Size	-0.15%	-1.398	-0.55%	-6.701	BTM & Size	-0.03%	-0.384	-0.51%	-8.136

Table 2 -Panel A (cont.)
Calendar time pre-spinoff monthly abnormal returns (parent companies)

	Equally Weighted	t-stat	Value Weighted	t-stat		Equally Weighted	t-stat	Value Weighted	t-stat
Prior 6-months holding period					***Prior 36-months holding period***				
Raw return	2.21%	4.682	2.45%	4.725	Raw return	1.59%	4.784	1.79%	4.925
CRSP Value Weighted	0.87%	2.339	1.11%	2.560	CRSP Value Weighted	0.54%	2.419	0.74%	2.684
CRSP Equally Weighted	0.65%	1.880	0.89%	2.141	CRSP Equally Weighted	0.44%	2.244	0.64%	2.348
S&P 500	1.16%	3.010	1.40%	3.120	S&P 500	0.80%	3.340	1.00%	3.457
Industry & Size	0.08%	0.138	-0.02%	-0.032	Industry & Size	-0.24%	-0.725	-0.24%	-0.725
BTM & Size	0.35%	1.010	0.58%	1.390	BTM & Size	0.00%	-0.008	0.00%	-0.003
Prior 12-months holding period					***Prior 48-months holding period***				
Raw return	2.09%	5.274	2.39%	5.528	Raw return	1.56%	4.753	1.75%	4.998
CRSP Value Weighted	0.97%	3.195	1.27%	3.521	CRSP Value Weighted	0.49%	2.198	0.67%	2.549
CRSP Equally Weighted	0.81%	3.041	1.11%	3.254	CRSP Equally Weighted	0.38%	1.999	0.56%	2.169
S&P 500	1.24%	3.901	1.54%	4.107	S&P 500	0.75%	3.159	0.94%	3.379
Industry & Size	-0.06%	-0.125	0.24%	0.565	Industry & Size	-0.14%	-0.449	-0.21%	-0.676
BTM & Size	0.47%	1.798	0.67%	2.006	BTM & Size	-0.07%	-0.381	-0.09%	-0.366
Prior 24-months holding period					***Prior 60-months holding period***				
Raw return	1.65%	4.578	1.91%	4.913	Raw return	1.60%	4.991	1.75%	5.225
CRSP Value Weighted	0.44%	1.746	0.71%	2.338	CRSP Value Weighted	0.55%	2.585	0.70%	2.773
CRSP Equally Weighted	0.28%	1.270	0.55%	1.851	CRSP Equally Weighted	0.39%	2.104	0.53%	2.114
S&P 500	0.72%	2.659	0.98%	3.102	S&P 500	0.82%	3.603	0.97%	3.677
Industry & Size	-0.28%	-0.766	-0.26%	-0.713	Industry & Size	-0.14%	-0.481	-0.14%	-0.486
BTM & Size	-0.15%	-0.681	-0.04%	-0.127	BTM & Size	0.00%	0.019	0.00%	0.016

Table 2 -Panel B
Event time post-spinoff monthly abnormal returns (subsidiaries)

	Equally Weighted	t-stat	Value Weighted	t-stat		Equally Weighted	t-stat	Value Weighted	t-stat
Post 6-months holding period					***Post 36-months holding period***				
Raw return	2.96%	6.871	2.08%	5.398	Raw return	1.77%	10.396	1.12%	7.928
CRSP Value Weighted	1.65%	4.034	1.33%	3.549	CRSP Value Weighted	0.65%	3.846	0.24%	1.768
CRSP Equally Weighted	1.66%	4.152	1.28%	3.444	CRSP Equally Weighted	0.52%	3.102	0.02%	0.138
S&P 500	1.86%	4.514	1.37%	3.637	S&P 500	0.87%	5.108	0.38%	2.749
Industry & Size	0.99%	1.855	0.65%	1.649	Industry & Size	0.36%	1.722	0.17%	1.240
BTM & Size	1.47%	3.560	0.27%	0.804	BTM & Size	0.43%	2.601	0.03%	0.248
Post 12-months holding period					***Post 48-months holding period***				
Raw return	2.27%	7.264	1.45%	3.947	Raw return	1.74%	12.403	1.52%	14.509
CRSP Value Weighted	1.11%	3.634	0.75%	2.163	CRSP Value Weighted	0.56%	3.940	0.47%	4.660
CRSP Equally Weighted	1.10%	3.649	0.59%	1.666	CRSP Equally Weighted	0.47%	3.383	0.42%	3.997
S&P 500	1.32%	4.287	0.82%	2.342	S&P 500	0.78%	5.476	0.60%	5.871
Industry & Size	0.89%	2.419	0.70%	2.037	Industry & Size	0.20%	1.230	0.35%	2.862
BTM & Size	1.01%	3.268	0.12%	0.417	BTM & Size	0.35%	2.483	0.29%	2.848
Post 24-months holding period					***Post 60-months holding period***				
Raw return	1.93%	8.745	1.73%	7.221	Raw return	1.66%	12.474	1.48%	14.056
CRSP Value Weighted	0.78%	3.563	1.02%	4.427	CRSP Value Weighted	0.44%	3.313	0.44%	4.141
CRSP Equally Weighted	0.71%	3.309	0.87%	3.767	CRSP Equally Weighted	0.44%	3.207	0.41%	3.971
S&P 500	0.99%	4.517	1.12%	4.854	S&P 500	0.66%	4.877	0.56%	5.252
Industry & Size	0.33%	1.315	0.87%	3.725	Industry & Size	0.01%	0.084	-0.13%	-1.047
BTM & Size	0.62%	2.857	0.46%	2.501	BTM & Size	0.29%	2.170	0.27%	2.505

Table 2 -Panel B (cont.)
Calendar time post-spinoff monthly abnormal returns (subsidiaries)

	Equally Weighted	t-stat	Value Weighted	t-stat		Equally Weighted	t-stat	Value Weighted	t-stat
Post 6-months holding period					***Post 36-months holding period***				
Raw return	2.77%	4.798	3.47%	5.719	Raw return	1.77%	4.133	2.14%	4.824
CRSP Value Weighted	1.77%	3.515	2.47%	4.713	CRSP Value Weighted	0.89%	2.817	1.26%	3.850
CRSP Equally Weighted	1.58%	3.258	2.27%	4.369	CRSP Equally Weighted	0.59%	2.048	0.96%	2.990
S&P 500	2.03%	3.977	2.73%	5.139	S&P 500	1.16%	3.487	1.53%	4.471
Industry & Size	0.80%	1.196	2.12%	3.253	Industry & Size	0.41%	1.339	0.98%	2.842
BTM & Size	1.26%	2.538	1.62%	3.128	BTM & Size	0.50%	1.774	0.91%	3.051
Post 12-months holding period					***Post 48-months holding period***				
Raw return	2.32%	4.867	2.67%	5.364	Raw return	1.86%	4.431	2.20%	5.114
CRSP Value Weighted	1.31%	3.419	1.66%	4.156	CRSP Value Weighted	0.95%	3.044	1.29%	4.035
CRSP Equally Weighted	1.04%	2.861	1.40%	3.388	CRSP Equally Weighted	0.63%	2.232	0.97%	3.106
S&P 500	1.57%	3.999	1.93%	4.682	S&P 500	1.22%	3.740	1.56%	4.698
Industry & Size	0.63%	1.433	1.31%	2.983	Industry & Size	0.39%	1.282	0.96%	2.847
BTM & Size	0.88%	2.407	0.99%	2.552	BTM & Size	0.51%	1.861	0.95%	3.280
Post 24-months holding period					***Post 60-months holding period***				
Raw return	2.00%	4.528	2.36%	5.224	Raw return	1.88%	4.638	2.17%	5.284
CRSP Value Weighted	1.13%	3.333	1.48%	4.225	CRSP Value Weighted	0.96%	3.201	1.25%	4.060
CRSP Equally Weighted	0.83%	2.605	1.18%	3.303	CRSP Equally Weighted	0.66%	2.414	0.95%	3.095
S&P 500	1.39%	3.954	1.75%	4.817	S&P 500	1.23%	3.908	1.52%	4.768
Industry & Size	0.53%	1.594	1.17%	3.146	Industry & Size	0.31%	1.069	0.91%	2.837
BTM & Size	0.74%	2.392	1.12%	3.372	BTM & Size	0.54%	1.991	0.94%	3.268

Table 3
Subsidiaries - Descriptive Statistics

(This table provides summary statistics on the monthly abnormal return, the variation in investments and the variation in industry-adjusted investments. The first raw shows the average. Median is reported in parenthesis. The second and the third columns report results referred to the entire sample. Results in columns from 4 to 11 are obtained dividing the sample in high- and low-Q firms. In columns from 4 to 7, high- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff. In columns from 8 to 11 high- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the Q for the subsidiary in the year immediately following the spinoff.)

			Industry median Q				Firm Specific Q			
Statistic	All firms	p-value	High-Q firms	p-value	Low-Q firms	p-value	High-Q firms	p-value	Low-Q firms	p-value
$AR_{t,t+1}$ (%)	0.99	0.006	0.88	0.097	1.12	0.028	1.95	0.000	0.00	0.987
	(0.70)	(0.204)	(-0.13)	(0.920)	(1.01)	(0.046)	(0.94)	(0.054)	(-0.07)	(1.000)
$AR_{t,t+2}$ (%)	0.86	0.003	1.02	0.027	0.70	0.050	1.42	0.002	0.23	0.519
	(0.75)	(0.005)	(0.84)	(0.035)	(0.56)	(0.073)	(1.04)	(0.000)	(0.51)	(0.691)
$AR_{t,t+3}$ (%)	0.69	0.004	0.83	0.025	0.54	0.072	0.83	0.013	0.45	0.173
	(0.50)	(0.011)	(0.47)	(0.133)	(0.50)	(0.046)	(0.47)	(0.129)	(0.50)	(0.046)
$\Delta Inv_{t-1,t+1}$ (%)	-4.67	0.000	-4.79	0.006	-4.55	0.013	-3.06	0.052	-6.43	0.001
	(-0.67)	(0.058)	(-0.63)	(0.146)	(-0.92)	(0.262)	(0.35)	(0.920)	(-1.51)	(0.004)
$\Delta Inv_{t-1,t+2}$ (%)	-2.03	0.140	0.28	0.863	-4.34	0.053	1.14	0.574	-5.48	0.003
	(-0.63)	(0.200)	(-0.63)	(0.241)	(-0.64)	(0.594)	(0.97)	(0.675)	(-1.03)	(0.021)
$\Delta Inv_{t-1,t+3}$ (%)	-2.65	0.057	-1.44	0.268	-3.82	0.118	-1.25	0.481	-4.16	0.057
	(-0.87)	(0.466)	(-0.69)	(1.000)	(-1.43)	(0.362)	(0.62)	(0.822)	(-0.93)	(0.160)
$\Delta Adj\ Inv_{t-1,t+1}$ (%)	-4.41	0.000	-4.67	0.006	-4.15	0.022	-2.94	0.062	-6.01	0.002
	(-0.55)	(0.146)	(-1.32)	(0.146)	(-0.27)	(0.610)	(0.29)	(0.762)	(-1.38)	(0.015)
$\Delta Adj\ Inv_{t-1,t+2}$ (%)	-1.76	0.195	-0.02	0.992	-3.51	0.114	1.05	0.606	-4.80	0.008
	(-0.61)	(0.258)	(-0.61)	(0.241)	(-0.59)	(0.749)	(0.95)	(0.530)	(-1.99)	(0.021)
$\Delta Adj\ Inv_{t-1,t+3}$ (%)	-2.55	0.062	-1.95	0.119	-3.14	0.196	-1.62	0.352	-3.56	0.099
	(-0.60)	(0.570)	(-0.40)	(0.818)	(-1.54)	(0.649)	(0.40)	(0.368)	(-2.22)	(0.060)

Table 4

Descriptive Statistics for High- and Low-Q Firms

(This table provides summary statistics on the monthly abnormal return, the variation in investments and the variation in industry-adjusted investments. The first raw shows the average. Median is reported in parenthesis. High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff.)

	High-Q firms				Low-Q firms			
Statistic	$\Delta Adj\ Inv_{t-1,t+1} > 0$	p-value	$\Delta Adj\ Inv_{t-1,t+1} < 0$	p-value	$\Delta Adj\ Inv_{t-1,t+1} > 0$	p-value	$\Delta Adj\ Inv_{t-1,t+1} < 0$	p-value
$AR_{t,t+1}$ (%)	1.99	0.018	0.15	0.817	1.65	0.013	0.68	0.359
	(1.03)	(0.337)	(-0.53)	(0.306)	(1.54)	(0.135)	(0.62)	(0.229)
$AR_{t,t+2}$ (%)	1.39	0.048	0.78	0.202	0.99	0.041	0.46	0.369
	(1.14)	(0.053)	(0.59)	(0.306)	(1.13)	(0.135)	(0.41)	(0.350)
$AR_{t,t+3}$ (%)	0.94	0.079	0.77	0.132	0.87	0.026	0.27	0.541
	(0.67)	(0.108)	(0.38)	(0.609)	(0.93)	(0.135)	(0.28)	(0.229)
$\Delta Inv_{t-1,t+1}$ (%)	4.48	0.000	-11.50	0.000	6.08	0.000	-13.94	0.000
	(2.26)	(0.000)	(-4.16)	(0.000)	(4.28)	(0.000)	(-7.01)	(0.000)
$\Delta Inv_{t-1,t+2}$ (%)	8.03	0.002	-5.62	0.003	4.13	0.095	-12.08	0.001
	(4.61)	(0.034)	(-1.81)	(0.000)	(1.29)	(0.020)	(-7.12)	(0.002)
$\Delta Inv_{t-1,t+3}$ (%)	2.32	0.082	-4.10	0.039	5.53	0.003	-12.47	0.003
	(2.20)	(0.473)	(-1.09)	(0.451)	(3.53)	(0.047)	(-7.49)	(0.001)
$\Delta Adj\ Inv_{t-1,t+1}$ (%)	4.79	0.000	-11.49	0.000	6.60	0.000	-13.64	0.000
	(2.39)	(0.000)	(-4.30)	(0.000)	(4.43)	(0.000)	(-6.80)	(0.000)
$\Delta Adj\ Inv_{t-1,t+2}$ (%)	8.12	0.001	-6.20	0.001	5.13	0.036	-11.40	0.001
	(4.23)	(0.005)	(-3.23)	(0.000)	(2.84)	(0.044)	(-5.37)	(0.011)
$\Delta Adj\ Inv_{t-1,t+3}$ (%)	2.27	0.074	-4.92	0.009	6.29	0.001	-11.87	0.004
	(1.77)	(0.029)	(-2.56)	(0.023)	(3.23)	(0.020)	(-6.51)	(0.002)

Table 5

Pearson Correlations Between Changes in Investment and Subsequent Excess Returns

(High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff. P-values are reported in parenthesis.)

Panel A: High-Q firms

	$\Delta Adj\ Inv_{t-1,t+1}$	$\Delta Adj\ Inv_{t-1,t+2}$	$\Delta Adj\ Inv_{t-1,t+3}$	$\Delta Inv_{t-1,t+1}$	$\Delta Inv_{t-1,t+2}$	$\Delta Inv_{t-1,t+3}$	$AR_{t,t+1}$	$AR_{t,t+2}$	$AR_{t,t+3}$
$\Delta Adj\ Inv_{t-1,t+1}$	1.00000								
$\Delta Adj\ Inv_{t-1,t+2}$	0.51640	1.00000							
	(0.000)								
$\Delta Adj\ Inv_{t-1,t+3}$	0.48257	0.68817	1.00000						
	(0.000)	(0.000)							
$\Delta Inv_{t-1,t+1}$	0.99417	0.49887	0.48664	1.00000					
	(0.000)	(0.000)	(0.000)						
$\Delta Inv_{t-1,t+2}$	0.51425	0.98929	0.68375	0.51313	1.00000				
	(0.000)	(0.000)	(0.000)	(0.000)					
$\Delta Inv_{t-1,t+3}$	0.45068	0.65263	0.96849	0.47700	0.68573	1.00000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
$AR_{t,t+1}$	0.32026	0.40785	0.36308	0.31298	0.41368	0.35777	1.00000		
	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.002)			
$AR_{t,t+2}$	0.23694	0.44150	0.36666	0.23857	0.46026	0.37957	0.80927	1.00000	
	(0.022)	(0.000)	(0.001)	(0.021)	(0.000)	(0.001)	(0.000)		
$AR_{t,t+3}$	0.25071	0.35364	0.33357	0.25478	0.37505	0.35263	0.72749	0.88125	1.00000
	(0.015)	(0.001)	(0.003)	(0.014)	(0.000)	(0.002)	(0.000)	(0.000)	

Panel B: Low-Q firms

	$\Delta Adj\ Inv_{t-1,t+1}$	$\Delta Adj\ Inv_{t-1,t+2}$	$\Delta Adj\ Inv_{t-1,t+3}$	$\Delta Inv_{t-1,t+1}$	$\Delta Inv_{t-1,t+2}$	$\Delta Inv_{t-1,t+3}$	$AR_{t,t+1}$	$AR_{t,t+2}$	$AR_{t,t+3}$
$\Delta Adj\ Inv_{t-1,t+1}$	1.00000								
$\Delta Adj\ Inv_{t-1,t+2}$	0.78681	1.00000							
	(0.000)								
$\Delta Adj\ Inv_{t-1,t+3}$	0.85066	0.85919	1.00000						
	(0.0001)	(0.000)							
$\Delta Inv_{t-1,t+1}$	0.99693	0.78271	0.84135	1.00000					
	(0.000)	(0.000)	(0.000)						
$\Delta Inv_{t-1,t+2}$	0.78000	0.99548	0.84143	0.78158	1.00000				
	(0.000)	(0.000)	(0.000)	(0.000)					
$\Delta Inv_{t-1,t+3}$	0.85401	0.86104	0.99396	0.85105	0.85321	1.00000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
$AR_{t,t+1}$	0.04879	0.11538	-0.13917	0.06357	0.13002	-0.13123	1.00000		
	(0.637)	(0.284)	(0.227)	(0.538)	(0.227)	(0.255)			
$AR_{t,t+2}$	-0.11453	-0.04525	-0.19023	-0.10516	-0.02985	-0.19147	0.76620	1.00000	
	(0.267)	(0.676)	(0.098)	(0.308)	(0.783)	(0.095)	(0.000)		
$AR_{t,t+3}$	-0.06416	-0.04207	-0.00520	-0.05404	-0.03285	0.00049	0.62945	0.83316	1.00000
	(0.535)	(0.697)	(0.964)	(0.601)	(0.761)	(0.997)	(0.000)	(0.000)	

Table 6 – Panel A
Change in Raw Investment for Subsidiary Companies

(High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff.)

	Average Daily Abnormal Return	*Investment ratio (t-1)*	*Investment ratio (t+1)*	*Investment ratio (t+2)*	*Δ Investment ratio (-1,+1)*	*Δ Investment ratio (-1,+2)*
Highest 3-years FF alpha firms	0.17%	12.93%	9.21%	12.76%	-3.72%	-0.17%
Middle 3-years FF alpha firms	0.02%	9.16%	6.40%	8.12%	-2.77%	-1.04%
Lowest 3-years FF alpha firms	-0.08%	11.05%	6.67%	7.23%	-4.39%	-3.82%
Highest 3-years FF alpha, high-Q firms	0.18%	9.61%	7.76%	15.69%	-1.85%	6.08%
Highest 3-years FF alpha, low-Q firms	0.15%	16.49%	10.83%	9.61%	-5.66%	-6.89%
Middle 3-years FF alpha, high-Q firms	0.02%	6.28%	5.25%	8.66%	-1.02%	2.38%
Middle 3-years FF alpha, low-Q firms	0.03%	11.11%	7.16%	7.76%	-3.95%	-3.36%
Lowest 3-years FF alpha, high-Q firms	-0.08%	11.41%	5.78%	5.99%	-5.63%	-5.42%
Lowest 3-years FF alpha, low-Q firms	-0.08%	10.67%	7.70%	8.61%	-2.97%	-2.06%

Table 6 – Panel B
Change in Raw Investment for Subsidiary Companies

(High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff.)

	Average Daily Abnormal Return	*Investment ratio (t-1)*	*Investment ratio (t+1)*	*Investment ratio (t+2)*	*Δ Investment ratio (-1,+1)*	*Δ Investment ratio (-1,+2)*
Highest 2-years FF alpha firms	0.22%	12.89%	9.59%	15.39%	-3.29%	2.51%
Middle 2-years FF alpha firms	0.03%	10.16%	5.66%	6.67%	-4.50%	-3.49%
Lowest 2-years FF alpha firms	-0.15%	12.87%	6.95%	4.91%	-5.92%	-7.97%
Highest 2-years FF alpha, high-Q firms	0.25%	9.14%	6.98%	16.11%	-2.16%	6.96%
Highest 2-years FF alpha, low-Q firms	0.20%	16.41%	12.12%	14.66%	-4.28%	-1.75%
Middle 2-years FF alpha, high-Q firms	0.04%	8.89%	4.93%	7.27%	-3.96%	-1.63%
Middle 2-years FF alpha, low-Q firms	0.03%	11.03%	6.16%	6.27%	-4.87%	-4.76%
Lowest 2-years FF alpha, high-Q firms	-0.15%	13.70%	6.05%	5.20%	-7.64%	-8.50%
Lowest 2-years FF alpha, low-Q firms	-0.14%	11.84%	8.20%	4.50%	-3.64%	-7.35%

Table 6 – Panel C
Change in Raw Investment for Subsidiary Companies

(High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff.)

	Average Daily Abnormal Return	*Investment ratio (t-1)*	*Investment ratio (t+1)*	*Investment ratio (t+2)*	*Δ Investment ratio (-1,+1)*
Highest 1-year FF alpha firms	0.29%	12.02%	9.45%	15.52%	-2.57%
Middle 1-year FF alpha firms	0.03%	10.77%	7.38%	6.52%	-3.40%
Lowest 1-year FF alpha firms	-0.18%	12.25%	5.06%	5.13%	-7.20%
Highest 1-year FF alpha, high-Q firms	0.32%	8.75%	8.02%	17.42%	-0.73%
Highest 1-year FF alpha, low-Q firms	0.26%	14.84%	10.48%	14.03%	-4.36%
Middle 1-year FF alpha, high-Q firms	0.03%	7.60%	5.61%	7.79%	-1.99%
Middle 1-year FF alpha, low-Q firms	0.03%	13.67%	9.04%	5.33%	-4.63%
Lowest 1-year FF alpha, high-Q firms	-0.18%	14.28%	4.65%	4.85%	-9.63%
Lowest 1-year FF alpha, low-Q firms	-0.17%	9.66%	5.61%	5.53%	-4.05%

Table 7

Change in Industry-Adjusted Investment for Subsidiary Companies

(High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff.)

	Average Daily Abnormal Return	*Industry Adjusted investment ratio (t-1)*	*Industry Adjusted Investment ratio (t+1)*	*Industry Adjusted Investment ratio (t+2)*	*Δ Industry Adjusted Investment ratio (-1,+1)*	*Δ Industry Adjusted Investment ratio (-1,+2)*
Highest 3-years FF alpha firms	0.17%	6.34%	2.77%	6.05%	-3.57%	-0.29%
Middle 3-years FF alpha firms	0.02%	2.88%	0.81%	2.66%	-2.07%	-0.22%
Lowest 3-years FF alpha firms	-0.08%	5.55%	1.12%	1.89%	-4.43%	-3.66%
Highest 3-years FF alpha, high-Q firms	0.18%	3.01%	1.00%	7.94%	-2.01%	4.93%
Highest 3-years FF alpha, low-Q firms	0.15%	9.91%	4.75%	4.01%	-5.16%	-5.90%
Middle 3-years FF alpha, high-Q firms	0.02%	0.36%	-0.16%	3.01%	-0.52%	2.65%
Middle 3-years FF alpha, low-Q firms	0.03%	4.59%	1.46%	2.43%	-3.14%	-2.16%
Lowest 3-years FF alpha, high-Q firms	-0.08%	5.82%	-0.03%	0.15%	-5.85%	-5.67%
Lowest 3-years FF alpha, low-Q firms	-0.08%	5.26%	2.45%	3.84%	-2.81%	-1.42%

Table 8
Change in Raw Investment for Subsidiary Companies

(High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff.)

	Average Daily Abnormal Return	*Investment ratio (t-1)*	*Investment ratio (t+1)*	*Investment ratio (t+2)*	*Δ Investment ratio (-1,+1)*	*Δ Investment ratio (-1,+2)*
Positive 3-years alpha, high-Q firms	0.12%	8.30%	6.81%	12.88%	-1.49%	4.58%
Positive 3-years alpha, low-Q firms	0.09%	12.84%	8.75%	8.89%	-4.09%	-3.94%
Negative 3-years alpha, high-Q firms	-0.07%	12.40%	5.00%	5.63%	-7.39%	-6.76%
Negative 3-years alpha, low-Q firms	-0.07%	12.99%	8.52%	8.03%	-4.47%	-4.96%
p-value (Difference Positive 3-years alpha, high-Q firms / Positive 3-years alpha, low-Q firms)					*0.377*	*0.006*
p-value (Difference Positive 3-years alpha, high-Q firms / Negative 3-years alpha, high-Q firms)					*0.053*	*0.002*
p-value (Difference Positive 3-years alpha, low-Q firms / Negative 3-years alpha, low-Q firms)					*0.901*	*0.943*
p-value (Difference Negative 3-years alpha, high-Q firms / Negative 3-years alpha, low-Q firms)					*0.381*	*0.974*

Table 9
Regression Results

(This table reports the regression results for the following models:

$$FF\alpha_{i,3} = \lambda_0^{(1)} + \lambda_1^{(1)}\,\Delta CAPEX_{i,3} + \lambda_2^{(1)}\,\Delta LEV_{i,3} + \varepsilon_{i,t}$$
$$FF\alpha_{i,3} = \lambda_0^{(2)} + \lambda_1^{(2)}\,\Delta CAPEX_{i,2} + \lambda_2^{(2)}\,\Delta LEV_{i,2} + u_{i,t}$$
$$FF\alpha_{i,2} = \lambda_0^{(3)} + \lambda_1^{(3)}\,\Delta CAPEX_{i,2} + \lambda_2^{(3)}\,\Delta LEV_{i,2} + v_{i,}$$
$$FF\alpha_{i,2} = \lambda_0^{(4)} + \lambda_1^{(4)}\,\Delta CAPEX_{i,1} + \lambda_2^{(4)}\,\Delta LEV_{i,1} + \nu_{i,t}$$

*Where FFα is the daily excess return on subsidiaries over the three ($FF\alpha_{i,3}$) and two ($FF\alpha_{i,2}$) years following the spinoff, ΔCAPEX is the variation in the investment ratio (measured on the time horizon between the year immediately preceding the year of the spinoff and the three or two years after the spinoff respectively), and ΔLEV is the variation of the leverage ratio (measured as the ratio between long term debt and total assets). High- and low-Q firms are determined by comparing the Q for the parent in the year immediately preceding the year of the spinoff with the median industry Q for the subsidiary in the year immediately following the spinoff. T-values are reported in parenthesis. * ,** and *** represent significant at the 0.10, at the 0.05 and at 0.01 respectively.)*

	Intercept	λ_1	λ_2	Adj. R^2
		Panel A: High-Q firms		
Model (1)	0.0002*	0.0036**	0.0000	*0.081*
	(1.75)	(2.62)	(0.18)	
Model (2)	0.0001	0.0040***	0.0005	*0.156*
	(1.34)	(3.50)	(0.92)	
Model (3)	0.0001	0.0074***	0.0008	*0.270*
	(0.93)	(4.82)	(1.02)	
Model (4)	0.0002	0.0022	0.0017*	*0.053*
	(0.98)	(1.45)	(1.95)	
		Panel B: Low-Q firms		
Model (1)	0.0005***	-0.0001	-0.0009	*0.007*
	(3.93)	(-0.25)	(-1.54)	
Model (2)	0.0005***	0.0000	-0.0014**	*0.044*
	(4.22)	(0.14)	(-2.25)	
Model (3)	0.0006**	-0.0009	-0.0008	*0.007*
	(3.42)	(-1.12)	(-0.93)	
Model (4)	0.0005***	-0.0016*	-0.00091	*0.244*
	(3.50)	(-1.89)	(-1.18)	

Figure 1

Change in Industry Adjusted Investment for Subsidiary Companies

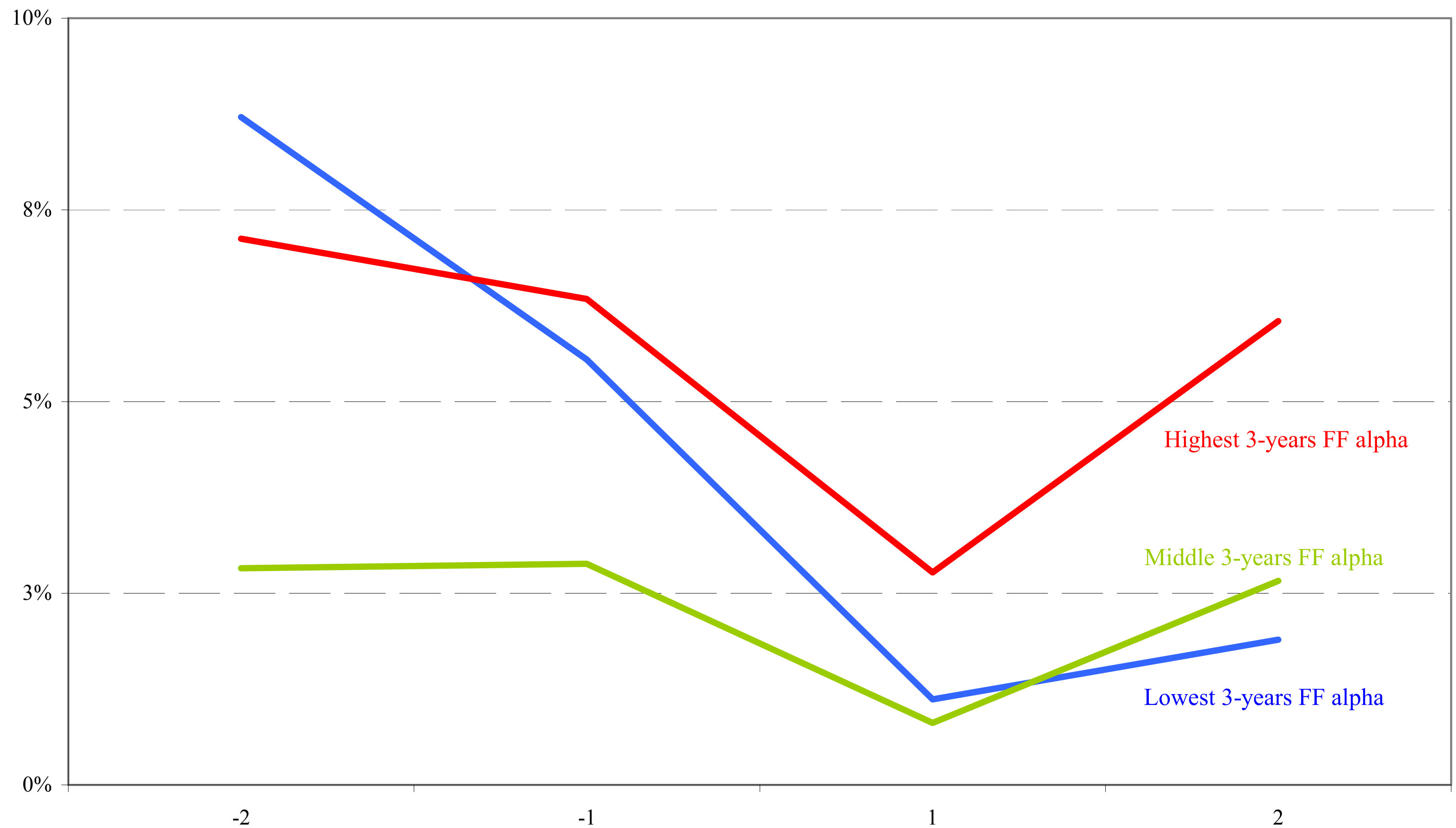

Figure 2

Change in Industry Adjusted Investment for Subsidiary Companies

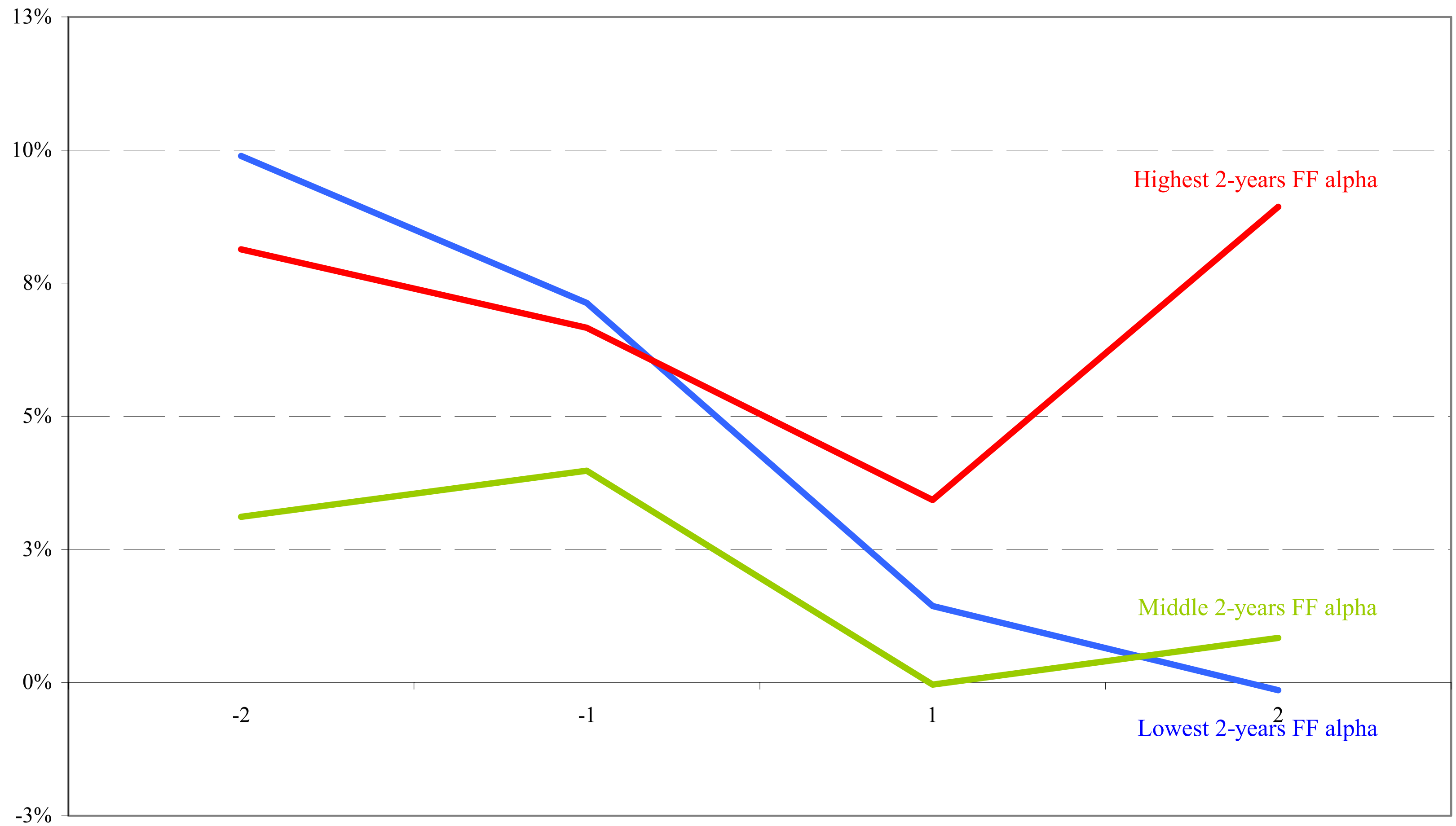

Figure 3

Change in Industry Adjusted Investment for Subsidiary Companies

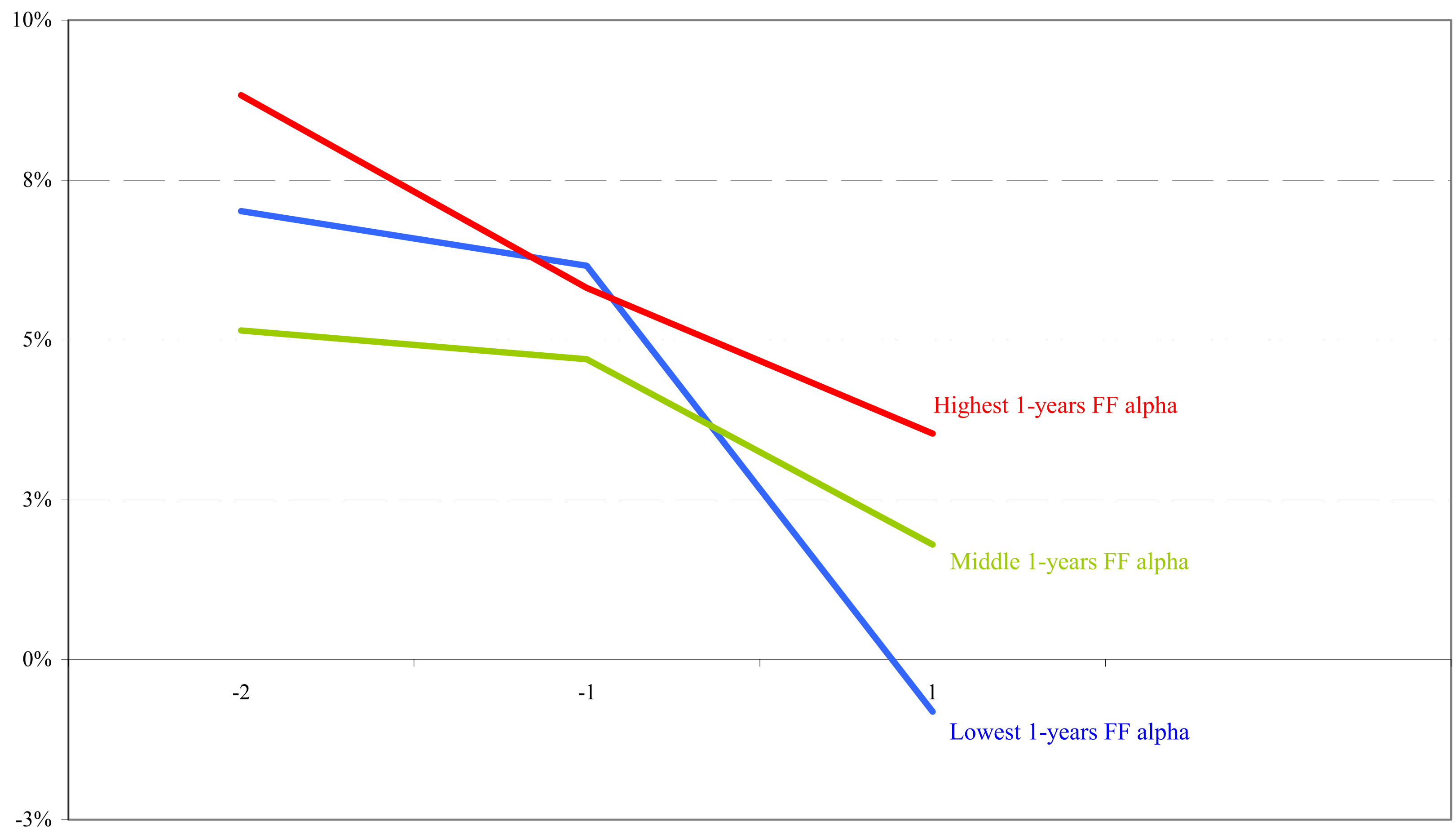

Figure 4

Change in Industry Adjusted Investment for High-Q and Low-Q Subsidiary Companies

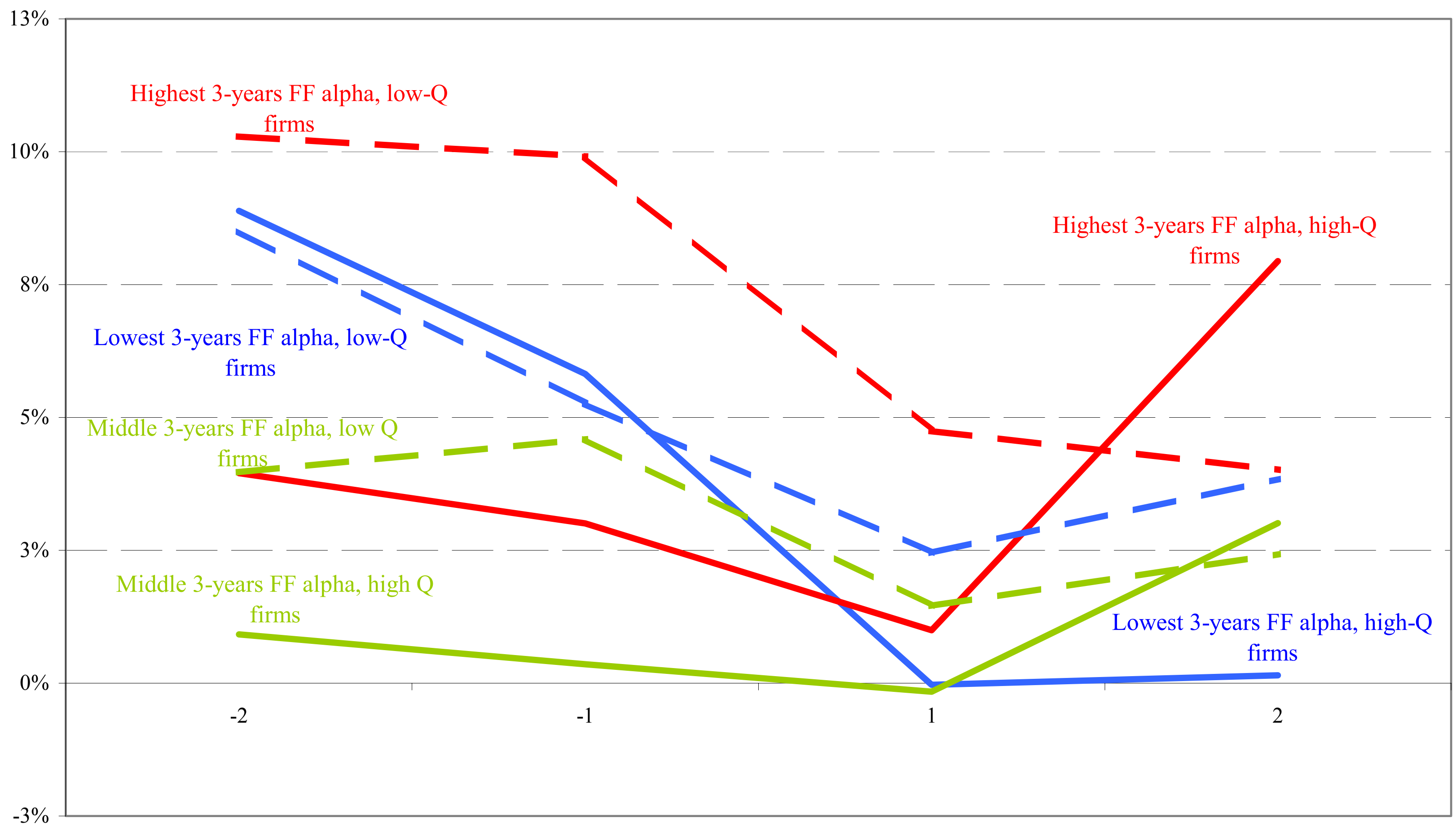

Figure 5

Change in Industry Adjusted Investment for High-Q and Low-Q Subsidiary Companies

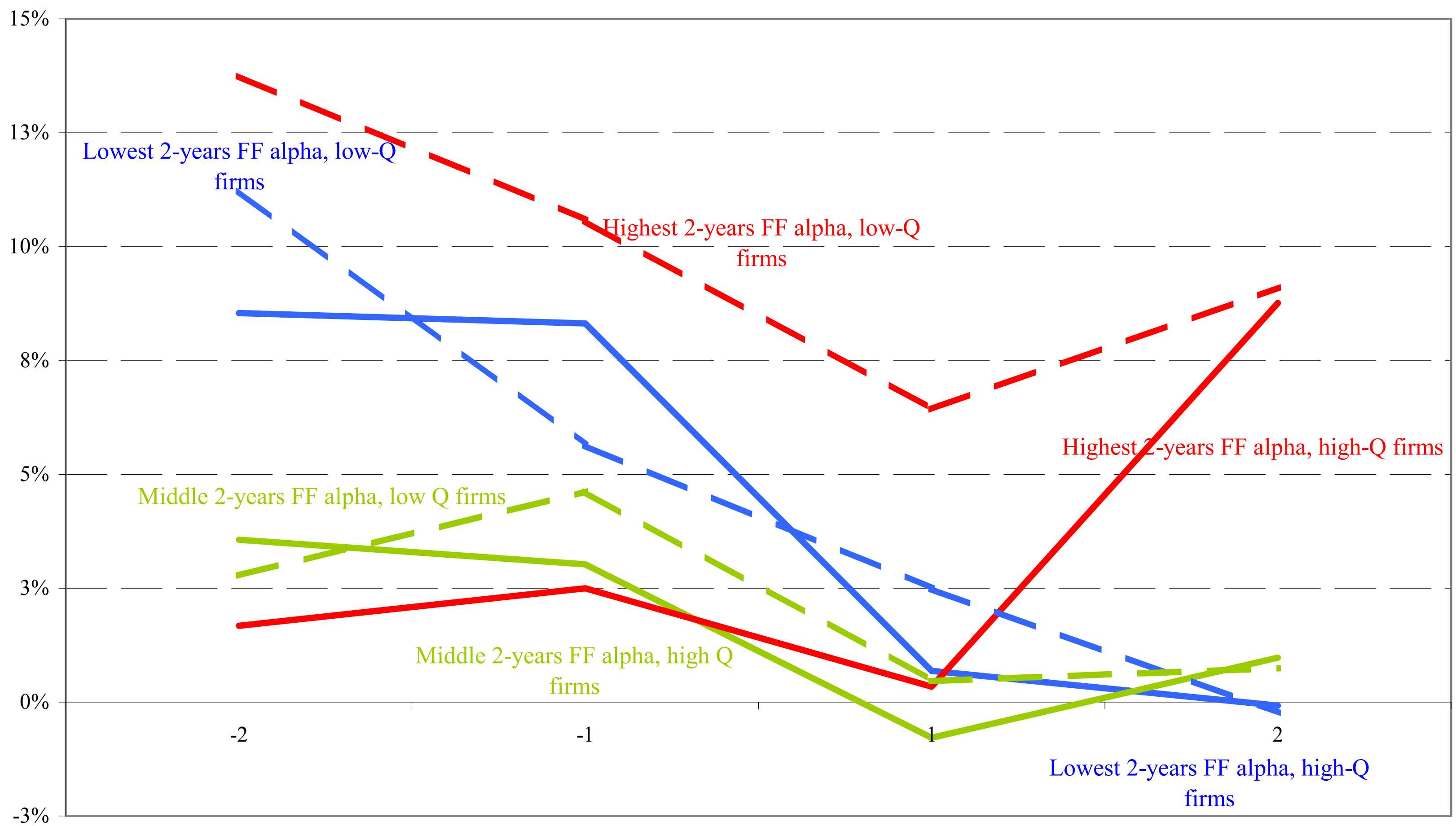

Figure 6

Change in Industry Adjusted Investment for High-Q and Low-Q Subsidiary Companies