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Corporate Restructuring and the Information Hypothesis: An Empirical Analysis.

Steven Randal Ferraro

Louisiana State University and Agricultural & Mechanical College

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**Corporate restructuring and the information hypothesis: An
empirical analysis**

Ferraro, Steven Randal, Ph.D.

The Louisiana State University and Agricultural and Mechanical Col., 1993

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300 N. Zeeb Rd.
Ann Arbor, MI 48106

CORPORATE RESTRUCTURING AND THE INFORMATION HYPOTHESIS:
AN EMPIRICAL ANALYSIS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Interdepartmental Program in Business Administration

by

Steven Randal Ferraro
B.A., The University of Utah, 1986
M.B.A., Brigham Young University, 1989
August 1993

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Abstract

The purpose of this dissertation is to explore the motivation behind various restructuring choices within a securities issuance context. Previous theoretical models and empirical evidence suggest that three methods of restructuring - equity carve-outs, sell-offs, and spin-offs, on average, signal favorable information about parent firms. This has been interpreted as reflecting either enhanced potential for efficiency gains, positive asymmetric information about the value of industry assets, or changes in agency costs. This dissertation presents an alternative framework by relating restructuring announcements to the effects of security issuance. Empirical tests are formulated to determine if these announcements contain valuable private information about the value of a subsidiary by analyzing whether or not elements of this information apply to other firms involved in related activities.

Rivals of the carved-out subsidiaries experience negative revaluation effects. This is consistent with the hypothesis that a motivation for equity carve-outs is management's belief that a subsidiary is likely to be overvalued by the market. Similar to equity carve-outs, the announcement of the intent to go public releases elements of industry-common information that causes downward revaluation of intra-industry rivals of the announcing firm. Rivals of spun-off subsidiaries increase in value around these announcements which suggests managers believe the subsidiary's asset value is greater than the proceeds that equity carve-out or sell-off transactions would produce. Although sell-off announcements do not generate significant intra-

industry effects, there are significant positive share price reactions to rivals of firms undergoing general restructurings. This indicates that positive information is released by these announcements about the value of the core assets of the restructuring firm.

Chapter 1

Introduction

The existence of a market for transferring control of corporate assets enhances general economic welfare by fostering the discipline to induce firms to combine resources into more efficient and/or profitable operations. In large part, the literature on the market for corporate control has focused on merger and acquisition activity. The results from many empirical studies on mergers and takeovers, summarized in Jensen and Ruback [1988], and Jarrell, Brickley, and Netter [1988], indicate that these transactions create wealth, on average, for target firm shareholders which may or may not be shared by bidder's shareholders. An equally important component of the market for corporate control is corporate restructuring transactions. The decision to divest assets may reflect management's desire to create more entrepreneurial, streamlined, decentralized, and efficient firms.

The literature on asset divestiture and corporate economic restructuring, while not as developed as the literature on mergers and acquisitions, is notable in finding consistent event study results for different types of events. These studies indicate that, on average, voluntary restructuring decisions enhance shareholder wealth. In particular, Schipper and Smith [1986] document positive and significant returns of approximately two percent to announcement of equity carve-outs. Schipper and Smith [1983], Hite and Owers [1983], and Miles and Rosenfeld [1983] report that spin-offs announcements are associated with positive and significant returns of two to four

percent. Hite, Owers, and Rogers [1987] find that announcing firms experience positive and significant returns of approximately two percent around announcements of asset sell-offs.

These studies on corporate asset disposition offer several hypotheses to explain the motivations behind, and the positive wealth gains from, corporate restructuring decisions which parallel hypotheses developed in the mergers and acquisitions literature. These hypotheses include: revelation of managerial assessment of asset value, improved managerial efficiency, synergies, reduction of agency costs, avoidance of regulatory and tax constraints, bondholder wealth expropriation, opening the firm to merger and acquisition bids, and enhancing the opportunity set for individual investors.

While these hypotheses are not mutually exclusive, some appear to have stronger support from empirical results and therefore may be more applicable as explanations for restructuring decisions. The two dominant hypotheses are: 1) there are important elements of private information conveyed by restructuring decisions about relevant assets (Schipper and Smith [1983,1986], and Hite, Owers and Rogers [1987]) and 2) there are economic efficiency gains from restructuring (Schipper and Smith [1983,1986], Hite and Owers [1983], Miles and Rosenfeld [1983] and Hite, Owers and Rogers [1987]). The purpose of this dissertation is to test the applicability of these hypotheses as explanations for the motivation behind economic restructuring by viewing these different decisions within the broader context of securities issuance phenomena. By analyzing the share price reaction to rivals of the restructured unit

and the parent firm, it is demonstrated that the market differentiates between the signal content of the three alternative methods of restructuring - equity carve-outs, sell-offs and spin-offs.

Detailed descriptions of the characteristics of equity carve-outs, spin-offs, and sell-offs are found in chapter 2. Characteristics unique to each of these forms of restructuring suggest that different motivations may drive the selection of the divestiture mechanism. For example, an equity carve-out and a sell-off both involve external capital acquisition, but the former is an equity issuance decision associated with public disclosure of information while the latter is a private transaction with little disclosure of proprietary information. A spin-off is associated with considerable information disclosure but does not involve the acquisition of external capital. Descriptions of voluntary liquidations and joint ventures are also given in this chapter to provide additional perspective on carve-outs, spin-offs, and sell-offs.

The major hypotheses developed for each form of corporate restructuring are discussed in chapter 3. The efficiency hypothesis, which states that gains related to the announcement of an economic restructuring flow from moving resources from lower to higher valued uses, is addressed first. Gains can be achieved through economies of scale or scope, or by aligning managers' incentives to more closely reflect those of shareholders by creating incentive contracts tied to market-based measures of the unit's performance. The asymmetric information hypothesis stems from the Myers and Majluf [1984] model of securities issuance which is built on the assumption that managers make shareholder-wealth maximizing decisions based on

possession of information not available in the public domain. Accordingly, the choice of restructuring mechanism reveals this information and allows the market to revalue relevant assets.

The third explanation for gains associated with restructuring decisions is based on Jensen's [1986] free cash flow argument, but is only applicable to restructuring activities that produce proceeds for the parent firm. In particular, retaining the proceeds from equity carve-outs and asset sales may exacerbate agency problems and lead to excessive consumption of managerial perquisites. Therefore, unless the proceeds are used to repay creditors, repurchase equity, or pay dividends, restructuring decisions may result in suboptimal investment of corporate resources.

Because each hypothesis results in different predictions for industry valuation effects, announcement reactions to intra-industry rivals of the relevant unit and the parent firm are used as a means of testing these hypotheses. The previous literature on intra-industry rival share price reactions to various managerial decisions is also discussed in chapter 3.

In chapter 4, the literature on initial public offerings (IPOs) is reviewed. While an IPO is not a form of economic restructuring, this securities issuance decision can provide further perspective on equity carve-outs. IPOs are included in the study because they resemble equity carve-outs in several ways, most notably because both decisions create a newly traded public firm by issuing equity claims to the public. From this securities issuance perspective the predicted effects on intra-industry rivals should be the same for both IPOs and equity carve-outs. Therefore, intra-industry

effects of IPO announcements aid in interpreting restructuring decisions within the context of securities issuance phenomena.

Chapter 5 contains an explanation of the methodology used in this dissertation and descriptive statistics of the samples used in the analysis. The empirical results are reported in chapter 6. Taken together, the event study results support the argument that corporate restructuring decisions are intricately tied to the market's assessment of private information possessed by managers. Moreover, the results imply that restructuring decisions convey elements of information relevant to revaluing assets employed in similar activities. In several cases, industry reactions to these events contradict predictions stemming from the efficiency hypothesis in several important respects. Although the effects of agency problems may also be reflected in market reactions to divestiture announcements, if such effects exist, they are dominated by information effects typical of securities issuance phenomena. Chapter 7 contains the conclusions derived from this study of corporate restructurings.

Chapter 2

Transferring Rights to Control Corporate Assets: Mechanisms of Restructuring

1. Introduction

Mergers and acquisitions have long played an important role in firm development and expansion. More recently, going private transactions have also become an important means to transfer control of corporate assets. The presence of a market for transferring control of corporate assets has important economic implications because it fosters the discipline to induce firms to combine resources into more efficient and/or profitable operations, thus enhancing general economic welfare. In general, friendly acquisitions and mergers are likely to be motivated by potential gains in operational or managerial efficiency linked to the existence of differential management skills and specialization. Hostile takeovers can also focus on improving managerial efficiency, but are more likely to reflect the perception that incumbent management has failed to maximize firm value.

An extensive literature has documented that control transactions create overall economic gains and Jensen and Ruback [1983] and Jarrell, Brickley, and Netter [1988] provide surveys of this literature. There is considerable evidence that the shareholders of target firms experience significant wealth increases as a result of control transactions, but the evidence is ambiguous as to whether shareholders of acquiring firms are, on average, better off. Excess returns to target firm shareholders may stem from the fact that bids are made by external agents that investigate the value

of firms and through this process supply capital markets, via merger negotiations or takeover bids, with new information pertinent to revaluing relevant securities.

Economic gains reflected in these returns may come from combining corporate resources so as to seize economies of scale (e.g. horizontal mergers/acquisitions) or scope in areas of management, operations and improved access to capital markets.

Other theories that have been developed to explain the sources of potential gains involve resolution of agency problems, creation of monopolistic power, and value enhancing tax strategies.

Voluntary corporate restructuring decisions are closely related to takeovers, mergers, and going private transactions because each of these mechanisms is part of the general process of resource reallocation in the economy. The dynamic characteristics of product and financial markets, manufacturing technologies, and competition sometimes require a firm to restructure its activities to meet the objective of shareholder wealth maximization. Such voluntary economic restructuring decisions usually entail disposing of a subsidiary or operating division and contrast with the decision to dispose of a single asset (such as a plant) or to undergo a financial restructuring in which a firm rebalances the proportion of debt and equity in its capital structure.

Recent studies on corporate asset disposition have offered several hypotheses to explain the motivations for restructuring, most of which parallel hypotheses developed to explain mergers and acquisitions activity. Much of the empirical analysis indicates that restructuring activities, on average, enhance shareholder value. Among the

hypotheses developed to explain these positive gains are: revelation of managerial assessment of asset value, improved managerial efficiency, synergies, reduction of agency costs, avoidance of regulatory and tax constraints, bondholder wealth expropriation, opening the firm to merger and acquisition bids, and spanning financial markets. It has also been argued that asset sales can cause negative valuation effects. For example, an asset sale may be interpreted as a signal of financial distress or may be used to defend against a takeover bid.

Two hypotheses, not necessarily mutually exclusive, that have dominated the restructuring literature are: 1) there are important elements of private information held by managers about relevant assets that are conveyed by restructuring decisions (Schipper and Smith [1983,1986], and Hite, Owers, and Rogers [1987]) and 2) there are economic efficiency gains from restructuring (Schipper and Smith [1983,1986], Hite and Owers [1983], Miles and Rosenfeld [1983] and Hite, Owers, and Rogers [1987]). Recently, agency cost arguments based on Jensen's [1986] free cash flow hypothesis have also been developed by Lang, Poulsen, and Stulz [1993] as a framework for analyzing asset restructuring. Although similar hypotheses have evolved in the corporate control literature, there is little published work that integrates these areas of research.

The specific types of asset disposition examined in this dissertation are equity carve-outs, spin-offs, and sell-offs. Intra-industry share price responses to announcements of each of these forms of restructuring are examined as a means to test the applicability of the hypotheses being tested. More specifically, these

hypotheses render different predictions for rival share price responses for one or more of these restructuring events. Therefore, announcement responses can be used to support or reject specific hypotheses that are being tested. To provide further perspective on the information effects of equity carve-outs, which are a special type of initial public offering of equity (IPO), there is also an intra-industry analysis of the effects of announcements of conventional IPOs.

Three alternative forms of restructuring mechanisms are analyzed and compared because each has unique characteristics as a method of external financing in addition to its effects on the firm's organizational and economic structure. Theories of security issuance and related empirical work reviewed in Smith [1986] suggest that the type of security utilized, the market mechanism (public or private), the size of the offering, and timing of the offering may each convey valuable information to public markets. Each of these facets of a restructuring decision provides new information that allows investors to revalue relevant outstanding securities. For the issuing firm, share price responses to restructuring decisions may reflect changes in the market's assessment of firm risk, current asset values, or perceived future cash flows. New information revealed in the announcement may also apply to firms whose operations are similar to the announcing firm or the unit involved in the restructuring. In particular, if an action communicates private information about the value of relevant industry assets or cash flows, then its announcement will cause the revaluation of outstanding securities of firms engaged in similar economic activities. Thus, an

analysis of intra-industry effects of restructuring decisions provides a means to test the validity of theories that have been developed to explain economic restructuring.

Relevant financing decisions are intimately associated with economic restructuring and involve issues such as: the degree of ownership to be retained in the asset in question, whether there is access to external capital, the use of private versus public transactions in capital raising, and the type of security, if any, that will be issued. I begin the analysis of these issues by discussing the nature of the restructuring mechanisms available to managers.

2. Mechanisms of restructuring

General corporate restructurings usually arise from management's desire to create more streamlined, specialized, decentralized, and/or entrepreneurial organizations. Recent literature has discussed several basic forces that can induce a firm to restructure. First, private information about future cash flows or current asset values of a division or other unit may induce management to separate a subsidiary from the remainder of the parent firm. Second, improvements in managerial incentives to utilize assets more productively can be accomplished by linking compensation contracts of division managers to subsidiary (rather than parent firm) performance through a restructuring. Third, asset disposition may improve economic efficiency by transferring assets to new owners that have a comparative advantage at managing them. Fourth, economic restructurings may help resolve agency problems. For example, if parent firm managers have been overly optimistic about their ability

to manage disparate businesses or the potential of past acquisitions, a form of corporate aggrandizement as suggested by Roll's [1986] hubris hypothesis, asset disposition can be a means to reverse the misguided growth. Conversely, Jensen's [1986] free cash flow hypothesis implies that agency problems may be exacerbated if a restructuring decision entails an equity offering or asset sale because these transactions generate additional cash for the firm. Finally, a major factor in the decision to divide the firm may be the desire to circumvent tax and/or regulatory constraints.

Identification of a firm's comparative advantages allows management to focus on areas related its expertise and to disengage the firm from activities that lack strategic fit. Often, decisions about abandoning certain industries and increasing investment in other industries coincide with management's forecast of an industry's profit potential that presumably reflects information known only to managers. Below are several examples of Wall Street Journal announcements of corporate restructurings that illustrate management's desire to adopt more efficient and profitable organizational structures. The first is an example of a restructuring announcement that focuses on an "underperforming" division:

Mobil Corp. Feb 25, 1985: Mobil Corp's decision to hire an investment adviser apparently means the big oil company is coming to grips with several disappointing non-oil investments, including its Montgomery Ward & Co. retailing unit. ... "We are not at all averse to removing those parts of the business that are not earning adequate rates of return,"

Mobil Corp.'s management reached the decision that its non-oil investments were not providing a satisfactory rate of return on investment. Management's

decision to dispose of the disappointing investments may indicate that this industry (retailing) is perceived by Mobil's managers as likely to be relatively unprofitable in the future. Another possible interpretation, however, is that Mobil's managers have no comparative advantage at managing assets in these industries. For example, the announcement specifically mentions Montgomery Ward & Co., a mass merchandiser, as an under-performing asset. Although Mobil's managers presumably have a comparative advantage in operating an integrated oil and gas company, the set of management, production, and marketing skills required by a mass merchandiser could be distinctly different from those required by an integrated oil firm. If so, it may be difficult for Mobil's managers to assess the effectiveness of the managers of its retailing operations. Thus, it is rational for Mobil to divest itself of subsidiaries lacking strategic fit. This announcement indicates that Mobil also hired an investment advisor to provide counsel for the restructuring, which presumably includes guidance on the type of restructuring mechanism to be adopted.

The announcement of Freeport-McMoran's restructuring provides another example of a statement of managerial expectations with respect to the profitability of its businesses:

Freeport-McMoran Nov 30, 1989: Freeport-McMoran Inc. outlined a plan to withdraw from several business, selling \$1.2 billion to \$1.5 billion of assets, so that it can concentrate on developing two huge commodity discoveries. The natural-resources company said it sees greater profitability in its giant sulfur discovery in the Gulf of Mexico off Louisiana and its sizable copper and gold find in Indonesia. "From 1989 to 1993 we'll be spending almost \$1 billion to get these two things on stream," said James R. Moffett, chairman and chief executive officer.

Freeport-McMoran's announcement indicates that its managers believe they have a comparative advantage in producing sulfur, copper and gold. Pursuing this advantage will increase the firm's profitability. Unlike the Mobil announcement, there is no indication that the assets to be sold are unprofitable or performing unsatisfactorily. This announcement also differs from Mobil's because Freeport-McMoran's managers explicitly state that they intend to "concentrate" on specific industries by increasing investment in those activities and withdrawing from others. In Mobil's case future investment intentions were less explicit, that is, they announced withdrawal from peripheral, non-oil industries but did not specifically indicate where the proceeds from the sale would be utilized.

Gulf & Western's restructuring announcement illustrates that inefficiencies can arise because of diseconomies of scale in management or the presence of agency problems in conglomerate firms:

Gulf & Western Industries, Inc. Aug. 15, 1983: "Gulf & Western Industries Inc. directors approved a massive divestiture plan... The divestiture plan, when complete, will leave G&W a leaner and less complex company than the conglomerate built by Charles G. Bluhdorn, its founder, who died in February. The new chief executive, Martin S. Davis, said in an interview that the divestiture plan is the result of his efforts to streamline G&W by getting rid of low-margin industrial businesses and focusing on three areas: consumer products, entertainment and financial services."

This "demerger" of a conglomerate firm may be the result of a new chief executive officer realizing that G&W does not have sufficient skills in areas outside of consumer products, entertainment, and financial services to compete profitably. It may also reflect a reduction in G&W management's expectations about the

profitability of those peripheral industries. The demerger may also be the solution to an agency problem. If the founder engaged in corporate aggrandizement by overestimating his skills as a manager or the profitability of businesses acquired outside of G&W's core operations, the announcement of the divestiture of the non-core assets will signal the reversal of these mistakes and the intention of current managers to enhance shareholder wealth.

There are several alternative means to restructure a firm's operation, including equity carve-outs, spin-off, sell-offs, voluntary liquidations, and joint ventures. Each mechanism has different impacts on the transfer of private information, control of the assets in question, and economic efficiency. The focus of this dissertation is on equity carve-outs, spin-offs and sell-offs, which are discussed in detail below.

Liquidations, a piecemeal sale of the entire firm, and joint ventures, partnerships with other firms, are two other forms of corporate restructuring that will be discussed briefly to provide perspective on the nature of equity carve-outs, spin-offs and sell-offs but no formal analysis of these two types of events will be included in this dissertation.

Equity carve-outs, spin-offs, and sell-offs can each serve as methods of restructuring that achieve greater economic efficiency by moving resources to higher valued uses. However, from the perspective of external financing and securities issuance, there are key differences between these alternatives that can provide valuable insight into the factors that motivate managers to conduct each type of

restructuring activity. Characteristics of these restructuring methods are summarized in Table 1.

2.1. Equity carve-outs

Equity carve-outs are initial public offerings (IPOs) of equity in a firm's wholly-owned subsidiary. These offerings parallel seasoned stock or conventional initial public offerings since they generate cash for the parent firm through a public sale of residual claims to relevant assets. In particular, equity carve-outs create publicly traded equity that has a claim only on a division's cash flows. This provides a means of having these cash flows independently priced by the market. This type of equity sale generally involves a firm commitment contract with an investment banker who agrees to purchase the equity and resell the claims to the public. The parent of a carved-out subsidiary may retain either a controlling or a minority interest in the carved-out subsidiary, but generally, the parent maintains a controlling interest so the subsidiary gains relatively little increased autonomy. As a result of this relationship with the parent, the subsidiary is exposed to less financial risk than it would face as a "stand alone" entity.

Schipper and Smith [1986] report that parent firms announcing the intent to carve-out a subsidiary experience a positive and significant stock price reaction of approximately 2% on average. Thus, the market views an equity carve-out as a favorable event. This contrasts with the average stock price decline of 3% when a firm announces a seasoned equity offer. Parents maintained at least 50 percent

Table 1

Characteristics of Restructuring Mechanisms

Characteristic	Carve-out	Spin-off	Sell-off
New publicly traded entity	Yes	Yes	No
Cash inflow	Yes	No	Yes
Security issued	Equity	None	None
Forum	Public	Public	Private
External Certification	Investment bank	None	None
Price Determination	Investment bank	Market	Negotiated
Shareholders	New-Public (Minority)	Unchanged	New owners
Managerial Rights	Parent	Unit's managers	Purchaser
Asset base	Unchanged/ Increases	Decreases	Unchanged/ Decreases

control in 89 percent of the cases, indicating that generally, a carve-out cannot be viewed as a change in control. Schipper and Smith also report that the proceeds from carve-outs range from \$300,000 to over \$112 million, which translates into 0.3 percent to 69 percent of parent equity value, with a median value of 8 percent. Thus, equity carve-outs are generally large equity issues. In 64 of the 72 cases (89 percent) examined by Schipper and Smith, the parent firm retained over 50 percent of the equity of the carved-out subsidiary. For the carved-out subsidiaries in their sample with available data, the average initial return on the offering day is 1.7 percent (excluding one outlier with an initial return of 133 percent). This small degree of average underpricing contrasts with that of conventional IPOs reported by Ritter [1984] (26.5 percent) and Ibbotson [1975] (11.4 percent). This suggests that equity carve-outs are not characterized by the same degree of asymmetric information as conventional IPOs even though both methods of issuing equity are subject to identical Securities and Exchanges Commission requirements.

The issuance of publicly traded equity in a carved-out subsidiary is governed by the Securities Act of 1933 which requires issuers of securities to fully disclose all material information regarding a security, its backers, and its intended use to prospective investors prior to the sale of the securities. Disclosure compliance is accomplished through filing a registration statement with the Securities and Exchange Commission (SEC). This statement contains two parts, the prospectus - a summary of the longer registration statement submitted to the SEC which is designed to help

investors evaluate the security - and a second section (items-and-answers) containing detailed information addressing inquiries raised by the SEC.

In general, the registration statement is intended to provide prospective investors with the following information: the security issuer's properties and businesses, significant provisions of the security to be offered for sale and their relationship to the offeror's other securities, background information about management and the current status of the offeror, and financial statements certified by independent public accountants. Registration statements become effective on the 20th day after filing is complete. However, the SEC may advance or delay the effective date if it deems such action to be in the interest of investors and the public.

The SEC issued additional requirements for firms wishing to carve-out subsidiaries in 1985. To prevent profits from being overstated, subsidiaries must subtract all general, selling and administrative expenses from their own earnings to prevent "hiding" these expenses in the parent's accounting statements. The SEC also requires that any goodwill created from the previous purchase of a subsidiary to be carried on the subsidiary's books. These accounting changes must be reflected in the prospectus before it is distributed.

Dow Jones News Wire (DJNW) and Wall Street Journal (WSJ) announcements of equity carve-outs typically include information related to the number of shares to be sold, the expected offer price range, the firm's investment banker, the ownership stake retained by the parent, the use of proceeds, and the primary activities of the subsidiary.

The following announcement of the intent of Banner Industries to carve out Banner Aerospace released over the DJNW is typical of equity carve-out announcements:

Washington - Banner Aerospace Inc., a unit of Banner Industries Inc., filed with the Securities and Exchange Commission for an initial offering of 9.5 million common shares. After the offering, Banner Aerospace will have 18 million shares outstanding. The sale of the shares would reduce Banner Industries' stake in Banner Aerospace to 47.2 pc from 100 pc. It is currently estimated that the initial price of the stock will be in the range of \$16 to \$18 per share, the filing said. Salomon Brothers Inc. and Merrill Lynch Capital Markets will underwrite the offering. (dated 05/16/90, time stamped 3:21 pm)

Below is the WSJ article reporting Banner Inds. Inc.'s intent to carve out Banner Aerospace which was published the subsequent day.

Cleveland - Banner Industries Inc. said it is considering an initial public offering of common stock of its Banner Aerospace Inc. unit. Banner said it filed a registration statement with the Securities and Exchange Commission in connection with the proposed sale of 9.5 million shares. The company said it granted the underwriters an option to purchase an additional 1,425,000 shares to cover overallotments. Salomon Brothers Inc. and Merrill Lynch Capital markets, a unit of Merrill Lynch Co., are the underwriters. As a result of the offering, Banner Industries' beneficial ownership of the common stock of Banner Aerospace will be reduced to 47.2% from 100% and to 39.3% if the overallotment option is exercised in full. Banner said completion of the offering is subject to market conditions. In March, Banner said it was considering shedding nonmanufacturing business, including its waste water treatment group and its aerospace distribution group. Lately, the company has been trying to raise capital for acquisitions more closely related to its manufacturing focus. Banner Aerospace distributes new and overhauled aviation replacement parts, including fasteners, avionics, bearings and electrical and airframe parts.

Schipper and Smith [1986] view an equity carve-out as a hybrid transaction that shares characteristics with both a seasoned equity issue and a spin-off. Equity carve-outs resemble seasoned equity offers because each is a form of external

financing that entails an equity issue, although the share price reaction is dramatically different. Carve-outs are compared to spin-offs because both of these transactions provide the firm with an opportunity to revise compensation contracts for subsidiary management to better align these managers' incentives with those of the relevant shareholders. For example, stock options can be linked to subsidiary stock prices and profitability measures, rather than to those of the parent, to directly reward subsidiary managers for effort and performance related to the subsidiary. In addition, both carve-outs and spin-offs are associated with the initiation of public trading of equity claims on subsidiary assets and a permanent increase in public disclosure of subsidiary information. Thus, the new public entities become subject to increased information collection and monitoring by outside investors, and monitoring by public markets, analysts and rating agencies.

This study develops a third comparison by viewing carve-outs as closely related to IPOs. Generally, both equity carve-outs and IPOs are associated with severe asymmetric information problems due to the lack of publicly available information and history of the relevant unit. Like IPOs, managers intending to issue equity claims on a wholly-owned subsidiary determine the amount of equity to be issued and the time of the public sale. Thus, the market for equity carve-outs and IPOs may suffer from problems related to adverse selection and moral hazard. The extensive IPO literature will be used later in this dissertation to draw further parallels between motivations for equity carve-outs and motivations for IPOs.

2.2. Spin-offs

Spin-offs are initiated via a pro rata stock dividend (usually tax-free) to existing shareholders. This method of corporate restructuring involves neither external financing nor third party agents. Instead, the consolidated firm is divided by managerial decision, subject to shareholder approval, into two (or more) firms with an identical set of shareholders. Unlike an equity carve-out or an asset sell-off, a spin-off reduces the asset base of the parent firm. Similar to a sell-off, but unlike a carve-out, the parent cedes the right to manage the assets of the spun-off subsidiary. Nevertheless, spin-offs involve considerable managerial continuity because the assets will be managed solely by the division's current management team, independent of parent firm management. Unlike a carve-out, the "stand alone" entity created by a spin-off is free from the parent's control and completely separated from the parent's resources. Nevertheless, even though the subsidiary is administratively and financially independent, the parent and subsidiary may maintain business relations (e.g. supplier and customer) if their respective activities are related.

Schipper and Smith [1983], Hite and Owers [1983] and Miles and Rosenfeld [1983] report positive and significant stock price reactions of 2% to 4% for firms announcing an intent to spin-off a subsidiary(s). Schipper and Smith indicate that the parent and the spun-off subsidiary belong to different industry classifications over 77 percent of the time. Hite and Owers indicate that the average value of spin-offs in their sample is 6.6 percent of the original equity value of the consolidated firm. Miles and Rosenfeld report that the announcement stock price reaction in their sample

is a positive function of the size of the spin-off. These authors interpret positive stock price reactions as being consistent with two explanations (aside from regulatory considerations). First, gains may arise from increased managerial efficiency of the subsidiary's assets. The efficiency increase may be achieved via improvement of the subsidiary managers' incentive contracts by tying managerial compensation to the performance of the subsidiary or by eliminating negative synergies that may occur within a firm with diverse operating units. Second, the announcement gains may be associated with a permanent increase of information flows about the subsidiary to, and enhanced monitoring by, public markets and related external monitors. Following the spin-off, the new publicly traded firm's performance is reported via its own set of financial statements rather than being submerged in the parent's performance in consolidated financial statements.

As with an equity carve-out, creation of new, publicly traded claims via a spin-off requires extensive public disclosure. Prior to 1969, spin-offs were not regulated because the SEC considered them to be dividends, not security sales. Therefore, spin-offs were not deemed to be subject to the registration requirements established in the Securities Act of 1933. However, allegations that spin-offs were used to avoid disclosure requirements for "going public" transactions resulted in the SEC's creating new filing requirements in 1969 and 1970 (Releases 4982 and 8909 respectively). Thus, since that time, the SEC has viewed spin-offs as a type of security issuance even though there is no sale of securities.

Currently, the SEC requires the following actions prior to the distribution of equity in a new firm that is to be created through a spin-off. First, an agreement between the parent and subsidiary regarding the details of the spin-off must be established. This is known as the plan of reorganization and contains details of the mechanics of the spin-off. Included in this plan are: the relationship of the parent and subsidiary during the period prior to and subsequent to the spin-off, asset/liability exchanges, the number of shares of stock to be distributed, record and payment dates for distribution, whether the new stock is to be listed on an exchange, and revisions of stock options, employee stock ownership plans and pensions plans. Second, a proxy statement must accompany the notice for the shareholders meeting at which the reorganization plan will be approved. Finally, a registration statement is submitted to the SEC with an accompanying prospectus. Most of the items in the proxy statement are also contained in the registration statement. The prospectus must be distributed to all shareholders receiving stock in the spin-off.

Under Section 355 of the Internal Revenue Code, the pro rata distribution of the equity in the subsidiary is tax-free if the following five criteria are met. One, the purpose of the spin-off must be germane to the corporations' business activities (e.g., to separate a business to allow its employees to participate in profit sharing). Two, the parent and the subsidiary must be engaged in business for at least five years preceding the spin-off. Three, the parent must own at least 80 percent of the subsidiary stock and distribute all of its holdings in the subsidiary to shareholders. Four, no pre-arranged plan for shareholders to sell the subsidiary stock subsequent to

the spin-off may exist (continuity of interest). Five, the transaction cannot be used primarily as a device for distributing the earnings or profits of either the parent or subsidiary.

Typically, DJNW announcements of planned spin-offs include information related to the pro rata distribution of shares, the tax treatment of the restructuring and the operation(s) that will be separated from the parent. Occasionally, additional information is provided including the reason for the spin-off (e.g. the market will be able to value the separate entities more precisely), past earnings information, recent stock price movements, and cursory industry analysis. Below is an example of a DJNW spin-off announcement:

Acton Mass - Acton Corp. said its board approved a plan to spin off the company's food operations into Acton Food Corp. at the end of the year. Acton Corp will continue to run its communications operations. Acton Corp said one common share of Acton Food will be issued for each share of Acton Corp.. Acton Corp said one Acton Food Corp. warrant will be issued for each Acton Corp. warrant. (dated 09/22/81, time stamped 10:24 am)

The WSJ article following the DJNW announcement generally contains similar information, but in more detail. For example, the following WSJ article for the Acton Corp. spin-off was published the subsequent day:

Acton Mass - Acton Corp. said its board approved a plan to spin off the company's food operations into a separate company at year-end. Acton Corp. which previously had disclosed its intentions to make the spinoff, will continue to operate its communications business, which includes 45 cable television systems, a telephone interconnect company, a telephone equipment manufacturing company and a broadcast division. The company said one share of stock in the new concern will be issued for each share of Acton Corp. held. For each Acton Corp. warrant held, a warrant in the new company will be issued, the

company added. The new food company will include a snack food manufacturing group, a service group and a egg farm.

This announcement of Acton Corporation's spin-off illustrates the diverse business activities currently under its management. The announcement indicates that the firm is to be split into two broad economic activities: broadcasting and communications, and food production and distribution. In this case, the motivation for the restructuring is not given. Incentives to separate Acton Corp's assets may be the result of diseconomies in managing disparate business activities. Because a spin-off is accompanied by increased disclosure of information about the subsidiary, managers may be attempting to capture unrecognized value for current shareholders by informing financial markets of the perceived higher value of the firms assets without changing the residual claims on the assets.

2.3. Asset sell-offs

Asset sell-offs include the sale of product lines, divisions, and subsidiaries to third parties through negotiated contracts. Unlike equity carve-outs and spin-offs, the typical sell-off does not create a new entity because the seller and buyer are usually existing, operating firms. However, some sell-offs involve leveraged purchases of a division by its management (management buyout) and/or other private investors (leveraged buyouts). Asset sales generate cash inflows to the parent firm and thus can be viewed as a form of external financing as well as a mechanism for transferring the right to manage assets from the seller's management team to the buyer's. The buyer

determines whether to retain the division's current managers or to replace them with a new team of managers.

Sell-offs, unlike spin-offs, do not intrinsically decrease a firm's asset base; instead, they transform part of the firm's illiquid assets into liquid assets that can be used to purchase other operating assets, reduce debt, or to disburse funds to shareholders through share repurchases or special dividends. Typically sell-offs are privately negotiated and, much like bank loans or other privately placed securities, involve little information disclosure relative to the issuance of publicly traded securities. Investment bankers are usually employed to facilitate the sell-off transaction and maintain confidentiality, through biparty negotiations or a private auction. On rare occasions the asset will be sold through a public auction. As in the case of acquisitions of publicly traded companies, buyers generally expend considerable resources to determine the value of the asset in question before agreeing to purchase it. Unlike the purchase of an entire firm, however, no market price of a subsidiary is available to reflect the market's prior assessment of its value.

Typically, a successful (i.e., ultimately completed) sell-off indicates that the bidder is willing to pay an amount at least as great as the seller's assessment of the asset's value. This suggests the buyer has some favorable information regarding the asset's value not known to the seller or the market. Recent empirical studies by Alexander, Benson, and Kampmeyer [1984], Jain [1985] and Hite, Owers, and Rogers [1987] indicate that sell-off announcements are associated with positive and significant average stock price reactions of 1%-2% for shareholders of the selling firms.

Positive share price reactions to selling firms from announcements of sell-offs are interpreted as evidence that these transactions are associated with the movement of assets to higher valued uses.

The SEC requires corporations to report any material events or corporate changes that are of importance to investors or security holders that have not been previously reported. This is accomplished by filing a Form 8-K. Frequently, a sell-off will induce firms to comply with this requirement and submit a Form 8-K. In the case of an exchange of a material asset, the SEC requires that firms (sellers and purchasers) disclose: 1) the date of the sale and a brief description of the assets involved, 2) the nature and amount of consideration given or received for the assets, 3) identity of other parties involved in the transaction, 4) the nature of any material relationship between transaction participants. The acquirer must meet two additional requirements: 1) identify the source of funds used, excluding ordinary bank loans if confidentiality criteria have been met, and 2) state the nature of the business in which the assets were employed and declare whether or not the assets will be used for the same purposes. If new uses are intended, they should be reported.

For most sell-offs, only general characteristics of the transaction are released to the public such as: which assets are being sold, the name of the buyer, the transaction price, and the method of payment. A sell-off announcement may also contain information related to the seller's (buyer's) motivation for disposing of (purchasing) the assets, the seller's and/or the subsidiary's latest earnings and sales,

and some analysis on the related industries. The following example is typical of sell-off announcements found in the Wall Street Journal:

New York - NL industries Inc. said it will purchase Sun Co.'s, oil field services subsidiary, Sperry-Sun Inc., for \$252.3 million. Sperry-Sun, which supplies drilling products and services for the oil and gas industry, had sales of about \$100 million and profit of more than \$10 million in 1980. Sales and earnings increased at a compound annual rate of over 30%. Sperry-Sun has plants in Sugarland, Texas; Lafayette, La., and Cheltenham, England. NL is a major petroleum services, chemicals and metals company. Annual sales at NL's petroleum services division are about \$1.2 billion, and its purchase of Sperry-Sun "underscores NL's commitment" to oil services, said Ray C. Adam, chairman of NL. Sperry-Sun marks NL's entry into the "directional drilling market" he said. Sun's chairman and president, Theodore A Burtis, said Sperry-Sun is "more compatible with NL future interests." "There is a concern that "an oil field services company is less attractive to its customers - oil companies - when it is owned by another oil company," Mr. Burtis added. Sun is based in Radnor, Pa..

This announcement indicates that the seller, Sun Co., is disposing of its oil field services assets because it believes that it no longer possesses a comparative advantage in that industry. Thus, although Sperry-Sun is still profitable, the nature of its parent's operations prevent it from reaching its perceived potential. Disposing of Sperry-Sun will presumably allow Sun Co. to become a more focused competitor in the refining and distribution sectors of the oil industry. Sperry-Sun is being purchased by NL Industries which has expressed a commitment to maintaining the competitiveness of its petroleum services division. NL Industries' anticipated gains from this transaction may result from economies of scale or scope. Implicitly, NL Industries' decision to enter the directional drilling market through the purchase of

Sperry-Sun indicates that management believes it is less expensive for them to acquire an existing company than to develop the business with their existing assets.

2.4. Voluntary liquidations

Voluntary liquidations are an extreme form of asset sell-off. Rather than selling an individual piece of the firm, managers sell all of the pieces in multiple transactions and distribute the proceeds to shareholders through special dividends. This form of corporate restructuring indicates that the organizational capital of the firm has dissipated and is less a form of restructuring than an auction of the entire firm in piecemeal form. This method of asset disposition is in contrast to a control transaction in which the entire firm is sold intact. Empirical analyses by Hite, Owers, and Rogers [1987] and Skantz and Marchesini [1987,1988] indicate that announcements of voluntary liquidations are associated with a 12 percent to 14 percent increase in share price. Hite, Owers, and Rogers and Kim and Schatzberg report relatively small median market values of equity of \$41 million and \$23 million respectively for their samples of liquidations. Strongly positive and significant stock price reactions to announcements of liquidation are documented by Hite, Owers, and Rogers, who find average two-day announcement returns of 12.24%, and Kim and Schatzberg who report a three-day announcement return of 14%. Skantz and Marchesini report an announcement month return of 21.4%.

A primary source of the positive announcement gains may be the anticipation of an auction with multiple bidders. Another possible source of gains is favorable tax

treatment of any capital gains. Voluntary liquidations, unlike liquidations that occur as part of bankruptcy proceedings, have the positive motivation that managers feel that the firm is more valuable to shareholders by being dismantled and auctioned off than it is as an on-going concern. In addition, a voluntary liquidation gives managers considerable control over the process by which the firm's assets are to be sold so as to enhance shareholder value. In contrast, in a bankruptcy liquidation, the court appoints a trustee who is responsible for terminating the firm's operations and disposing of the firm's assets.

2.5. Joint ventures

A joint venture is a complex form of corporate restructuring that involves a continuing relationship with another firm. Creation of a new legal entity via a joint venture may be viewed as a partial merger, while the sale of a share of an existing joint venture may be viewed as a divestiture. In either case, the partners exist as separate firms apart from the joint venture. Joint ventures may exist as partnerships, corporations, or any of several other legal forms of organization. Joint ventures are typically of limited scope and duration. Each partner contributes something to the venture that enhances the other participants' investment, but, the sharing of information and/or assets between participants is limited to the scope of the joint venture. McConnell and Nantell [1985] show that on average, there are positive and significant share price reactions of approximately 0.73% for firms participating in joint ventures.

There exists a wide range of motives for joint ventures. For example, a firm with a product idea whose outcome is highly uncertain and whose expected payoff may not be realized for several years may seek a partner with sufficient cash flow to invest in development of the idea. Frequently, transfer of knowledge is a major factor in creating joint ventures. This is often the case when the knowledge to be shared is very complex or technical in nature. A joint venture can also serve as a method of reducing cash outlays and sharing risk in developing new technologies and markets. Creation of a new entity via a joint venture can also be means of avoiding legal liability while developing new products. Finally, antitrust authorities may be more willing to permit joint ventures rather than mergers because a joint venture increases the number of firms in an industry while a merger may reduce the number of firms.

3. Summary

General economic welfare is enhanced by the existence of a market for corporate control that creates the discipline to induce managers to combine corporate resources into more profitable organizations. An extensive literature documents that gains are created from merger and acquisition activity. Substantial evidence indicates that, on average, shareholders of target firms experience significant wealth increases, although the evidence on gains to shareholders of acquiring firms is more ambiguous. There also exists considerable evidence that the dismantling of complex corporate organizations enhances shareholder wealth.

Announcements of equity carve-outs, spin-offs, and asset sell-offs are each associated with positive stock price reactions, even though each differs as a form of external financing and securities issuance and has a unique impact on the control of the assets in question. An equity carve-out is the sale to outside investors of residual claims on a subsidiary's assets that typically remain under the control of the parent. A spin-off creates a new publicly traded entity that is administratively and financially independent of its parent, via a pro rata dividend to existing shareholders without any new external financing. Like an equity carve-out, but unlike a spin-off, a sell-off is a form of external financing. Unlike a spin-off, no stand alone entity is created because control of the division or subsidiary is generally transferred from one management team to the management team of an existing, operating firm via a private transaction.

The focus of this dissertation is to test the relevance of motives associated with various types of corporate restructuring by viewing these transactions within the context of the securities issuance literature and related work on financing decisions. Intra-industry share price effects of restructuring decisions, viewed within the framework of models of securities issuance, will provide a means for testing the relevance of three hypotheses that have been developed to explain management's decision to restructure: the asymmetric information hypothesis, the efficiency hypothesis, and agency cost arguments.

Chapter 3

Major Hypotheses for Restructuring

1. Introduction

Previous literature on economic reorganization contains several alternative theories as explanations for the motivation behind corporate restructuring and asset disposition. Several of these alternative hypotheses are not mutually exclusive and it is difficult to discriminate among them based on existing empirical evidence, which focuses predominately on share price reactions to announcing firms. In general previous empirical studies indicate that each form of restructuring (equity carve-out, spin-off, and asset sell-off) is, on average, a wealth enhancing event.

Schipper and Smith [1986] posit that the positive returns from equity carve-outs may result from: (1) increased disclosure of information related to the subsidiary's activities and profitability, (2) improved efficiency in asset management that is the result of changes in management compensation contracts, and (3) preventing subsidiary management from having to forego positive net present value projects by separating the parent's and the subsidiary's external financing opportunities. This argument is based on predictions stemming from Myers and Majluf's [1984] model of security issuance (that will be discussed in detail later) which argues that managers may forego positive net present value projects to avoid the negative information effects associated with seasoned equity issues (if no alternative funding source is available). Schipper and Smith conclude that each of

these explanations may account for the 2% increase in parent firm shareholder value that is observed in response to equity carve-out announcements.

Schipper and Smith [1983], Hite and Owers [1983], and Miles and Rosenfeld [1983] hypothesize that the positive returns to spin-offs may be explained by: (1) a permanent increase in information disclosure about the subsidiary and the parent, (2) elimination of diminishing returns to management through increased specialization by the parent and the spun-off subsidiary that enhances shareholder value, (3) resolution of agency problems, (4) overcoming regulatory, tax, and bond covenant constraints, (5) bondholder wealth expropriation and (6) facilitating opportunities for takeover bids.

Of these theories, only the bondholder wealth expropriation hypothesis is inconsistent with existing empirical evidence. In particular, Schipper and Smith and Hite and Owers demonstrate that neither bond prices nor bond ratings show statistically significant reactions to announcements of spin-offs. Due to the small number of parent firms that spin off subsidiaries because of regulatory considerations and the even smaller number of cases in which a spin-off leads to a takeover of either the parent or the subsidiary, it is difficult to generate definitive evidence about these considerations as explanations for the positive share price reaction to spin-off announcements. In particular, they are unlikely to be important motivations for restructuring via a spin-off in general, although they may be reasonable explanations for some specific restructurings.

Hite, Owers, and Rogers [1987] argue that efficiency considerations are the major source of positive returns to firms announcing sell-offs. They reach this conclusion because their results show that only firms that are able to complete an announced asset sale experience a permanent positive share price revision. For firms announcing a sell-off that is not brought to completion, the positive announcement effects eventually dissipate. This is consistent with the fact that efficiency gains are only realized when buyers with higher valued economic uses for the assets are able to purchase them from sellers with relatively lower valued economic uses. Hite, Owers and Rogers conclude that dissipation of the announcement reaction for firms not completing a sell-off is inconsistent with the hypothesis that information effects are the source of the announcement gains.

Lang, Poulsen, and Stulz [1992] find positive returns only for firms that pay out proceeds from asset sales to bondholders (they found no examples of payouts to shareholders). Lang, Poulsen, and Stulz argue that sell-offs may potentially exacerbate agency problems if there is retention of large free cash flows within the firm. They find that there are statistically insignificant returns to sellers who retain the proceeds within the firm, a result that they argue is inconsistent with efficiency arguments advanced by Hite, Owers, and Rogers.

This dissertation considers the three hypotheses that have become the dominant alternative explanations for restructuring activities: (1) the economic efficiency hypothesis, (2) the asymmetric information hypothesis, and (3) the agency cost hypothesis. Analysis of intra-industry valuation effects, found in the finance and

accounting literatures and discussed later, will be used to test the applicability of the three hypotheses as explanations of the various forms of corporate restructuring. Announcement returns of intra-industry rivals aid in testing the validity of the hypotheses because the predicted reaction for industry rivals is different for each hypothesis. These predictions are discussed in detail below.

2. The efficiency hypothesis

The gains from corporate restructuring decisions are often attributed to capturing potential efficiency gains obtained by moving assets to higher valued uses. The efficiency hypothesis is based on the assumption that there are differential managerial skills and comparative advantages of different corporate entities or that there are important economies of scale and scope. This hypothesis predicts both private and social gains when assets are moved to higher valued uses. Economic gains from restructuring may arise if current managers are induced to operate the assets in question more efficiently. Schipper and Smith [1983,1986] argue that efficiency gains may be achieved by dividing the firm for two separate, but related reasons. First, there may be diseconomies of scale in management which dissipate economic gains that would otherwise be obtainable through separation of disparate productive activities. For example, diversity of transactions due to dissimilar activities of the parent and subsidiary may give rise to diseconomies. The costs of decision making, which involve distributing investment-facilitating information, may also offset any economies of scale or scope in production as firm complexity grows.

The second potential cause of diseconomies in management given by Schipper and Smith is the cost of evaluating and rewarding managerial performance. Enhanced asset management may be achieved by reorganizing management's responsibilities and incentives. Creating a "stand alone" entity through a corporate restructuring may be useful in promoting top level managers, attracting new, competent managers, and strengthening managerial incentives. For example, promoting a productive top level manager from within the parent firm to the post of Chief Executive Officer of a newly created "stand alone" firm may be a form of compensation that encourages continued profitable decision making and effort. The new Chief Executive Officer post may also be used to attract talented managers outside of the parent firm and thus augment or strengthen the management of the assets of the new entity. Asset management efficiency can also be improved by incorporating subsidiary share prices as a market based measure of their performance in incentive contracts rather than the use of parent firm prices or profits or subsidiary accounting data. Subsidiary management can then be rewarded with stock options or other forms of compensation based more directly on their decisions and effort, rather than the performance of the parent as a whole.

In their studies of equity carve-outs and spin-offs, Schipper and Smith report that subsidiary managers are frequently offered new compensation contracts subsequent to the event. Almost without exception these contracts include stock options based on the subsidiary's stock price and performance. Thus, a corporate restructuring decision that results in a new publicly traded entity may be an important method of improving the management of subsidiary assets. In contrast, stimulating

productive gains through the revision of compensation contracts based on market prices is not possible in the case of a sell-off because no new publicly traded firm results from such a restructuring.

Another means to achieve improved operational efficiency is to transfer the right to control the assets to a new management team that is able to employ the assets more profitably. The comparative advantage possessed by the new managers may stem from potential economies of scale or scope in their current asset organization or may be due to the fact that the new managers are more competent in managing those assets.

Economies of scale occur because of the indivisibility of certain assets - people, equipment, and overhead. This encourages horizontal asset transfers, that is, asset transfer within an industry. Spreading the cost of the indivisible assets over a larger number of units of output increases the returns to those assets. Therefore, if economies of scale exist within an industry, asset utilization will be improved by moving resources from industry members who are operating at lower levels of output to members who can more readily capture the gains from economies of scale.

Economies of scope may arise due to the difficulty in writing, executing, and policing contracts, and are conducive to vertical integration. Combining assets related by a common productive activity, but employed at different stages of the process, may reduce the cost of the process. Costs of communication, bargaining, advertising, transportation, payment collections, and production coordination may be reduced if a process is controlled by a single management team rather than competing management

teams. The uncertainty over input supply may also be reduced through backward integration while distribution quality can be controlled by forward integration. In sum, reconciliation of divergent interests of parties to a contract is achieved through common ownership, which decreases costs related to contracting.

Because economies of scale and scope are only obtainable by combining assets, a sell-off is the only form of restructuring that can directly create efficiency gains in this manner. Both equity carve-outs and spin-offs produce stand alone entities that are not combined with the assets of other firms. Of course it is possible that subsequent to a spin-off, the new firm may be taken over by a firm that has the potential to realize economies to scale or scope by combining the assets of the carved-out or spun-off subsidiary with its own operations. If the market anticipates such a takeover, then these economies would be capitalized at the initial spin-off announcement.

A firm may lose its comparative advantage in an industry due to a material change in product markets, manufacturing technologies, or competition. As a result, a division or subsidiary may no longer be an efficient component of the firm's operations and therefore it is rational for managers to sell it to outsiders who have a comparative advantage in managing those assets and can achieve productive gains from its acquisition.

2.1. Intra-industry effects

Increasing the efficiency of asset utilization creates social gains through enhanced allocation of resources. There are private gains to the owners of the

resources if rents accrue from improving the competitive position of the firm within an industry. Such gains accrue to more competitive firms presumably at the expense of the less competitive intra-industry rivals. For example, the increase in profitability may come as a result of achieving low-cost producer status in a competitive market or by creating a monopolistic position within the industry through horizontal asset purchases. Either scenario indicates that the intra-industry rivals will face tougher competition and presumably lose future cash flows. Thus, gains to the firms involved in the restructuring come at the expense of competitors. Therefore, the efficiency hypothesis implies that restructuring decisions should have a negative impact on rival firms unless the industry is perfectly competitive.

Potentially offsetting the gains related to increased efficiency is the fact that restructuring decisions may sometimes have the effect of decreasing the number of independent producers of a product. As the number of firms within an industry decreases, the opportunity to collude increases and may result in an oligopoly. Therefore, there may also be intra-industry effects attributable to increases in market power through enhanced opportunities for collusion as well as improved efficiency effects. If collusive activity is expected to be fostered by a consolidation of operations, share prices of rival firms should be revalued upward to reflect the expected increase in profits.

3. The asymmetric information hypothesis

The asymmetric information hypothesis posits that managers (insiders) have valuable information about the value of firm assets and future cash flows and reveal this private information (favorable or unfavorable) by the nature of the corporate decisions they publicly announce. Arguments based on asymmetric information are usually developed within the context of signalling models, first developed by Spence [1973, 1974] in the labor economics literature and later introduced to finance by Ross [1977].

Ross's model of capital structure implies that changes in financial leverage convey information to financial markets about manager's expectations of the firm's future profitability. For example, an increase in leverage may indicate that managers perceive future cash flows as being sufficiently high to safely bond themselves to higher future interest payments related to the increased indebtedness. A decrease in leverage may have an opposite interpretation, that is, managers may feel future cash flows will be insufficient to cover future interest obligations and therefore reduce those obligations to more appropriate levels, thus diminishing the probability of financial distress. Similar arguments have been developed in dividend models by Bhattacharya [1979], Hakansson [1982], and Miller and Rock [1985]. These models interpret an increase in dividend payout by a firm as a signal that the firm has expected future cash flows sufficiently large to meet debt payments, dividend payments, and investment needs without increasing the probability of bankruptcy.

The typical positive and significant stock price reaction to the announcement of an initiation or increase in dividends (Aharony and Swary [1980], Asquith and Mullins [1983,1986], and Healy and Palepu [1988]) or a firm repurchasing its own equity (Masulis [1980], Dann [1981] and Vermaelen [1981]) is interpreted as support for the argument that the market perceives dividend initiations and increases and share repurchases as signals of favorable information regarding the firm's future prospects.

3.1. Asymmetric information and takeover bids

The asymmetric information hypothesis also extends to bidders in takeover transactions. Given imperfect information about potential future cash flows, share prices may not reflect the value of assets that have more profitable alternative uses to potential buyers. Thus, a well-informed bidder may be prepared to pay a higher price for assets than the price at which the current owner and the market values those assets. Dodd and Ruback [1977] and Bradley [1980] assert that signalling is an important component in the valuation effects of tender offers. They argue that a permanent upward revaluation of target equity value, even when a tender offer is unsuccessful, indicates that the bid conveys private information to financial markets about the value of the target's assets employed in alternative uses.

However, in subsequent studies Bradley, Desai, and Kim [1983,1988] observe that a permanent revaluation of target firms only occurs when the target's assets are combined with those of another firm, whether it be the initial bidder or an ensuing bidder. They find that the upward revision in firm value of the targets that do not

receive subsequent bids dissipates shortly after the failed takeover attempt. Bradley, Desai, and Kim interpret these results as consistent with the efficiency hypothesis, that is, gains are only permanent if assets are combined to create economies of scale. They conclude that a tender offer does not necessarily imply that the target firm's assets are undervalued. Similarly, Hite, Owers, and Roger [1987] demonstrate that, consistent with the findings for tender offers, terminated sell-off negotiations result in the loss of the positive announcement returns if the failed attempt is not followed by another, eventually successful, negotiation. Thus, the evidence suggests that outside bidders involved in takeover and sell-off transactions do not necessarily convey private information about the value of the assets being sought.

The hypothesis that takeover bids convey private information about target assets is also found in the literature on going private transactions. DeAngelo, DeAngelo, and Rice [1984], Lehn and Poulsen [1988], and Hite and Vetsuypens [1988] find large premiums and abnormal announcement returns to shareholders in response to going private bids. The large premiums paid by the acquirers who are managers or other private investors rather than operating firms, are consistent with the argument that these agents have access to private information that leads them to place a higher value on the assets than the market does. The premium may reflect the acquirer's expectations of higher cash flows or that the acquirer views the firm's cash flows to be less risky than the market perceives.

Similar to attempts to take control of a firm or take it private, a sell-off transaction unlike a carve-out or spin-off, involves an outside bidder(s) with private

information seeking to gain control of the division. Hite and Vetsuypens [1988] find small but significant wealth gains to parents completing divisional management buyouts, which is also consistent with the empirical results associated with going private transactions. Since no consolidation of operating firms occurs in these cases, this evidence suggests that going private transactions, involving the entire firm or only portions of it, convey favorable information about the value of relevant assets that is not available in public markets.

3.2. Asymmetric information and securities issuance

The securities issuance literature is replete with signalling models based on asymmetric information and adverse selection. Leland and Pyle [1977] argue that entrepreneurs have better information about the expected future value of their projects than do outside investors when the entrepreneur is ready to take the firm public. Because it is in the entrepreneur's interest to invest a greater fraction of his wealth in successful projects, Leland and Pyle argue that the market will interpret the firm's value as being positively related to the fraction of equity retained by the entrepreneur during the going public process.

Myers and Majluf [1984] develop a signalling model that combines investment and financing decisions. This model is based on the assumptions that managers have more accurate information about the "true" value of the firm and any projects it might undertake than the market does, and that managers act in the interest of "old" shareholders who are passive investors. Myers and Majluf first analyze a case where

the firm has no new projects. They show that if managers anticipate bad states, i.e. states where assets are underperforming, it is rational for managers to issue equity in order to maximize shareholder value. Issuing equity is an unambiguous negative financial signal that the market uses to assess the private information held by managers, in this case, that the firm's assets are overvalued. The market then revalues the value of the firm downward.

The second case considered by Myers and Majluf includes a positive net present value (NPV) project. In this example, the market considers announcement of the positive NPV project as good news. If the project is financed by equity, which is bad news, the announcement of the project becomes an ambiguous signal. The market cannot separate information about new project opportunities from the information about the value of the firm's assets in place. Separation is impossible because project outcomes and states of nature are correlated. As a result, an underinvestment problem may occur if the firm chooses to forego some positive NPV projects rather than issue equity at a price it feels is too low.

If project outcomes and states of nature are uncorrelated, that is, if the project has the same outcome regardless of the state of nature, the problem disappears. Another means of overcoming the problem is finding a source of financing that is not subject to the asymmetric information problem. Myers and Majluf show that if the firm uses its available liquid assets, e.g. retained earnings, then all positive NPV projects can be undertaken without having to issue equity, which resolves the asymmetric information and underinvestment problems.

Myers [1984] uses the implications of this model to develop a pecking order theory for financing investment. The theory suggests that firms prefer retained earnings as their primary source of funds for investment. Using an internal source of capital avoids the problems related to the ambiguous signal of externally financing a new positive NPV project. Debt is the optimal secondary source of funds because debt financing has payoffs that are less correlated with the states of nature than equity payoffs. Therefore, announcing debt financing for a new project conveys a less negative signal than an announcement of equity financing for a new project. New equity is the least preferred source of funds. Firms will avoid issuing new equity in order to circumvent the problems of having to forego positive NPV projects or issue equity at a price they feel is too low.

Miller and Rock [1985] relate dividend and financing decisions to managerial expectations about future cash flows in their model of asymmetric information and securities issuance. In Miller and Rock's model, all external financing decisions are interpreted as a negative signal that managers view the firm's future prospects unfavorably, or more specifically, that future cash flows will be inadequate to meet the firm's investment and operational needs. The implications of Miller and Rock's model on investment financing are dichotomous and contrast to those of the Myers and Majluf model, which establishes a hierarchy for choosing a source of funds.

Empirical studies of public security issuance are generally consistent with the Myers and Majluf model. Empirical studies by Asquith and Mullins [1986], Mikkelsen and Partch [1986] and Masulis and Korwar [1986] indicate seasoned equity

issue announcements are associated with significant stock price returns of approximately -3%, which implies that managers issue equity when they have unfavorable information about the value of the firm. Linn and Pinegar [1986] and Mikkelsen and Partch [1986] report non-significant negative excess returns to announcements of preferred stock. Dann and Mikkelsen [1984], Eckbo [1986], and Mikkelsen and Partch find non-significant negative excess returns to announcements of straight debt as well.

Restructuring decisions entail the announcement of both a decision about the role of an asset in the firm's future operations and the choice of a mechanism by which a change in structure is to be accomplished. Because some of these mechanisms involve acquisition of external capital, the securities issuance literature implies that the method of asset restructuring that is selected conveys a signal about the value of the relevant subsidiary and/or the parent firm's assets.

Transferring rights to control corporate assets through a sell-off creates cash inflows for the parent firm and thus serves as an alternative to issuing new securities while at the same time altering the firm's production opportunities. An equity carve-out by its nature is a securities offering that involves the issuance of equity claims without removing assets from the firm's production set. In contrast, no external financing is involved in spin-offs since the firm is merely split up. Because the securities issuance literature illustrates the adverse selection problem associated with utilizing external financing in an environment in which managers have access to information about future cash flows not available to public markets, the three forms of

restructuring - sell-offs, carve-outs, and spin-offs - must also be viewed in the context of the securities issuance literature and its relation to the asymmetric information perspective.

More specifically, this dissertation extends the asymmetric information hypothesis of securities issuance by arguing that management's private knowledge about asset valuation or future cash flows influences the choice of the mechanism used to carry out the restructuring or divestiture of assets. For example, assuming that financing future investment is an integral part of a restructuring decision so that a spin-off is not appropriate, managers may choose to sell-off a division to a third party rather than carve it out if they feel that the financial market would not appropriately value the assets. In contrast, if managers perceive the assets in question are likely to be overvalued by the market, they will have an incentive to issue equity in the division. If the firm does not need additional capital or if managers feel that the market is undervaluing the division (i.e. managers have favorable private information), they may choose to spin-off the division, allowing gains to accrue to current shareholders as private information is eventually released to the market through future disclosure or the revelation of future cash flows.

In this dissertation, empirical tests of the relevance of this hypothesis are developed conditioned on the assumption that some elements of private managerial information about relevant assets may be applicable to the industry as a whole. As a result, managerial decisions about restructuring mechanisms induce the market to

adjust prices of comparable assets throughout the industry depending on the type of securities transaction intrinsic to the restructuring mechanism.

3.3. Asymmetric information and intra-industry effects

Intra-industry tests in this dissertation parallel those found in the finance and accounting literatures. Several studies report evidence that certain managerial decisions convey industry-common information while others find evidence that managerial decisions convey only firm-specific information. For example, Foster [1981] and Clinch and Sinclair [1987] find that unexpected earnings announcements contain valuable information related to expected cash flows for other firms in the industry. Lang and Stulz [1992] report evidence that rivals of firms petitioning for bankruptcy experience significant negative announcement effects. Consistent with the asymmetric information hypothesis, Eckbo [1983] and Stillman [1983] find evidence of positive valuation effects for intra-industry rivals of targets of merger and acquisition activity. Furthermore, Slovin, Sushka, and Bendeck [1991] document positive and significant returns to intra-industry rivals for announcements of going-private transactions. In contrast, there is evidence that some managerial decisions convey only firm-specific information including Hertzels [1991] work on intra-industry effects of share repurchases and Slovin, Sushka, and Polonchek's [1992] finding of no effect on rival share prices for seasoned equity issues.

If private, industry-common information about related assets is conveyed through restructuring decisions, the market should revalue intra-industry rivals in

response to a firm's decision to conduct asset disposition and the type of mechanism utilized. The market will systematically reprice the equity of firms conducting closely related activities based on expectations about the value of private, managerial information that is conveyed by the decision. The degree of repricing will be related to the degree of informational asymmetry.

4. The agency cost hypothesis

Jensen and Meckling [1976] first drew attention to the potential loss in value to public corporations caused by the conflict of interest between principals and agents. Agency costs arise because wealth maximizing incentives are different for corporate managers and suppliers of capital. The agency cost hypothesis is based on difficulties involved in writing (or rewriting) and enforcing contracts between managers and bondholders, and between owners and managers, that might better align wealth maximizing incentives. The former problem is known as bondholder wealth expropriation and occurs when managers increase corporate risk to benefit shareholders while the contracted rate of return on existing corporate debt remains unchanged. Since these contracts cannot be costlessly rewritten, bondholders may face higher than contracted for risk. The latter problem is a manifestation of moral hazard. This type of agency cost arises when it is costly to monitor the behavior of agents or when it is costly to bond agents.

Jensen [1986] contends that because managers cannot be perfectly monitored, decisions that result in a cash inflow may increase agency costs if the cash is retained

in the firm. Excess cash may allow corporate aggrandizement as hypothesized by Roll [1986] or misuse of cash in other suboptimal investments, including those which facilitate managerial consumption of perquisites. Potential agency costs may also be high because managers who face considerable firm-specific risk to their human capital have an incentive to diversify. The motivation to diversify stems from the fact that much of the risk to managerial human capital is non-diversifiable. Managers may attempt to reduce the risk to their human capital by pursuing projects with expected cash flows that are independent of one another, which is not necessarily consistent with maximizing firm value. Shareholders will not favor this strategy because they can costlessly diversify away non-systematic risk by holding a portfolio of residual claims on many firms. Thus, this divergence of interests can be harmful to shareholder wealth. These agency costs can be checked if managers retain only sufficient cash to finance positive net present value (NPV) projects and release remaining funds to shareholders. This minimizes cash resources under management's control. In a related argument, Easterbrook [1984] suggests that dividends and share repurchases serve as mechanisms for effective disbursement of cash, and subject the firm to intensive monitoring by financial markets and related external agents such as investment bankers.

Within this context, restructuring can either reduce or exacerbate agency costs. If managerial behavior is characterized by excessive risk aversion, aggrandizement, or consumption of perquisites, a divestiture can represent a possible solution for correcting agency problems. For example, a spin-off allows a firm to restructure and

ameliorate agency costs without raising external capital. The new firm created by the spin-off now stands alone, becoming a less diversified entity, and thus is subjected to increased monitoring by capital markets. The increase in disclosure of the new firm's cash flows, further exposure to the market for managerial labor, and more market oriented incentive contracts may induce managers to operate the firm's assets more efficiently. In contrast, a carve-out or a sell-off generates considerable cash inflows which may increase agency problems by fostering corporate aggrandizement or consumption of perquisites.

Agency problems are generally firm specific. Thus, if agency problem considerations are the sole source of changes in the announcing firm's equity, resolution or intensification of agency problems resulting from restructuring or asset sale decisions should only alter the value of the announcing firm's equity, not the equity of rival firms. Therefore, explanations of corporate restructuring based on agency problems predict that there should be no intra-industry announcement effects.

The next three sections contain detailed reviews of equity carve-outs, spin-offs, and sell-offs with the emphasis on the role that each of these mechanisms play as a form of external capital acquisition. This relates to the basic perspective of this dissertation that financing and investment decisions are an integral, but undeveloped element of the corporate restructuring process. A discussion of the character of asymmetric information (that is, favorable or unfavorable) held by managers at the time of restructuring can provide new perspective on the incentives of managers to choose one method of asset disposition over another. Although this discussion is

largely focused on the relationship of restructuring to the securities issuance process and its implications for intra-industry effects of these decisions, at various points the contrasting implications of the efficiency and asymmetric information hypothesis are developed.

5. Equity carve-outs

On February 7, 1983 Trans World Corporation delivered a prospectus to the Securities and Exchange Commission detailing a proposal to sell shares of its airline unit, Trans World Airlines (TWA). The action came amid troubled times for TWA, which had posted operating losses from 1979 to 1982. The proposal outlined Trans World Corp's intention to sell five million TWA shares to the public at an offer price between \$14 and \$17 per share. Trans World Corporation would retain 84% of the ownership of the airline. Trans World Corporation indicated that the proceeds of the equity sale would be used to purchase new airplanes and for general corporate purposes.

Trans World Corporation's decision is a classic example of a relatively uncommon form of securities issuance, an equity carve-out, in which a portion of a wholly-owned subsidiary's common stock is offered for sale to the public. An equity carve-out is similar to a conventional initial public offering because it creates a new and distinct set of publicly traded equity claims on the assets of the subsidiary. As is typically the case, Trans World Corporation retained a controlling interest in the

subsidiary, thus maintaining control over the subsidiary's assets and operations, so the subsidiary does not become an independent, "stand alone" corporation.

As initial public equity issues, both equity carve-outs and conventional IPOs can be presumed to be associated with a severe asymmetric information problem relative to a bond issue or even a seasoned equity issue due to the lack of historical public disclosure of accounting and other data. In addition, managers have considerable flexibility to determine the proportion of equity sold and the timing of each of these public equity offers, which presumably will occur at an optimal time with respect to the manager's informational advantage. Given this potential for adverse selection problems, the firm's decision to issue equity is likely to be interpreted as an indication of unfavorable private information. With respect to seasoned equity issues, this argument is supported by empirical studies which report that there is a significant stock price reaction of -3% to the issuing firm.

Schipper and Smith [1986] show that the average stock price reaction to a public firm offering equity in a subsidiary is +2%, contrasting sharply with the negative and significant results for equity offerings in the parent firm. Thus, an equity carve-out is a form of public equity issuance that is favorably received, on average, by the market. Schipper and Smith report that 73 percent of their sample were underwritten equity carve-outs. The remaining carve-outs were sold through rights offers and exchange offers.

Schipper and Smith [1986] list several explanations for the positive reaction to a parent firm's announcing carve-outs. First, the reaction may be ascribed to the

creation of a separation of the financing of parent and subsidiary activities. This separation can create a "pure play" investment opportunity that may not already exist in the market. For example, when Club Mediteranee carved out Club Med, it allowed investors the opportunity to own a firm whose only business was operating vacation resorts. Club Med was the only public firm of its kind at the time of the offering. Thus, a carve-out may help complete the market by creating unique investment opportunities, leading to a positive share price reaction. This would have no impact on the valuation of industry rivals who are each components of larger entities.

Second, the market may be reacting to increased efficiency in asset management. Efficiency gains may be achieved by eliminating negative managerial synergies that may exist with diverse businesses. Elimination of diseconomies of scale in management can be realized through improving managerial motivation by rewriting incentive contracts to include compensation based on the stock price and other performance measures of the subsidiary rather than the parent. Given market efficiency, market prices of subsidiary stock become valuable indicators of managerial performance that can be effective in motivating managers to pursue maximization of shareholder wealth. Consistent with this view, Schipper and Smith report that 94 percent of their sample cases adopted incentive compensation plans based on the subsidiary's stock price. This is effectively an economic efficiency argument which predicts that rival share prices should fall, assuming that the subsidiary becomes a significantly stronger competitor.

Improved public understanding of a subsidiary's growth opportunities may also enhance equity values. Managers can foster more precise market valuation by permanently increasing the amount and quality of public information about assets. In an equity carve-out, managers bond themselves to maintain a higher, legally mandated level of financial reporting about the subsidiary's activities. If this method of restructuring is interpreted as releasing favorable information regarding future cash flows relative to voluntary divisional reporting, carving out a subsidiary will increase the market's perception about the value of the subsidiary, thus increasing the value of the parent firm in response to the announcement. If this information is common to other firms in the same industry as the subsidiary, an equity carve-out announcement should lead to an increase the value of rival firms.

In contrast to Schipper and Smith, Nanda [1991] argues that the good news associated with an equity carve-out is a securities issuance problem rather than an efficiency phenomenon. He models carve-outs in a Myers and Majluf [1984] security issuance framework rather than an economic efficiency framework. Nanda suggests that the ability to issue equity tied to a wholly-owned subsidiary creates an additional degree of managerial freedom in financing subsidiary projects. In Nanda's model, equity carve-outs will generally be chosen when managers believe a parent firm is undervalued by the market and thus are reluctant to issue parent firm equity. Nanda demonstrates that the option to utilize an equity carve-out allows firms to invest in some subsidiary projects that might otherwise be waived. Although Nanda's model does not develop the case in which a subsidiary is overvalued while the remaining

assets are fairly valued, presumably managers would have the same incentive to carve-out the subsidiary in this situation.

More specifically, Nanda's model indicates that rational managers will maximize firm value by choosing to issue equity in a subsidiary when their private information leads them to believe the market is likely to overvalue the subsidiary but undervalues the parent firm's remaining assets. If the firm is overvalued as a whole, then a standard seasoned equity issue is used. This implies that there is good news in an equity carve-out, namely, that managers believe that consolidated firm equity is undervalued so the carve-out announcement should induce a positive stock-price reaction in the consolidated firm's equity. However, Nanda's model also implies that there is bad news in an equity carve-out, namely, that managers regard the subsidiary as overvalued. If some of the unfavorable private information released in the announcement applies to similar industry assets, this implies that an equity carve-out should cause a negative stock price reaction for rivals of the subsidiary being carved out. Likewise, if the good news in an equity carve-out is the undervaluation of the parent firm, then the carve-out announcement should induce positive changes in the equity of parent firm rivals.

The efficiency hypothesis implies that the subsidiary and possibly the parent firm, become more efficient competitors that indicates that negative stock price reactions are predicted for the rivals of the carved-out subsidiary and possibly for the rivals of the parent firm. Therefore, if subsidiary rivals do experience a negative valuation effect, the asymmetric information and the efficiency hypotheses are

indistinguishable. However, the two hypotheses do have distinct predictions for the rivals of the parents. Finally, if firm specific agency considerations are responsible for equity carve-outs, there would be no effect on industry rivals for either the subsidiary or the parent.

6. Spin-offs

Schipper and Smith [1983] argue that spin-offs are generally similar to carve-outs and thus spur economic efficiency. Unlike a carve-out, however, a spin-off creates an entity that is financially and administratively independent of its parent. As in the case of a carve-out, the new firm is subject to extensive public disclosure which will permanently increase the quality and quantity of information flowing to the market by requiring that two sets of financial reports be permanently supplied to the market instead of a single consolidated report. Thus, both spin-offs and equity carve-outs are forms of restructuring that provide separate valuation of disparate business activities. Managerial continuity of the subsidiary is maintained in both cases, but in a spin-off subsidiary management becomes fully independent while in a carve-out it still reports to the parent firm.

As with carve-outs, there are positive gains to firms announcing spin-offs as reported by Schipper and Smith [1983], Hite and Owers [1983], and Miles and Rosenfeld [1983]. Previous explanations for these gains have largely rested on managerial efficiency and pure play arguments. Schipper and Smith argue that firms can eliminate negative synergies by separating diverse business activities and thus

improve operational efficiency. Managerial motivation to increase the profitability of subsidiary assets can be enhanced by establishing a compensation system based on performance of the subsidiary. Schipper and Smith [1983] also argue there are gains from relaxed regulatory constraints. If there are important efficiency gains to spin-offs, there should be negative effects on rivals of the parent and of the subsidiary.

No support was found for bondholder wealth expropriation as a source of the announcement gains. Specifically, Schipper and Smith and Hite and Owers report that there are no significant changes in the bond ratings or bond prices of the firms spinning off subsidiaries. A wealth transfer induced by a spin-off is less likely if: (1) the spun-off assets existed as a legal subsidiary prior to the transaction, (2) bond covenants protect collateral by restricting dividends, or (3) debt is allocated to both the parent and the subsidiary. Schipper and Smith report that most of their sample meets at least one of these conditions. They indicate that approximately 75 % of the spin-offs were legal subsidiaries prior to the restructuring, about 65% of the sample firms had some kind of dividend constraint or requirement of lender approval, and debt was assigned to subsidiaries in 64 of the 93 sample spin-offs. If spin-offs merely represent a redistribution of wealth between bondholders and equity holders and if this redistribution is responsible for the positive announcement effect, then there should be no intra-industry effect on rivals. Similarly, if a spin-off is a means to attenuate firm specific agency problems, intra-industry rival equity values will remain unchanged.

From a securities issuance perspective, divesting assets through a spin-off may release private information that allows the market to favorably revalue the relevant

equity claims on the resulting new firms. If the spin-off announcement releases information that relevant assets are undervalued, and if elements of this information are industry-common, then the market will revalue industry assets involved in related activities. In general, under this hypothesis rivals with similar assets should be revalued upward by the market.

More specifically, there is an important difference between spin-offs and carve-outs from a securities issuance perspective. Unlike a carve-out, a spin-off is not form of external financing. Thus, in a Myers and Majluf [1984] framework a spin-off cannot be viewed as a signal of bad news. Although a carve-out is intrinsically an equity issuance phenomenon, the decision by management to split the asset base of a consolidated firm without either issuing equity in a division or selling the asset outright to a third party may reflect manager's belief that the subsidiary is undervalued by the market. Likewise, avoidance of an equity issue in a parent firm that restructures may also indicate that managers regard the parent firm's equity as also undervalued.

If the market assumes that managerial beliefs about this undervaluation reflect industry-common information, equity values of rivals of the spun-off firm (and possibly parent rivals as well) should increase in response to an announcement of restructuring via a spin-off. This prediction for rivals of parents of spin-offs can be viewed as a parallel Nanda's [1991] argument for equity carve-outs. It should be noted however, that this perspective generates different valuation predictions for rivals of spun-off subsidiaries versus carved-out subsidiaries. In particular, rivals of the

spun-off unit should sustain positive share price effects because managers are unwilling to issue equity in the subsidiary or sell the assets outright to a third party. In contrast, rivals of subsidiaries to be carved-out should have negative valuation effects because of the equity issuance.

The asymmetric information hypothesis prediction of positive stock price reactions for rivals of the spun-off subsidiary also provides a means for distinguishing between securities issuance considerations and the efficiency hypothesis as explanations for restructuring. The efficiency hypothesis predicts negative returns to subsidiary rivals regardless of the method of restructuring. Thus, the asymmetric information hypothesis predicts positive valuation effects for rivals of spun-off subsidiaries, in contrast to the efficiency hypothesis. Both hypotheses predict negative valuation effects for rivals of carved-out subsidiaries.

7. Asset sell-offs

The most common form of asset disposition, the sell-off, involves transferring the rights to manage a subsidiary from one parent firm to another. Unlike a carve-out or a spin-off, a sell-off does not intrinsically create autonomy for the subsidiary. Much of the literature on asset sales focuses on the role that these transactions play in enhancing economic efficiency or synergy, i.e., moving resources to higher valued uses. Nevertheless, a sell-off also involves a cash inflow to the selling firm through a private transaction with an outside party. Miller and Rock's [1985] model of security issuance implies that any form of security issuance signals bad news about the firm's

future cash flow and early arguments regarding voluntary sell-offs focus on the notion that sell-offs signal financial distress, effectively a securities issuance argument. However, empirical studies find positive and significant stock price reactions to firms announcing a sell-off of 1% to 2% percent (Alexander, Benson, and Kampmeyer [1984], Linn and Rozeff [1984], and Jain [1985]). Hite, Owers and Rogers [1987] confirm this result and report positive and significant average returns of 0.83% to buyers as well. They conclude that share price reactions are largely consistent with the synergy hypothesis because of the transitory positive revaluation announcement effect for the firms that are unable to complete the sale of the asset. Since the revaluation is not permanent, it is unlikely that announcement gains are associated with bids that convey private information indicating that the assets are undervalued by the market.

Direct sales of assets can be viewed as a private form of external financing that avoids the need to issue equity or other publicly traded instruments. In a sell-off, the seller can give a bidder(s) access to private information about the prospects of the subsidiary in a way that would be otherwise difficult to do. In the case of multiple bidders, the sell-off process effectively becomes an auction. Investment bankers can foster an environment in which competing bidders can participate in a private auction that is conducive to the selling firm's receiving the fair market price for the assets without providing the disclosure associated with the normal public securities issuance process.

This privately negotiated transaction provides an alternative source of raising capital that allows the firm to entirely avoid a public securities offerings. Positive returns to sell-offs are consistent with share price reactions that have been observed for other forms of private financing transactions, suggesting that the market responds to private financing more favorably than equivalent public securities. Wruck [1989] reports positive and significant returns of 4.5% upon announcements of privately placed equity which is in contrast to the typical negative response of -2% to -3% observed for public equity issues. James [1987] reports positive returns to bank loans and high-quality, privately placed debt. In contrast, public debt issues are typically associated with non-positive announcement effects. Thus, stock-price reactions to corporate financing depend not only on the type of security issued (equity or debt), but also on whether issuing securities involves private or public capital raising mechanisms.

Although a sell-off intrinsically leaves the firm's potential asset size unchanged, it can also be viewed as the partial liquidation of the firm if the proceeds are distributed to bondholders or equity holders rather than retained within the firm. Instead of selling all of the pieces of the firm as in a liquidation, managers may find it optimal to sell only one component of the firm. Since liquidations are piecemeal sales of a firm's entire asset base to multiple buyers in which proceeds are distributed to shareholders through special dividends following the retirement of more senior claims on the assets, the literature on corporate liquidations which has emphasized the role of asymmetric information as a motivation for liquidation may provide insight on

possible incentives for sell-offs. Furthermore, Hite, Owers and Rogers observe positive and significant returns to senior debt securities around liquidation announcements of 8.57%, a result confirmed by Kim and Schatzberg. This result indicates the beneficial effect of liquidation on senior claimants in addition to the positive effects on residual claims. Kim and Schatzberg hypothesize that an auction environment with several bidders may induce the increase in market values.

Hite, Owers, and Rogers argue that liquidation announcements convey the favorable information that managers view a piecemeal sale of the firm as generating greater value than either the market value of the firm as an on-going concern or the price obtainable from selling the firm as a whole. This hypothesis is consistent with the relatively small firm size found in the liquidation samples. Smaller firms are followed by fewer analysts and are typically younger firms with modest histories. Thus, information asymmetry may be inversely related to firm size.

This asymmetric information view of sell-offs is consistent with effects found for transactions such as leveraged buyouts (LBOs) and management buyouts (MBOs). DeAngelo, DeAngelo, and Rice [1984] and Lehn and Poulsen [1989] report strongly significant, positive average LBO announcement effects of 22% and 20%, respectively. Possible sources of these gains include (1) tax benefits, (2) increased management incentives and reduced agency costs, (3) wealth transfer effects, (4) efficiency considerations, and (5) asymmetric information and underpricing. While it is difficult to empirically separate many of these explanations, there is considerable support for the hypothesis that going private bids convey private asymmetric

information. For example, DeAngelo, DeAngelo, and Rice [1984] find that going-private bids not brought to fruition are still positive events for the target, which suggests a permanent upward revaluation of firm equity. Slovin, Sushka, and Bendeck [1991] report positive and significant stock price reactions to intra-industry rivals of firms receiving LBO or MBO offers. They argue that these valuation effects are a result of bidders releasing industry-common information about asset values. Because no consolidation of operating firms occurs, these effects cannot be attributed to synergies or monopoly power.

From an asymmetric information perspective, an acquisition of a division indicates that the buyer voluntarily pays a price greater than the asset's worth to the seller. Similar to LBOs, the decision to purchase an asset is presumably preceded by expenditure of resources by the buyer to determine the value of the relevant assets. This suggests that such an acquisition entails the production of private information by the buyer regarding the value of relevant assets that is not available in the public domain. Thus, the information hypothesis implies that bidders in sell-offs reveal positive, private information about the unit. If this information relates only to the suboptimal operating policies of current management or to the inefficiency of the firm's organizational structure, then the gains from an announcement that the asset is to be sold will be firm specific. However, if the announcement reveals positive private information about the true value of the subsidiary's assets and if some of this information applies to the industry, the market would increase the value of the equity of the divested unit's rivals. Since a single buyer agrees to purchase the unit and

there is no issuance of equity tied to the unit, valuation effects on rivals of the divested unit should be more favorable than an equity carve-out.

Because the selling of an asset may serve as a form of securities issuance, it may also communicate information to the market regarding the value of parent firm's equity and in turn, the value of its rivals. From a Miller and Rock viewpoint, any form of securities issuance represents bad news about managers' expectations about future cash flows. From this perspective, an asset sell-off conveys unfavorable news about the value of the parent firms.

In contrast, Myers and Majluf [1984] and Nanda [1991] predict managers will avoid equity issues when their firm's equity is undervalued by the market. If a sell-off reflects management's choice to forego a parent firm equity issue because of its view that the equity is undervalued, then a sell-off announcement could cause positive stock price reactions to rivals of the selling firm if the announcement contains industry-common information. In a sell-off the firm does choose an action that may raise financing externally, generally a negative event. Nevertheless, the decision to sell a subsidiary may be more closely related in nature to other methods of private financing such as bank loans and privately placed debt, which are generally viewed as positive events, since none of these transactions involve significant disclosure of information to the public. Instead, the seller communicates sufficient private information to the buyer to facilitate the transaction rather than providing extensive public information to financial market participants. From this perspective, assuming that not all of the information is firm specific, there would be a positive effect on

rivals of the parent firm. Thus, the securities issuance perspective leads to ambiguous predictions with respect to valuation effects of sell-off announcements on rivals of selling firms.

If the proceeds from a sell-off are retained by management, sell-offs may exacerbate agency costs. Lang, Poulsen, and Stulz [1992] relate asset sales and agency costs based on Jensen's free cash flow argument. They argue their evidence is inconsistent with the operating efficiency view of Hite, Owers, and Rogers [1987]. They report that firms near distress account for the majority of asset sales and that investors place greater value on asset sales where proceeds are used to retire debt than if the cash is utilized by the firm. Moreover, they report that there is no significant stock price reaction to sell-offs for companies that retain the proceeds for use within the firm.

This agency hypothesis implies stock-price reactions for rivals of divested units and parents in response to sell-offs may differ based on the use of the proceeds. In particular, if Lang, Poulsen, and Stulz's conclusion that retention of funds indicates that a sell-off is largely related to agency difficulties, this firm-specific perspective implies that there should not be significant positive intra-industry effects for rivals of parents that channel these funds into core business activities. In contrast, if a sell-off and reinvestment strategy indicates that managers are confident about the future prospects of core business activities, rivals of parent firms should sustain positive returns.

Finally, if a sell-off conveys information about the financial distress of a firm's core business, this signal may be good news for the intra-industry rivals if it indicates the possible demise of a competitor, or it may be bad news for rivals if it signals deteriorating expectations on the part of managers about future industry conditions. In this regard, Lang and Stulz [1992] report evidence that rivals of firms petitioning for bankruptcy experience significant losses in equity value. This suggests that the industry information effects dominate any possible competitive effect. If this is the case, and if retention of the proceeds of the sell-off is viewed as an indication of the firm's failing core business, the asset sell-off should convey negative news about the related industry and parent firm rivals so there should be negative returns to rivals of parent firms in response to sell-off announcements. The predicted announcement effects for parent firms, rivals of parent firms, and rivals of subsidiaries for each method of restructuring under each of the three hypotheses are found in Table 2.

8. Summary

Several studies document the significant positive announcement effects of equity carve-outs, spin-offs and sell-offs. The gains associated with these restructuring decisions are largely attributed in earlier literature to capturing potential efficiency gains by moving assets to higher valued uses or the release of private information that allows the market to revalue assets accordingly. Viewing restructuring decisions within the context of financing decisions and the securities issuance literature provides a means to distinguish between the two hypotheses. In

Table 2

Predicted direction of equity revaluation for the relevant firm subject to the chosen restructuring mechanism under three different hypotheses.

	Information Hypothesis	Efficiency Hypothesis	Free Cashflow (Agency Costs)
Parent:			
Carveout	Positive	Positive	Negative*
Spin-off	Positive	Positive	
Sell-off	Positive (no equity issued) Negative (capital acquisition) Negative (financial distress)	Positive	Negative*
Rivals of Parents:			
Carveout	Positive	Negative	
Spin-off	Positive	Negative	
Sell-off	Positive (no equity issued) Positive (competitors distress) Negative (industry distress)	Negative	
Rivals of Subsidiaries:			
Carveout	Negative	Negative	
Spin-off	Positive	Negative	
Sell-off	Positive	Negative	

* If cash is retained within the firm. Lang, Poulsen, and Stulz argue that if cash proceeds are not retained within the firm, returns to parents of sell-offs should be positive and significant. Their empirical results support this argument.

particular, if managerial decisions convey elements of information that are relevant to other firms in the industry, the efficiency and asymmetric information hypotheses can be separated because each renders unique predictions for returns to intra-industry rivals.

The efficiency hypothesis predicts negative returns to rivals of carved-out, spun-off, or sold-off subsidiaries because rivals are now facing more efficient, competitive entities. The asymmetric information hypothesis also predicts negative revaluations for rivals of equity carve-outs because issuing equity is viewed as an unfavorable signal about asset values or future cash flows of related assets. Conversely, the asymmetric information hypothesis predicts positive revaluation effects to rivals of spun-off subsidiaries. If managers perceive the value of a subsidiary as being higher than the value the market places on those assets or the value obtainable in a privately negotiated transaction, they may spin-off of the subsidiary and allow the market to revalue the assets based in accordance with the release of private information. Sell-offs involve a type of securities issuance that utilizes private financing mechanisms which renders ambiguous predictions about intra-industry rivals. If these transactions imply the expectation of higher future profits within an industry because of the use of private financing, rivals' share prices should rise. If the external financing aspect is dominant, rival share prices are predicted to fall. The securities issuance perspective also yields more complex predictions about the effect of equity carve-outs, spin-offs and sell-offs on rivals of parent firms.

Chapter 4

Initial Public Offerings (IPOs) and Asymmetric Information

1. Introduction

This chapter relates recent literature on initial public offerings to the phenomenon of equity carve-outs because both of these securities issuance decisions involve the initial sale of equity claims that are to be publicly traded. Each transaction takes place in an environment in which managers have the freedom to time the equity offer and determine the proportion of equity to be sold to the public. Because the IPO market is associated with adverse selection problems, asymmetric information arguments paralleling those developed to explain equity carve-out decisions are analyzed in light of the empirical evidence associated with IPOs. The efficiency hypothesis is only applicable as it relates to the use of compensation contracts based on market performance to improve managers' incentives. Arguments of diseconomies in management or enhanced operational structures are not relevant to the IPO case because no assets are transferred between firms and therefore no economies of scale or scope are obtainable.

An IPO is a financial, rather than an economic, restructuring. The empirical evidence developed in this dissertation indicates that there are significant intra-industry effects to IPOs which leads to conclusions similar to those derived from the equity carve-out evidence; that is, announcements of both equity carve-outs and IPOs are associated with negative valuation effects of related industry assets. These results

support the argument that equity carve-out and IPO announcements reveal private, managerial information reflecting management's perceptions of future changes in industry asset values, industry risk, and/or cash flows.

2. The literature on IPOs

Generally, efficiency arguments are not applicable in the IPO case because no assets are transferred between firms. However, managerial efficiency may be improved by forming compensation contracts based on market performance measures. If this is a primary motivation in the decision to IPO, then rivals may experience negative stock price reactions to IPO announcements because they are facing a potentially more efficient competitor.

Initial public offerings involve the sale of equity in closely-held firms where existing shareholders may possess non-public information. Similar to equity carve-outs, entrepreneurs decide when and what proportion of the firm to sell to outside investors. A considerable body of literature has argued that the market for IPOs may suffer from adverse selection problems and has used this framework of analysis to explain the phenomenon of underpricing that is characteristic of IPOs. In addition, because managers have considerable options regarding the use of proceeds, the potential for moral hazard is also associated with IPOs. In these respects the IPO market bears similarities to equity carve-outs.

Access to financing in private markets may allow some firms with favorable private information to avoid or postpone an IPO. Private financing allows a high-

quality firm to prosper and grow while developing reputational capital that may help it ameliorate potential adverse selection problems in financial markets. Commercial bank loans and venture capital financing are sources of external funds which may allow a high-quality firm to acquire necessary funding for future operations while maintaining the benefits of its proprietary information. Slovin and Young [1990], James and Wier [1990], and Megginson and Weiss [1991] report that financial contracts with commercial banks and venture capitalists act as a certification mechanism that reduces the underpricing associated with IPOs.

Given the availability of private funding for firms with favorable inside information, announcements of the intent to go public may suggest an adverse selection problem. If managers possess unfavorable non-public information about asset values or future cash flows, there is an incentive to go public before the information reaches financial markets. In doing so, insiders capture a higher price for the equity than might otherwise be possible at a later date when the information becomes public.

Previous literature has concentrated on the behavior of IPO underpricing and no attention had been focused on the information effects of announcements of intent to go public, largely because no equity of the announcing firm trades at that time. If, however, announcements of intent to go public indicate an adverse selection problem and serve as an unfavorable signal about the value of relevant assets, and if this information applies to other firms in the industry, there should be negative intra-industry effects on this date.

Formal models of the IPO market developed by Leland and Pyle [1977], Titman and Trueman [1986], Grinblatt and Hwang [1989], Allen and Faulhaber [1989], and Welch [1989] assume that an adverse selection problem exists and suggest that IPO decisions are likely to signal unfavorable information about the value of the underlying assets. Included in these models are mechanisms that high-quality firms can employ to temper the unfavorable information content of these announcements. Among these signalling mechanisms are (1) the proportion of the firm retained by the entrepreneur, (2) the degree of underpricing, and (3) the employment of prestigious auditors. Booth and Smith [1986], Beatty and Ritter [1986], and Carter and Manaster [1990] develop models which indicate that the use of prestigious underwriters in an IPO also serves to certify firm quality. Welch's model of the IPO market, in which well-informed entrepreneurs offer equity to less well informed outside investors, closely accords with the arguments developed earlier in this dissertation relating to equity carve-outs. Thus, the tests developed earlier for equity carve-outs that are based on private managerial information being conveyed in securities issuance decisions can also be applied to IPOs. Similar to the equity carve-out case, it is hypothesized that if IPOs are indicative of unfavorable non-public information about relevant asset values, and if elements of the information are applicable to related industry assets, then equity of intra-industry rivals is likely to be overvalued by the market. Thus, an announcement of the intent to go public may cause a downward revision of the equity of intra-industry rivals.

In contrast, Rock [1986] develops a model of adverse selection in IPO markets that provides a different explanation for the underpricing associated with IPOs. He argues that the informational differences among investors will result in a winner's curse problem. Rock models the IPO market given the dichotomous condition of *perfectly informed and completely uninformed investors*. He observes that fully informed investors only participate in an initial offering if the offer is underpriced. If the offer is overpriced, only the uninformed investors purchase shares so that these investors purchase all of the shares of overpriced issues. In contrast, uninformed investors compete with fully informed investors for the underpriced issues. Rock concludes that uninformed investors, aware of this adverse selection problem, will only participate in IPOs if the offers are, on average, underpriced sufficiently to compensate them for the bias they face in the allocation process. If this characterization of the IPO market is correct, an announcement of an IPO does not convey private information to the public because of the assumed information structure, i.e. perfectly informed investors have an informational advantage over managers. As a result, there should be no stock price effects on rivals of the announcing firm.

Benveniste and Spindt [1989] argue that investment bankers use underpricing for information acquisition. Underpricing is used to induce investors to truthfully release information pertinent to pricing the IPO during the pre-issuing period. Baron and Holstrom [1980] and Baron [1982] focus on informational asymmetries between the firm and the investment banker to explain the underpricing of IPOs. They hypothesize that the investment bank's superior knowledge of market conditions

allows it to expend less marketing effort, while enhancing relationships with its clients who purchase IPOs, by underpricing new issues. However, Muscarella and Vetsuypens [1989] find that investment banking firms underprice themselves when they go public as well, casting doubt on this explanation. Finally, Tinic [1988] posits that underpricing IPOs may be a rational response by investment bankers who seek to reduce the frequency and severity of law suits. The hypothesis stems from the fact that the Securities Act of 1933 makes all signatories liable for any material omissions in the prospectus. If underpricing of IPOs reflects information gathering techniques, monopsonistic power of investment bankers, or attempts to circumvent future legal liabilities, the announcement of an IPO by the firm's managers should have no share price effects on rival firm equity.

3. Summary

The notion of managers possessing an informational advantage (Welch [1989]) contrasts with the assumptions of Rock [1986] (well informed outside investors with an informational advantage over other investors and managers) and Baron and Holstrom [1980], and Baron [1980], who assume investment bankers are better informed than managers. If managers possess private information, as modeled by Welch, and if elements of the information are industry common, then the decision to go public may result in negative valuation effects on intra-industry rivals. Conversely, if managers do not have private information, as argued by Rock, Baron

and Holstrom, and Baron, then an IPO decision should not convey information that will impact rival firm's equity values.

Chapter 5

Methodology and Descriptive Statistics

1. Introduction

This chapter describes the data selection criterion and methodology used to calculate stock price returns in this dissertation. Section 1 details the data collection and sample construction. The second section describes market model methodology which is used to empirically measure announcement effects of restructuring decisions. Section 3 contains descriptive statistics of the samples used in the study.

2. Sample generation

Each of the samples used in this study is developed from firms listed on the New York and American Stock Exchanges (NYSE and AMEX, respectively). For both carve-outs and spin-offs, there is a requirement that the newly traded equity also be listed on NYSE/AMEX. This requirement assures that these events are of major importance. This requirement also implies that all of the events used in each sample represent ultimately completed transactions.

The first set of sample firms is comprised of parent firms announcing an equity carve-out, intra-industry rivals of the parent firm, and rivals of the subsidiary being carved-out. The second set of sample firms includes parent firms announcing a spin-off, their intra-industry rivals, and the rivals of the subsidiary being spun-off. The date of the Dow Jones News Wire press release is used to identify the announcement

date of the equity carve-out and spin-off transactions. The third sample contains firms announcing sell-offs, the rivals of parent firms, and the rivals of the divested units.

The event date for a sell-off transaction is date of the Wall Street Journal article announcing the sale of the assets to an identified purchaser, to an unidentified purchaser, or in an auction where the purchaser is not immediately identifiable.

The following selection criteria are used to further refine the samples and narrow the focus of the dissertation to U.S. industrial firms:

- (1) Closed-end funds (SIC 6000-6999) and utilities (SIC 4900-4999) are excluded from all three samples. Financial firms are also excluded.
- (2) Events in which parent firms announce restructuring decisions concurrently with other major corporate decisions or activities are also omitted from the analysis
- (3) Foreign firms (parents and subsidiaries) are excluded from the samples. However, U.S. rivals of these firms are included in the analysis of rival portfolios.

Rivals portfolios for parent firms and disposed asset(s) are created by matching 4-digit Standard Industrial Classification codes (SIC). The SIC codes for parent firms and disposed subsidiaries/divisions are retrieved from the CRSP tapes and Predicast. This classification is checked using Standard and Poor's quarterly stock reports and Value Line to ensure that the SIC code accurately identifies the firm's major business activity. Once the event firm's SIC code is established, CRSP, Value Line, and Predicast are used to identify other firms whose major business activity corresponds to

the same industry as the event firm. These rival firms are identified as firms carrying the same 4-digit SIC code. Standard and Poor's quarterly stock reports are then used to confirm each potential rival's core business and SIC code before the firm is included in the event firm's portfolio of rivals.

The equity carve-out sample covers the period 1981-1990. The development of procedures in 1983 by the NYSE enabling firms to list concurrently with their IPO is reflected in the data which shows these transactions become more common by the mid-1980's (table 6). The sole sample carve-out prior to 1983 is listed on the AMEX. Firms qualifying for direct listing must meet requirements on the market value of shares, the number of shares, and the number of shareholders. This sample is developed by identifying the first-trade dates on the Center for Research in Securities Prices (CRSP) daily returns file. Only new listings that can be verified as equity carve-outs using the Wall Street Journal, Moody's, Standard and Poor's, and the National Stock Summary are retained in the sample. This procedure produces a total of 36 eligible equity carve-outs. After omitting parent firms with SIC codes 4900-4999 and 6000-6999, and firms lacking sufficient data in the estimation period (i.e. firms trading on fewer than one-half of the total trading days in the estimation period), the parent group contains 22 events for which there are 21 rival portfolios with matching 4-digit SIC codes. There are 25 rival portfolios for the carved-out subsidiaries. The parent group has three fewer events than the carved-out rival group because the parents of three of the carve-outs are financial firms and are omitted from the study.

The spin-off sample also covers the period 1981 to 1990 for reasons similar to those explained above. Stock distributions coded as spin-offs on the CRSP Daily Master File are used to create a sample of 54 announcements. These announcements are verified in the same manner as the carve-outs. Excluded from this sample are four spin-off announcements that are part of management's defensive tactics against takeover attempts. Seventeen more announcements are excluded because of the parent firm's industry classification or because of missing returns data in the estimation period. The final sample for the spin-off group consists of 33 parent firms for which 25 parent rival portfolios are developed. Portfolios of rival firms for 37 spun-off subsidiaries are available.

The spin-off rival sample is associated with four more events than the parent sample due to announcements containing multiple spin-offs. Rollins Incorporated (June 4, 1986) and General Mills (September 24, 1985) both announced that they were each spinning off two subsidiaries simultaneously. Therefore, these two announcements are associated with a total of two parent firms and four spun-off subsidiaries. Household International (January 11, 1989) announced that it would be forming three new stand alone firms by spinning off three of its subsidiaries. Thus, this announcement is associated with one parent firm and three spun-off subsidiaries. These three announcements account for the difference in the number of observations in the two samples.

Firms announcing sell-offs are identified by using Mergers & Acquisitions' annual "Largest Divestitures" and "Top 100" transactions lists for the period 1981 to

1991. This results in 322 announcements for which sell-off dates are verified in the Wall Street Journal index. By employing the same selection criteria outlined above and excluding foreign firms, 175 sell-off events are identified. The sample of rivals of the selling parents comprises 167 portfolios. There are 190 portfolios of rivals of sold-off subsidiaries. The subsidiary rival sample contains more events than the sell-off parent sample because several of the parent firms are conglomerates, foreign or private companies, or are not traded on the NYSE or AMEX.

Firms involved in conventional IPOs are identified as those firms associated with start-up trading on the CRSP daily returns file. The IPOs are verified using the Wall Street Journal, Moody's, Standard and Poor's, and the National Stock Summary. The sample begins in 1983 when the NYSE developed procedures allowing firms to list concurrently with their initial public offering, and ends in 1990. The sample of intra-industry rivals consists of firms sharing the same 4-digit SIC code as firms announcing a conventional IPO.

For inclusion in the sample, each event must have at least one intra-industry rival with returns for a sufficient number of trading days to estimate the market model. Excluded from this sample are conglomerates (SIC 9980), closed-end funds and financial firms (SIC 6000-6999) and utilities (SIC 4900-4999). There are 72 IPOs and corresponding rival portfolios (257 total rivals) in the final sample.

A subgroup of 38 of the parent firms announcing general corporate restructurings is also identified. In these announcements the firm typically states that it intends to concentrate on a few of its primary businesses and streamline itself by

shedding the remaining assets in the near future. Often the announcement indicates that the firm has hired an investment banker to advise them on their restructuring and assist them with asset disposition. These restructuring announcements are found in the 18 months prior to, or subsequent to, an asset disposition announcement via sell-off or spin-off. Of these 29 events, 25 portfolios of rival firms of the restructuring firms are developed.

3. Methodology

Stock price reactions to announcements of corporate restructuring are measured using standard event study methodology as described in Brown and Warner [1985]. Under semi-strong form market efficiency, the announcement effects provide unbiased valuation adjustments corresponding to the information contained in the announcement and changes in the perceptions of the firm's asset values, future cash flows, and risk, held by the market. Standard event study methodology will also allow the results of this dissertation to be easily compared to the results reported in earlier event studies using similar methodology.

Event study methodology requires parameters of a returns generating process, which are obtained via an ordinary least squares regression. The parameters of the regression are estimated over an interval that is chronologically close to, but does not include, the announcement window. This estimation process is referred to as the market model, which is described as:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \epsilon_{jt} \quad (1)$$

where:

- R_{jt} = the return for firm j on day t,
- α_j = mean return not explained by the market,
- β_j = firm j's sensitivity to the market's return - its risk factor,
- R_{mt} = return of the market index for day t,
- ϵ_{jt} = the statistical error or the regression residual.

The predicted return for a firm for a day in the event period is the return given by the market model on that day using the estimates of α_j and β_j from the pre-event period.

That is, the predicted return for firm j on day t is:

$$\hat{R}_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{mt} \quad (2)$$

The prediction error, PE, is defined as:

$$PE_{jt} = R_{jt} - \hat{R}_{jt} \quad (3)$$

The share price reaction for the parent firms announcing a corporate restructuring are estimated by calculating the average daily prediction error (APE) using the market model around the event date $t=0$, defined as the announcement date.

The average daily prediction errors are calculated as:

$$APE = \left(\frac{1}{N}\right) \sum_{j=1}^N PE_j \quad (4)$$

where N is the number of firms in the sample trading on day t . Cumulative average prediction errors, $CAPE$, defined as the sum of the daily average predictions errors over some relevant time period, say $t=t_1$ to $t=t_2$, are calculated as:

$$CAPE = \sum_{t=t_1}^{t_2} APE_t \quad (5)$$

The equal weighted CRSP index is used as the explanatory variable in the least squares regression. The pre-event estimation period used to estimate the market model is $t=-240$ to $t=-121$. For subsequent statistical tests, the null hypothesis is that the APE is equal to zero for each event subperiod. The test statistic is the ratio of the APE ($CAPE$) to its standard deviation (the square root of the product of D , the number of days in the event window, and the variance) estimated over the pre-event period. The test statistic is distributed as Student- t under the null hypothesis if the APE are independent, identically distributed and normal.

For the equity carve-out and spin-off samples, the event window used to compare and interpret announcement stock price reactions is defined as $t=0$ and $t=+1$, where $t=0$ is the Dow Jones News Wire date. In both cases, the announcement reaction is usually concentrated on day 0. However, to obtain results that are more readily comparable to previous event study results, the conventional two-day window is adopted. A two-day window also facilitates capture of

announcement effects for announcements occurring late in one trading day that may create spill-over effects on the following trading day. For the sell-off sample, the event window is defined as $t=-1$ and $t=0$, where $t=0$ is the Wall Street Journal date. The window is defined in this manner because the news wire usually carries the announcement on the day prior to its appearance in the Wall Street Journal. Therefore, the day previous to the WSJ date is included in the measurement of the market's reaction to the announcement.

Equally weighted portfolios of intra-industry rivals are created to obtain prediction errors associated with the industry effects of asset disposition announcements. Prediction errors for each rival are calculated using the same methodology described above. The mean prediction errors for the rival portfolios are calculated by averaging the adjusted returns over all portfolios for each day in the relevant subperiod.

4. Sample descriptive statistics

Descriptive statistics for the equity carve-out, IPO, spin-off, and sell-off samples are found in Tables 3-7. The distribution for the market value of the subsidiaries involved in the restructuring transactions is reported in Table 3. For the equity carve-outs, IPOs, and spin-offs, the market value is defined as the product of the number of shares outstanding and the price per share four weeks after the initial trading day. Because of the requirement that the equity of these new firms must begin trading on the NYSE/AMEX, the samples used in this dissertation tend to be

Table 3

The distribution of market values¹ of newly traded public firms created through an equity carve-out, an IPO, or a spin-off are given in panel A. For sell-off transactions, the distribution of values reflects sales prices. The distribution of parent market values² two days prior to the restructuring announcement is given in panel B. The distribution of the relative size of the disposed assets/equity issue to the parent firm is given in panel C.

	Equity carve-outs	IPOs	Spin-offs	Sell-offs
Panel A: Newly traded public firm's market value of equity and sell-off transaction price (\$ millions)				
	N=25	N=72	N=37	N=179
Mean	692.37	155.04	319.70	657.19
Median	462.15	68.04	198.00	507.10
Maximum	2,687.50	1,913.63	1,824.52	4149.60
Minimum	12.86	6.77	106.17	79.00
Panel B: Market value of parent firms (\$ millions)				
Mean	3,161,606	155.04	1,473,670	5,644,937
Median	1,431,021	61.04	1,076,400	2,371,841
Maximum	14,659,177	1,916.63	6,437,376	74,058,416
Minimum	56,657	6.77	16,273	133,204
Panel C: Proportion of disposed asset/equity issue market value to parent market value				
Mean	16.00%	45.68%	29.99%	32.71%
Median	6.00%	41.00%	21.11%	17.47%
Maximum	86.42%	100.00%	114.02%	223.83%
Minimum	1.23%	10.00%	4.83%	0.76%

¹Market value is defined as the number of shares outstanding multiplied by the market price per share four weeks after the initial trading day for equity carve-outs, IPOs and spin-offs.

²Market value is defined as the number of shares outstanding multiplied by the market price per share two days prior to the initial announcement of a restructuring decision.

substantially larger than those used in previous studies. For the sell-off sample, the value is defined as the price received by the selling firm. This sample is also larger, on average, than samples used in previous studies. This difference is largely due to the fact that assets sales tend to increase in size through time. The difference may also be a function of the financial condition of the sample firms. For example, the proportion of distressed selling firms in this sample appears to be significantly smaller than that in the Lang, Poulsen, and Stulz [1992] sample.

For the 25 equity carve-outs in this sample the mean (median) value is \$692 million (\$462 million) versus a median value of \$20-\$30 million for Schipper and Smith [1986] sample. For the 72 conventional IPO announcements the mean and median values are \$155 million and \$61 million respectively. Thus, the equity carve-outs are large relative to conventional IPOs. The 37 spin-off transactions create new firms with an mean (median) market value of \$319 million (\$198 million). Previous studies on spin-offs by Schipper and Smith [1983], Hite and Owers [1983], and Miles and Rosenfeld [1983] do not report the absolute market value of spun-off units. For 179 sell-off transactions the mean (median) sale price is \$657 million (\$507 million). The asset sales in this sample are large relative to the samples used by Lang, Poulsen, and Stulz, and the Hite and Owers, who report mean (median) sale values of \$124 million (\$28 million) and \$79 million (\$44 million), respectively.

Parent firms performing equity carve-outs tend to be larger, on average, than those involved in spin-offs, but smaller than parent firms involved in sell-offs. The mean (median) market value of the parents firms performing carve-outs is \$3.2 billion

(\$1.4 billion). The relatively smaller spin-off parent firms have a mean (median) market value of \$1.5 billion (\$1 billion). The mean (median) market value of sell-off parents is \$5.6 billion (\$2.4 billion). Lang, Poulsen, and Stulz report mean and median equity values for sell-off parent firms of \$949 million and \$150 million respectively. Thus, the market value of parent firm equity and the sell-off transaction price are substantially larger in this sample than in samples used in previous studies.

The distributions of the ratio of the value of the restructuring transaction to the market value of equity of the parent firm are reported in Panel C of Table 3. For equity carve-out transactions, the ratio is defined as the proceeds from the issue of subsidiary equity divided by the market value of the parent firm two days prior to the announcement of the intent to carve out the subsidiary. The mean (median) ratio in this sample is 16 percent (six percent), which is smaller than the median ratio of approximately 10 percent reported by Schipper and Smith [1986]. Even though the mean proceeds in this sample are twice as large as those in Schipper and Smith's sample, the mean parent firm market value of equity in the former sample is several times larger than in latter sample, accounting for the smaller median ratio found in the former sample.

For spin-offs, the ratio is defined as the market value equity of the new publicly traded firm 28 days subsequent to the initial trade date, divided by the market value of equity of the parent firm two days prior to the initial announcement of the spin-off. The mean (median) ratio is 30 percent (21 percent) and is substantially larger than the median of 6.6 percent reported by Hite and Owers [1983]. Similar to

the equity carve-out transactions, this sample of spin-off transactions contains larger parent firms spinning off larger portions of assets than in previous studies.

The relative value ratio for sell-off transactions is calculated by dividing the sale price of divested assets by the market value of equity of the parent firm two days before the announcement of the asset sale. The mean (median) proportion sold in this sample is 33 percent (17 percent). The mean (median) proportion reported by Hite and Owers is 16 percent (eight percent), indicating that the firms in their sample are selling off fewer assets relative to the parent firm size. Conversely, Lang, Poulsen, and Stulz report mean (median) ratios of 69 percent (22 percent). However, it should be noted that this sample contains a larger proportion of distressed firms in need of capital which suggests that these firms should have to sell-off a larger proportion of their relatively smaller asset base.

Table 4 provides the distribution of the market values for rival firms and the number of rivals per event. The new firms created by an equity carve-out tend to be larger than their rivals. The distribution of market values for these rivals has a mean (median) market value of over \$1.1 billion (\$278 million) but is skewed by a few relatively large firms which explains why the mean market value of the rivals is large compared to that of the equity carve-outs. The 25 rival portfolios include 150 individual rivals. Mean and median number of rivals per event are 6 and 5 respectively. The mean (median) size of the rival firms of IPOs of \$800 million (\$214 million) is notably larger than that of the announcing firms. This is in contrast to the case of equity carve-outs. There is a mean (median) of 3.57 (2) rivals per

Table 4

Descriptive statistics for the market value of intra-industry rivals of carve-outs, IPOs, spin-offs, and sell-offs are given in panel A. Descriptive statistics for the number of rivals per event are found in panel B.

	Equity carve-outs	IPOs	Spin-offs	Sell-off parents	Sell-off units
Panel A: Rival firm market value of equity					
	N=150	N=257	N=223	N=1623	N=1415
Mean	1,132.20	800.15	903.92	3,799,439	2,349,603
Median	278.82	214.15	165.27	1,239,596	607,296
Maximum	27,267.02	15,520.06	24,088.00	80,951,136	74,077,488
Minimum	7.96	3.51	3.06	1026	1519
Panel B: Number of Rivals per event					
Mean	6.0	3.6	6.0	9.0	6.9
Median	5	2	5	7	5
Maximum	36	19	33	30	29
Minimum	1	1	1	1	1

event and 257 total rivals included in the study. The rivals of spun-off units have a mean (median) market value of \$903 million (\$165 million). There are 223 individual rival firms comprising 37 rivals portfolios. The mean (median) numbers of rivals per spin-off announcement are 6 and 5, respectively. The market value of rivals of the parent firms of sell-offs is substantially larger than that of the rivals of any other group but are smaller on average, than the parents themselves. The mean and median market values for these rival firms are \$3.8 billion and \$1.2 billion respectively. The mean (median) rival portfolio consists of nine (seven) firms. The market values of the rivals of the sold-off units are also substantially larger than those of the rivals of the carve-outs, spin-offs, and IPOs. These rivals firms have a mean (median) of \$2.3 billion (\$607) million. The mean number of rival firms per portfolio is seven, the median is five.

Distributions for the offer size, initial returns, and the proportion of equity ownership retained by the parent (owner/mangers) for carve-outs and IPOs are provided in Table 5. Offer size is calculated as the product of the number of shares sold to the public and the offer price. Underpricing (i.e. initial returns) is calculated as the percentage price change from offering price to closing price on the first day of trading. Equity carve-out transactions have a mean (median) offer size of \$259 million (\$102 million). The mean and median underpricing is 2.03% and 1.25% respectively. The mean underpricing of this sample is similar to that of Schipper and Smith's [1986], who report an average underpricing of 1.70%. Fifty two percent of this sample's initial returns are positive and 36% are zero.

Table 5

Descriptive statistics for offer size and underpricing for equity carve-outs and initial public offerings.

	Equity carve-outs N=25	IPOs N=72
Panel A: Offer size ¹ (\$ millions)		
Mean	258.89	44.63
Median	101.75	18.68
Maximum	1,311.50	436.84
Minimum	5.22	2.90
Panel B: Initial return ²		
Mean	2.03%	4.78%
Median	1.25%	1.76%
Maximum	12.50%	68.33%
Minimum	-2.63%	-5.36%
Proportion of returns > 0	0.52	0.65
Proportion of returns < 0	0.36	0.19
Panel C: Proportion of equity ownership retained by the parent		
Mean	68.26%	54.32%
Median	80.00%	59.00%
Maximum	94.50%	90.00%
Minimum	31.00%	0.00%

¹Defined as the offer price multiplied by the shares sold to the public, excluding overallotments.

²Defined as the percentage price change from the offering price to the closing price on the first day of trading.

For conventional IPOs, the mean (median) offer size is \$45 million (\$19 million) and the mean (median) initial return is 4.78% (1.76%). The average initial return is low relative to previous studies such as Ritter [1984] who reports average underpricing of 9.6% for 382 firms (mostly NASDAQ and OTC) with sales greater than \$4 million. Comparing the NYSE/AMEX IPO results and Ritter's results through a difference in means test yields a t-statistic of 3.02, indicating rejection of the null hypothesis that the mean underpricing for the two groups is equal.

Relatively low average underpricing in the NYSE/AMEX sample of conventional IPOs is consistent with the notion that IPOs listing directly on these exchanges are characterized by a smaller degree of asymmetric information and therefore, less ex ante uncertainty about their equity value prior to an initial public offer. These results suggest that firms that are able to delay their IPOs, through private financing for example, until qualifying for direct listing on the NYSE/AMEX sustain less underpricing.

The proportion of equity ownership retained by the parent of a carved-out subsidiary, or owner/managers in the case of an IPO, is defined as the fraction of total shares outstanding held by the parent (owner/managers) following the initial public sale of equity in the new publicly traded firm. The mean (median) proportion retained in an equity carve-out is 68 percent (80 percent). This suggests that equity carve-outs are an important means for firms to raise capital and create in-house contracts based on market prices without losing control of the subsidiary. For IPOs, the mean (median) retention rate is 54 percent (59 percent).

Table 6 provides the distribution of restructuring and initial public offering announcements by year. It is important to note that all the samples used in this study are more recent than those used in previous studies and there is very little overlap between them. The distribution for equity carve-outs indicates that these announcements are more common in the mid to late 1980's. A similar pattern is observed for spin-off announcements. Because the IPO sample begins in 1983 it appears to have the same pattern. Due to the pre-1983 listing restriction of the NYSE, the announcement pattern of IPOs prior to 1983 is probably similar to those of carve-outs and spin-off. Sell-off announcements appear to be evenly distributed through out the 1980's.

Table 7 provides a distribution of restructuring and initial public offering announcements by industry classification. Most of the parent firms announcing equity carve-outs belong to the Food and Kindred Products (SIC=2000) and Rubber and Miscellaneous Plastics Products (SIC=3000) groups. The largest 4-digit SIC code concentration occurs in the Integrated Petroleum Refining (SIC=2910) and Primary Metals Industry (SIC=3300) groups, which provide three announcements each. Most of the carved-out units belong to the Metal Mining (SIC=1000) and Food and Kindred Products (SIC=2000) groups. Within these classifications are four carved-out units operating in the Gold Mining (SIC=1041) industry and four carved-out units in the Oil Field Services (SIC=1310) sector.

Firms announcing spin-offs are less concentrated by industry than the carve-out parents. The largest representation is in the Primary Metals Industry (SIC=3000).

Table 6

Distribution of equity carve-out, spin-off, sell-off and IPO sample announcements by year.

	Carve-out parent	Carve-out unit	Spin-off parent	Spun-off unit	Sell-off parent	Sold-off unit	IPO
1979	0	0	2	2	0	0	0
1980	0	0	1	2	4	5	0
1981	1	2	2	2	20	26	0
1982	0	0	3	4	16	19	0
1983	1	1	0	0	14	18	9
1984	0	0	2	3	11	16	6
1985	2	2	3	3	18	21	7
1986	4	5	1	2	19	18	24
1987	6	7	5	5	18	17	18
1988	4	3	4	4	19	22	8
1989	2	3	8	8	12	15	0
1990	2	2	3	2	6	7	0
1991	0	0	0	0	22	19	0
Total	22	25	34	37	179	203	72

Table 7

Distribution of equity carve-out, spin-off, sell-off and IPO sample announcements by SIC code.

	Carve-out parent	Carved -out unit	Spin-off parent	Spun -off unit	Sell-off parent	Sold -off unit	IPO
1000	2	10	3	6	7	27	3
2000	9	7	5	6	58	71	16
3000	7	3	8	14	36	44	23
4000	0	1	3	5	23	27	5
5000	2	3	4	3	7	21	15
6000	0	1	1	0	0	0	1
7000	0	0	5	2	5	9	7
8000	0	0	2	1	2	4	2
9000	2	0	3	0	40	0	0
Total	22	25	34	37	179	203	72

However, none of the eight firms in this classification share the same 4-digit SIC code. Only one 4-digit classification contains more than one event, that is 9980 which is the code for conglomerate firms. The activities of the parent firms involved in sell-offs are eclectic. The highest concentration of parent firms is found in the Food and Kindred Products sector (SIC=2000). The second highest concentration, SIC=9000, is represented by 40 conglomerate firms. The sold-off units have a similar pattern. Seventy-one of these subsidiaries/divisions operate in Food and Kindred Products industries. Fourty-four of the units are found in the Rubber and Miscellaneous Plastics (SIC=3000) sector.

Chapter 6

Empirical Results

1. Introduction

This chapter reports share-price responses to restructuring decisions. Section 2 reports the effects of equity carve-out announcements on firms announcing the carve-out, its rivals, and the rivals of the carved-out subsidiary. Significantly negative reactions are reported for carve-out rivals which are consistent with both the asymmetric information and efficiency hypotheses and therefore do not differentiate between these different motivations related to carve-out decisions. Section 3 reports evidence on the announcement effects for rivals of firms going public. There are negative returns to this set of rival firms which are consistent with those found for rivals of equity carve-outs, providing support for the asymmetric information hypothesis. The empirical results associated with spin-off announcements are found in section 4. There are positive intra-industry effects for units to be spun-off which are consistent with the asymmetric information hypothesis, but contradict efficiency explanations as a motivation for restructuring. Section 5 reports the impact of sell-off announcements. The results of these tests show no significant intra-industry effects for rivals of either the announcing firm or the sold-off unit, perhaps reflecting the private nature of the transaction. However, an examination of general restructuring announcements indicates that a managerial decision to concentrate on a core set of

activities conveys favorable information about the future of these industries since rival returns to these announcements are positive. The final section contains a summary.

2. Equity carve-outs

Table 8 contains empirical results for parents of equity carve-outs, portfolios of the intra-industry rivals of announcing firms, and portfolios of rivals of the carved-out subsidiary. The average two-day excess return for parent firms, reported in column (1), is 1.70% with a t-statistic of 2.53, significant at the 5% level. Seventy-seven percent of the firms have positive stock-price reactions. There is no positive price run-up for the parent firm prior to the announcement and post-event returns are also normal. These results are comparable to the findings of Schipper and Smith [1986], who report a five-day excess return of 1.83% with a t-statistic of 2.55 for a sample of 76 equity carve-outs for the period 1965-1983. However, the median size of proceeds from this sample is \$101 million versus \$20-\$30 million for the Schipper and Smith sample, indicating that the carve-outs in this sample are larger equity offerings.

The two-day average excess return to rivals of the carved-out subsidiary is -1.05% which is statistically significant at the 5% level, column (3). The pre-event and post-event returns for the industry portfolios are normal. Furthermore, 64% of the rival portfolios have negative announcement returns. Thus, the equity of firms whose assets are employed in the same industry as the carved-out unit is revalued downward in response to the carve-out announcement. This result is consistent with

Table 8

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing equity carve-outs, carve-out parent rivals grouped by portfolio, and carve-out rivals grouped by portfolio.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Equity carve-out announcements		
	(1) Equity carve-out parents 22 events	(2) Parent rivals 21 events 172 rivals	(3) Rivals of carved-out subsidiaries 25 events 145 rivals
Two-day event return (0,1)	1.70** (2.53)	.39 (.50)	-1.05** (-2.35)
Proportion of returns > 0	[.77]	[.43]	[.36]
Pre-event interval (-121,-1)	-3.07 (-.42)	.01 (.00)	.00 (.00)
Post-event interval (2,15)	.45 (.25)	.15 (.07)	-.12 (-.09)
Median (portfolio) return	1.46	-.38	-.41
Range of returns	-15.57 to 15.22	-2.19 to 8.06	-7.86 to 4.34

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Nanda's carve-out model and implies that equity carve-outs are interpreted as a signal that management regards the carved-out assets as overvalued. Alternatively, negative returns to rivals may reflect expected improvements in the efficiency of the carved-out unit that reduce cash flows to rival firms. The aggregate loss of shareholder wealth for industry rivals, calculated as the sum of the two-day returns multiplied by the market value of equity of each firm, is \$2.5 billion. This is 39% of the aggregate gross proceeds received by the firms announcing the carve-outs.

Returns to intra-industry rivals of parent firms announcing carve-outs are reported in column (2). The returns for the two-day event window are 0.39% and not statistically significant. Moreover, only 43% of the portfolios experience positive announcement reactions. Thus, market values of rivals of parent firms are not affected by the carve-out announcement. The pre-event and post-event interval returns also are normal.

Overall, these results provide evidence supporting the information hypothesis as an explanation for equity carve-outs. Returns to parent firms are positive and significant, as reported in earlier studies. Announcement returns to rivals of carved-out subsidiaries are negative and significant. This suggests that negative news is released by the carve-out announcement and that some elements of this information are industry-common, not solely firm-specific. This result is consistent with the Myers and Majluf-type model of Nanda which implies that an equity carve-out is a negative signal of managerial expectations about future cash flows of the carved-out unit.

Normal returns to parent rival portfolios indicate that an equity carve-out announcement contains little industry-common information with respect to the activities of the parent's business. This provides little support for Nanda's asymmetric information model that implies that an equity carve-out conveys favorable news about the value of the parent firm. It is also possible that the breadth of activities of parent operations is too extensive to generate an accurate matching of industry related activities based on SIC codes, thus weakening the power of the test relative to the case of the carved-out units, which are more narrowly focused economic entities.

These results can also be viewed as providing support for the efficiency hypothesis. Carving-out a subsidiary may create important efficiency gains for the carved-out subsidiary. Increased efficiency implies that the subsidiary will be more competitive in its markets which should have an adverse impact on intra-industry rivals. The negative returns to the rivals of the subsidiaries support this argument. The size of the returns to portfolios of rivals of the subsidiary are small relative to the gains to parent firms. If efficiency considerations are the sole source for this result, such gains should be approximately equal. Thus, although the evidence from equity carve-outs provides support for both the asymmetric information hypothesis and the efficiency hypothesis, the size of the announcement losses to subsidiary rivals make it unlikely that the sole factor is efficiency gains. To gain further insight on the issue, intra-industry effects on IPOs can be analyzed.

3. IPOs

Table 9 contains the empirical results for 72 equally-weighted portfolios of rival firms in response to the announcement of an IPO within the industry. The average two-day excess return for the rival portfolios is $-.88\%$ with a t-statistic of -3.06 , which is significant at the 1% level. Thus, although IPOs are small relative to the market value of other firms in their industry, the intra-industry effects are comparable to returns observed in response to equity carve-outs. Approximately 74% of the portfolios of IPO rivals have negative returns. The calculated aggregate decline in shareholder wealth for industry rivals is \$1.8 billion, which is 56% of the aggregate total proceeds received by the offering firms. This evidence is consistent with the hypothesis that announcements of conventional IPOs convey some unfavorable industry-common information about asset values and/or future cash flows. The fact that relatively small IPOs generate such strong effects casts doubt on the relevance of efficiency arguments based on enhanced compensation contracts as a rationale for such announcement effects. In addition, there is little previous evidence suggesting that economic efficiency considerations are a primary motivation in IPO decisions.

The negative industry effects for carve-outs and IPOs are approximately equal. A difference in means test between returns for the two groups generates a calculated t-value of $.24$ which indicates that returns to rivals of IPOs and rivals of equity carve-outs are not significantly different. Thus, the significantly negative APEs to industry

Table 9

Cumulative excess returns (in percent) for rival portfolios of firms announcing an initial public offering of equity to be traded on the NYSE/AMEX.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

IPO announcements	
	(1)
	IPO rivals
	72 events 258 rivals
Two-day event return (0,1)	-1.07*** (-3.67)
Proportion of returns > 0	.24
Pre-event interval (-121,-1)	-.05 (-.02)
Post-event interval (2,15)	.01 (.01)
Median portfolio return	-1.04
Range of returns	-7.11 to 5.42

*** Significant at the 1% level.

rivals of IPOs and carve-outs is consistent with the hypothesis that equity issues do convey unfavorable information about asset values and/or future cash flows.

4. Spin-offs

Table 10 contains empirical results for firms announcing spin-offs, their intra-industry rivals, and the rivals of the spun-off subsidiaries. The two-day APE for announcing firms is 1.33% with a t-statistic of 2.32, as reported in column (1). Approximately 73% of these firms have positive two-day announcement returns. The pre-event and post-event returns are normal. Schipper and Smith [1983], Hite and Owers [1983], and Miles and Rosenfeld [1983] report two-day announcement returns of 2.84%, 3.30%, and 3.34% respectively. The similarity of these results with those of previous spin-off studies indicates that this sample of spin-offs is also representative of these earlier samples.

In column (3) the average announcement period return for the portfolios of rivals of spun-off units is a positive 0.68%, which is significant at the 10% level (t-statistic = 1.86). Moreover, approximately 60% of the portfolio returns are positive. There are normal returns in both the pre-event or post-event intervals. The positive return to rivals of spun-off units stands in contrast to the negative returns to rivals of carved-out units and IPOs. Applying a difference in means to the two-day returns for rival portfolios of carve-outs and spin-offs yields a calculated t-value of 2.76, rejecting the null hypothesis of equality at the 1% level. Likewise, a difference in means test indicates that returns to rivals of IPOs are significantly different from the

Table 10

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing spin-offs, spin-off parent rivals grouped by portfolio, and spin-off rivals grouped by portfolio.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Spin-off announcements		
	(1)	(2)	(3) Rivals of spun-off units
	Spin-off parents	Parent rivals	
	33 events	25 events 194 rivals	37 events 217 rivals
Two-day event return (0,1)	1.33** (2.32)	.28 (.72)	.68* (1.86)
Proportion of returns > 0	[.73]	[.52]	[.60]
Pre-event interval (-121,-1)	-5.84 (-.93)	-.01 (-.01)	.04 (.04)
Post-event interval (2,15)	-1.42 (-.92)	.09 (.08)	.00 (.00)
Median (portfolio) return	-1.00	.13	.60
Range of returns	-8.26 to 9.48	-1.93 to 2.24	-4.21 to 6.66

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

returns to rivals of spun-off subsidiaries ($t=3.45$). This evidence, combined with the evidence from equity carve-outs, presents support for the hypothesis that equity issues do convey unfavorable information about asset values and/or future cash flows.

The pattern of these results supports the asymmetric information hypothesis. The positive stock-price reaction to spin-off announcements indicates that this method of separating a subsidiary from the parent is viewed as a signal of favorable information with industry-common elements. More specifically, a spin-off allows a parent to separate a subsidiary while simultaneously signaling management's reluctance to issue equity in either the parent or the spun-off subsidiary, or to sell the subsidiary to a third party. In contrast, the results are inconsistent with the efficiency hypothesis which predicts negative valuation effects for intra-industry rivals of spun-off units. If a firm restructures via a spin-off so as to induce a subsidiary to become more efficient and more competitive, such announcements should have negative effects for rivals of the spun-off firms. The positive returns to spin-offs, however, do not support this prediction and contrast with the negative rival returns to carve-outs. This suggests that the negative effects observed for rivals of carved-out subsidiaries reflect the market's concern about a potential redistribution of wealth from outside investors to parent-company shareholders, an effect associated with the issuance of equity that is not possible in a spin-off.

The returns to portfolios of parent firm rivals are positive but not statistically significant, a result that closely parallels results for rivals of parents of equity carve-outs. The absence of a significant return may reflect the lack of an information effect

or the fact that the breadth of operations of parent firms prevents effective matching of rival firms. Overall, the evidence indicates that a spin-off or an equity carve-out decision communicates little information about the value of the industry the parent firm operates in.

5. Sell-offs

Table 11 contains general event study results for sell-off events. In column (1) the returns to parent firms announcing a sell-off are a positive 1.69%, which is strongly significant given a t-statistic of 8.55. Approximately 55% of the returns are positive. These results closely parallel those reported for parents of spin-offs and carve-outs and are consistent with results found in previous sell-off studies. For example, Hite, Owers, and Rogers [1987] find a significant positive return of 1.66% for a sample of 53 sell-offs completed during the period 1963-1981. In the 6 months prior to a sell-off announcement, firms gain an average 5.01%, significant at the 1% level. This implies that firms involved in sell-offs are not in distress which contradicts the Lang, Poulsen, and Stulz finding, which is based on a smaller sample of only firms filing 8-k reports.

The positive and significant returns to firms announcing a sell-off are consistent with both the asymmetric information and efficiency hypotheses of restructuring. To provide further insight on motivations for sell-offs, intra-industry returns to these announcements are obtained. In column (2) rivals of parent firms have an average announcement return of 0.03%, which is not statistically significant.

Table 11

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing sell-offs, sell-off parent rivals grouped by portfolio, and sell-off rivals grouped by portfolio.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Sell-off announcements		
	(1)	(2)	(3) Rivals of sold-off units
	Sell-off parents	Parent rivals	
	179 events	180 events 1623 rivals	203 events 1415 rivals
Two-day return (-1,0)	1.70*** (8.55)	.03 (.25)	.04 (.24)
Proportion of returns > 0	[.62]	[.49]	[.49]
Pre-event interval (-121,-2)	5.01*** (3.29)	.01 (.01)	.00 (.00)
Post-event interval (1,15)	.39 (.72)	.00 (.00)	.04 (.09)
Median (portfolio) return	.72	-.46	-.19
Range of returns	-16.68 to 42.34	-4.73 to 4.17	-7.62 to 10.87

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Moreover, 49% of the portfolios have positive returns. These portfolios also earn normal returns in both the pre-event and post-event interval. The statistically insignificant returns to parent rivals may indicate that no private information is conveyed or that there are no efficiency effects on industry rivals. Normal returns may also be the result of the private nature of the sell-off transaction, counteracting negative information effects of raising external funds.

In contrast to spin-offs and carve-outs, portfolios of rivals of sold-off subsidiaries show no abnormal returns around sell-off announcements. In column (3) the average return to these rivals is 0.04%, with a t-statistic of .24. A difference in means test between the returns to rivals of sold-off units and rivals of carved-out units yields a calculated t-value of 1.93, rejecting the null hypothesis of equality at the 10% level. This is consistent with the securities issuance view that, because a sell-off provides external funds for the firm without having to issue equity claims against the unit, the information conveyed by the sell-off should be more favorable than that conveyed in a carve-out.

Miller and Rock's [1985] model of security issuance implies that any external funding decision by managers conveys unfavorable information with respect to the firm's future cash flows or investment prospects. This implication is supported by the higher mean returns to rivals of spun-off units (.68%) versus rivals of sold-off units (.04%). A difference in means test between the returns for the two rival groups obtains a t-value of 1.89, which is statistically significant at the 10% level.

The evidence from sell-offs indicates that this method of divestment does not lead to revaluation of assets throughout the industry of the sold-off unit. This may be due to the fact that the private nature of the sell-off transaction may counteract any negative information that is released by the firm's use of a sell-off to raise funds. Alternatively, the normal returns to rivals may suggest that any efficiency gains to be achieved by the buyer of the unit are not sufficiently large to materially change the competitive structure of the industry to which the sold-off unit belongs.

5.1. Buyers of the sold-off assets

Hite, Owers, and Rogers [1987] report positive and significant returns of .83% to 51 buyers of asset sell-offs that are completed (t -statistic = 2.25) between 1963-1978. In contrast, the returns to 110 buyers in this sample (Table 12, column (1)) are negative and statistically significant with a mean excess return of -.71% and a t -statistic of -2.99. Almost 60% of the sample firms experience a negative announcement return. The pre-event and post-event interval returns are normal.

Hite, Owers, and Rogers interpret the positive returns to sellers and buyers in their sample as support for the efficiency hypothesis. Because assets are being moved to higher valued uses both the buyer and the seller stand to gain from the transaction. However, the negative returns to buyers in this sample are not consistent with this interpretation.

There are several sample differences that may account for the difference in announcement reactions of Hite, Owers, and Rogers' buyer sample and this buyer

Table 12

Cumulative excess returns (in percent) for NYSE/AMEX firms purchasing assets in an announced sell-off transaction.

The returns for the entire sample are found in column (1). Returns to buyers who are identified in the initial sale announcement are reported in column (2). Column (3) contains the returns to buyers who are identified subsequent to the initial announcement of the asset sale. For the latter group, day 0 is date of the Wall Street Journal article associating the purchaser with the previously announced asset sale.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Sell-off announcement		
	(1)	(2)	(3)
	All buyers	Buyers named in initial sale announcement	Buyers named following initial sale announcement
	110 events	79 events	32 events
Two-day return (-1,0)	-.71*** (-2.99)	-.65** (-2.19)	-.82** (-2.11)
Proportion of returns > 0	[.41]	[.41]	[.40]
Pre-event interval (-121,-2)	-1.47 (-.79)	-1.19 (-.51)	-2.16 (-.72)
Post-event interval (1,15)	.83 (1.27)	.90 (1.00)	.66 (.62)
Median return	-.32	-.63	-.80
Range of Returns	-24.04 to 12.22	-24.04 to 12.22	-8.99 to 4.31

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

sample. First, the average asset sale by Hite, Owers, and Rogers is relatively small, with a median value of \$42 million. In contrast, the median sell-off in this sample is \$507.1 million. Thus, bidder returns for larger sell-offs could more closely resemble the negative returns in some studies of acquisitions of entire firms. Second, the sample period of this study is 1980-1991. In contrast, Hite, Owers, and Rogers' sample period for buyers is 1963-1978. There is evidence of an apparent negative shift in the returns to bidders in merger and acquisition transactions in the 1980's which may also be typical of returns to buyers of sold-off assets during the same periods.

In particular, the negative returns to buyers of sold-off assets are comparable to the average negative returns found for firms making tender offers during the 1980's reported by Jarrell, Brickley, and Netter [1988] and Bradley, Desai and Kim [1988]. Consistent with these results, You, Caves, Smith and Henry [1986] show that the distribution of returns to bidders in mergers and acquisitions (1975 to 1984) has a mean of -1%, and 53% of the returns are negative. The negative returns to bidder firms are attributed to increased governmental regulation and more effective takeover defenses. However, it is not apparent that these explanations apply to sell-offs. Regulatory influence is not an obvious factor in any of these sell-off transactions, and there is no need to overcome takeover defense tactics - these asset sales are all negotiated and represent a voluntary decision by the selling firm. Thus, while the apparent pattern of positive returns in the 1960's and 1970's and negative returns in the 1980's to buyers of sold-off assets parallels that of returns to bidders in

acquisitions, some explanations for the latter paradigm are not applicable to the former. Further testing fails to produce a definitive, satisfactory explanation for the significantly average negative returns to the buyers in sell-off transactions, suggesting that sell-off purchasers may be characterized by hubris behavior as described by Roll [1986]. These tests are explained in the discussion that follows.

To gain further insight on the pattern of returns to buyers, separate returns are calculated for buyers who are identified in the initial sale announcement versus those who are identified in a subsequent announcement, reported in columns (2) and (3) of Table 12 respectively. The results of this breakdown suggest that regardless of when the buyer is announced, the returns to the transaction announcement are, on average, significantly negative. For buyers named in the initial announcement, the returns are $-.65\%$ ($t=-2.19$). For buyers named in a subsequent announcement, the APE is $-.82\%$ ($t=-2.11$). Tables 13 and 14 report the related returns to the seller, rivals of the seller, and rivals of the sold-off unit when the buyer is identified in the initial announcement versus in a subsequent announcement. The returns to the sellers in each group are positive and strongly significant, indicating that the timing of identification of a buyer has little impact on the announcement reaction to the selling firms. The returns to parent rival portfolios and sold-off unit rival portfolios are unaffected by the timing of disclosure of the buyer. None of the parent or unit rival portfolios experience abnormal announcement returns.

Table 13

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing an asset(s) sale, their intra-industry rivals, the rivals of the unit being sold, and the purchaser of the asset(s).

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Buyer named in the initial asset sale announcement			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	Buyer
	128 events	129 events 1174 rivals	158 events 1109 rivals	78 events
Two-day return (-1,0)	1.63*** (6.95)	.08 (.55)	.05 (.30)	-.65** (-2.19)
Proportion of returns > 0	[.58]	[.49]	[.51]	[.41]
Pre-event interval (-121,-2)	5.42*** (3.00)	-.00 (-.00)	.01 (.01)	-1.19 (-.51)
Post-event interval (1,15)	-.10 (-.16)	-.01 (.03)	.04 (.08)	.90 (1.00)
Median (portfolio) return	.45	-.05	.02	-.63
Range of returns	-12.31 to 31.44	-4.73 to 10.87	-7.62 to 4.85	-24.04 to 12.22

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Table 14

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing an asset(s) sale, their intra-industry rivals, the rivals of the unit being sold, and the purchaser of the asset(s). These sales were initially announced without identifying the purchaser of the asset(s).

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Buyer named subsequent to the initial asset sale announcement			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	Buyer
	51 events	51 events 449 rivals	45 events 306 rivals	32 events
Two-day return (-1,0)	1.86*** (4.96)	-.09 (-.42)	-.02 (-.06)	-.82** (-2.11)
Proportion of returns > 0	[.70]	[.49]	[.42]	[.39]
Pre-event interval (-121,-2)	3.99 (1.31)	.03 (.02)	-.01 (-.00)	-2.16 (-.72)
Post-event interval (1,15)	1.64 (1.52)	-.03 (-.06)	.02 (.03)	.66 (.62)
Median (portfolio) return	1.78	-.06	-.20	-.80
Range of returns	-16.68 to 42.34	-3.41 to 3.78	-3.42 to 5.35	-8.99 to 4.31

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

5.2. Sell-offs and the potential for collusion

Because a sell-off may decrease the number of independent producers of a product, the equity value of buying firms and rival firms may be affected by an increased potential for collusion due to a more restricted oligopoly. Therefore, the purchase of a sold-off subsidiary by another industry member may create an increase in market power and profits within the industry. In this case, the predicted returns for buyers, sellers, and intra-industry rivals are each positive, reflecting the potential increases in market power and profitability. This hypothesis is tested by dividing the entire group of sell-offs between those where the buyer is in the same industry as the sold-off unit, i.e. a horizontal sell-off, and those where the buyer is not.

The empirical results for the horizontal sell-off groups are reported in Table 15. The sellers (column (1)) experience a positive and statistically significant mean return of 1.19% (t-statistic = 4.42). Returns to the portfolios of parent rivals and unit rivals are .02% and .09%, respectively, and are not statistically significant. The mean return to the buyer group is -.51%, which is not statistically significant at the 5% level (t=-1.81)

The empirical results for the non-horizontal group of buyers are found in Table 16. Sell-off parents experience a positive mean return of 2.30%, significant at the 1% level (t=9.42), which exceeds the return to firms that sell to buyers belonging to the same industry as the sold-off unit. Again, the returns to the rival portfolios of the parents and sold-off units are normal (.04 and -.03 respectively). The buyers, who

Table 15

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing a horizontal sell-off, intra-industry rivals, the rivals of the sold-off unit, and the purchaser of the unit. A horizontal sell-off is defined as the purchaser and the sold-off unit sharing the same 4-digit SIC code.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Horizontal sell-offs			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	All buyers
	98 events	104 events 905 rivals	114 events 775 rivals	75 events
Two-day Returns (-1,0)	1.19*** (4.42)	.03 (.18)	.09 (.43)	-.51* (-1.81)
Proportion of returns > 0	[.63]	[.51]	[.48]	[.39]
Pre-event interval (-121,-2)	3.50* (1.68)	.00 (.00)	-.01 (-.00)	-1.28 (-.58)
Post-event interval (1,15)	.85 (1.14)	.02 (.03)	.03 (.07)	.59 (.76)
Median (portfolio) return	.76	.01	-.17	-.75
Range of returns	-12.31 to 15.11	-4.73 to 4.17	-7.62 to 10.87	-10.68 to 12.22

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Table 16

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing a non-horizontal sell-off, intra-industry rivals, the rivals of the sold-off unit, and the purchaser of the unit. A non-horizontal sell-off is defined as the purchaser and the sold-off unit having different 4-digit SIC codes.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Non-horizontal sell-offs			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	All buyers
	81 events	76 events 718 rivals	89 events 640 rivals	35 events
Two-day Returns (-1,0)	2.30*** (9.42)	.04 (.17)	-.03 (-.12)	-1.13*** (-2.75)
Proportion of returns > 0	[.60]	[.46]	[.51]	[.48]
Pre-event interval (-121,-2)	6.79*** (3.72)	.02 (.01)	.02 (.01)	-1.89 (-.60)
Post-event interval (1,15)	-.14 (-.22)	-.02 (-.03)	.03 (.05)	1.35 (1.20)
Median (portfolio) return	.60	-.09	-.03	-.25
Range of returns	-16.68 to 42.34	-2.07 to 2.96	-3.86 to 4.85	-24.01 to 5.74

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

are entering the industry through the purchase of the sold-off subsidiary, experience a negative and significant return of -1.13% ($t=-2.75$).

While it appears that horizontal sales redistribute some of the gains associated with asset sale transactions from the sellers to the buyers, difference in means tests indicate that the returns to the horizontal sellers (buyers) and non-horizontal sellers (buyers) are not significantly different from each other. A difference in means test between the returns to horizontal sellers (buyers) and non-horizontal sellers (buyers) generates a t-statistic of 1.22 (.75). These results, combined with the normal returns to unit rival portfolios, provide no support for the possibility that sell-offs within an industry systematically create a collusive environment.

5.3. Sell-offs involving multiple bidders

It is possible that the auction environment could be responsible for the negative returns to buyers. In particular, the presence of a multiple bid auction for an asset may alter returns by increasing the seller's return and reducing the returns to bidders. In this way, multiple bids may lead to a negative return to buyers through the "winner's curse". Roll [1986] offers the winner's curse as an explanation for overpayment in mergers generally, and results for buyers in asset acquisitions could reflect a similar effect.

The impact of an auction environment on the equity values of sellers and buyers is analyzed by obtaining the returns associated with sell-offs that have multiple bidders. Column (1) of Table 17 contains the returns to sellers who utilized an

Table 17

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing an asset(s) sale associated with multiple bids for the asset(s), intra-industry rivals, the rivals of the unit being sold, and the purchaser of the asset(s).

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Asset sales with multiple bidders			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	Buyer
	19 events	22 events 190 rivals	25 events 198 rivals	20 events
Two-day return (-1,0)	.67 (.89)	-.34 (-1.14)	.23 (.53)	-.54 (-.82)
Proportion of returns > 0	[.67]	[.41]	[.27]	[.30]
Pre-event interval (-121,-2)	-1.25 (-.21)	-.02 (-.01)	-.07 (-.02)	-5.51 (-1.09)
Post-event interval (1,15)	2.35 (1.14)	.01 (.02)	.00 (.00)	.51 (.28)
Median (portfolio) return	.76	-.24	-.84	-1.37
Range of returns	-7.91 to 6.40	-3.42 to 2.73	-4.00 to 5.74	-2.49 to 5.06

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

auction format for their asset sale. The returns to this relatively small group of 19 events upon announcing the auction are positive (.67%) but not significant. The average return to the announcement of the winning bidder, -.54%, is not statistically different from zero. Thus, the mean returns to each group are smaller than the mean returns for the overall seller sample and not statistically significant. The lack of significance may reflect the small sample size ($n=19$), but it is clear that the negative returns to buyers as a whole cannot be explained by returns associated with multiple bid auctions. Equity values of sell-off parent rivals and sold-off unit rivals appear to be unaffected by multiple bid asset sales.

5.4. Type of proceeds from the sale

Studies by Gordon and Yagil [1981], Wansley, Lane, and Yang [1983], and Travlos [1985, 1987] find higher abnormal returns to target firms for cash offers than for stock offers in merger and acquisition transactions. These studies also reveal negative and significant announcement returns (-1.47%) to bidders offering equity as a method of payment, while bidders offering cash experience normal announcement returns. The negative returns in merger and acquisition transactions are consistent with the implications of the Myers and Majluf [1984] model of securities issuance; that is, managers issue equity in their own firm when they feel the equity is overvalued by the market. This argument is tested for sell-off transactions to see if the means of payment is responsible for the presence of negative returns to buyers.

Table 18 (column (1)) contains the returns to relevant groups where sales proceeds consist of cash and other non-equity forms of payment for the sold-off asset(s). Returns to announcements of sell-offs where the medium of exchange involves equity are found in Table 19. The buyers offering non-equity forms of payment experience significant negative announcement returns of $-.65\%$ with a t -statistic of -2.67 . Pre-event and post-event returns are normal for these firms. The relatively small number of buyers ($n=13$) offering equity as a form of payment for acquired assets experience normal announcement returns ($-.87\%$, $t=-1.02$), pre-event returns (-7.50% , $t=-1.15$) and post-event returns (3.15% , $t=1.37$). A difference in means test between the returns for the two buyer groups generates a t -value of $.46$ (p -value = $.65$), indicating failure to reject the null hypothesis that the mean returns are equal.

Announcement returns to selling firms receiving cash and other non-equity forms of compensation from an asset sale are 1.62% and strongly significant ($t=7.92$). The selling firms have a significant positive return of 5.61% ($t=3.55$) in the pre-event interval and normal returns of $.35\%$ in the post-event interval. For sell-off parents ($n=14$) receiving equity in exchange for assets announcement returns ($.95\%$, $t=1.36$), pre-event returns (1.01% , $t=.19$), and post-event returns (1.53% , $t=.80$) are all normal. A difference in means test between these two seller groups also fails to reject the null hypothesis that the mean returns are different from each other (t -value = $.56$). Whether an asset sale involves equity as a medium of

Table 18

Cumulative excess returns (in percent) for NYSE/AMEX firms receiving cash and other non-equity forms of compensation as proceeds from a sell-off. Also included are cumulative excess returns for intra-industry rivals, the rivals of the sold-off unit, and the purchaser of the unit.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Cash and other non-equity forms of proceeds from asset sales			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	All buyers
	162 events	164 events 1454 rivals	183 events 1224 rivals	96 events
Two-day Returns (-1,0)	1.62*** (7.92)	.00 (.02)	.07 (.45)	-.65*** (-2.67)
Proportion of returns > 0	[.61]	[.49]	[.49]	[.40]
Pre-event interval (-121,-2)	5.61*** (3.55)	.02 (.02)	.00 (.00)	-.38 (-.20)
Post-event interval (1,15)	.35 (.63)	-.00 (-.00)	.05 (.13)	.50 (.73)
Median (portfolio) return	.67	-.05	-.03	-.81
Range of returns	-16.68 to 42.34	-4.73 to 3.78	-7.62 to 10.87	-10.68 to 10.36

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Table 19

Cumulative excess returns (in percent) for NYSE/AMEX firms receiving a combination of cash, equity, and notes as proceeds from a sell-off. Also included are cumulative excess returns for intra-industry rivals, the rivals of the sold-off unit, and the purchaser of the unit.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Equity included in the proceeds from asset sales			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	Buyer
	14 events	13 events 112 rivals	17 events 155 rivals	13 events
Two-day return (-1,0)	.95 (1.36)	.23 (.48)	-.22 (-.33)	-.87 (-1.02)
Proportion of returns > 0	[.57]	[.46]	[.50]	[.52]
Pre-event interval (-121,-2)	1.01 (.19)	-.10 (-.03)	.04 (.01)	-7.50 (-1.15)
Post-event interval (1,15)	1.53 (.80)	.11 (.09)	-.10 (-.05)	3.15 (1.37)
Median (portfolio) return	1.45	-.11	2.03	.59
Range of returns	-7.36 to 9.55	-1.42 to 4.17	-24.04 to 12.22	-6.91 to 14.85

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

exchange or not, rivals of the selling firm as well as those of the sold-off unit experience normal announcement, pre-event, and post-event returns.

Thus, the empirical results on the type of proceeds offered as payment for sold-off assets do not parallel those for merger and acquisition transactions. More specifically, there is no evidence that returns to buyers offering equity to sellers are lower than for buyers who offer cash and debt securities as a means of payment. Thus, negative returns to buyers of asset sales are not the result of equity issuance by buyers.

5.5. Sell-offs by distressed firms

Distressed asset sales are defined as sell-offs by firms currently in reorganization under Chapter 11 ($n=4$), in private workouts ($n=5$), or those that have omitted a dividend in the 12 months prior to the sale ($n=9$). Returns to two firms in bankruptcy, one firm in a private workout, and one firm that had omitted dividends are not available and therefore these firms are deleted from the sample of selling firms. However, rival portfolios for all four of these parent firms are available and included in the analysis.

Generally the announcement of these sales is likely to indicate that the firm is under pressure to divest the assets swiftly in order to raise funds to repay debt obligations or otherwise meet cash needs. Proceeds from these sales are typically cash, and the transactions tend to be brought to fruition quickly. Due to the pressure to sell, the seller may not have time or be able to negotiate the appropriate price for

the assets, especially since its state of distress and need for capital are public information. Therefore, potential bidders may be able to purchase the assets at a price below the market's expectation of the value of the assets to the seller. In this case the average returns to sellers in distress may be lower than the average return to sellers who are not in distress. Likewise, the average returns to the purchasers of assets sold by a distressed firm may be higher than the average returns to purchasers of assets sold by non-distressed firms. In this regard, James and Weir [1987] report significantly positive returns to bidders that acquire banks that have been seized by regulatory authorities.

Empirical results to announcements of sell-offs by firms in distress are reported in Table 20. The returns to sellers are positive (.99%) but not significant ($t=.94$). Buyers experience a positive and significant average return of 1.80% with a t -statistic of 2.77. In contrast, empirical results to non-distressed sales, reported in Table 21, indicate that returns to sellers and buyers parallel those found for the entire sample. The APE for non-distressed sellers is 1.76% with a corresponding t -statistic of 8.99, indicating significance at the 1% level. The APE for buyers in non-distressed sales is -1.08% ($t=-4.47$), also significant at the 1% level. Moreover, a difference in means test generates a calculated t -value of 2.32 ($p\text{-value} = .02$) indicating that the APE's for the two buyer groups are statistically different from each other at the 5% level. A difference in means test for the two seller groups produces a t -value of .35 ($p\text{-value} = .75$) and fails to reject the null hypothesis that the means returns to the two groups are equal. Although these results should be interpreted with

Table 20

Cumulative excess returns (in percent) for distressed NYSE/AMEX firms announcing a sell-off, intra-industry rivals, the rivals of the sold-off unit, and the purchaser of the unit. A distressed sell-off is defined as a sell-off by a firm in Chapter 11 or by a firm that omitted a dividend during the 12 months prior to the announcement.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Asset sales by distressed parent firms			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	All buyers
	14 events	18 events 166 rivals	15 events 134 rivals	14 events
Two-day Returns (-1,0)	.99 (.94)	-.41 (-1.23)	-.43 (-.67)	1.80*** (2.77)
Proportion of returns > 0	[.71]	[.39]	[.40]	[.69]
Pre-event interval (-121,-2)	-3.42 (-.41)	-.00 (-.00)	.01 (.00)	2.77 (.55)
Post-event interval (1,15)	4.63 (1.60)	-.05 (-.06)	-.13 (-.07)	.36 (.20)
Median (portfolio) return	.91	-.24	-.65	1.24
Range of returns	-16.68 to 17.12	-3.14 to 3.49	-4.45 to 3.85	-5.59 to 10.51

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

Table 21

Cumulative excess returns (in percent) for NYSE/AMEX non-distressed firms announcing a sell-off, intra-industry rivals, the rivals of the sold-off unit, and the purchaser of the unit. A non-distressed sell-off is defined as an asset sale by a firm that is neither in Chapter 11 or nor has omitted a dividend during the 12 months prior to the announcement.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses.

	Asset sales by non-distressed parent firms			
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Rivals of sold-off units	All buyers
	165 events	162 events 1457 rivals	188 events 1281 rivals	96 events
Two-day Returns (-1,0)	1.76*** (8.99)	.08 (.63)	.07 (.48)	-1.08*** (-4.41)
Proportion of returns > 0	[.61]	[.50]	[.50]	[.37]
Pre-event interval (-121,-2)	5.77*** (3.86)	.01 (.01)	.00 (.00)	-2.09 (-1.08)
Post-event interval (1,15)	.03 (.06)	.01 (.02)	.05 (.11)	.91 (1.32)
Median (portfolio) return	.63	-.01	.00	-1.02
Range of returns	-12.31 to 42.34	-4.73 to 4.17	-7.62 to 10.87	-24.04 to 12.22

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

caution due to the small sample size of distressed sales ($n=14$), the pattern of returns is consistent with the notion that distressed sales cause a redistribution of the overall gains from a sell-off away from the seller. The results also strengthen the conclusion that returns to buyers of sold-off assets that are not associated with distressed sellers are strongly negative.

5.6. Retention and uses of proceeds from sell-offs

Lang, Poulsen, and Stulz [1992] report positive and significant returns to sell-off announcements for firms that use the proceeds from a sell-off to repay debt. No firms in their sample repurchased equity. In contrast, they find normal announcement returns for firms who retain the proceeds. They conclude that the positive returns to sellers reducing their leverage can be attributed to avoidance of economically significant costs of financial distress and the avoidance of the agency costs of free cash flow that pervade firms that do retain the proceeds. Their conclusions also imply that retaining the proceeds for any reason, even if such sales are a source of funding investment in areas of firm expertise, produce normal returns to asset sales.

Table 22 contains the empirical results for selling firms and their rivals, disaggregated by whether the firm retains the proceeds or does not retain the proceeds from asset sales. Sellers retaining proceeds (column (1)) experience a positive and significant mean return of 1.29% ($t=5.29$). This is in contrast to the Lang, Poulsen and Stulz result of normal returns to these sellers. Sellers using the proceeds to reduce debt, repurchase equity, or both, also experience a positive and strongly

Table 22

Cumulative excess returns (in percent) for NYSE/AMEX firms retaining the proceeds from sell-offs and those not retaining the proceeds (i.e. proceeds use to reduce debt, repurchase equity, or both). Also included are cumulative excess returns for intra-industry rivals of the parents and the units for the respective samples.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Firms retaining proceeds		Firms not retaining proceeds	
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Sell-off parents	Parent Rivals
	129 events	127 events 1139 rivals	50 events	53 events 484 rivals
Two-day Returns (-1,0)	1.29*** (5.29)	.06 (.37)	2.77*** (7.89)	-.03 (-.16)
Proportion of returns > 0	[.60]	[.46]	[.67]	[.60]
Pre-event interval (-121,-2)	4.87*** (2.58)	.01 (.01)	5.35** (1.99)	.00 (.00)
Post-event interval (1,15)	.86 (1.30)	.01 (.02)	-.84 (-.88)	-.02 (-.04)
Median (portfolio) return	.67	-.11	2.30	.28
Range of returns	-16.68 to 31.44	-3.41 to 3.78	-10.34 to 42.34	-4.73 to 4.17

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

significant announcement return of 2.77% ($t=7.89$), which is close to the figure of 3.14% reported by Lang, Poulsen, and Stulz. Both groups of firms in this sample show a strong positive return in the six months prior to the announcement and normal returns in the 3 weeks subsequent to the announcement. A difference in means test for the announcement returns to both seller groups generates a calculated t -value of 1.22 ($p\text{-value} = .22$). Thus, this pattern in announcement returns to asset sales is consistent with the findings of Lang, Poulsen, and Stulz that firms not retaining the proceeds from asset sales tend to have higher average announcement returns, but contrary to Lang, Poulsen, and Stulz, firms that retain proceeds have significantly positive returns.

The differences found in the results of Lang, Poulsen, and Stulz versus this study may be driven by the fact that their study has a relatively high proportion of firms in some distress, whereas the sample of large divestitures found in this study contains very few distressed sell-offs. More specifically, the median dollar value of the sell-off (\$28 million) and the market value of the selling firms (\$150 million) in Lang, Poulsen, and Stulz are small relative to the median values of found in this study of \$507 million and \$2.4 billion, respectively. Overall, the results in this study suggest that agency problems may play a role in asset sales, but even firms that retain proceeds generate positive returns from sell-offs. Returns to the rivals of the sellers who retain proceeds and those who do not (columns (2) and (4) respectively) are normal in each case. This result indicates that no industry information is released

from asset sales which supports the notion that firm specific agency problems may play a role in the return to sellers.

The sample of sellers not retaining the sell-off proceeds is analyzed further to determine if the form of disbursement, i.e. reducing debt or repurchasing equity, has an impact on the announcement returns. The results are reported in Table 23. A sample of 33 firms are identified as declaring the intent to reduce debt with the sell-off proceeds in the initial announcement of the sale (column (1)). Returns to these selling firms are positive (2.82%) and strongly significant ($t=6.38$). These firms experience normal returns in the pre-event and post-event intervals. Rivals of these firms experience normal announcement (-.13%), pre-event, and post-event returns (column (2)).

A sample of 13 firms (column (3)) is obtained for sellers using the proceeds from a sell-off to repurchase equity. These firms experience a mean return of 3.14% with a t-statistic of 6.34, which is significant at the 1% level. These firms have a strong positive pre-event return of 13.48% ($t=3.51$). Post-event returns are normal (.80% with $t=.59$). Moreover, the rival portfolios corresponding to these firms (column (4)) also experience a significant positive announcement return of .81% ($t=2.03$). Significant positive returns to intra-industry rivals suggest that favorable private managerial information may be conveyed by these announcements about the future profitability of the parent firm's industry, the value of the assets in place, or an expected change in the risk of the industry. These results are consistent with the literature on share repurchase announcements (Dann [1981], Vermalen [1981]). The

Table 23

Cumulative excess returns (in percent) for two samples of NYSE/AMEX firms retaining the proceeds from sell-offs; one sample used the proceeds to reduce debt proceeds and the other used the proceeds to repurchase equity. Also included are cumulative excess returns for intra-industry rivals of the parents and the units for the respective samples.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

	Firms reducing debt		Firms repurchasing equity	
	(1)	(2)	(3)	(4)
	Sell-off parents	Parent rivals	Sell-off parents	Parent Rivals
	33 events	41 events 396 rivals	13 events	8 events 58 rivals
Two-day Returns (-1,0)	2.82*** (6.38)	-.13 (-.60)	3.14*** (6.34)	.81** (2.03)
Proportion of returns > 0	[.67]	[.51]	[.69]	[.75]
Pre-event interval (-121,-2)	1.92 (.57)	-.01 (-.00)	13.48*** (3.51)	.08 (.02)
Post-event interval (1,15)	-.82 (-.68)	-.00 (-.00)	.80 (.59)	.00 (.00)
Median (portfolio) return	1.33	.09	3.88	.63
Range of returns	-10.34 to 42.34	-3.54 to 3.49	-9.00 to 16.73	-1.24 to 4.17

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

positive returns to the rival firms in this sample, however, contrasts with Hertzell [1991], who finds no intra-industry effects for share repurchase announcements. In addition, it should be noted that this intra-industry effect is based on a small sample size ($n=8$).

The overall results generally parallel the findings of Lang, Poulsen, and Stulz that there are greater returns to sell-offs in which proceeds are to be paid out rather than retained within the firm. However, they find that positive returns accrue only to firms announcing a sell-off and the intent to reduce debt with the proceeds. Empirical results from tests in this study indicate that firms that do retain proceeds also have positive announcement returns. This difference may be due to the fact that their sample includes a substantial number of relatively small, distressed firms, whereas the incidence of distressed firms in this sample of relatively large firms is less than 10%.

5.7. The effect of general restructuring announcements

To gain further insight on the information effects of sell-offs, empirical results for 38 general restructuring announcements are obtained and reported in Table 24. These announcements typically report a general intention to shed less profitable businesses and increase investment in core businesses by using the proceeds from divestitures. The average two-day return to these announcements is 3.22%, with a t-statistic of 8.16 and 68% of the sample have positive announcement returns. The pre-event period return is a positive and statistically significant 6.52%, and the post-event returns are normal. Thus, the market regards announcements in which the firm

Table 24

Cumulative excess returns (in percent) for NYSE/AMEX firms announcing a restructuring and their intra-industry rivals grouped by portfolio.

Cumulative excess returns are the sum of excess returns over relevant event periods. Excess returns are calculated as the difference between realized returns and expected returns from -240 days to -121 days prior to announcement. The t-statistics are in parentheses. The proportion of positive returns are in brackets.

Restructuring announcements		
	(1)	(2)
	Restructuring firms	Rivals of Restructuring firms
	38 events	33 events 385 rivals
Two-day return (-1,0)	3.22*** (8.16)	.55** (2.12)
Proportion of returns > 0	[.68]	[.58]
Pre-event interval (-121,-2)	6.52** (2.13)	.01 (.02)
Post-event interval (1,15)	-1.50 (-1.39)	.08 (.11)
Median (portfolio) return	2.20	.33
Range of returns	-2.56 to 15.56	-4.34 to 7.73

*Significant at the 10% level.

**Significant at the 5% level.

***Significant at the 1% level.

indicates a willingness to sell a broad array of assets and focus on core businesses as favorable news. Moreover, for the rivals of these firms, the average two-day return is 0.55% and t-statistic is 2.12 with 58% of the returns positive. These results support the view that managers are optimistic about the value of the firm's core assets and the market reacts to this signal by increasing the equity of the parent firm's rivals.

An efficiency explanation for the returns for restructuring firms and their rivals is inconsistent with this result. The magnitude of the average returns for restructuring announcements suggests that the market expects a material increase in the profitability of these firms. If this increase were expected to come at the expense of intra-industry rivals, the rivals would experience negative stock-price reactions. Instead, there is a significantly positive announcement effect for rivals which is consistent with the view that the industry related to the firm's core activities is judged to have favorable future prospects. Therefore, the restructuring announcement signals managerial beliefs about the future profitability of the industry rather than an indication of their greater comparative advantage within the industry.

These results are also inconsistent with the agency cost hypothesis. Restructuring announcements indicate managers are anticipating substantial cash flows into the firm that are to be redirected into core activities. If these cash flows were viewed by the market as increasing agency costs, the share price response should not be positive. Moreover, if firm specific agency factors were dominant there would be no effect on intra-industry rivals. Instead, the market's positive reaction to

announcing firms and their rivals in response to restructuring announcements indicates that managers are viewed as making appropriate financing and investment decisions conducive to shareholder wealth maximization and that there are positive prospects for the industry as a whole.

6. Summary

The overall empirical results reported here provide evidence consistent with the predictions of the asymmetric information hypothesis of securities issuance when viewed within the context of corporate restructuring decisions involving equity carve-outs and spin-offs, and with respect to initial public offerings. The returns also confirm the hypothesis that some restructuring decisions involving securities issuance convey elements of information relevant for valuing similar assets in related activities. The strongest piece of evidence for these conclusions is the announcement reactions of intra-industry rivals for carve-outs, IPOs and spin-offs. The returns to intra-industry rivals of equity carve-outs and IPOs are significant and negative, -1.05% and -.88%, respectively. These results are consistent with models of security issuance which imply that equity issues are negative signals of managerial expectations about future cash flows of relevant assets. The normal returns to sold-off unit rivals and the positive returns to rivals of the spun-off units are also consistent with securities issuance arguments. Because managers choose to undergo an economic restructuring without issuing equity in the parent firm or a subsidiary, the returns to these kinds of

transactions should be better received by the market. The rival returns to spin-off decisions contradict the negative predictions derived from the efficiency hypothesis.

Normal returns to portfolios of rivals of parent firms announcing an equity carve-out or spin-off indicate that these announcements contain little industry-common information with respect to the activities of the parent's business. This provides little support for Nanda's hypothesis that an equity carve-out conveys favorable news about the value of the parent firm. It is also possible that the breadth of activities of parent operations is too extensive to generate an accurate matching of industry related activities based on SIC codes, thus weakening the power of the test relative to the case of the subsidiaries.

The positive and significant returns to parent firms announcing sell-offs are consistent with the findings reported in earlier studies. The normal returns to parent and subsidiary rivals to sell-off announcements indicate that this method of divestment does not lead to revaluation of assets throughout the related industries. The negative and significant returns to buyers of sold-off assets contrast with the positive and significant returns to buyers reported by Hite, Owers and Rogers [1987]. The differences in returns may be due to differences in the sample period, the relative size of the divestitures, which tend to get larger through time, or the financial soundness of the sample firms.

Because of the relatively large size of these divestitures, and therefore the similarity to mergers and acquisitions, factors affecting the returns to bidders in control transactions are examined to determine if similar factors apply for returns to

buyers of sold-off units. Empirical results indicate that: (1) the time the buyer is identified, whether in the initial sale announcement or in a subsequent announcement, has no impact on the returns to the sellers or the buyers, (2) multiple bid auctions cannot explain the negative returns to buyers, (3) buyers using equity as a medium of exchange do not experience returns statistically different from those who do not use equity to purchase divested units, and (4) that buyers purchasing assets from sellers in distress experience positive and significant returns. Distressed asset sales appear to be the only type of sell-off where buyers share in the gains from the transaction.

Finally, Lang, Poulsen and Stulz argue that potential agency problems arising from increased free cash flow can influence the returns to firms announcing asset sales. They report that only firms that disburse proceeds from asset sales by reducing debt experience positive and significant returns. Firms retaining sale proceeds, even if such proceeds are used to further investment in core business activities and areas of expertise, experience normal returns. In contrast, stock price reactions to sell-off announcements in this sample indicate that sellers who retain proceeds, as well as those who do not, are positive and significant. Moreover, the positive and significant returns to firms announcing general restructurings in order to focus on core businesses, and their rivals, indicate that retention of proceeds for such uses is viewed by the market as shareholder wealth maximizing behavior. Thus, although agency problems apparently play some role in asset sell-offs, it is clear that there are also positive wealth effects associated with increased investment in areas of the firm's expertise.

Chapter 7

Conclusions

The purpose of this dissertation has been to explore the motivation behind various restructuring choices within a securities issuance context. Previous theoretical models and empirical evidence suggest that three methods of restructuring - equity carve-outs, sell-offs, and spin-offs, on average, signal favorable information about parent firms. This has been interpreted as reflecting either enhanced potential for efficiency gains, positive asymmetric information about the value of industry assets, or changes in agency costs. This dissertation presents an alternative framework by relating restructuring announcements to the effects of security issuance. Empirical tests are formulated to determine if these announcements contain valuable private information about the value of a subsidiary by analyzing whether or not elements of this information apply to other firms involved in related activities. Similarly, if favorable news associated with restructuring announcements indicates that parent firm equity is undervalued, equity values of intra-industry rivals may also be affected by restructuring decisions.

Announcements of equity carve-outs are interpreted within Nanda's [1991] Myers and Majluf-type framework. The results are consistent with the hypothesis that a motivation for these events is management's belief that a subsidiary is likely to be overvalued by the market. In particular, rivals of the carved out subsidiary experience negative revaluation effects. Nevertheless, there is little evidence to

support arguments made by Nanda [1991] that managers carve out a subsidiary because they believe that the parent firm's equity is undervalued by the market since rivals of parents do not have significant positive valuation effects. Instead, rivals of parent firms earn normal returns.

A spin-off is a form of divestiture that does not involve external financing. Rivals of spun-off subsidiaries increase in value around these announcements. Management's apparent unwillingness to sell the subsidiary in a private transaction or offer public equity claims on the subsidiary suggests managers believe the subsidiary's asset value is greater than the proceeds these transactions would produce and that firm value will increase as information from the newly independent subsidiary is released. This type of divestiture implies a parallel argument for the parent firm being spun off since managers may view their entire firm as being undervalued by the market relative to the value conditioned on their inside information. Nevertheless, although intra-industry rivals of the subsidiary experience positive stock-price reactions to the spin-off announcement, returns to rivals of the parent, although positive, are not significant.

Because a sell-off can be viewed as a method of external financing that allows managers to avoid an equity issue, stock price responses of rivals of a subsidiary to be sold off are predicted to be less negative than for a carve-out. Consistent with this view, rivals of assets to be sold off earn normal returns. Arguments about effects on rivals of the parent firm announcing a sell-off parallel those of equity carve-out decisions, except that sell-off announcements release the news that funds are to be

raised without an equity issue, suggesting that managers believe that parent firm equity is not overvalued. Although sell-off announcements do not generate significant intra-industry effects, there are significant positive share price reactions to rivals of restructuring firms. This indicates that positive information is released by these announcements about the value of the core assets of parents. This suggests that the favorable information released by these decisions pertains to managers' favorable expectations about the parent firm.

The market for conventional IPOs is typically viewed as suffering from adverse selection problems. Potential investors view corporate insiders of privately-held firms as having the incentive to time a going public transaction to correspond to unfavorable inside information. Aware of these incentives, rational investors offer an appropriately low average price for IPOs. Similar to equity carve-outs, the announcement of the intent to go public releases elements of industry-common information that causes downward revaluation of intra-industry rivals of the announcing firm. Together with the equity carve-out results, this evidence suggests that there is a negative signal content to going public. Thus, the decision to restructure a firm by selling equity to the public, even as an element of a corporate restructuring, is a negative signal about the value of the relevant industry.

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Vita

Steven R. Ferraro received a Bachelor of Arts in Spanish from the University of Utah in 1986. After working for Fidelity Investments for approximately 9 months, he matriculated in Brigham Young University's Masters of Business Administration program. He received an MBA in the spring of 1989. The following fall he entered the doctoral program in Business Administration at Arizona State University. In 1991 he transferred to Louisiana State University and completed his doctoral degree two years later in the fall of 1993. He has accepted a position of Assistant Professor of Finance at Pepperdine University in Malibu, California, effective September 1, 1993.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Steven Randal Ferraro

Major Field: Business Administration (Finance)

Title of Dissertation: Corporate Restructuring and the Information
Hypothesis: An Empirical Analysis

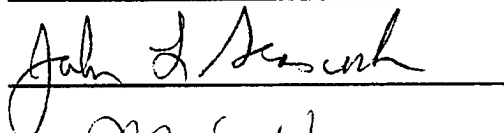
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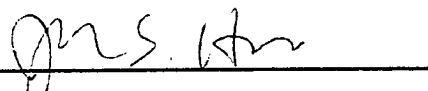

Major Professor and Chairman

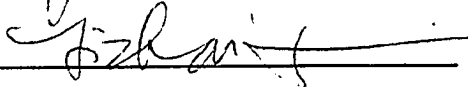

Dean of the Graduate School

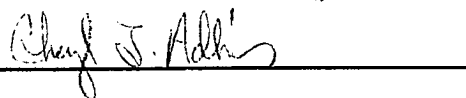
EXAMINING COMMITTEE:











Date of Examination:

April 21, 1993