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Essays on the Impact of Antitrust Regulation on Corporate Mergers and
Divestitures

A Dissertation

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Doctoral of Philosophy
in
Financial Economics

By

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May, 2007

Dedication,

This is dedicated to my parents, brothers, and sister.

Acknowledgement

I would like to thank my dissertation committee co-chairs Dr. Sudha Krishnswami and Dr. Tarun Mukherjee who never hesitated to guide me all through this dissertation and served as teaching mentors and role models. I also thank my committee members Oscar Varela, Gerald Whitney, and Peihwang Wei for their valuable comments that significantly improved this dissertation.

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Table of Contents

Abstract.....	vi
Essay 1: To Merge or Not Merge: Factors Affecting the Successful Completion of a Merger.....	1
1. Introduction.....	1
2. Literature Review.....	4
2.1. Motives behind Mergers and Acquisitions	4
2.2. The Success of a Merger Attempt.....	7
2.3. Cost of a Failed Merger Attempt	9
3. Hypotheses Development	10
3.1. Factors Influencing Regulatory Challenge	11
3.1.1. Market Concentration	11
3.2. Factors Affecting Merger Completion Decision.....	14
3.2.1. Target Termination Fees	14
3.2.2. Method of Payment.....	16
3.3.3. Investment Opportunities.....	20
4. Variables Definitions	21
5. Methodology	22
6. Data and Sample	26
7. Descriptive Statistics.....	30
8. Market Reaction Results	37
9. Results.....	41
9.1. Explaining the Choice between Completing and Canceling an Acquisition Deal Conditional on Regulatory Decision	41
10. Specification Tests	50
11. Conclusions.....	51
Essay 2: The Divorce before a Merger: Value Consequences and Capital Allocation Efficiency of Merger Facilitating Asset Divestitures	55
1. Introduction.....	55
2. Literature review.....	57
2.1. Explanations for Gains from Asset Divestitures.....	57
2.2. Efficiency of Internal Capital Allocation.....	59
2.3. Empirical Evidence on the Efficiency of Internal Capital Allocation	61
3. Hypotheses Development	62
3.1. Market Reaction to Merger Facilitating Asset Divestitures	63
3.2. Relatedness of Assets Divested in a Merger Facilitating Divestiture to the Acquirer’s Remaining Business Lines and the Acquirer’s Operating Performance following the Asset Sale.....	65
3.3. Internal Capital Allocation Efficiency	66
4. Variables Definitions	67
4.1. Corporate Focus	68
4.2. Operating Performance	68

4.3. Internal Capital Market Efficiency	68
5. Methodology	69
6. Data and Sample	70
7. Market Reaction Results	72
8. Descriptive Statistics.....	73
9. Results.....	76
9.1. Operating Performance Changes following an Asset Sale	76
10. Conclusions.....	79
References.....	81
Appendix: Brief Description of the Challenged Acquisition Deals.....	87
Vita.....	100

Abstract

A merger requires at least one of two separate yet equally important sets of negotiations. The first involves merging parties to discuss issues related to the terms of the merger, including target firm's valuation. The second resolves disputes between the merging parties and the government regulatory agency over the potential anticompetitive impact of the merger. In the first essay, I investigate the probability of completing an acquisition deal conditional on the government approval by applying a nested logit model. My results support the findings of Eckbo (1985), Coate, Higgins, and McChesney (1990), and Coate (2005) that mergers that are expected to increase market concentration are more likely to be challenged by the government. Consistent with Officer (2003) and Bates and Lemmon (2003), I find that including target termination fees is significantly positively related to the probability of completion irrespective of whether the deal is challenged or not. However, I document that including target termination fees deters competitive bidding only if the deal was challenged and leads to higher bid premium to the target firm only if the deal was not challenged. Conditional on not being challenged, acquirer's investment opportunities and the relative size of acquirer and target firms are significantly positively related to the probability of completion, while target investment opportunities and the existence of multiple bidders are significantly negatively related to the probability of completion. Conditional on the merger being challenged, acquirer's investment opportunities and the existence of target termination fees are positively related to the probability of completion and only the existence of multiple bidders is

negatively related to the probability of completion. In the second essay, I study the impact of asset sales on the firm's focus level, information asymmetry, and operating performance. I find that following a merger facilitating asset sale the firm becomes more diversified, its information asymmetry increases, and its operating performance does not change while following a non merger related asset sale, the firm becomes more focused, its information asymmetry decreases, and its operating performance improves significantly.

Essay I

To Merge or Not To Merge: Factors Affecting the Successful Completion of a Merger

1. Introduction:

A merger or acquisition¹ represents one of the most important strategic decisions made by managers as well as shareholders of the engaged firms. Any merger or acquisition deal involves at least one of two separate yet equally important sets of negotiations. The first set puts the managers and/or the shareholders of the acquiring and target firms face to face to discuss issues related to the terms of the merger, including target firm's valuation, while the second set resolves disputes between the merging parties and the government regulatory agency over the potential anticompetitive impact of the merger.² A breakdown in either set of negotiations would render the merger attempt unsuccessful and, therefore, an announcement of merger does not necessarily mean it will eventually be completed.

¹ For the purpose of this dissertation the terms "merger", "acquisition", and "takeover" are used interchangeably.

² Section 7 of Clayton Act of 1914 in conjunction with the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (henceforth, HSR Act) governs merger and acquisition activity. Section 7 of Clayton Act prohibits firms from acquiring, directly or indirectly, the whole or any part of the stock, assets, or share capital of another firm when the effect of such acquisition may substantially lessen competition, or create a monopoly. The HSR Act, which became effective in August 30, 1978, requires firms to file notification with the Federal Trade Commission and the Assistant Attorney General and wait a designated period of time before consummating the acquisition if the deal meets or exceeds the jurisdictional thresholds mandated in the Act². The federal government, through its different agencies, challenges merger or acquisition proposals that violate section 7 of Clayton Act and requires the merger parties to pursue a remedial action as a condition for approving the merger. The remedial action takes many forms that include requiring merger parties to divest some of acquirer's or target's assets to a buyer approved by the regulatory agency or limiting acquiring firm's (or combined firm's) future attempts at external expansion (e.g. forming business combinations or giving up patents).

Early theoretical and empirical research on the success of merger attempt (Walkling, 1985; Samuelson and Rosenthal, 1986; Hirshleifer and Titman, 1990) finds that the bid premium, the acquirer's ownership of the target prior to the actual acquisition offer (i.e., acquirer's toehold), and target managements' opposition are important factors in predicting the acquisition deal outcome. More recent research (Officer, 2003; Bates and Lemmon, 2003; Hotchkiss, Qian, and Song, 2005) focuses basically on the role of bidder and target termination fees in acquisition deal completion. The evidence is that termination fees serve as an efficient contracting device in the sense that they mitigate information asymmetries between the merger parties, rather than their being an attempt by target managers to deter competitive bidding.

Although the previous literature presents useful analyses of how a merger completion decision is made, the regulatory role in a merger completion process has escaped researchers' attention. Thus, several interesting questions relevant to this issue remain unanswered. These questions include the following:

- 1- What role, if any, do merger regulations and antitrust requirements play in a firm's decision to complete an acquisition deal?
- 2- What role do other factors play in a firm's decision to successfully complete an acquisition deal, conditioned upon regulatory approval or disapproval? Specifically, there are two opposite issues that beg to be addressed in this respect: a) what factors will motivate merging parties to complete the merger in spite of a regulatory challenge? b) what factors will motivate the parties to cancel the merger even in the absence of a regulatory challenge? and

3- What, if any, is the actual cost of a merger facilitating divestiture? How does it affect the acquirer's future growth needs and internal capital allocation efficiency?

These questions are intriguing in light of the evidence that the impact of government intervention is not uniform across firms seeking mergers. At first glance, it appears that government intervention has a deterring impact on acquisitions proposed by some firms but not on those proposed by other firms. Similarly, the cost of compliance with regulatory requirements appears to be different across merger-seeking firms. For example, Barnes & Noble Inc. withdrew its proposal to buy Ingram Book Group, a closely held unit of Ingram Industries Inc., following the Federal Trade Commission's opposition although both companies believed that the merger would be ultimately approved, while Albertson's Inc. chose to complete its merger with American Stores Co. although it was required to divest more stores than it had expected.³ These two examples pose two opposite rationales: Barnes & Noble case implies that if the merger had gone through, the government requirements would have made it ex-ante infeasible, while Albertson's case implies that even after divesting some assets, the merger was still ex-ante feasible. Thus, the bases on which these firms made their deal completion or cancellation decision seem to be different and the assets that these firms are required to divest seem to have different impact on their future growth needs.⁴

³ For more details about these two cases, refer to the Wall Street Journal editions on June 3, 1999 and June 22, 1999.

⁴ For more details about the antitrust remedies, refer to the following website:
<http://www.usdoj.gov/atr/public/guidelines/205108.htm>

In this first essay, I investigate the first two issues raised above.⁵ More specifically, I study the factors that explain the decision to cancel or complete a merger deal, conditioned on the regulatory approval.

2. Literature Review:

The literature pertaining to mergers and acquisitions is abundant. Below I provide a brief summary of the research that is immediately relevant to the question I address in this essay. This provides a perspective on where my research contributes to the literature, while it also motivates my analysis.

2.1. Motives behind Mergers and Acquisitions:

Since 1980, the U.S corporate market has been witnessing huge restructuring activities that culminated in the largest merger wave in the U.S history in the 1990s. Most of the acquisitions of the 1980s were hostile, paid for with cash, and played a significant role in disciplining managers, while most of those of the 1990s were friendly, paid for with stock, and played a trivial role as a corporate governance mechanism (Andrade, Mitchell, and Stafford, 2001; Kini, Kracaw, and Mian, 2004). During 1998-2001 many mergers have also been most value destroying (Moeller, Schlingemann, and Stulz, 2005).

Extant literature has thoroughly investigated the announcement effect of mergers and acquisitions. An overwhelming conclusion of this line of research can be summarized as follows: the targets return is positive and statistically significant, while for the acquirer

⁵ In the second essay, I investigate the third issue posed above. Specifically, I follow those merger cases where the acquirer was required to actually divest some assets or an entire division as a prerequisite for the merger approval. I compare merger facilitating asset divestitures and non-merger related asset divestitures in the context of acquirer's future growth needs and internal capital allocation efficiency.

it is insignificant.⁶ Travlos (1987) notes that the announcement return to the acquirer is affected by the method of payment (i.e., positive reaction to cash mergers and negative reaction to stock exchange offers), and argues that the negative reaction for stock offers is consistent with signaling hypothesis implying that stock offers convey information that the bidding firm is overvalued. Brown and Ryngaert (1991) present empirical evidence consistent with this argument and further argue that bidders offer stock in order to avoid the tax consequences of cash offers. Berkovitch and Narayanan (1990) also present an asymmetric information model that implies that in takeovers financed with mixture of cash and equity, the higher the amount of cash, the higher the abnormal returns to stockholders of both the acquirer and target. Huang and Walkling (1987) present empirical evidence consistent with this implication.

The literature provides both theoretical and empirical explanations as to why firms engage in mergers and acquisitions. The first explanation suggested in the literature is the market (or the monopolistic) power hypothesis. It is argued that a takeover may be driven by the acquiring firm's desire to gain larger market share by acquiring rival firms so that it could control output prices. However, such clear motivation is scrutinized and prohibited by the federal government for its potential anticompetitive impact. Ellert (1976) presents finds that enforcement of antimerger law does not dislodge monopolistic concentration of corporate wealth. Eckbo (1983); Stillman (1983); and Trembly and Trembly (1988), test the effectiveness of this policy and find little or no evidence of anticompetitive effects for firms prosecuted by the FTC. Most recently, Fee and Thomas

⁶ See for example, Huang, and Walkling (1987), Bradely, Desai, and Kim (1988), Servaes (1991), and most recently Luo (2005), among others.

(2004) and Sharur (2005) find that horizontal mergers (i.e. mergers between competitors) challenged by the FTC, are primarily motivated by efficiency considerations.

The hubris hypothesis, coined by Roll (1986) is another explanation for takeovers. It asserts that the decision makers of the acquiring firm suffer from hubris, so they mistakenly believe that the target firm value is above its market price and consequently overpay. Roll (1986) argues that the hubris hypothesis assumes that markets are strong-form efficient but may imply that the market for corporate control is inefficient. Therefore, hubris alone cannot explain the takeover phenomenon. Berkovitch and Narayanan (1993) test the hubris hypothesis and document that they cannot reject it in spite of their finding that the primary motive behind takeovers is the synergetic gains.

Given the conflict of interest between managers and shareholders, an acquisition may be one way by which managers spend firm's resources on nonpositive or even negative net present value projects. However, if the market for corporate control is efficient, such a firm will become a takeover target rather than being an acquiring firm. As a result, a takeover is both an evidence of conflict of interest between managers and shareholders and a solution of the problem. This is the free cash flow theory of takeovers formalized in Jensen (1986). It predicts that managers of firms with unused borrowing power and large free cash flows are more likely to undertake value-destroying mergers. Furthermore, these mergers are more likely to be diversifying mergers. Harford (1999) provides empirical evidence supportive of the Free Cash Flow theory. He finds that cash-rich firms are more likely to make diversifying, value destroying acquisitions. The prediction that diversification does destroy value has been empirically supported by Berger and Ofek (1995) and Lang and Stulz (1994) show that firms that undertake

diversifying mergers are poor performers. More recently, Aggrawal and Samwick (2003) provide theoretical and empirical evidence that, in equilibrium, firms in which managers experience an increase in private benefits of diversification will diversify more. Matsusaka (1996) finds that diversification is not driven by tough antitrust enforcement that may have prevented firms from growing in their industries, and that smaller firms are as likely to diversify as larger ones.

More recent explanations for mergers include market misvaluation and the industry shocks. Theoretical models of Shleifer and Vishny (2003) and Rhodes-Kropf and Vishwanathan (2003) predict that merger waves occur as managers time acquisitions when the market overvalues their firms. Empirically, Rhodes-Kropf, Robinson, and Viswanathan (2003) and Dong, Hirshleifer, Richardson, and Teoh (2005) find evidence supportive of this prediction. Mitchell and Mulherin (1996) show that merger waves are the result of firms' adaptation to industry shocks. However, whether an economic, regulatory, or technological shock leads to a merger wave depends on whether there is sufficient liquidity in capital markets (Harford, 2004).

2.2. The success of a merger or acquisition attempt:

The interest in modeling a takeover outcome has been propelled by the observation of asymmetric reactions to news of bid success and bid failure. Dodd (1980) shows that merger success announcement is greeted by positive market reaction while merger cancellation announcement is perceived as bad news. This may imply that information pertaining to the outcome of takeover was not fully incorporated in the stock price at the initial announcement of the takeover. Alternatively, the asymmetric stock

price reaction to merger failure and success can be explained by new information released by the acquiring and/or target firms during the time between the initial announcement date of a merger and its eventual outcome date. A merger is a lengthy process that may take more than one year to be concluded (completed or canceled). Research shows that, on average, the length of time between the announcement date and completion or termination date is six months.⁷ During this time period new information might be released about the acquirer and target firms, consequently changing shareholders' estimates about the post-merger value of the combined firm and possibly the likelihood of completing the merger deal. Consistent with this latter implication, Samuelson and Rosenthal (1986) find that target stock price changes can predict the deal outcome and Luo (2005) finds that merging companies use information extracted from market reaction in closing a merger deal. However, Jennings and Mazzeo (1991) find that managers do not learn from changes in their stock prices when completing or canceling their acquisition deal. Additionally, the new information allows competitors reevaluate the initial bidder's assessment of the target value, influencing their decision as to whether or not they should make competitive bids. Walkling (1985) finds that the existence of a competing bid and target management resistance decrease probability of takeover success while increased bid premium and payment of solicitation fees increase it. Hirshleifer and Titman (1990) provide theoretical perspective that supports these results.

⁷ See for example, Hotchkiss, Qian, and Song (2005) and Boone and Mulherin (2004).

2.3. Cost of a failed merger attempt:

The failure of a merger attempt can entail significant direct and indirect costs to the acquirer, target, or both firms.⁸ From the time of a merger announcement to the time when it is completed or canceled, the acquiring firm discloses information that it would not otherwise disclose, incurs substantial legal expenses, and faces production activity disruptions as well as management distraction.⁹ If the deal falls through, then competitors are in a better position to use such information to their advantage. Ekbo and Wier (1985) find evidence that rival firms benefit from the news of a merger proposal and that a delay in completion of the deal gives rival firms additional time to exploit the news. Bates and Lemmon (2003) find that the inclusion of target termination fees is more frequent in merger deals where the potential for information expropriation by third parties is significant. The target, on the other hand, has to seek other means of restructuring, including being taken over by a different firm,¹⁰ which may not be possible within a short period of time. The literature overwhelmingly suggests that the target firm's stock price reacts favorably at the acquisition announcement date, with the average abnormal return exceeding 10%.¹¹ However, Wier (1983) finds that between the merger announcement date and the date when the deal is canceled following antitrust challenge, targets lose all

⁸ An example of the direct cost of failed acquisition attempt is Staples and Office Depot merger attempt. Staples invested more than \$ 20 million in the case before the merger was banned by the government.

⁹ For example, when announcing the termination of Viasoft's acquisition agreement with Compuware, Steven Whiteman, Viasoft chairman, said "The board of directors did not believe that continuing litigation, with its inherent risks, substantial costs and potential irreparable damage to our business and relationships with customers, distributors, and employees, was in the best interest of Viasoft shareholders.

¹⁰ Getting eventually taken over seems to be the best strategy for most of the unsuccessful targets. For example, Jennings and Mazzeo (1993) find that targets of unsuccessful takeover that had resisted an initial offer are less likely to stay independent six months after the outcome date than are targets of unsuccessful takeover that did not resist.

¹¹ See for example Luo (2005), among others.

the announcement period gains.¹² She interprets this result as the cost of antitrust lawsuit to acquisition targets. Moreover, the party that reneges on a merger deal bears the risk of having to compensate the other party for damages stemming from the abandoned deal.¹³

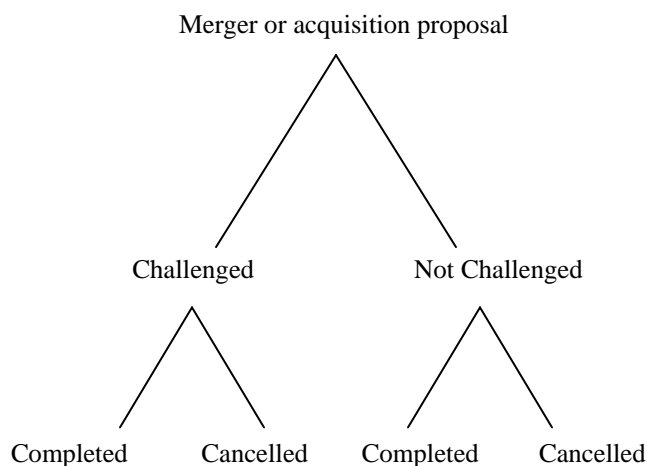
3. Hypotheses Development:

Based on the empirical evidence presented earlier, it seems that the likelihood of success or failure of a merger depends on whether or not the regulatory agencies challenge the deal. Thus, the determinants of completion or cancellation decision may be different when it is conditioned on the regulatory approval. I, therefore, visualize the merger completion or cancellation decision as in figure I where the merger parties get to choose between completing and canceling the deal after they observe the government decision as to whether or not the deal is challenged. I develop two sets of hypotheses that capture intricacies of the merger process path. The first set of the hypotheses is in regard to the regulatory agency's decision to challenge (or not challenge) the acquisition deal, while the second set concerns merger parties' decision to complete (or cancel) the acquisition conditional on the regulatory agency's approval.

¹² Also, Dodd (1980) finds that when the merger is canceled because it had been vetoed by incumbent target management, target firms retain some of the value gains they had realized when the merger was announced while when the merger is canceled for other reasons, target stock price falls back to where it was before the merger announcement.

¹³ For example, Northeast Utilities filed lawsuit against Consolidated Edison Inc for more than \$1 billion for the latter's withdrawal from the planned merger.

Figure I: The path of a merger or acquisition proposal



3.1. Factors Influencing Regulatory Challenge:

3.1.1. Market Concentration:

The regulatory investigation process of a merger begins once the merger parties accurately complete the forms required for notifying the Federal Trade Commission (FTC) and Department of Justice (DOJ). The HSR Act requires both the acquiring and the acquired entities to file notification if all the following conditions are met: (a) one entity has sales or assets of at least \$100 million; (b) the other entity has sales or assets of at least \$10 million; and (c) as a result of the transaction, the acquiring entity will hold an aggregate amount of stock and assets of the acquired entity valued at more than \$50 million; or (d) as a result of the transaction, the acquiring entity will hold an aggregate amount of stock and assets of the acquired entity valued at more than \$200 million, regardless of the sales or assets of the acquiring and acquired entity. The parties must

then wait a specified period, usually 30 days (15 days in the case of a cash tender or a bankruptcy sale), before they may complete the transaction.¹⁴

The DOJ issued its merger guidelines in 1984 in order to describe the general principles and specific standards normally used by the department in analyzing mergers to decide whether or not they violate Section 7 of Clayton Act. These guidelines are also among other undisclosed criteria that the FTC uses in its antitrust investigations. Coate, Higgins, and McChesney (1990) find that the FTC's decision to file an antitrust complaint against particular acquisitions is determined by these guidelines beside political factors. In 1992 the DOJ and FTC jointly issued horizontal merger guidelines to clarify certain aspects that proved to be ambiguous in the previous guidelines. Merger-induced increase in market concentration is the primary basis for the DOJ and the FTC in deciding whether or not to challenge a merger or acquisition. Since horizontal mergers (mergers between competitors) have the greatest potential for increasing market concentration, these proposals are primary targets for regulatory challenges. Additionally, vertical mergers (merger between producer and customer) that have the potential to increase concentration (measured by the Herfindahl Hirshman Index) in the market in which the merger parties operate trigger regulatory scrutiny.¹⁵

Eckbo (1985) models the government's decision to successfully challenge a proposed merger deal and finds that merger-induced increase in market concentration

¹⁴ For some cases, the FTC or the DOJ may need more time for investigation and therefore it issues a "second request" that requires the parties to provide additional documents and wait for another 30 days (10 days in the case of a cash tender or bankruptcy sale). If the first waiting period expires without issuing the "second request" then the parties can complete the transaction.

¹⁵ The FTC and DOJ merger guidelines define a market as a product or group of products and a geographic area in which it is produced or sold such that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future producer or seller of those products in that area likely would impose at least a "small but significant and nontransitory" increase in price, assuming the terms of sale of all other products are held constant.

increases the probability of challenging a merger while the number of rival firms decreases it. Coate et al (1990) model the FTC's decision to challenge merger proposals and examine a sample of cases for which the FTC issued a second request between 1982 and 1987. They find that increase in HHI, the existence of barriers to entry, and the possibility of collusion as a result of the merger can significantly predict the FTC's decision to challenge a merger deal. Coate (2005) finds that the probability that the FTC would file a complaint against a proposed merger increases with the post-merger HHI and the number of consumer complaints. The importance of the market share and concentration as determinants of challenging merger proposals is not limited to the U.S.A. Governments of many other countries use them as a basis on which anticompetitive impacts of mergers are determined.¹⁶

Based on the procedures and decision rules that the government follows in analyzing and challenging mergers and the evidence presented by Eckbo (1985), Coate et al (1990) and Coate (2005) I hypothesize that

***HI:** The greater the expected increase in the HHI in the relevant industry, the greater is the chance that the merger proposal will be challenged.*

The strategic importance to the economy of the industry in which a merger is attempted may determine how severely the merger is scrutinized by the government. Also, if the major player in the market is a foreign firm, the government may more likely allow the merger to go through. Therefore, when testing the above hypothesis, I control

¹⁶ See, for example, Khemani and Shapiro (1993).

for the industry in which the merger is attempted and for the market share held by foreign firm (s).

3.2. Factors affecting merger Completion Decision conditioned on the Regulatory Decision:

3.2.1. Target Termination Fees:

The literature presents two opposing arguments in explaining the role of the target termination fees in merger or acquisition deals: The managerial entrenchment hypothesis and the efficiency hypothesis. The managerial entrenchment hypothesis asserts that incumbent target management agrees to pay termination fees in order to lock their firms with bidders that promise them job security should the deal be completed. The efficiency hypothesis argues that termination fees reflect target managers' attempts to increase their shareholders' wealth. It asserts that target firm managers offer termination fees to the bidder in order to encourage it to reveal information about its post-merger plans for target assets that the bidder may be reluctant to disclose in order to prevent competitors from free riding on this information.¹⁷ Such information would enhance target manager's bargaining power to ask for higher premium, which will eventually benefit target shareholders. Officer (2003) and Bates and Lemmon (2003) find that target termination fees are associated with higher bid premiums and higher probability of deal success, a result that supports the efficiency hypothesis.

In merger deals that are challenged by the government, there are, at least, two reasons to believe that the target firm's agreement to pay termination fees is unlikely to serve as an incentive for the acquirer to reveal private information. First, challenged

¹⁷ Competitors' ability to exploit the information revealed during merger proposals is empirically supported by Eckbo and Wier (1985).

mergers are mergers in the same industry or related industries and, therefore, both the acquirer and the target firms have less information asymmetries about each other's values as well as about how each others assets can be used. Second, in challenged mergers the HSR Act prohibits the acquirer and the target from sharing information about each other's operations, pricing mechanisms, or future plans until the government agency concludes the investigation process lasting well beyond 30 days. This suggests that termination fees in challenged mergers are more likely to be used to deter competition rather than as a means to encourage the bidder to disclose information about the target's value.

Another reason for including target termination fees in merger deals is presented by Hotchkiss et al (2005). They model the contracting and negotiation process in mergers allowing for new information arrival subsequent to the signing of an initial merger agreement. The model implies that including target termination fees in a merger contract increases the expected merger synergy if the deal is completed by giving the acquirer the incentive to exert deal-specific effort with less concern about the possibility that the target would walk away from the deal after realizing the synergy. The acquirer has greater incentive in a challenged merger (than in an unchallenged one) to be involved in deal-specific efforts as it has to sign a consent decree requiring it to divest some assets or preventing it from forming business combinations in the future. Thus, I hypothesize the following,

H2: Conditional on the merger being challenged, the existence of target termination fees increases the probability that the merger will be completed by deterring competitive bidding.

3.2.2. Method of Payment:

Huang and Walkling (1987) state,

“The form of payment will influence bidding strategy if it affects the anticipated net present value of an acquisition. Payment methods can affect net present values through interrelations with either acquisition cost (i.e., size of premium) or the probability of success, or both”.

They argue that in stock offers, the target will have time to implement a defensive strategy because stock offers take more time to get the approval of the Securities and Exchange relative to cash offers. Therefore, stock offers may have a lower probability of success than that of cash offers. They do not directly test this prediction. However, they report a statistically significant positive relation between target’s cumulative abnormal returns and cash payment. As for the bidder’s abnormal returns, Travlos (1987) finds that it is positive for cash offers and negative for stock offers and that this result is robust to the type (tender offer or merger) and outcome (successful or unsuccessful) of the deal. Travlos (1987) interprets the robustness of the negative (positive) reaction of stock offers (cash offers) to the deal outcome as evidence against the possibility that stock offers may be less likely to be completed. However, the negative abnormal return in stock offers is greater for unsuccessful than for successful deals. Therefore, the possibility that the

market may be perceiving mergers paid with stock to be less likely to be completed cannot be ruled out.

The literature offers several explanations for the asymmetric shareholder reaction across cash and stock offers. Hansen (1987) develops a model of bargaining under asymmetric information where the acquirer and target know their values but neither knows the value of the other. He shows that equilibrium can develop whereby the acquirer offers stock when it is overvalued and offers cash when it is undervalued. If either is the case, target shareholders lose: if they had accepted stock, they would have purchased shares for more than what they are worth, and if they had accepted cash, they would have lost the opportunity to gain from expected increase in bidder's post-takeover value. Thus, the model predicts that target share price will decrease if the offer is accepted and increase if it is rejected. In Fishman (1987) model, cash is used to signal bidder's high valuation of target assets rather than being an indication of bidder's stock undervaluation as in Hansen (1987). Fishman (1987) concludes that the probability of a competing bid consequent to a stock offer is higher than that of a cash offer and that target shareholders are more likely to accept a cash offer rather than a stock offer. Consistent with this latter result, Jennings and Mazzeo (1993) find empirical evidence of negative relation between target resistance and percentage of offer represented by cash.

The theoretical models of Hansen (1987) and Fishman (1987) do not allow for mixed offers (only some percentage of the offer is made with cash). The implications of this type of offers are theoretically addressed by Eckbo, Giammarino, and Heinkel (1990). In the model, they derive a separating equilibrium in which the value of the bidder is revealed by the mix of cash and securities used as payment for the target. The

prediction is that the value of the bidder is monotonically increasing and convex in the fraction of the total offer that consists of cash. This prediction is in line with Hansen's (1987) prediction that cash offers signal bidder undervaluation and empirical tests fail to support the implications of the Eckbo, Giammarino, and Heinkel model. Berkovitch and Narayanan (1990) also model a setting that allows for mixed offers and predict that as competition to acquire the target firm increases, the amount of cash used in financing takeovers increases. This prediction is consistent with Fishman (1987) prediction in that cash payment deters competition. Empirically, Walkling (1985) and Jennings and Mazzeo (1993) find some evidence that the use of cash increases the probability of takeover offer success.

The theoretical arguments and the empirical evidence presented above may imply that acquisition deals paid in cash (or with some cash) are more likely to be completed than those paid entirely in stock. This implication applies to both challenged and unchallenged deals. However, I argue that cash payment is especially significant in completing unchallenged deals. My reasoning follows.

Recall that previously, it was argued that the existence of target termination fees is likely to deter competition (the managerial entrenchment hypothesis) in merger proposals, and even more so when the deal is challenged by antitrust agencies, increasing the likelihood of merger completion. Here, I posit the same competition deterrence role of the cash offers as predicted by Fishman (1987) and empirically supported by Walkling (1985) and Jennings and Mazzeo (1993). In other words, target termination fees and payment with cash may serve as substitutes for each other. Officer (2003) finds evidence of negative relation between payment in cash and the existence of target termination fees.

He reports that a larger percentage of deals without target termination fees are paid fully or partly with cash than deals with target termination fees.¹⁸ Consequently, it is difficult to predict ex-ante which of these two variables (target termination fees vs. cash offer) will dominate in explaining acquisition deal completion. However, the success of challenged deal is contingent on, among other things, the cost of fulfilling government requirements as well as the acquirer's willingness to comply with these requirements. Therefore, from the perspective of both acquirer's and target's shareholders a challenged deal is more uncertain than an unchallenged deal. From the view point of the acquirer of an challenged deal, the target termination fees may serve as a better substitute as deterrent to competitive offers than cash offers. This proposition leads me to hypothesize the following,

H3: Conditional on the merger not being challenged, a merger paid in cash (or a combination of cash and stock) is more likely to be completed.

3.2.3. Investment Opportunities:

Tobin's Q, measured as the ratio of the firm value to its replacement cost, has been used in the literature as a metric of firm's investment opportunities, management efficiency, and information asymmetry. For the purpose of this dissertation, I use it as a measure of firm's investment opportunities. Viewed in this sense, Tobin's Q is a forward looking measure of a firm's future growth opportunities that may justify its investments,

¹⁸ Officer (2003) also finds that the negative relation between the existence of target termination fees and the appearance of competing bid post initial bid is no longer significant after controlling for other variables including the payment with cash even when mixed with other securities. This result supports Fishman (1987) theoretical prediction that cash offers are less likely to be contested than stock offers.

including acquisitions. Consistent with this conjecture, Lang, Stulz, and Walkling (1989) argue that Tobin's Q is an increasing function of the quality of a firm's current and anticipated projects under existing management. They investigate announcement returns by dividing merger partners in terms of their Tobin's Q. They find that bidder, target, and total returns are the highest when a high Q bidder takes over a low Q target in tender offers and Servaes (1991) finds that this result holds not only for tender offers but also for merger parties as well. Jovanovic and Rousseau (2002) present a model that predicts that firms with high investment opportunities will acquire those with low investment opportunities and that merger waves occur during times when dispersion in investment opportunities among firms increases. These results imply that Tobin's Q also proxies for the improvements that acquirer is expected to introduce in managing target firm's assets. Such improvements are predicted by Hirshleifer and Titman (1990) to increase the probability of deal success. Thus, I hypothesize

H4: The higher the investment opportunities of the acquirer relative to those of the target, the higher is the probability of a merger completion irrespective of whether the merger is challenged or unchallenged.

4. Variables Definitions:

The existence of target termination fees, the method of payment for the acquisition, and the final outcome of the deal are collected from the Securities Database Corporation (SDC) and verified by Lexis-Nexis search except for target termination fees. The SDC identifies an acquisition event as having target termination fees if the merger

parties have signed a merger agreement containing a statement that requires the target firm to pay certain amount of money to the acquiring firm if it chooses to cancel the deal. The merger deals that are challenged by the government are identified by Lexis-Nexis search. A deal is defined as challenged if the FTC, FCC, or DOJ required the merger parties to pursue a remedial action, if the merger parties cancelled the deal because of concerns about antitrust investigation, or if the regulatory agency succeeded in obtaining a preliminary injunction to block the deal.

The firm's investment opportunities is measured by Tobin's q and is calculated as,

Tobin's $q = (\text{market value of equity} - \text{book value of equity} + \text{total assets})/\text{total assets}$

The Herfindahl Hirshman Index (henceforth, HHI) is calculated as,

$$H = \sum_{i=1}^n \alpha_i^2$$

where α_i is the market share of firm i and n is the number of firms operating in the relevant market. The relevant market is defined as the SIC code that is determined as follows

1. Primary SIC code of the acquirer and target if they match on the 4- digit or 3-digit level and the HHI is calculated using the sales of all firms that have such primary SIC code. To determine the merger impact on HHI, the HHI is recalculated after summing up the acquirer and target sales at the end of the year preceding the merger announcement year; or

2. If the acquirer and target primary SIC codes do not match, the relevant market is the acquirer and target divisional SIC code that matches on the 4-digit or 3-digit level. If the acquirer and target have more than one similar divisional SIC codes, the relevant market is the SIC code in which the HHI is the highest, and the HHI is calculated using the segment sales of all firms that operate a segment with such SIC code. The impact of HHI is determined by recalculating the HHI after summing up the acquirer and target relevant segment sales; or
3. If neither the primary nor divisional SIC codes of the acquirer and target match on the 4-digit or 3-digit level, the relevant market is the target firm's primary SIC code. The impact of the merger is determined by recalculating the HHI after dropping the target firm from its primary market.

5. Methodology:

Almost every announcement of a merger or acquisition contains a clause that conditions the completion of the deal on the regulatory approval, among other things. Therefore, the decision making process of a merger deal completion can be viewed as a tree form as in Figure I, where the merger parties have to get the regulatory approval on the first stage and then decide the final outcome of the deal on the second stage. Such a decision making process can be modeled using a nested logit model. The nested logit model has the additional property of relaxing the Independence of Irrelevant Alternatives assumption (IIA) that underlies the standard logit model. This assumption means that the decision to make a particular choice is not affected by the existence of other choices. Therefore, if the IIA assumption fails to hold, the ratio of the probabilities of any two

choices will not be independent from the remaining probabilities. Consequently, using a standard logit model will produce inefficient parameter estimates. The IIA assumption is unlikely to hold in an acquisition completion decision setting because an acquiring (or target) firm that is involved in a challenged merger may choose to cancel the deal and seek acquiring (or getting acquired by) a different firm that is unlikely to raise antitrust concerns. Thus, the decision to cancel a challenged acquisition deal may be affected by the existence of other firms that can be acquired (or get acquired by) without being challenged. In fact, some acquiring and target firms that cancelled the merger attempt due to regulatory concerns actually announced that they will be seeking mergers with other firms.

I assume that both the acquiring and target firms have a common (combined) utility function and that both will jointly choose the final outcome of the deal (complete or cancel) that maximizes the common utility function. This assumption holds, at least, for friendly mergers where both parties are willing to do what it takes to facilitate the process (including complying with regulatory requirements, should there be any). Although the upper level choice in Figure I is made by the government and the lower level choice is made by the merger parties, the whole decision making process can still be assumed solely the merger parties' because, first, merger guidelines have become so transparent that merger parties can predict with reasonable accuracy whether or not a proposed merger attempt will be challenged by the government (Johnson and Parkman,

1991).¹⁹ Second, even if the merger was challenged, merger parties can still complete the merger provided that they comply with the regulatory requirements.

The acquiring and target firms' common utility function is assumed to take the following form,

$$U_{ij} = V_{ij} + \varepsilon_{ij} \quad (1)$$

$$i \in \{1, 2, \dots, C\}$$

$$j \in \{1, 2, \dots, N_i\}$$

where U_{ij} is the utility function from choice j from the choice set i , V_{ij} is a function of all measured characteristics and ε_{ij} is a residual that captures the effects of unmeasured variables and is independently and identically distributed with extreme value distribution.

Then, the probability P_{ij} that the alternative (i, j) will be chosen is given by,

$$P_{ij} = e^{V_{ij}} / \sum_{m=1}^C \sum_{n=1}^{N_m} e^{V_{mn}} \quad (2)$$

I assume that,

$$V_{ij} = \beta' X_{ij} + \alpha' Y_i \quad (3)$$

where X_{ij} is the vector of explanatory variables for the final outcome of the deal and Y_i is the vector of explanatory variables for the regulatory decision.

Under these assumptions, the joint probability can be written as,

$$P_{ij} = P_{j|i} \cdot P_i \quad (4)$$

¹⁹ With the passage of the HSR Act, merger regulations have become dramatically transparent. This transparency eliminates much of the uncertainty regarding a) whether the DOJ or FTC will challenge a merger, b) the duration of Antitrust proceedings, c) and the type of remedial action they might be asked to implement, should they be required to do so (Johnson and Parkman, 1991).

where P_i is the marginal probability of choosing the regulatory reaction and $P_{j|i}$ is the conditional probability of choosing the final outcome conditional on the regulatory decision.

The conditional probability $P_{j|i}$ is

$$P_{j|i} = e^{\beta'X_{ij}} / e^{\lambda I_i} \quad (5)$$

and the marginal probability P_i is,²⁰

$$P_i = e^{\alpha'Y_i + \lambda I_i} / \sum_{m=1}^C e^{\alpha'Y_m + \lambda I_m} \quad (6)$$

where

$$I_i = \log \left(\sum_{j=1}^{N_i} e^{\beta'X_{ij}} \right) \quad (7)$$

is the inclusive value and represents the expected value of the subset i . λ is the coefficient of the inclusive value and reflects the dissimilarity of the lower level choice. Modeling the decision making process as in figure I and using the nested logit model is appropriate if the coefficient of the inclusive value is different from 1.²¹ If $\lambda=1$, the nested logit model reduces to a multinomial model. For $0 < \lambda < 1$, the model fails to satisfy the IIA property but it does satisfy the properties required for random utility. For

²⁰ Another way to write equations (5) and (6) is,

$$P_{j|i} = e^{\beta'X_{ij}} / \sum_{k=1}^{N_i} e^{\beta'X_{ik}} \quad (5)'$$

$$P_i = e^{\alpha'Y_i} \sum_{j=1}^{N_i} e^{\beta'X_{ij}} / \sum_{m=1}^C e^{\alpha'Y_m} \sum_{n=1}^{N_m} e^{\alpha'X_{nm}} \quad (6)'$$

If Y_i and/or X_{ij} contain (s) firm specific terms that are the same for the same firm across all choices, they drop out of the probability function. Therefore, to allow for firm specific variables, I use a method suggested by Greene (2003) by adding an indicator variable for one choice on each subset and interacting it with the firm specific variable.

²¹ See Maddala (1983) page 70.

λ outside the unit interval, the probabilities are still well defined (Hausman and McFadden, 1984). The parameter vectors α' and β' in equation (3) can be estimated by full information maximum likelihood or sequentially by limited information maximum likelihood. I use the full information maximum likelihood because it produces more efficient parameter estimates.²²

6. Data and sample:

The initial sample of mergers and acquisitions is obtained from the Securities Database Corporation (SDC) over the period 1990-2002. I select the mergers and acquisitions where the acquirer and target are U.S public firms and exclude firms in the financial industry (i.e. firms with SIC code 6000-6999) because the financial variables of these firms are not directly comparable to those of other firms. I include only those acquisitions where the acquirer seeks to end up controlling the target firm by holding more than 50% of its outstanding shares after the transaction²³ and exclude acquisitions where the acquirer had a controlling stake in the target prior to the merger. Leverage buyouts, management buyouts, and cases where the target firm ends up a private firm are excluded. To be in the sample, both the acquiring and target firms must have data on the COMPUSTAT and CRSP databases. Finally, only acquisition deals that are reportable under the HSR Act are included and, therefore, acquisition cases where the sum of the acquirer and target assets (sales) at the end of the year preceding the announcement year

²² See Greene (2003) page 727.

²³ Less than controlling ownership in the target firm is not likely to trigger government scrutiny. For example, the FTC let Lockheed Martin's acquisition of 49% of Comsat to go through without conditions.

is less than \$110 million and acquisitions where the transactions value²⁴ is less than \$50 million are excluded.²⁵ This screening process results in 1416 acquisition deals. These deals are, then, searched on Lexis-Nexis to verify the incidence of acquisition event, the announcement date of the deal, its final outcome, the method of payment, and whether the acquisition parties had signed a definitive merger or acquisition agreement before deciding the final outcome of the deal.²⁶ From the Lexis-Nexis search, I find that some of the deals that the SDC reports as acquisitions are not actually acquisition deals. Instead, those cases are: strategic alliances, sales of convertible debt, sales of series B stock or preferred stock, purchasing an option to purchase target firm's stock, or some kind of business combinations between the acquirer and target firms. After excluding those observations the final sample drops to 1139 completed and cancelled acquisition deals.

To identify acquisition deals challenged by the government, I search the newswires compiled in Lexis-Nexis for announcements of such deals.²⁷ I define a deal as challenged if the FTC, FCC, or DOJ required the acquisition parties to pursue a remedial

²⁴ SDC defines the transaction value as the total value of consideration paid by the acquirer, excluding fees and expenses. The dollar value includes the amount paid for all common stock, common stock equivalents, preferred stock, debt, options, assets, warrants, and stake purchases made within six months of the announcement date of the acquisition.

²⁵ The HSR Act requires both the acquiring and the acquired entities to file notification if all the following conditions are met: (a) one entity has sales or assets of at least \$100 million; (b) the other entity has sales or assets of at least \$10 million; and (c) as a result of the transaction, the acquiring entity will hold an aggregate amount of stock and assets of the acquired entity valued at more than \$50 million; or (d) as a result of the transaction, the acquiring entity will hold an aggregate amount of stock and assets of the acquired entity valued at more than \$200 million, regardless of the sales or assets of the acquiring and acquired entity.

²⁶ For this search, I use the bidder and target names and merger, acquisition, offer, or bid as search terms.

²⁷ To identify the challenged deals from Lexis-Nexis, I use the bidder and target names and FCC, FTC, or department of justice as search terms. To verify the accuracy of my search algorithm, I cross reference the challenged deals specified by this search algorithm with the acquisition deals on the FTC website for the period 1996-2002 and with the challenged horizontal deals provided by Shawn Thomas from his sample in Fee and Thomas (2004) for the period 1990-1996. I find that my search algorithm can identify each and every challenged deal that appears on the FTC website and in Fee and Thomas (2004) sample. In the Appendix, I provide brief details about the challenged acquisition deals collected from Lexis-Nexis, the FTC website, and WSJ.

action, if the merger parties cancelled the deal because of concerns about antitrust investigation, or if the regulatory agency succeeded in obtaining preliminary injunction to block the deal. The inclusion of target termination fees in a merger deal is determined from the SDC. Articles published around the acquisition announcement date are collected by searching the Wall Street Journal and Lexis-Nexis news wires.

Panel A of Table I shows that the sample is dominated by mergers that were completed without being challenged and that the percentage of cancelled mergers among challenged deals is higher than that among unchallenged deals. The sample period has been ended in 2002 because in 2002 the assets and/or sales thresholds have been amended for the acquisition to qualify for merger notification under the HSR Act. Also, acquisitions of foreign entities by U.S firms or foreign entity's acquisition of U.S firm have become qualified for notification provided that they satisfy the required thresholds. Panel B of Table I shows the distribution of the sample acquisitions across the sample period of 1990-2002. The sharp increase in the number of acquisitions during the second half of the 1990s is consistent with the documented merger wave of the 1990s which starts to dissipate after the turn of the century. The challenged deals do not include acquisition deals where the FTC granted early termination of the HSR waiting period or terminated its investigation after a second review had been issued. The peak of the number of challenged deals in 1998 is consistent with reports released by the Bureau of competition of the FTC that year 1998 was the most active year in terms of the number of merger cases reviewed by the FTC. Of the 93 merger attempts that were challenged, 62 are challenged by the FTC, 18 by the DOJ, 10 by the FCC, one by both the DOJ and FCC, and one by the pentagon. In 52 challenged and completed cases, merger parties are

Table I: Panel A shows the distribution of 1139 challenged and unchallenged acquisitions between completed and cancelled deals. Panel B shows the distribution of these deals across the period 1990-2002 broken down into completed and cancelled deals. The acquisition deals are obtained from the Securities Database Corporation (SDC). Challenged deals are identified by searching the newswires compiled in Lexis-Nexis. A deal is defined as challenged if the FTC, FCC, or DOJ required the acquisition parties to pursue a remedial action, if the merger parties cancelled the deal because of concerns about antitrust investigation, or if the regulatory agency succeeded in obtaining preliminary injunction to block the deal. Panel C shows the distribution of acquisitions across industries where the industry is defined at the two digit SIC level and the acquisition is classified as same industry if the acquirer and targets firms have the same two digit primary SIC code. Panel D shows mean and median values for transaction value, Herfindahl Hirschman Index (HHI) in the year preceding the announcement date, and change in HHI that the acquisition results in, and percentage of deals that fall in the classification shown in the first column. Dollar amounts are denominated in millions.

Panel A: Distribution of acquisitions between completed and cancelled				
Deal outcome	Unchallenged acquisitions		Challenged acquisitions	
	N	%	N	%
Completed	904	86.42	72	77.42
Cancelled	142	13.58	21	22.58
Total	1046	100.00	93	100.00

Panel B: Distribution of acquisitions across sample period				
Year	Number of acquisitions			
	Unchallenged acquisitions		Challenged acquisitions	
	Completed	Cancelled	Completed	Cancelled
1990	16	4	1	0
1991	16	3	0	0
1992	17	2	0	0
1993	30	12	3	1
1994	33	14	9	1
1995	62	12	5	1
1996	74	13	8	3
1997	111	10	5	4
1998	131	16	15	1
1999	155	24	12	5
2000	123	17	8	1
2001	85	11	3	3
2002	51	4	3	1
Total	904	142	72	21

required to actually sell selected assets, in 8 cases parties have to sell rights to produce some products or license patents to a third party named by the government, and in 5 cases the acquirer or the resulting firm is restricted from acquiring interests in selected industries. Other remedial actions include delegating voting rights or transferring holdings in another firm to a trustee appointed by the FTC to sell those holding to a third party (2 cases), creating a new competitor (2 cases), terminating selected business agreements (1 case), making changes in internal operations (1 case), and canceling some business agreements and allowing a target's competitor equal access to cable (Time Warner's acquisition of Turner Broadcasting).²⁸

7. Descriptive Statistics:

The distribution of the same industry acquisition deals across industries in Panel C of Table I does not show any clear industry clustering except for the business services industry that went through a relatively huge consolidation activity. This pattern continues to be seen when the deal is not challenged. Mergers in the communications, chemicals and allied products, petroleum and coal products, and retail trade industries show more prevalent government involvement as these industries have relatively higher percentage of challenged deals. Only the communication industry is regulated, thus, there is no sufficient indication that mergers in regulated industries may be subject to heavier government scrutiny. Most of the acquisitions take place between parties in the same

²⁸ Eckbo (1985) identifies 98 challenged (80 horizontal) merger cases in the mining and manufacturing industries where a divestiture was ordered in 50 cases over the period 1963-1981 and Fee and Thomas (2003) identify 39 challenged horizontal cases over the period 1980-1997.

industry and a larger percentage of deals are challenged by the government when the merger parties are in the same industry than when they are in different industries.

Panel D of Table I shows that the median transaction value of a challenged and completed deal is more than ten times higher than that of an unchallenged and completed deal while the transaction value of a challenged and cancelled deal is only five times higher than that of an unchallenged and cancelled deal. The larger transaction value of a challenged deal may be due to larger size targets, higher bid premium offered by the acquirer, or both. Following Officer (2003), I use two measures of the bid premium because the premiums computed using SDC data are noisy containing large outliers. The first measure is the total compensation paid to the target deflated by the target's market value 42 days prior to the bid announcement day less one. The second measure is the share price paid to the target as reported by SDC deflated by the target's share price 42 days prior to the bid announcement less one. The bid premium is equal to the first measure if it is greater than zero and less than two and equal to the second measure if the first is missing and the value of the second measure is between zero and two. The median bid premium is about 70% of the target firm's value for completed deals whether the deal was challenged or not while it is more than 90% for a challenged and cancelled deal compared to less than 50% for an unchallenged and cancelled deal. The market concentration in which a merger is attempted is low (median HHI is 0.123 for completed acquisitions and 0.130 for cancelled acquisitions) and is expected to result in either no change or very small change in market concentration (median change in HHI is 0.00 for completed acquisitions and 0.002 for cancelled acquisitions). However, classifying the mergers into challenged and unchallenged deals reveals that challenged mergers are

Panel C: Distribution of acquisitions across industries				
Industry Name (2-digit SIC)	All acquisitions		Unchallenged acquisitions	Challenged acquisitions
	N	%		
Agricultural services (07)	1	0.09	1	0
Oil and gas extraction (13)	36	3.17	36	0
Other Mining (10 and 14)	4	0.35	4	0
General building contractors (15)	7	0.62	7	0
Food and kindred products (20)	21	1.85	20	1
Other manufacturing (22, 23, 24, 25, 30, 32, and 34)	23	2.02	22	1
Paper and allied products (26)	10	0.88	8	2
Printing and publishing (27)	10	0.88	9	1
Chemicals and allied products (28)	61	5.35	52	9
Petroleum and coal products (29)	6	0.52	1	5
Primary metal industries (33)	16	1.41	15	1
Industrial machinery and equipment (35)	49	4.31	47	2
Electronic and other electric equipment (36)	52	4.57	50	2
Transportation equipment (37)	17	1.50	14	3
Instruments and related products (38)	55	4.84	50	5
Miscellaneous manufacturing industries (39)	9	0.79	8	1
Other transportation (40, 42, 45, and 47)	18	1.58	17	1
Communication (48)	73	6.41	59	14
Electric, gas, and sanitary services (49)	50	4.40	46	4
Wholesale trade (50, and 51)	21	1.85	19	2
Retail trade (52, 53, 54, 56, 57, 58, and 59)	46	4.05	39	7
Other services (70, 72, 75, 78, 82, 83, and 87)	16	1.41	15	1
Business services (73)	152	13.37	144	8
Amusement and recreation services (79)	13	1.14	13	0
Health services (80)	30	2.64	27	3
Total same industry acquisitions	796	70	723	73
Cross industry acquisitions	343	30	323	20
Total	1139	100	1046	93

Panel D: Mean and median values for transaction value, HHI in the year preceding the announcement date, and change in HHI that the acquisition results in, and percentage of deals that fall in the classification shown in the first column.

	All acquisitions		Unchallenged acquisitions		Challenged acquisitions	
	Completed	Cancelled	Completed	Cancelled	Completed	Cancelled
Mean transaction value	1874.39	1972.77	1081.36	1902.03	11787.25	2420.75
Median transaction value	339.57	402.77	303.73	356.86	4169.07	1905.36
Mean bid premium	0.7880	0.6189	0.7845	0.5733	0.8326	0.8829
Median bid premium	0.7169	0.4799	0.7171	0.4660	0.7007	0.9162
Mean HHI before merger	0.164	0.177	0.167	0.176	0.130	0.190
Median HHI before merger	0.123	0.130	0.124	0.125	0.099	0.160
Mean change in HHI	0.009	0.018	0.009	0.011	0.016	0.064
Median change in HHI	0	0.002	0	0.002	0.007	0.020
Percentage of deals paid with cash only	22.8%	27.6%	23.8%	28.2%	11.1%	23.8%
Percentage of deals paid with stock only	40.4%	39.9%	40.5%	42.3%	38.9%	23.8%
Percentage of deals with target termination fess	75.4%	30.7%	75.3%	25.4%	76.4%	66.7%
Percentage of deals with multiple bidders	5.1%	25.8%	5.1%	28.9%	5.6%	4.8%
Percentage of targets firms with poison pill in place	0.9%	7.4%	1.0%	8.5%	0	0
Percentage of deals with lock up option	16.5%	9.8%	16.6%	8.5%	15.3%	19.0%

expected to result in greater change in market concentration relative to unchallenged mergers as the median change in HHI is 0.007 for completed acquisitions and 0.02 for cancelled acquisitions. The mean and median values of the merger-induced change in HHI for all the challenged cases are 0.0078 and 0.0266, respectively. These values confirm Eckbo (1985) results who finds that challenged horizontal mergers induce a mean and median change in HHI of 0.01 and 0.033, respectively. The stock is more prevalent method of payment than pure cash payment as about 40% of the deals are paid

for with only stock regardless of whether the deal is challenged or not. Target termination fees are included in more than 70% of merger deals with the exception of unchallenged yet cancelled deals where only 25.4% of them include termination fees payable by the target. This observation is consistent with the results of the empirical research that finds that acquisition deals that include target termination fees are more likely to be completed. The unchallenged and cancelled deals also represent the highest percentage of contested ones and the lowest percentage of deals with target termination fees or lock up option. A lock up option gives the acquirer the right to buy target firm's shares at a specified price if the deal fails. It is another mechanism beside target termination fees that the acquirer can use to lock the target firm in the deal. The poison pill is rarely used by the target firm as an antitakeover measure as less than 10% of targets involved in unchallenged mergers and none of the targets involved in challenged merger has a poison pill in place.

Because the number of challenged deals is smaller than that of unchallenged deals, the following discussion is based on median differences rather than mean differences. Panels A and B of Table II show the descriptive statistics for acquirers and targets of unchallenged and challenged acquisitions and median difference tests of selected variables. Acquirers and targets of challenged deals are much larger than their counterparts of unchallenged acquisition deals and have higher sales. This result is expected since the government is more likely to challenge acquisitions proposed by parties whose sum of sales or assets would result in increasing market concentration.

Acquirers of challenged acquisitions have significantly higher free cash flows but significantly lower leverage ratio, lower investment opportunities, and lower market-to-book ratio than acquirers of unchallenged acquisitions. Targets of challenged

acquisitions, on the other hand, are more levered and have significantly higher investment opportunities and market- to-book ratio than targets of unchallenged mergers. In Panels C and D of Table II, I classify the unchallenged deals into completed and cancelled deals.

Table II: Panels A and B present the summary statistics for acquirers and targets involved in unchallenged and challenged acquisitions. Panels C and D present the summary statistics for acquirers and targets involved in *unchallenged* completed and cancelled acquisitions. Panels E and F present the summary statistics for acquirers and targets involved in *challenged* completed and cancelled acquisitions. All summary statistics are calculated at the end of the year preceding the year of acquisition announcement date. Free cash flow (FCF) is calculated as operating income before depreciation – interest expense – income taxes – capital expenditures. Leverage is calculated as (long term debt + current portion of long term debt) / (total assets + book value of equity + market value of common equity). Market value of common equity is calculated as the product of number of shares outstanding and the fiscal year closing stock price. Tobin’s q is calculated as (market value of common equity – book value of equity + total assets)/(total assets). PPE is the plant, property, and equipment. Dollar amounts are denominated in millions.

Panel A: Acquirers					
Variables	Unchallenged acquisitions		Challenged acquisitions		<i>p</i> -value for median difference
	Mean	Median	Mean	Median	
Total assets	7064.86	1259.04	11764.25	4096.10	0.00
Sales	5402.74	1046.15	10361.02	3797.00	0.00
FCF/Total assets	1.85%	3.96%	2.78%	4.81%	0.007
Leverage	14.34%	10.42%	13.48%	10.85%	0.014
PPE/Total assets	28.89%	21.09%	30.29%	25.30%	0.593
Tobin’s Q	3.25	1.96	3.11	2.31	0.00
M/B	7.98	3.22	4.60	3.44	0.003
Panel B: Targets					
Total assets	800.55	170.08	4723.49	1476.00	0.00
Sales	762.65	170.44	4476.00	1001.56	0.00
FCF/Total assets	-2.56%	1.73%	0.78%	2.76%	0.484
Leverage	17.12%	11.65%	18.66%	18.18%	0.052
PPE/Total asset	28.66%	20.52%	30.34%	24.73%	0.728
Tobin’s Q	2.42	1.54	2.45	1.63	0.00
M/B	3.54	2.09	4.13	2.59	0.00

Acquirers of unchallenged and completed deals have significantly higher sales than acquirers of unchallenged and cancelled deals but are comparable in terms of their assets, free cash flows, leverage, plant property and equipment, investment opportunities,

Table II continued,

Panel C: Acquirers of unchallenged acquisitions					
Variables	Completed acquisitions		Cancelled acquisitions		<i>p</i> -value for median difference
	Mean	Median	Mean	Median	
Total Assets	7261.53	1342.16	5812.85	782.21	0.597
Sales	5759.64	1127.44	3130.62	637.84	0.00
FCF/Total assets	2.41%	4.24%	0.13%	2.02%	0.165
Leverage	13.69%	9.54%	18.48%	16.67%	0.143
PPE/Total assets	28.34%	20.65%	32.44%	24.75%	0.294
Tobin's Q	3.35	2.02	2.56	1.68	0.303
M/B	8.56	3.29	4.30	2.72	0.250
Panel D: Targets of unchallenged acquisitions					
Total assets	615.17	157.91	1926.56	305.61	0.00
Sales	575.96	155.37	1951.15	310.47	0.00
FCF/Total assets	-3.14%	1.73%	0.88%	1.73%	0.422
Leverage	16.64%	10.71%	20.13%	16.90%	0.235
PPE/Total assets	27.95%	19.75%	32.17%	27.340	0.045
Tobin's Q	2.45	1.56	2.24	1.46	0.089
M/B	3.50	2.12	3.81	1.95	0.073

and market-to-book ratios. Targets of unchallenged and completed deals have significantly less assets and sales and lower plant property and equipment and investment opportunities than those of targets of unchallenged and cancelled deals.

Panels E and F of Table II classify the challenged deals into completed and cancelled acquisitions. Both acquirers and targets of challenged and completed deals are not significantly different from their counter parts of challenged and cancelled deals in terms of assets, sales, free cash flows, leverage, investment opportunities, plant, property, Table II continued,

Panel E: Acquirers of challenged acquisitions					
Variables	Completed acquisitions		Cancelled acquisitions		<i>p</i> -value for median difference
	Mean	Median	Mean	Median	
Total assets	13744.98	5309.10	4973.17	2472.61	0.181
Sales	11723.52	4353.07	5689.62	3638.81	0.106
FCF/Total assets	1.35%	3.75%	8.23%	6.96%	0.136
Leverage	13.15%	11.12%	14.64%	8.33%	0.765
PPE/Total assets	32.92%	27.35%	21.27%	16.20%	0.575
Tobin's Q	3.19	2.31	2.86	2.26	0.232
M/B	4.62	3.43	4.53	4.09	0.823
Panel F: Targets of challenged acquisitions					
Total assets	5592.39	1718.55	1744.41	1187.96	0.903
Sales	5040.44	1007.48	2540.77	721.35	0.289
FCF/Total assets	0.92%	2.01%	0.34%	3.82%	0.145
Leverage	19.20%	17.88%	16.80%	17.79%	0.911
PPE/Total asset	32.48%	27.71%	23.02%	17.45%	0.391
Tobin's Q	2.46	1.65	2.45	1.57	0.550
M/B	4.78	2.62	1.92	2.25	0.911

and equipment, or market-to-book ratio. The reason why the target firm is larger in a cancelled deal than in a completed deal for the unchallenged deals may be due to the fact that larger targets are harder to acquire.

8. Market Reaction:

Panel A of Table III shows that when an unchallenged deal that is eventually completed is announced, acquirers lose a median value of less than 1% while the targets gain about 15% over one day period before announcement. However, when an unchallenged merger that is eventually cancelled is announced, acquirers lose 1.52% and targets gain 7.58%. Lower gains to targets of cancelled deals may be attributed to market's ability to anticipate that the deal would fail. Panel B of Table III shows that the

Table III: Panels A and C show the cumulative abnormal returns (CAR) around the announcement of unchallenged and challenged acquisition deals, respectively, for the event windows shown in the second column and classified according to the final outcome of the deal. Panels B and D show the CARs around the announcement of the final outcome of the deal for unchallenged and challenged deals, respectively. CAR is calculated using the standard event study methodology of Brown and Warner (1985) with the value-weighted portfolio of all CRSP firms is used as a proxy for the market portfolio. The market model parameters are estimated using returns of 155 days ending 45 days before the date of announcement.

Panel A: Stock price reaction at the announcement of an unchallenged acquisition deal

Deal outcome	Event window	Acquirer CAR		Target CAR	
		Mean (%)	Median (%)	Mean (%)	Median (%)
Completed	(-1,0)	-1.75 ^a	-0.98 ^a	19.94 ^a	14.90 ^a
	(-5,0)	-1.53 ^a	-1.25 ^a	22.90 ^a	18.61 ^a
Cancelled	(-1,0)	-2.29 ^a	-1.52 ^a	9.58 ^a	7.58 ^a
	(-5,0)	-1.72 ^a	-1.43 ^b	12.37 ^a	8.78 ^a

Panel B: Stock price reaction at the announcement of the final outcome for unchallenged acquisition deal

Deal outcome	Event window	Acquirer CAR		Target CAR	
		Mean (%)	Median (%)	Mean (%)	Median (%)
Completed	(-1,0)	0.48 ^a	0.28 ^b	0.31 ^b	-0.17
	(-5,0)	0.22	0.08	-0.20	-0.34
Cancelled	(-1,0)	0.53 ^b	-0.18	-3.74 ^a	-1.09 ^a
	(-5,0)	-1.67 ^b	-0.69	-5.60 ^a	-1.59 ^b

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

Table III continued,

Panel C: Stock price reaction at the announcement of a challenged acquisition deal					
Deal outcome	Event window	Acquirer CAR		Target CAR	
		Mean (%)	Median (%)	Mean (%)	Median (%)
Completed	(-1,0)	-2.26 ^a	-1.98 ^a	15.89 ^a	7.75 ^a
	(-5,0)	-2.59 ^a	-2.69 ^a	18.23 ^a	12.80 ^a
Cancelled	(-1,0)	-0.17	0.52	14.53 ^a	11.60 ^a
	(-5,0)	1.40 ^b	3.95	15.48 ^a	14.21 ^a

Panel D: Stock price reaction at the announcement of the final outcome for a challenged acquisition deal					
Deal outcome	Event window	Acquirer CAR		Target CAR	
		Mean (%)	Median (%)	Mean (%)	Median (%)
Completed	(-1,0)	0.25	0.51	0	0.17
	(-5,0)	0.36	0.53	0.16	0.02
Cancelled	(-1,0)	0.45	1.09	-11.82 ^a	-7.29 ^a
	(-5,0)	-1.68	-0.61	-18.17 ^a	-12.21 ^a

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

announcement of completing of an unchallenged merger does not elicit any significant market reaction. However, when cancellation of such a merger is announced the target firm loses 1.09%. Panel C of Table III shows that the target firm reaps a median value of 7.75% and acquirers lose about 2% upon the announcement of a challenged deal that is eventually completed. The announcement of challenged deals that are later cancelled is greeted as more favorable news as it results in targets gaining a return of 11.60% which is about 4% higher than what they gain when a completed deal is announced. Like the announcement of completing an unchallenged deal, the announcement of completing a

challenged deal does not bring about any significant market reaction. When cancellation of a challenged deal is announced, targets lose 7.29% of their stock value that represents 61.78% of what they gained when the deal was announced compared to the loss of only 14.38% by targets when the cancellation of an unchallenged deal is announced. Thus, canceling an acquisition deal due to regulatory reason appears to be less anticipated by investors than canceling an acquisition deal for other reasons.

Whether the merger was challenged or not, the market reaction of target stock upon announcing completing or canceling the deal does not support Hansen's (1986) predictions that target firms lose if the deal is completed and gain if it is cancelled. In fact, upon canceling a merger deal target stock price reacts negatively and shows no significant change when the deal is completed whether the deal is challenged or not. Thus, these results do not support the argument that the method of payment signals the bidder's stock under- or overvaluation.

In Table IV, I investigate the sources of value gains around the announcement of an acquisition. The dependent variable is the combined two-day cumulative abnormal return for the acquirer and target firms calculated as the sum of the market value weighted cumulative abnormal return for the acquirer and target. As shown in model 1, merger deals that end up being completed, paid for in cash, and deals that are expected to increase market share have higher value gains while the higher the acquiring firm's size relative to the target firm's size the lower is the value gain. The market reaction is not different between challenged and unchallenged deals including target termination fees or whether the merger is between firms in the same industry or different industries does not affect the combined value change at the announcement. In models 2, 3, and 4, I include

Table IV: OLS regression of the determinants of the combined value change of the acquiring and target firms at the announcement of the merger. The dependent variable is the two-day combined cumulative abnormal return (-1,0) of the acquiring and target firms calculated as the sum of market value weighted cumulative abnormal returns of the acquirer and target where the market value is calculated at the end of the year preceding the announcement date. Deal completed dummy is a dummy variable that is equal to 1 if the deal has been completed and zero otherwise, Challenged deal dummy is a dummy variable that is equal to 1 if the deal has been challenged and zero otherwise. Cash merger dummy is a dummy variable if the method of payment is only cash. Same industry is a dummy variable that is equal to 1 if the acquirer and target have the same 2-digit primary SIC code and zero otherwise. Challenged_Cash merger is the interaction term for the challenged deal that are paid with only cash. Challenged_Per_change in HHI is the interaction term for the challenged deals and the percentage change in HHI. Challenged_Target termination fees is the interaction term for the challenged deals that include target termination fees. All other variables are as defined earlier. The standard errors are corrected for heteroskedasticity.

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.009	0.009	0.009	0.009
Deal completed dummy	0.012 ^c	0.012 ^c	0.012 ^c	0.013 ^c
Deal challenged dummy	-0.002	-0.004	-0.003	-0.013
Cash merger dummy	0.022 ^a	0.022 ^a	0.022 ^a	0.023 ^a
Relative size	-0.006 ^a	-0.006 ^a	-0.006 ^a	-0.006 ^a
Percentage change in HHI	0.059 ^a	0.059 ^a	0.059 ^a	0.060 ^a
Same industry dummy	-0.001	-0.001	-0.001	-0.001
Target termination fees dummy	-0.007	-0.007	-0.007	-0.008
Challenged_Cash merger		0.011		
Challenged_Per_change in HHI			0.036	
Challenged_Target termination fees				0.015

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

an interaction term for the challenged deals that are paid in cash, challenged and the change in HHI, and challenged deals and the inclusion of target termination fees. The positive impact of cash mergers and increase in HHI on the announcement returns is not different for challenged deals.

9. Results:

9.1. Explaining the choice between completing and canceling an acquisition deal conditional on regulatory decision:

The most important factor that the government employs when deciding whether or not to challenge an acquisition attempt is the change in HHI that the merger is expected to result in especially when the relevant market is highly concentrated.²⁹ Therefore, when testing for the effect of the change in HHI on the first stage, I use the percentage change in HHI and control for the acquiring firm's size. In addition, I control for regulated industries because a regulated industry may be subject to more government scrutiny and for the industry in which the merger is attempted because some industries may be more scrutinized than others. The government may be more lenient towards acquisitions by U.S firms when the relevant industry is dominated by foreign firms. Thus, I control for the market share held by foreign firms. As shown in Panel A of Table V model 1, the percentage change in HHI and the acquirer's size are positively related to the probability of challenging the deal controlling for acquirer industry, regulated industry, and market share held by foreign firms. In other words, mergers attempted by larger acquirers that are expected to result in larger increase in market concentration are more likely to be challenged. Furthermore, the government's decision to challenge a merger deal is not affected by the type of the industry in which the merger is attempted, whether the industry is regulated, and the market share held by foreign firms. Conditional on the acquisition not being challenged, the percentage of cash paid by the acquirer, the

²⁹ The 1992 merger guidelines released jointly by the FTC and DOJ state that mergers in industries where the HHI is at least 0.18 and are expected to increase the HHI by at least 0.10 are more likely to be challenged.

Table V: Nested Logit Regression Estimates estimated by full information maximum likelihood. Regulated industry dummy is 1 if the relevant market is a regulated industry and zero otherwise. Relative size is the natural logarithm of the ratio of acquirer assets to target assets. Market share held by foreign firms is the market share held by firms not incorporated in the U.S operating in the relevant market. All other variables are as defined previously.

Panel A Explanatory variable	Challenged Vs. unchallenged (Challenged =1; Unchallenged=0)			Challenged & completed Vs. challenged & cancelled (Challenged & completed=1; Challenged & cancelled=0)			Unchallenged & completed Vs. unchallenged & cancelled (Unchallenged & completed=1; unchallenged & cancelled=0)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	-5.8611 ^a	-5.9652 ^a	-5.9849 ^a						
Percentage change in HHI	2.7620 ^a	2.7403 ^a	2.7221 ^a						
Acquirer size	0.5372 ^a	0.5429 ^a	0.5532 ^a						
Regulated industry dummy	0.1797	0.1582							
Market share held by foreign firms	-0.3319	-0.2728	-0.2998						
Acquirer industry	-0.0020	-0.0010	-0.0010						
Target termination fees					2.1178 ^a	2.1201 ^b		2.0466 ^a	2.0323 ^a
Percentage cash paid				0.0037		0.0005	0.0047 ^b		0.0021
Acquirer Tobin's q				0.3359 ^a	0.0997 ^b	0.0914 ^c	0.3399 ^a	0.1070 ^b	0.0997 ^b
Target Tobin's q				-0.0104	-0.0249	-0.0230	-0.1018 ^b	-0.1215 ^a	-0.1162 ^a
Multiple bidders dummy				-1.5503 ^a	-1.7882 ^a	-1.8198 ^a	-1.3002 ^a	-1.4438 ^a	-1.5146 ^a
Relative size				0.1063	-0.0731	-0.0833	0.7539 ^a	0.6187 ^a	0.5945 ^a
Inclusive value	1.0859 ^a	1.0514 ^a	1.0705 ^a						
LR	1771.4	1916.2	1917						
McFadden's LRI	0.5610	0.6069	0.6071						

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

Table V continued,

Panel B Explanatory variable	Challenged Vs. unchallenged (Challenged =1; Unchallenged=0)		Challenged & completed Vs. challenged & cancelled (Challenged & completed=1; Challenged & cancelled=0)		Unchallenged & completed Vs. unchallenged & cancelled (Unchallenged & completed=1; unchallenged & cancelled=0)	
	Model 4	Model 5	Model 4	Model 5	Model 4	Model 5
Constant	-5.8928 ^a	-5.9121 ^a				
Percentage change in HHI	2.7848 ^a	2.7505 ^a				
Acquirer size	0.5381 ^a	0.5573 ^a				
Acquirer industry	-0.0015	-0.0013				
Regulated industry dummy	0.1737	0.2328				
Market share held by foreign firms	-0.3003	-0.4088				
Target termination fees			2.1270 ^a	2.1533 ^a	2.0329 ^a	1.9548 ^a
Percentage cash paid			0.0004	0.0002	0.0020	0.0010
Acquirer Tobin's q			0.0971 ^c	0.0710	0.0963 ^b	0.0845 ^b
Target Tobin's q			-0.0248	-0.0279	-0.1175 ^a	-0.1057 ^a
Multiple bidders dummy			-1.8132 ^a	-1.8796 ^a	-1.5126 ^a	-1.5025 ^a
Relative size			-0.0870	-0.0093	0.5956 ^a	0.5868 ^a
Acquirer M/B			-0.0055		0.0016	
Target M/B			0.0027		0.0005	
Acquirer leverage				-2.3684 ^c		-0.9433
Target leverage				1.6718 ^c		1.5128 ^a
Inclusive value	1.0426 ^a	1.2937 ^b				
LR	1918.7	1925.4				
McFadden's LRI	0.6077	0.6098				

acquirer's investment opportunities, and relative size are positively related to the probability of completing the deal while the target firm's investment opportunities and the existence of multiple bidders are negatively related to the probability of completing the deal. When the merger is challenged, the acquirer's investment opportunities have a positive and significant impact on the probability of completing the deal while the existence of multiple bidders is significantly negatively related to the probability of completing the deal. In model 2, I replace the percentage of cash paid by a dummy variable that indicates whether the merger agreement includes target termination fees because the payment in cash and the inclusion of target termination fees could be used as substitutes for preventing competitive bidding. Including target termination fees is positively related to the probability of completing the deal for both the challenged and unchallenged deals. This result supports Officer (2003) and Bates and Lemmon (2003) empirical finding that target termination fees do increase the probability of completing an acquisition deal and here I document that this result holds even when the deal is challenged by the government. The acquirer investment opportunities and the relative size are still positively related to the probability of completing the deal and the existence of multiple bidders and target firm's investment opportunities are still negatively related to the probability of completion for the unchallenged deals. For the challenged deals, the acquirer investment opportunities still significantly increases the probability of completing the deal while the existence of multiple bidders decreases it. When both the target termination fees and percentage of cash paid are included in model 3, the inclusion of target termination fees (but not the percentage of cash paid) is still positively related to the probability of completion regardless of whether the merger is challenged or not. In

model 4, I control for the acquirer and target firms' M/B ratios and in Model 5, I control for acquirer and target leverage ratios. The results presented in the first three models do not change as a result of controlling for these variables for the unchallenged deals while for the challenged deals the acquirer's investment opportunities lose significance when controlled for leverage ratios.

The parameters of inclusive values for all models are significantly different from 1 and the McFadden's LRI, which is one of the measures of the model's explanatory power, ranges from 56.1% to 60.98%.

Although the above analysis shows that the target termination fees are positively related to the probability of completing an acquisition deal, it does not show whether this positive impact is due to the target termination fees being an efficient contracting device (efficiency hypothesis) or to their competition deterrence impact (managerial entrenchment hypothesis). In what follows, I perform several tests that investigate these two issues.

The efficiency hypothesis of target termination fees argues that termination fees are an efficient contracting device that benefits the target firm shareholders because by agreeing to pay termination fees the target manager induces the acquirer to reveal information that helps her to negotiate higher bid premium. Thus, the efficiency hypothesis implies that the existence of target termination fees is positively related to bid premium and does not discourage competitive bidding. The managerial entrenchment hypothesis argues that target manager who agrees to pay termination fees does so in order to lock his shareholders with acquiring firms that promise him job security. Thus, according to this hypothesis including target termination fees would make the target firm

more expensive to acquirer and consequently discourage competitive bidding. Thus, the managerial entrenchment hypothesis implies that the existence of target termination fees is negatively related to the appearance of competitive bids and is not related to bid premium.

Table VI: OLS regression of the determinants of bid premium. The dependent variable is the bid premium. Target (Acquirer) TF is a dummy variable that is equal to 1 for deals that include termination fees payable by the target (acquiring) firm and zero otherwise. Percentage cash is the cash percentage of the cash paid by the acquirer. Same industry is a dummy variable that is equal to 1 if the acquirer and target firms are in the same industry where the industry is defined as 4-digit SIC. Hostile is a dummy variable that is equal to one for deals classified by SDC as hostile and zero otherwise. Tender is a dummy variable that is equal to one if the acquisition is a tender offer and zero otherwise. Lockup is a dummy variable if the target gave the acquirer a lockup option and zero otherwise. Poison pill is a dummy variable if the target has a poison pill in place and zero otherwise. PreComp is a dummy variable that is equal to 1 if the target firm received takeover offer within six months prior to the acquisition announcement date and zero otherwise. Log Tar (Aqc) MV is the natural logarithm of the target (acquiring) firm market capitalization one day before the acquisition announcement day. The standard errors are corrected for heteroskedasticity.

Variable	Unchallenged mergers		Challenged mergers	
	Model 1	Model 2	Model 3	Model 4
Constant	0.864 ^a	0.842 ^a	1.055 ^a	0.798 ^a
Target TF	0.129 ^a	0.122 ^a	0.110	0.152
Acquirer TF		-0.033		-0.024
Percentage cash		-0.001 ^b		0.003
Same industry		0.033		-0.052
Hostile		-0.007		0.035
Tender		0.127 ^a		-0.148
Lockup		-0.047		0.105
Poison pill		-0.002		
PreComp		-0.008		-0.209
Log Tar MV	-0.049 ^a	-0.048 ^a	-0.048	-0.028
Log Aqc MV	0.010 ^a	0.012	0.005	0.011

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

Table VI shows OLS regression results for the determinants of the bid premium for challenged and unchallenged deals separately using both successful and unsuccessful deals. Model 1 shows that target termination fees are positively related to bid premium for the unchallenged deals while for the challenged deals no significant relation exists between target termination fees and bid premium. These results persist even after controlling for the existence of acquirer termination fees, type of the deal (tender offer or not), and the attitude by which the acquisition took place (hostile or friendly) as shown in models 2 and 4. Thus, target termination fees result in higher bid premium for targets only when the deal is not challenged.

The regressions in Table VI include three variables (percentage cash, target termination fees, and lockup option) that can be related to competitive bidding. To investigate the competition deterrence role of these three variables, I perform a probit analysis of post announcement competition of a merger. The dependent variable in the probit analysis in Table VII is an indicator variable that is equal to one if a competitive bid is made within six months following the merger announcement date. Model 1 shows that including target termination fees is negatively related to the probability of observing a competitive bid following the announcement of an unchallenged merger. However, this may be due to the omitted variable bias. Therefore, I control for other variables that may be related to the appearance of a competitive bid especially the payment in cash and the lockup option in Model 2. After controlling for other variables, target termination fees are no longer related to the post announcement competition. In Models 3 and 4, I replicate the same analysis for the challenged deals controlling for the variables for which enough data is available. Model 3 shows that target termination fees do deter competitive bidding

Table VII: Probit regression of the determinants of the post announcement competition. The dependent variable is a dummy variable that is equal to one if the target firm received a takeover offer within six months following the announcement of the acquisition and zero otherwise All other variables are as defined earlier.

	Unchallenged mergers		Challenged mergers	
	Model 1	Model 2	Model 3	Model 4
Constant	-1.483 ^a	-1.988 ^a	-4.785 ^a	7.225 ^c
Target TF	-0.379 ^a	-0.215	-1.447 ^b	-2.078 ^b
Acquirer TF		0.348 ^c		
Bid premium		0.336		0.001
PreComp		-0.293		
Poison pill		-0.223		
Cash merger		0.564		0.416
Same industry		0.264		0.865
Hostile		0.944 ^a		-0.408
Tender		0.180		0.979
Lockup		0.489		
Log Tar MV	-0.001	-0.758	0.393	0.664
Log Acq MV	-0.001	-0.840	0.638	0.838

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

for challenged mergers as the inclusion of target termination fees in such mergers is significantly negatively related to receiving a competitive bid following the merger announcement and Model 4 shows that target termination fees continue playing competition deterrence role even after controlling for other relevant variables.

Overall, the results indicate that the government's antitrust policy plays a significant role in shaping the structure of markets for products and services by monitoring and preventing acquisition attempts that may result in giving few firms excessive control over production factors. The implementation of such policy is mainly

based on predicting the post acquisition market concentration measured by the sales-based HHI. No evidence is found here that mergers in regulated industries may be subject to heavier government scrutiny and no evidence that the government would allow U.S firms to complete an alleged anticompetitive acquisition transaction when non U.S firms hold a high market share in a particular industry.

The fact that not any acquisition deal is approved by the government, at least not before the merger parties agree to pursue the remedial action mandated by the government, is not irrelevant of merger-seeking firms' decision to complete or cancel the deal. The results presented here show that merger parties as well as the deal characteristics of challenged deals are systematically different from those of unchallenged deals. In unchallenged mergers, targets are smaller than the acquirers and have lower investment opportunities and both of these factors significantly increase the probability of completing the deal while in challenged mergers, the relative size of the acquirer and target firms or the investment opportunities of the target firm has no impact on the probability of completing the deal. More importantly, the reason why the target firms would agree to paying termination fees if the deal falls through is different between challenged and unchallenged deals. In unchallenged deals, target termination fees result in higher bid premium for the target firm without deterring competitive bidding while in challenged deals target termination fees deter competitive bidding and do not result in higher bid premium.

10. Specification tests:

If the nested logit model is the appropriate specification for modeling the merger completion decision as in figure I, then the parameter estimates of the inclusive value (λ) must lie in the unit interval. The λ estimates in Table V are significantly different from zero but lie outside the unit interval. Hausman and McFadden (1984) argue that in this case, the probabilities are still well defined but the interpretation of the model as choice model is not clear cut. They further suggest that the reason behind λ estimate taking a value outside the unit interval might be that the IIA property is satisfied in any sub branch of the tree. For the purpose of modeling merger completion decision, relaxing the IIA assumption across the branches and not within a branch is sufficient. To further investigate this issue, I test the IIA assumption using the likelihood ratio test and reestimate the parameters of the different models in Table V by conditional logit that assumes that the IIA property holds.

The dependent variable in the conditional logit regressions in Table VII is a 4-element choice variable (unchallenged and completed, unchallenged and cancelled, challenged and competed, and challenged and cancelled) and the independent variables are interacted with a dummy variable for the challenged and/or challenged and completed deals in order to allow for the firm specific effects across the different choices. The results from estimating model 1 in Table VII are qualitatively similar to those of model 1 in Table V and the based on likelihood ratio test , the null hypothesis that the IIA assumption holds can be rejected. In untabulated results, I reestimate the conditional logit for all the models on Table V and find virtually similar results.

Table VIII: Conditional logit model estimates. The dependent variable is a choice variable that indicates whether the acquisition is challenged and completed, challenged and canceled, unchallenged and completed, or unchallenged and canceled. Challenged and completed dummy is a dummy variable that is equal to 1 if the acquisition is challenged and completed and zero otherwise. Unchallenged and completed dummy is a dummy variable if the acquisition is unchallenged and completed. All other variables are as defined earlier except the challenged means that variables has been interacted with a dummy variable that is equal to 1 if the acquisition is challenged and zero otherwise. Challenged_completed means that the variables has been interacted with the challenged and completed dummy variable. Unchallenged_completed means that the variable has been interacted with the unchallenged and completed dummy variable.

	Model 1	Model 3
Constant	-6.0779 ^a	-6.0672 ^a
Challenged_acquirer industry	-0.0021	-0.0018
Challenged_percentage change in HHI	2.7630 ^a	2.7107 ^a
Challenged_regulated industry dummy	0.1878	0.1603
Challenged_ Market share held by foreign firms	-0.3674	-0.3431
Challenged_acquirer size	0.5412 ^a	0.5474 ^a
Challenged completed dummy	1.7040 ^a	0.7793 ^b
Challenged completed_target termination fees		1.7647 ^a
Challenged_completed percentage cash	-0.0052	-0.0031
Challenged_completed acquirer Tobin's q	0.0874 ^c	0.0499
Challenged_completed target Tobin's q	-0.0204	-0.0191
Challenged_completed multiple bidders	-1.9080 ^a	-1.9306 ^a
Challenged_completed relative size	-0.1505	-0.1782
Unchallenged completed dummy	1.3265 ^a	0.3988 ^b
Unchallenged_completed_target termination fees		1.8807 ^a
Unchallenged_completed percentage cash	-0.0024	-0.0031
Unchallenged_completed acquirer Tobin's q	0.0981 ^b	0.0603
Unchallenged_completed target Tobin's q	-0.1186 ^a	-0.1194 ^a
Unchallenged_completed multiple bidders	-1.6138 ^a	-1.6069 ^a
Unchallenged_completed relative size	-0.5687 ^a	0.5483 ^a
LR	1828.4 ^a	1923.4 ^a
McFadden's LRI	0.579	0.6091

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

10. Conclusions:

In this essay, I investigate the probability of completing an acquisition deal conditional on the government approval. Mergers that satisfy certain jurisdictional thresholds require notifying the FTC and can not be completed unless they are approved by the FTC, DOJ, or FCC which investigates the anticompetitive impact of the attempted merger. Mergers that are challenged by the government are either disapproved or require merger approval.

I model merger parties' decision to complete or cancel an acquisition deal using the nested logit model because it allows the completion decision to be made as getting the regulatory approval on the first stage and then deciding to complete or cancel the deal on the second stage. Also, the nested logit model allows the completion decision to be affected by the existence of other choices.

Consistent with evidence presented by Eckbo (1985), Coate et al (1990), and Coate (2005), the expected change in market concentration measured by the HHI is significantly positively related to the probability that the government will challenge an acquisition deal. Mergers that are expected to result in a concentrated market are more likely to be challenged even if the market was fairly competitive before the attempted acquisition.

Consistent with Officer (2003) and Bates and Lemmon (2003), we find that including target termination fees in merger deals is significantly positively related to the probability of completing the deal whether it was challenged or not. However, we document that including target termination fees deters competitive bidding only if the

deal was challenged and leads to higher bid premium to the target firm only if the deal was not challenged. Conditional on not being challenged, acquirer's investment opportunities and the relative size of acquirer and target firms are significantly positively related to the probability of completing the deal while target investment opportunities and the existence of multiple bidders are significantly negatively related to the probability of completing the deal. Finally, canceling an unchallenged merger attempt has more significant impact on target firm value. Targets of failed unchallenged merger attempts keep most of the value gains they had made at the merger announcement date while targets of failed challenged merger attempts lose most of it.

Essay 2

The Divorce before a Merger: Value Consequences and Capital Allocation

Efficiency of Merger Facilitating Asset Divestitures

1. Introduction:

Extant empirical research shows that since the early 80s, U.S corporations have been witnessing a trend toward firm specialization or focus, reversing the multidivisional structure of U.S corporations that prevailed during the 60s and 70s. Comment and Jarrell (1995) attribute this trend toward corporate focus to firms' inability to exploit the efficiencies that motivate diversification. In fact, Berger and Ofek (1995) show that diversified firms sell at a discount compared to single segment firms and argue that one reason for the discount is the inefficiency of investment policy of these firms. More specifically, they argue that diversified firms do not efficiently allocate funds to their divisions based on their divisional investment opportunities. Therefore, multisegment firms do not seem to have efficient internal capital markets that would allow a financially constrained division to undertake positive net present value investments.

Consistent with the notion of inefficient internal capital markets in diversified firms, empirical research shows that firms that voluntarily divest assets that are not related to their core business, experience improved operating performance of the remaining assets (John and Ofek, 1995; Cusatis, Miles, and Wooldridge, 1993), higher stock returns (Comment and Jarrell, 1995), lower information asymmetries between

management and investors (Krishnaswami and Subramaniam, 1999), more efficient investment policy (Ahn and Denis, 2004), and decrease in diversification discount (Dittmar and Shivdasani, 2003) post divestiture .

Whether to divest an asset or not and, given that the firm has decided to divest an asset, which asset to divest are decisions that the firm usually makes voluntarily. In some cases, however, divesting an asset is mandated by regulators if the firm is simultaneously involved in a merger attempt that is likely to increase market concentration in the relevant industry or if the firm had gained excessive market power over its life. From the regulatory point of view, an asset sale constitutes the most common remedial action that the Federal Trade Commission (FTC), Federal Communications Commission (FCC), or the Department of Justice (DOJ) recommends to prevent firms that acquire other firms from gaining monopolistic (or monopsonistic) power following the acquisition. The assets that the regulatory agency requires the acquirer to divest are those that overlap those of the acquired firm in case of horizontal acquisitions (acquisitions between competitors). In vertical acquisitions (acquisitions between firms in different industries), the federal government requires the acquirer to divest assets that are likely to enhance its buying power. In these cases, a firm would be giving up assets (or even a whole division) in order to facilitate its acquisition plans. Empirical research³⁰ finds no evidence that acquisition attempts where the government required such kind of divestitures would have enhanced the acquirer's monopolistic power, and little evidence that they would have increased acquirer's buying power. This implies that merger facilitating assets divestitures may be costly to divesting firms.

³⁰ See, for example, Fee and Thomas (2004) and Shahrur (2005), among others.

A merger facilitating asset divestiture³¹ need not be always formally mandated by the government. Johnson and Parkman (1991) find that after the passage of the HSR Act, merger regulations have become dramatically transparent eliminating much of the uncertainty as to whether the government would challenge an acquisition deal. An example that is consistent with this result is Texaco's divestiture of some of its refining assets to ease its merger with Chevron. Such a divestiture was proposed upfront in order to preempt government challenge of the merger deal. Thus, another reason for asset divestitures is to satisfy a regulatory requirement. Unlike for voluntary asset divestitures, the literature does not clearly show whether merger facilitating sales are associated with changes in firm value and what, if any, do these divestitures cost the divesting firm.

In this essay, I aim at contributing to the literature by investigating firm value changes around merger facilitating asset divestitures. More specifically, I compare between merger facilitating asset divestitures and other asset divestitures in terms of their announcement impacts and changes in divesting firm's operating performance and focus.

2. Literature Review:

In this section I present a brief review of the theoretical and empirical literature that directly relates to gains from asset divestitures and capital market efficiency changes around asset divestitures.

2.1. Explanations for gains from asset divestitures:

It is well documented in the literature that asset divestitures are positively associated with firm value. One explanation for the gain from asset divestitures is that the firm becomes more focused following the asset sale (John and Ofek, 1995; Comment and

³¹ For the purposes of this dissertation, I use the words 'divestiture' and 'sale' interchangeably.

Jarrell, 1995; Hite, Owers, and Rogers, 1987). According to this focus hypothesis, firms sell assets that do not fit into their business to buyers whose assets have similar characteristics to those assets being divested. Firms sell assets that interrupt the operations of other divisions and create negative synergies. The corporate focus hypothesis predicts that following the asset divestiture the firm will reduce investment in less efficient divisions and increase investment in more efficient divisions. John and Ofek (1995) find empirical evidence that the operating performance of asset sellers' significantly improves following the divestiture.

Another explanation for gains from asset divestitures, presented by Lang, Poulsen, and Stulz (1996), is the financing hypothesis. Lang et al. (1995) argue that firms that are financially constrained and cannot issue external securities due to information asymmetries find asset sales a less costly way to raise funds required to make new investments. The financing hypothesis implicitly assumes that management values firm size and control and, therefore, may not be willing to sell assets unless that was the last resort to raise funds for new projects. Using a sample of asset sales that management deems significant and unexpected, Lang et al. (1995) find that sellers who payout the cash proceeds from asset sales are poor performers and have less investment opportunities than sellers who retain the proceeds. Bates (2005) provides recent evidence consistent with this result. Specifically, he finds that the probability of retaining sale proceeds is positively related to firm's investment opportunities. However, retaining firms invest significantly more than their industry benchmarks. Therefore, although firms with more investment opportunities are more likely to retain sale proceeds, the existence of agency considerations cannot be ruled out.

Schlingmann, Stulz, Walkling (2002) present evidence consistent with both the focusing and the financing explanations for divestitures. However, they show that firms that refocus their operations by decreasing the number of their reported segments do not necessarily do so by divesting the segment that the firm stopped reporting. Some firms actually divest a segment while others restructure the segment internally. Schilngmann et al. (2002) show that firm asset liquidity can explain why some focusing firms actually divest an asset while others do not. They find that firms that have more liquid assets are more likely to divest and given that a firm is divesting a segment, more liquid assets are more likely to be divested. Dittmar and Shivdasani (2003) also find supporting evidence for focusing and financing hypotheses and further document that the diversification discount decreases following the asset divestiture.

2.2. Efficiency of internal capital allocation:

Proponents of the efficient internal capital market theory argue that the multidivisional structure of diversified firms relaxes the external financing constraints that arise as a result of information asymmetries between the firm and its capital suppliers. Because resources could be transferred among divisions of a diversified firm, these firms can finance positive NPV projects that would be forgone had the firm been a focused single division firm. Consistent with this argument, Lamont (1997) finds that oil companies reduced investment in non-oil divisions when the oil prices rose at the beginning of the 80s, an observation that points at the interdependence among the different divisions of a multidivisional firm.

Stein (1997) theoretically models the circumstances under which an internal capital market can function efficiently in a credit constrained firm whose headquarters has the incentive to engage in winner-picking (because it can better assess the relative merits of the firm's divisions). He argues that diversification enhances the efficiency of the internal capital market because it increases the resources available to headquarters and prevents mistakes made about a project's outcomes from affecting assessments of other projects. A focused corporate structure would work better if there are errors in assessing projects and those errors are correlated.

The classical internal capital markets theory assumes that the incentives of the headquarters and divisional managers are aligned. If this is not the case, then, divisional managers will act to extract rents from the headquarters. Scharfstein and Stein (2000) model a setting that assumes such behavior and show that divisional managers may extract greater compensation not in higher cash wages but rather in preferential capital budget allocations. This leads to cross subsidization among divisions, which, in turn, results in the resources being drained away from divisions with good investment opportunities to divisions with poor investment opportunities. Therefore, contrary to the predictions of the efficient capital markets theory, Scharfstein and Stein (2000) predict that diversified firms will have an inefficient capital market.

Another reason for the possibility that the internal markets may not work efficiently is presented by Rajan, Servaes, and Zingales (2000). They present a model where the divisional manager can choose between two investments, one efficient and the other is not, and show that as diversity between the resource-weighted investment opportunities (not relative investment opportunities) of firm's divisions increases,

divisional managers have less incentive to choose the efficient investment. Headquarters that understand this will try to induce divisional managers to choose the efficient investment by giving them control over more resources. According to the Rajan et al. (2000) model's predictions, this will lead to resources being transferred from divisions with high resource-weighted investment opportunities to divisions with low-resource weighted investment opportunities. The model also relates the value of the firm to the degree of its diversification and implies that there is a level of diversification where the value of the firm peaks and then starts to decrease. Matsusaka and Nanda (2002) also present a model that shows that a firm's optimal level of focus in operations is a trade off between the transaction costs of raising external financing and the cost of overinvestment as the firm diversifies.

2.3. Empirical evidence on the efficiency of internal capital allocation:

The earliest evidence on the inefficiency of internal capital markets is presented by Berger and Ofek (1995) who show that multidivisional (diversified) firms trade at a discount while single division (focused) firms trade at a premium relative to the sum of their parts. They show that diversified firms invest more in divisions with low investment opportunities than in divisions with high investment opportunities. More recent empirical research finds mixed evidence on the efficiency of internal capital markets in diversified firms. For example, Shin and Stulz (1998) find that in highly diversified firms, segment investment is less sensitive to its cash flow than for comparable single segment firms and that segment investment increases with its investment opportunities but is not related to other segments' investment opportunities. Billet and Mauer (2003) relate the efficiency of

internal capital markets to firm's value and find that efficient subsidies to financially constrained segments increase firm value while inefficient subsidies to unconstrained segments do not affect firm value. This result is consistent with the internal capital markets being efficient.

Another line of empirical research tests changes in internal capital market efficiency around corporate divestitures. This strand of literature unanimously shows that asset divestitures are related to improvements in diversified firm's investment policy but finds mixed results when testing internal capital market efficiency around these divestitures. Gertner, Powers, and Scharfstein (2002) find that firms that spin-off an unrelated division experience increased sensitivity of investment to investment opportunities. By reconstructing the parent firm after spinoff, Burch and Nanda (2003) find that firm value improvement following the spinoff is related to decreases in diversity and not solely a result of selection bias or measurement errors. Finally, Ahn and Denis (2004) more directly link the inefficiency of investment with the incidence of spin off event. They find that following a spin off firm's value increases due improvement in investment efficiency.

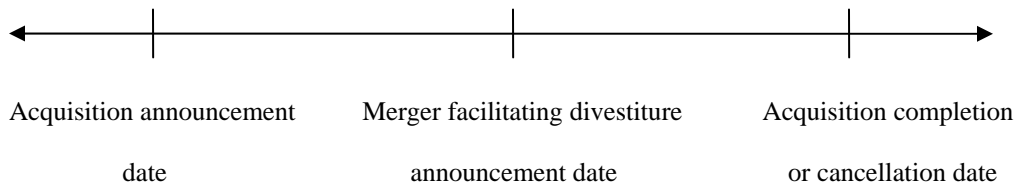
3. Hypotheses Development:

In this section, I present hypotheses that investigate the difference between merger facilitating asset divestitures and other divestitures. In addition, I compare the efficiency of internal capital allocation prior to both of these asset divestitures.

3.1. Market reaction to merger facilitating asset divestitures:

Figure II below shows the sequences of event dates in a challenged acquisition deal. The length of the time period that elapses between the acquisition announcement date and the announcement of merger facilitating divestiture depends on how fast the merger parties and the FTC, FCC, or DOJ officials agree on the assets to be divested.

Figure II: The sequence of event dates in a challenged acquisition deal.



The announcement of an acquisition usually precedes the announcement of regulatory mandated asset sale. Here, a question may be raised as to whether the market reaction to the merger announcement reflects the impending possibility of the asset sale for acquisitions that are likely to enhance acquirer's monopolistic (or monopsonistic) power. The announcement impacts of these two events are assumed to be independent although if investors were able to anticipate government decision as to whether it would challenge the acquisition, then, that anticipated reaction is likely to feed back in the acquisition announcement impact. Therefore, to the extent that this assumption holds, the announcement impact of the acquisition announcement will reflect the expected true

value change of the acquirer. A similar argument also applies for the announcement impacts of the acquisition and its completion or cancellation.³²

Empirical research documents a positive market reaction to the announcement of voluntary corporate asset sell offs.³³ Hite et al. (1987) explain this positive reaction as evidence that asset sell offs are movements of resources to those who can use them more efficiently. Such argument implies that asset sellers sell those assets that fit more into the buyers business than into their own business. John and Ofek (1995) provide consistent evidence with this argument. Lang, Poulsen, Stulz (1995) show that the market reaction depends on the purpose for which the proceeds from the sale are going to be used. They find that when the management announces that the proceeds will be used for debt retirement or as dividends then an asset sale is good news while if it is announced that the proceeds will be retained in the firm then the market reaction becomes negative.

The assets that are divested in order to facilitate a merger are chosen by the regulatory agency and are usually assets from the division whose assets overlap those of the target firm. For example, in Tribune Co.'s acquisition of Renaissance Communication Corp., the FCC required Tribune to divest its WDZL-TV because FCC rules prohibit ownership of two or more TV stations whose signals overlap.³⁴ Another example is Albertson's Inc., which had to divest its stores that overlapped with those of American Stores Co. Such divestitures represent a loss of revenue which may not be easy to recover at least within a short period of time. In fact, Albertson's was expected to lose 6% of the

³² The empirical research that tests the informativeness of the announcement market reaction finds mixed results. See, for example, Luo (2005) and Jennings and Mazzeo (1993).

³³ See, for example, Alexander, Benson, Kampmeyer (1984); Hite, Owers, Rogers (1987); Comment and Jarrell (1995); Dittmar and Shivdasani (2003)

³⁴ See the Wall Street Journal edition on July 1, 1996.

combined company's sales due to this divestiture.³⁵ Therefore, a merger facilitating divestiture is likely to be perceived by the market as bad news. Thus, I hypothesize that,

***H1:** The announcement of a merger facilitating asset sale will have a negative or less positive market reaction than that of non merger related asset sale.*

3.2. Relatedness of assets divested in a merger facilitating divestiture to the acquirer's remaining business lines and the acquirer's operating performance following the asset sale:

Recent empirical literature documents an increasing trend toward corporate focus. Berger and Ofek (1995) find that diversified firms trade at discount while single segment firms trade at premium. Consistent with this result, Comment and Jarrell (1995) show that increase in focus is positively related to firm stock performance. John and Ofek (1996) show that increase in focus is also positively related to the operating performance of firm's remaining assets because it eliminates the negative synergies between the divested assets and seller's remaining assets. Dittmar and Shivdasani (2003) further show that diversified firms that divest a segment experience increase in their value.

A regulatory mandated divestiture is a divestiture that would prevent the acquirer from having a monopolistic power following the acquisition. Increasing monopolistic power would be a concern when a firm acquires one of its competitors whose core business is the same as that of the acquiring firm. Therefore, when required to divest

³⁵ See the Wall Street Journal edition on June 22, 1999.

assets, the acquirer will have to divest assets that overlap those of the target firm. Thus, I hypothesize that,

***H2:** Firms that sell assets for non merger related reasons will experience increase in focus while firms that sell assets to facilitate a merger will experience no change or even a decrease in focus.*

In the absence of agency problem that results from the information asymmetry between managers and stockholders, the focus hypothesis predicts that the operating performance of firms that sell assets that result in the firm becoming focused will increase. Since a merger facilitating asset sale is not driven by firm's willingness to become more focused, the focus hypothesis would predict that firms that sell related (for example, merger-facilitating) assets to have better operating performance than that of firms that sell related assets. Thus, according to the focus hypothesis,

***H3:** Firms that sell assets to facilitate a merger attempt have better operating performance prior to the sale than that of firms that sell assets for non-merger related reasons.*

3.3. Internal Capital allocation efficiency:

Assuming that headquarters and divisional managers' interests are aligned, the classical internal capital market theory predicts that as firm's diversity decreases the internal capital market will function less efficiently. In other words, divisions that have

high investment opportunities will become less able to finance new projects. In contrast, Scharfstein and Stein (2000) model makes the opposite prediction assuming that headquarters and divisional managers' interests are not aligned. Rajan et al. argue that divisional investment opportunities should be compared relative to the resources available to them (i.e. not in absolute terms) because the headquarters will induce the divisional managers to choose efficient investment by granting them enough resources to do so. They predict that the higher are the division's relative investment opportunities, the less will the firm invest in that division, and vice versa. Thus, according to these three theories, if asset divestitures are driven by inefficient internal capital market, firms that sell an asset only for the purpose of facilitating an acquisition should have efficient internal capital market before the actual sale of the asset compared to that of firms that sell for non regulatory reasons. Therefore, I hypothesize that

H4: *Before the asset sale, firms that sell assets to facilitate an acquisition deal have more efficient internal capital market than that of firms that sell assets voluntarily.*

4. Variables Definitions:

An asset sale is defined as merger-facilitating if the firm is selling the asset in order to satisfy a regulatory requirement for approving an acquisition attempt that it is involved in at the same time.

4.1. Corporate Focus:

To measure corporate focus, I use the following measures. First, the number of SIC codes reported by COMPUSTAT. Second, whether or not the divested division is related to the seller's core business. An asset sale is classified as related if the 3-digit SIC code of the assets or the segment to which the sold assets belong is the same as that of the segment that has the highest sales. Third, sales-based Herfindahl Hirschman index (HHI). The HHI is calculated as,

$$H = \sum_{i=1}^n \left(\frac{S_i}{\sum_{i=1}^n S_i} \right)^2$$

where S_i is firm's segment i 's sales or assets.

4.2. Operating performance:

As in John and Ofek (1995), I measure firm's operating performance as (1) earnings before interest, taxes, and depreciation to sales and (2) earnings before interest, taxes, and depreciation to book value of assets.

4.3. Internal capital market efficiency:

To measure the internal capital market efficiency, I use Rajan et al. (2000) measures of funds transferred to/from a segment and the relative value added by allocation.

Rajan et al. (2000) proxy for the transfers the segment makes (if negative) or receives (if positive) is computed as,

$$\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^n w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right)$$

and the relative value added by allocation is,

$$\frac{\sum_{j=1}^n BA_j (q_j - q) \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^n w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right) \right)}{BA}$$

where *ss* refers to single-segment firms, w_j is segment j 's share of total firm assets. q is the asset-weighted average of segment q s for the firm, q_j is the asset-weighted Q ratio of single segment firms that operate exclusively in segment j , I_j is the capital expenditure of segment j , BA_j is the book value of assets of segment j , $\frac{I_j}{BA_j}$ is the asset-weighted average capital expenditures to assets ratio for the single segment firms in the corresponding industry where the industry is defined at the 3-digit level of the segment SIC, and BA in the firm's book value of assets.

5. Methodology:

The market reaction to the announcement of asset sales will be tested using the standard event study methodology of Brown and Warner (1985) with the CRSP value weighted portfolio as proxy for the market portfolio. To test for the operating performance and focus level changes, I use parametric and non parametric tests. I also use the ordinary least regressions to relate the changes in operating performance to the change in a firm's focus level. .

6. Data and sample:

The initial sample of asset divestitures³⁶ is obtained from the Securities Database Corporation (SDC) over the period 1990-2002. The SDC database includes divestitures of assets and divestitures of a whole subsidiary. When a firm sells an asset, the SDC records the name of the divesting firm as the parent firm and the type of the assets divested as the name of the target. Therefore, I treat the target parent firm rather than the target firm as the asset divesting firm. I exclude spin off and equity carve-out transactions and transactions where the asset divesting parent firm is not U.S public firm or is operating in the financial industry (SIC 6000-6999). To verify the incidence of the asset sale transaction, its announcement date, and reason for the sale, I search the transactions in Newswires compiled in Lexis-Nexis.³⁷ Finally, to be in the sample, the selling firms must have data on the CRSP and COMPUSTAT databases. The final sample consists of 1240 asset and subsidiary sale transactions including 51 merger facilitating sales where the transaction value is \$10 million or more and the reason for selling the asset is disclosed in 477 asset sale announcements. Other disclosed reasons for the sale include: increasing firm's focus, reducing debt, selling non core or non strategic assets, among other reasons.

Panel A of Table I shows the distribution of asset sales over the sample period 1990-2002 classified into merger-facilitating and non merger-related asset sales. The number of asset sales increases steadily until 1998, a pattern that is consistent with the documented restructuring activity that U.S corporations went through during the 1990s.

³⁶ The SDC identifies the transaction as divestiture if the target firm loses controlling stake in the divested entity following the transaction.

³⁷ For this search, I use the asset selling firms name, the buyer's name, FTC, FCC, and DOJ, as search terms.

Table I: Panel A shows the distribution of 1240 non-merger related and merger related asset sales over the period 1990-2002. The initial sample of asset divestitures is obtained from the Securities Database Corporation (SDC). The purpose of the asset sales is identified by searching the newswires compiled in Lexis-Nexis. Panel B shows the distribution of the asset sales across industries where the industry defined on the 2-digit SIC code.

Panel A: Distribution over the sample period.

Year	All asset sales	Non-merger related	Merger-facilitating
1990	52	51	1
1991	33	33	0
1992	53	53	0
1993	59	58	1
1994	62	60	2
1995	91	85	6
1996	123	116	7
1997	123	122	1
1998	163	157	6
1999	126	115	11
2000	128	114	14
2001	110	109	1
2002	117	116	1
Total	1240	1189	51

Panel B: Distribution across industries.

Industry Name (2-digit SIC)	All asset sales	Non-merger related	Merger-facilitating
Mining (10-14)	101	98	3
Construction (15-17)	4	4	0
Manufacturing (20-39)	610	589	21
Transportation & public utilities (40-49)	232	212	20
Wholesale trade (50-51)	39	39	0
Retail trade (52-59)	55	50	5
Services (70-89)	190	188	2
Other (99)	9	9	0
Total	1240	1189	51

As similar pattern is also seen in the government involvement as more and more firms divest assets for regulatory reasons. Panel B shows the distribution of the asset sales across the different industries. Most of both non merger related and merger facilitating asset sales take place in the manufacturing and transportation and public utilities industries and no assets are exchanged in the construction and wholesale trade industries to facilitate a merger transaction.

7. Market reaction results:

Table II shows the market reaction to the announcement of an asset sale for both merger-facilitating and non merger-related reasons over different event windows. Upon the announcement of non merger-related asset sale, the stock price of the seller significantly increases by 2.06% compared to no significant reaction for firms selling assets to facilitate an acquisition transaction. The announcement day return documented in the literature ranges from 0.014% to 1.66%.³⁸ Over 4 day period (two days before to two days after) around the announcement date, firms selling assets to facilitate a merger lose 1.84% of their value while firms selling assets for non merger related reasons gain 2.79%. Thus, announcement of selling asset to facilitate a merger is unfavorable news to investors while selling an asset for non merger-related reasons is greeted as good news. For merger facilitating asset sales, the announcement of an acquisition attempt is usually separate from the announcement of the asset sale and therefore the announcement reaction of the asset sales is not contaminated by the announcement impact of the acquisition attempt. However, if the acquisition attempt is challenged by the government,

³⁸ See John and Ofek, 1995, Lang, Poulsen, and Stulz, 1995, and Hite, Owers, and Rogers, 1987, among others.

investors may expect the announcement of the asset sale. Thus, to the extent that investors are able to anticipate the asset sale, the announcement reaction of that sale understates the true market reaction.

Table II: Cumulative abnormal returns (CAR) around the announcement of non merger-related and merger-facilitating. CAR is calculated using the standard event study methodology of Brown and Warner (1985) where the value-weighted portfolio of all CRSP firms is used as a proxy for the market portfolio. The market model parameters are estimated using returns of 155 days ending 45 days before the date of announcement.

Event window	Non-merger related		Merger-facilitating	
	Mean(%)	Median(%)	Mean(%)	Median(%)
(-1,0)	2.06 ^a	0.56 ^a	0.41	-0.58
(-5,0)	2.84 ^a	1.03 ^a	-1.97 ^a	-1.52 ^c
(-5,5)	2.75 ^a	1.19 ^a	-3.71 ^a	-1.81 ^b
(-2,2)	2.79 ^a	1.27 ^a	-1.84 ^b	-1.709 ^b

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

8. Descriptive statistics:

Panel A of table III shows the descriptive statistics for asset sellers at the end of the fiscal year preceding the asset sale. Firms that are selling assets to facilitate an acquisition transaction have significantly higher total assets, sales, and intangible assets than those of firms selling assets for non merger related reasons. Firms that are selling assets to facilitate a merger have significantly higher investment opportunities compared to their industry peers and compared to firms that are selling assets for non merger related reasons as their Tobin's q (0.1640) is significantly higher than zero and significantly higher than that of firms that are selling assets for non merger related reasons. One reason cited in the financial press for undertaking an asset is the need for financing when the firm has low internally generated funds or has high debt in its capital structure. This may

Table III: Panel A shows the summary statistics for asset selling firms calculated at the end of the year preceding the year of the asset sale announcement date. Panel B shows measures of information asymmetry, operating performance, focus, and internal capital market efficiency calculated at the end of the fiscal year preceding the announcement date. Free cash flow (FCF) is calculated as operating income before depreciation – interest expense – income taxes – capital expenditures. Leverage is calculated as (long term debt + current portion of long term debt) / (total assets + book value of equity + market value of common equity). Market value of common equity is calculated as the product of number of shares outstanding and the fiscal year closing stock price. Tobin’s q is calculated as (market value of common equity – book value of equity + total assets)/(total assets). MV assets is the market value of assets and is calculated as the market value of equity + book of debt. PPE is the plant, property, and equipment. EBITD is the earnings before interest, tax, and depreciation. ROA is the return of assets and is calculated as net income/book value of assets. The Tobin’s q, Leverage, EBITD/Sales, ROA, and EBITD/MV of assets are adjusted for industry by subtracting the industry median value where the industry is defined as the 4 digit SIC code provided that there are at least three firms in the industry, otherwise the industry is the defined as the 3 digit SIC code. Residual standard deviation in year t is the standard deviation of the residuals of the market model regression using the daily returns from year $t-1$. HHI is the Herfindahl Hirschman index calculated using segment sales. RVA is the Rajan et al. (2000) measure of relative value added by allocation and is calculated as

$$\frac{\sum_{j=1}^n BA_j (q_j - q) \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} - \sum_{j=1}^n w_j \left(\frac{I_j}{BA_j} - \frac{I_j^{ss}}{BA_j^{ss}} \right) \right)}{BA}$$

where ss refers to single-segment firms, w_j is segment j 's share of total firm assets. q is the asset-weighted average of segment q s for the firm, q_j is the asset-weighted Q ratio of single segment firms that operate exclusively in segment j , I_j is the capital expenditure of segment j , BA_j is the book value of assets of segment j , $\frac{I_j}{BA_j}$ is the asset-weighted average capital expenditures to assets ratio for the single segment

firms in the corresponding industry where the industry is defined at the 3-digit level of the segment SIC, and BA in the firm's book value of assets. Dollar amounts are denominated in millions. The median tests are performed using the Wilcoxon signed rank test.

Panel A: summary statistics for asset selling firms calculated at the end of the year preceding the year of the asset sale announcement date.

	Non-merger related		Merger-facilitating		p -value for the median difference
	Mean	Median	Mean	Median	
Assets	8744.09	1879.02	17125.32	11065.90	0.000
Sales	6536.84	1568.97	13516.38	3146.00	0.002
Intangibles/Total assets	0.1453	0.0696	0.2685	0.1927	0.000
PPE/Total assets	0.3754	0.3252	0.3728	0.2826	0.415
R&D expenses/sales	0.0705	0.0249	0.1709	0.0194	0.683
FCF/assets	-0.0072	0.0137	-0.0884	0.0233	0.085
Tobin's q	0.0400	-0.0280 ^a	1.2965 ^a	0.1640 ^a	0.020
Leverage	0.0788 ^a	0.0430 ^a	0.0025	-0.0080	0.019

Panel B: Measures of information asymmetry, operating performance, focus, and internal capital market efficiency.					
	Non-merger related		Merger-facilitating		<i>p</i> -value for the median difference
	Mean	Median	Mean	Median	
Residual Standard deviation	0.0298 ^a	0.0242 ^a	0.0226 ^a	0.0204 ^a	0.435
EBITD/Sales	0.0102	0.0042	-0.0774	0.0136	0.626
ROA	0.0075	0.0014	-0.0681	0.0005	0.530
EBITD/MV of assets	-0.0108	0.0064 ^b	-0.0067	-0.0144	0.600
Number of segments reported	2.82	3.00	3.19	2.00	0.176
HHI	0.6834	0.6594	0.6341	0.5111	0.203
RVA	0.0040 ^c	0.00	-0.0089 ^a	-0.0046 ^a	0.00

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

be a reason for the significantly high leverage ratio of firms selling assets for non merger related reasons compared to their industry peers and compared to firms that are selling assets to facilitate a merger transaction.

Panel B of table III shows measures of information asymmetry, operating performance, focus, and internal capital market efficiency of asset selling firms. The operating performance, measured by EBITD/sales or ROA, of asset selling firms is not different from that of their industry peers irrespective of the announced reason for the asset sale. Furthermore, the operating performance of firms selling assets to facilitate a merger is not different from that of firms selling assets for non merger related reasons. However, asset selling firms have significantly higher information asymmetry than their industry peers regardless of the announced reason for the asset sale. The HHI is

calculated using segment sales and, therefore, it can only be calculated for firms that have segment data. As a result, the sample reduces to 1153 asset sales including 42 merger facilitating asset sales. The relative value added by allocation (RVA) in Table III is the Rajan et al. (2000) measure of internal capital market efficiency which can only be calculated for diversified firms that report multiple segments. Due to this restriction the RVA is calculated in 766 asset sales including 29 merger facilitating asset sales. Firms selling assets to facilitate a merger are not different from firms selling for other reasons in terms of their focus level whether it is measured by the number of segments reported or their HHI calculated using segment sales. Finally, firms that sell assets to facilitate a merger have significantly less efficient internal capital market than that of firms selling assets for non merger related reasons.

9. Results:

9.2. Operating Performance Changes following an Asset Sale:

The pair wise comparisons of operating performance and focus in Table III do not show whether the improvement in operating performance or increase in focus level may have been a motive for selling an asset. Therefore, I examine the change in operating performance and focus level from the year before to the year after the asset sale. Panel A of Table IV shows that the operating performance of firms that sell assets for non merger related reasons significantly increases regardless of how the operating performance is measured while firms that sell assets to facilitate a merger do not experience any change in operating performance following the asset sale as shown in panel B of Table III. Also, firms that sell assets to facilitate a merger experience significant decrease in focus as the

number of segments that those firms report after the asset sale increases from 2 to 4 and their HHI decreases from 0.5111 to 0.5015 and both of these changes are significant at the 1% and 10% levels, respectively. Thus, as a result of the asset sale, firms that sell

Table IV: Panel A shows measures of operating performance and focus for firms that sell assets for non merger-related reasons in the year preceding and following the asset sale announcement and the mean and median change tests from the year before to the year after the asset sale. Panel B shows measures of operating performance for firms that sell assets for merger facilitating reason and the mean and median change tests from the year before to the year after the asset sale. All the variables are as defined previously and dollar amounts are denominated in millions

Panel A: Non merger-related asset sales						
Variable	One year before event		One year after event		<i>p</i> -value for difference	
	Mean	Median	Mean	Median	Mean	Median
Residual standard deviation	0.0301	0.0245	0.0320	0.0243	0.00	0.009
<i>Measures of operating performance:</i>						
EBITD/sales	0.0097	0.0041	0.0236	0.0154	0.172	0.012
ROA	0.0078	0.0007	0.0154	0.0100	0.143	0.053
EBITD/ MV of assets	-0.0120	0.0066	-0.1094	0.0083	0.343	0.046
<i>Measures of focus:</i>						
Number of segments reported	2.84	3.00	3.00	3.00	0.001	0.927
Segment-based HHI	0.6814	0.6577	0.6875	0.6596	0.234	0.001
Panel B: Merger facilitating asset sales						
Residual standard deviation	0.0224	0.0227	0.0301	0.0249	0.010	0.004
<i>Measures of operating performance:</i>						
EBITD/sales	0.0431	0.333	0.0310	0.0054	0.487	0.464
ROA	0.243	0.0005	0.0143	-0.0031	0.363	0.279
EBITD/ MV of assets	0.0008	0.0037	0.0095	0.0019	0.268	0.561
<i>Measures of focus:</i>						
Number of segments reported	3.19	2.00	3.92	4.00	0.004	0.005
Segment-based HHI	0.6341	0.5111	0.5992	0.5015	0.068	0.096

assets to facilitate a merger become more diversified while firm that sell assets for other reasons become more focused.

Next, I investigate the relationship between the change in operating performance and the change in focus following an asset sale. Prior research shows that firms that sell assets that are not related to their core business experience improved operating performance of the remaining assets following the asset sale. The dependent

Table V: OLS regression of the determinants of change in operating performance following an asset sale. The dependent variable is EBITD/sales. Change in HHI is the difference between HHI in the year before the asset sale and HHI in the year after the asset sale. Firm size is the natural logarithm of the firm's total assets. Industry dummy is a dummy variable that indicates the firm's 2-digit primary SIC code. Merger facilitating dummy is a dummy variable that is equal to 1 if the announced reason for the asset sale is to facilitate a merger. Merger_HHI is the interaction term of the merger facilitating asset and the change in HHI. Log MV is the natural logarithm of the firm's market value one day before the asset sale announcement day. After 1997 dummy is a dummy variable that is equal to 1 if the asset sale is announced after the end 1997. The standard errors are corrected for heteroskedasticity.

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.200 ^b	0.200 ^b	0.198 ^b	0.194 ^a
Change in HHI	0.146 ^b	0.145 ^b	0.151 ^b	0.150 ^b
Firm size	-0.014	-0.014	-0.016	-0.016
Industry dummy	-0.001 ^c	-0.001 ^c	-0.001 ^c	-0.001 ^c
Log MV	-0.005	-0.005	-0.003	-0.003
Merger facilitating dummy		-0.013		-0.021
Merger_HHI		0.025		0.027
After 1997 dummy			0.029	0.029

^a Significant at 1% level.

^b Significant at 5% level.

^c Significant at 10% level.

variable in Table V is the change in operating performance measured by EBITD/sales. Model 1 shows that increase in focus is significantly positively related to the change in operating performance controlling for the firm's size and industry. In model 2, I test whether the relationship between change in focus and change in operating performance is

different between firms that sell assets to facilitate a merger and firms that sell assets for other reasons by including a dummy variable for asset sales that are undertaken to facilitate a merger and an interaction term with the change in focus. Both of these variables are not significant indicating that the positive relationship between change in focus and change on operating performance holds regardless of the announced reason for the asset sale. Since the HHI is calculated using segment sales and because of the change in accounting requirements for reporting segment data, I control for this change in models 3 and 4. The results in Models 3 and 4 show that the change in reporting requirements does not change the positive relation between change in operating performance and change in focus.

Overall, the results indicate that firms that sell assets to facilitate a merger have high growth opportunities and do not seem to be financially constrained compared to their industry peers. Although these firms are as diversified as the firms that sell assets for other reasons, increase in focus does not represent a motive for them to sell assets as these firms become more diversified following the asset sale. However, no evidence is found here to indicate that the positive relationship between operating performance and change in focus does not hold for firm that sell assets to facilitate a merger.

10. Conclusion:

In this essay, I compare between firms that sell assets to facilitate a merger and firms that sell assets for other reasons in term of their and firm focus level changes. Merger facilitating asset are those undertaken in order to satisfy a regulatory condition for approving an acquisition transaction that the firm is involved in at the same time.

For a sample of 1250 asset sales obtained from the SDC, I study the value consequences of asset sales that took place during the period 1990-2002 as well as the selling firm's operating and focus levels.

The results show that firms that sell assets to facilitate a merger are significantly larger and have higher sales than those of firms that sell assets for other reasons. They also have significantly higher growth opportunities and lower leverage ratio. The announcement of an asset sale to facilitate a merger is perceived as bad news while selling an asset for other reason is greeted as good news by investors.

Consistent with the evidence presented by John and Ofek (1995), Comment and Jarrell (1995), and more recently, Bates (2005), I find that firms that sell assets for non merger related reasons experience increase in focus and improved operating performance following the asset sale. Furthermore, the change in focus is positively related to the change in operating performance. In contrast, firms that sell assets to facilitate a merger become more diversified and do not show any change on operating performance following the asset sale. However, the positive relationship between the change in focus and the change in operating performance is not different between firms that sell assets to facilitate a merger and firms that sell assets for other reasons.

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Appendix: Brief description of the challenged acquisition deals.

In this appendix, I provide brief details about the challenged acquisitions. These details are collected from the FTC website, Lexis-Nexis, and the Wall street Journal.

Format of challenged acquisitions' information.

Announcement date.

Acquiring and target firms' names.

Challenging agency.

Remedial action required for competed deals or reason for canceling the deal for cancelled deals.

Deal outcome.

1) 9/24/1990.

General Binding Corp and Velobind Inc.

DOJ.

The Justice Department planned to file a civil antitrust suit to prevent completion of the deal. The department said the proposed deal would substantially reduce competition in the high-volume mechanized binding market. General Binding Corp signed a consent decree that creates an element of additional competition by bringing a third party to provide additional distribution and competition.

Completed.

2) 4/12/1993

Chipsoft Inc. and MECA Software Inc.

FTC

Both companies decided to cancel the merger following FTC's anticompetitive concerns.

Withdrawn.

3) 6/10/1993

Columbia Hospital Corp and Galen Healthcare Inc.

FTC

Columbia Hospital Corp is required to sell its hospital in Kissimmee.

Completed.

4) 9/7/1993

Dresser Industries Inc. and Baroid Corp

FTC

Under a consent decree, the combined company must shed either Dresser's or Baroid's drilling fluid business and the domestic assets of Baroid's DB Stratabit drill bit subsidiary. In addition, DB Stratabit patents and other technology must be licensed to a new competitor.

Completed.

5) 10/3/1993

Columbia Healthcare Corp and HCA- Hospital Corp of America

FTC

The consent agreement requires the merged company to divest Aiken Regional Medical Center in Aiken, South Carolina.

Completed.

6) 3/15/1994

Adobe Systems Inc. and Aldus Corp

FTC

The FTC agreed to permit the merger after Adobe said it would divest itself of the software to the Altsys Corporation, which developed it.

Completed.

- 7) 4/4/1994
Revco D.S Inc. and Hook-SupeRx Inc.
FTC
Revco is required to divest three stores in Virginia.
Completed.
- 8) 5/35/1994
Columbia/HCA Healthcare Corp and Medical Care America
FTC
The FTC issued a ruling calling for the divestiture of Alaska Surgery by Columbia/HCA by Dec 31, 1995.
Completed.
- 9) 8/29/1994
IVAX Corp and Zenith Laboratories Inc.
FTC
IVAX is restricted from acquiring any interest in a company that makes verapamil or entering an arrangement to distribute the drug to another manufacturer.
Completed.
- 10) 8/31/1994
Boston Scientific Corp and Cardiovascular Imaging Systems Inc.
FTC
Boston Scientific is required to license patents for catheters to Hewlett-Packard or another purchaser.
Completed.
- 11) 9/19/1994
HealthSouth Corp and Relife Inc.
FTC
HealthSouth agreed to sell rehabilitation facilities in Birmingham, Alabama.
Completed.
- 12) 10/5/1994
Columbia/HCA Healthcare Corp and Healthtrust Inc.
FTC
FTC required the parties to divest seven hospitals in four states- Florida, Louisiana, Texas, and Utah.
Completed.
- 13) 10/13/1994
Microsoft Corp and intuit Inc.
FTC
According to Bill Gates, Microsoft could not face additional uncertainty in a fast-paced industry.
Withdrawn.
- 14) 11/8/1994
Boston scientific Corp and SciMed Life System Inc.
FTC
Boston Scientific agreed to license technology that uses ultrasound arteries and diagnose cardiovascular disease.
Completed.
- 15) 2/7/1995
Silicon Graphics Inc and Wavefront Technologies Inc
FTC
Silicon Graphics entered a consent decree that requires it to negotiate a porting agreement with one other major UNIX (R) workstation vendor to make the Alias Animator (TM) and power Animator (TM)

software products available on that vendor's systems.
Completed.

16) 7/17/1995

Kimberly-Clark Corp and Scott Paper Co
FTC

Kimberly-Clark entered into a consent decree requiring it to license the Scotties brand for facial tissue and to sell up to two tissue mills by June 9, 1996. Kimberly-Clark licensed the Scotties facial tissue brand name and sold its tissue mill in Fort Edward, New York to privately held Irving Tissue Inc.
Completed.

17) 7/31/1995

Walt Disney Co and Capital Cities/ABC Inc.
FCC

A New York broadcasting company that owns 10 television stations around the country said it will buy Disney-owned KCAL-TV for \$ 385 million if regulators approve the deal. Federal regulators made sale of the station a requirement of the Walt Disney Co's acquisition in February of Capital Cities/ABC Inc., which owned Los Angeles station KABC-TV. Federal Communications Commission rules prohibit ownership of two television stations in a single market.
Completed.

18) 8/29/1995

Time Warner and Turner Broadcasting System Inc.
FTC

Time Warner, Turner, TCI agreed to make a number of structural changes and abide by certain restrictions designed to break down the entry barriers created by the deal. The agreement would (1) require TCI to divest its interest in Time Warner to a separate company (or accept a maximum of 9.2% nonvoting interest in Time Warner); (2) require TCI, Turner, and Time Warner to cancel their long-term carriage agreements; (3) reduce significantly Time Warner's enhanced opportunities for bundling Time Warner and Turner programming; (4) bar Time Warner's programming interests from discriminating in price against rival cable systems; (5) prohibit Time Warner's cable interests from discriminating in carriage decisions against rival programmers; and (6) require Time Warner's cable interests to carry a rival to CNN.
Completed.

19) 10/19/1995

Johnson & Johnson and Cordis Corp.
FTC

Johnson & Johnson agreed to sell the Cordis unit that makes cranial shunts.
Completed.

20) 10/27/1995

Praxair Inc and CBI Industries Inc.
FTC

Praxair agreed to divest to AGA Gas, Inc., of Independence, Ohio, four industrial gas producing facilities located in Bozrah, Connecticut; Madison, Wisconsin; Irwindale, California; and Vacaville, California.
Completed.

21) 11/29/1995

Rite Aid and Revco Inc.
FTC

The FTC did not allow the merger under any condition.
Withdrawn.

- 22) 1/24/1996
Mattel Inc. and Hasbro Inc.
FTC
Hasbro management rejected the deal because it believed that the deal would not pass antitrust investigation.
Withdrawn.
- 23) 2/13/1996
Jacor Communications and Citicasters Inc.
DOJ
Jacor agreed to sell Cincinnati radio station WKRQ-FM, one of the 19 radio stations and two television stations Jacor would acquire in the deal.
Completed.
- 24) 3/5/1996
American Greetings Corporation and Gibson Greetings Inc
FTC
Gibson has rejected merger negotiations with American Greetings on the basis of overwhelming antitrust problems.
Withdrawn.
- 25) 7/1/1996
Tribune Co and Renaissance Communications.
FCC
The FCC refused to grant Tribune a permanent waiver of federal rules that bar the ownership of TV station and newspaper in the same market. The FCC gave the company one year to sell off either the TV station or the newspaper before March 22 1998.
Completed.
- 26) 8/5/1996
American Radio Systems Corp and EZ Communications Inc.
DOJ
According to the agreement with the Justice Department, EZ must divest radio station WRFX-FM in Charlotte, North Carolina and American must divest radio station KSSJ-FM in Shingle Springs, California, which will leave the merged company at the FCC's ownership limit of five FMs in both Charlotte and Sacramento.
Completed.
- 27) 8/14/1996
General Mills and Ralcorp
FTC
General Mills agreed to a consent order that requires a new entity, New Ralcorp Holding Inc, retain Ralcorp's private label cold cereal business. The order requires General Mills to permit New Ralcorp to transfer to any successor party, without authorization or approval from General Mills, the right to manufacture and sell cereals identical to Chex brand product. The order also bars General Mills from delaying production of the private label Chex rivals.
Completed.
- 28) 9/4/1996
Staples Inc. and Office depot Inc.
FTC
The FTC did not allow the merger under any condition.
Withdrawn.
- 29) 10/17/1996
Tenet Healthcare Corp and OrNda Health Corp.

- FTC
The consent decree signed with the FTC required divesting several assets of OrNda Health Corp.
Completed.
- 30) 10/28/1996
Cadence Design Systems Inc and Cooper & Chyan Technology
FTC
The FTC required the companies to permit developers of Commercial Integrated Circuit Routing Tools to participate in Independent Software Interface Programs. Furthermore, the companies are prohibited from acquiring any interest in development or sale of Integrated Circuit Routing Tools in the U.S for 10 years.
Completed.
- 31) 11/4/1996
J.C Penney Co and Eckerd Corp
FTC
The FTC required the companies to divest the Rite Aid North Carolina/Charleston Retail assets and the Thrift Retail assets.
Completed.
- 32) 12/10/1996
Autodesk and Softdesk
FTC
Autodesk is barred from reacquiring "IntelliCADD" or any entity that owns or controls the IntelliCADD technology, without prior notice to the FTC for 10 years.
Completed.
- 33) 2/11/1997
Mediq Inc. and Universal Hospital Services Inc.
FTC
The companies jointly announced that in light of the likelihood of a protracted administrative proceeding before the FTC extending well beyond the Oct 31, 1997 termination date for the merger, the uncertainty of the outcome and the costs associated with continuing to defend against the efforts of the FTC to obtain a preliminary injunction to prevent the merger, they have called off the deal.
Withdrawn.
- 34) 7/3/1997
Lockheed Martin Inc Northrop Grumman Corp
DOJ
The Justice Department sued to block the acquisition on grounds the merger could threaten soldiers lives and taxpayers' wallets.
Withdrawn.
- 35) 8/25/1997
Cardinal Health Inc and Bergen Brunswig Corp
FTC
The deal was called off after the district attorney judge issued temporary injunction against the combination.
Withdrawn.
- 36) 8/25/1997
Perkin-Elmer Corp and PerSpective Biosystems Inc.
DOJ
The Justice Department approved the merger after Perkin-Elmer agreed to sell PerSpective's DNA synthesis patent rights.
Completed.

- 37) 9/19/1997
CBS Corporation and American Radio Systems
DOJ
The Department of Justice required CBS to divest its Boston-area radio stations. To satisfy this requirement, CBS agreed to its Boston-area radio stations to Entercom.
Completed.
- 38) 9/22/1997
McKesson Corp and Amerisourcebergen Corp
FTC
The deal was called off after the district attorney judge issued temporary injunction against the combination.
Withdrawn.
- 39) 10/1/1997
Worldcom and MCI
FCC
The FCC conditioned the merger approval on the sale of MCI's Internet business.
Completed.
- 40) 10/27/1997
Intel Corporation and Digital Equipment
FTC
Digital is required to license Alph technology to advance Micro devices, developer and producer of high performance microprocessors, and to Samsung electronics, a developer and producer of semiconductors, or some other commission-approved licensee. Digital also would be required to begin the process of certifying IBM machines, or another commission-approved company, as an alternative production source for Alph chips.
Completed.
- 41) 11/21/1997
TRW Inc and BDM International
FTC
The FTC required the companies to divest the SETA Services Operations and such additional ancillary assets as are necessary to ensure the continued ability of the acquirer to provide SETA Services. Computer Sciences Corporation (NYSE: CSC) has been selected to acquire a major scientific, engineering and technical assistance (SETA) contract business in support of the DoD Ballistic Missile Defense Organization (BMDO). The contract business, previously performed by BDM, was divested as a condition to the Federal Trade Commission's approval of TRW's acquisition of BDM in December 1997
Completed.
- 42) 1/5/1998
SBC and Southern New England Telecom
FTC
SBC entered a consent decree that requires it to make several important changes regarding its internal operations. In a addition, SBC agreed to make a voluntary payment of \$ 1.3 million to the U.S treasury.
Completed.
- 43) 1/20/1998
Albertson's and Buttery Food & Drug Store
FTC
The commission's approval endorsed an agreement by the two companies that requires Albertson's to sell 15 of its stores in Montana and Wyoming to ensure continued competition for grocery customers in the affected cities. Seven Buttery stores in Billings; Bozeman; Butte; Great Falls; Helena; Cody;

Wyo; and Gillette, Wyo will be sold to Smith's Food and Drug Centers Inc. Smith's also will purchase five Albertson's stores in Missoula; Billings; Laramie, Wyo; and Cheyenne, Wyo. A Max Food and Drug Cheyenne, Wyo, operated by Albertson's also will be sold to Smith's. Two Buttery stores in Casper. Wyo will be sold to another company, Supervalu Holding Inc.
Completed.

44) 2/26/1998

Halliburton Company and Dresser Industries Inc.

DOJ

Halliburton Company entered in an agreement with W-H Energy Services Inc. for the sale of Halliburton's logging-while-drilling (LWD) and related measurement-while-drilling (MWD) business known as PathFinder. This sale being made to comply with the consent decree Halliburton entered into with the U.S Department of Justice on September 29, 1998 in order to conclude the antitrust review of Halliburton's merger with Dresser Industries Inc.

Completed.

45) 3/4/1998

Global Industrial Technologies Inc and AP Green Industries Inc

FTC

The FTC required the companies to divest AP Green Silica Refractories Properties.

Completed.

46) 4/15/1998

Holly Corporation and Giant Industries Inc.

FTC

The companies mutually agreed to terminate their proposed merger, which had been approved by the stockholders of both companies in last June, 1998. The decision to terminate the merger was as a result of the August 31st filing of a lawsuit by Loughorn Partners pipeline, L.P. against Holly and others, which Holly believes to be wholly without merit, and as a result of continuing delays and uncertainties in negotiations with the Federal Trade Commission and the New Mexico Attorney General's office concerning federal and state clearance of the merger.

Withdrawn.

47) 5/11/1998

SBC and Ameritech

FCC & DOJ

The FCC adopted 30 conditions to ensure the SBC-Ameritech deal would serve the public interest. The new SBC must enter 30 new markets with 30 months to compete with local phone companies. The company is required to provide deep discounts on key pieces and their networks to rivals who want to lease them. On March 23, the U.S. Department of Justice terminated its investigation and cleared the transaction, contingent on Ameritech and SBC reaching an agreement for sale of certain overlapping wireless properties.

Completed.

48) 5/11/1998

Consolidated Edison Inc and Orange & Rockland Utilities Inc.

DOJ

The Department of Justice announced that Consolidated Edison Inc and Orange & Rockland Utilities Inc have resolved antitrust concerns involving their proposed merger by selling all of Orange & Rockland's electric generating plants and a plant co-owned by the companies to Southern Energy Inc.

Completed.

49) 6/24/1998

AT & T and TCI

DOJ

The companies entered an agreement that requires them to transfer the Sprint PCS stock to an independent trustee before the merger can be closed. The trustee will have approximately five years to complete the stock sale.

Completed.

50) 6/29/1998

Medtronic Inc and Physio-Control International Corp

FTC

The FTC required Medtronic to delegate its voting rights held pursuant to all of its Ownership Interests to SurVivaLink. Medtronic is also restricted from making any related acquisitions or partnerships.

Completed.

51) 7/13/1998

Medtronic Inc and Avecor Cardiovascular Inc.

FTC

The FTC required Medtronic to divest the Avecor Pump assets and to accept other contracting limitations.

Completed.

52) 8/3/1998

Albertson's Inc and American Stores

FTC

The FTC required the companies to divest grocery related assets.

Completed

53) 8/6/1998

Safeway Inc. and Carr-Gottstein Foods Co

FTC

The companies announced that an Alaska court approved the February 9th consent decree negotiated with the Alaska Attorney General governing Safeway's proposed acquisition of Carr-Gottstein Foods Co. Under the terms of the consent decree, Safeway is required, among other things, to sell seven Alaska stores of the combined company to an approved buyer or buyers after Safeway completes its acquisition of Carr-Gottstein.

If the FTC were overseeing the Safeway-Carr deal, it would have required Safeway to find a buyer for the seven stores before approving the merger. And it would have publicly named the buyer and given the public 60 days to comment before approving or denying the sale, said Jim Fishkin, an FTC attorney in Washington.

Completed.

54) 8/6/1998

Service Corporation International and Equity Corporation International

FTC

The FTC accepted the agreement containing consent decree order signed by Service Corporation International and the FTC staff in December 1998, resolving regulatory concerns of the FTC staff with regard to the merger. Under the consent agreement Service Corporation International is required to divest sufficient funeral service and cemetery properties to Carriage Services Inc in each of 14 local markets.

Completed.

55) 10/19/1998

Kroger Co and Fred Meyer Inc.

FTC

The FTC required Kroger to divest all Supermarkets in Utah, in which Kroger had a financial interest, including "City Market".

Completed.

- 56) 10/7/1998
Clear Channel Communications Inc and Jacor Communications Inc
FCC
The FCC approved the merger after the companies agreed to sell 18 radio stations in four cities to preserve competition.
Completed.
- 57) 12/1/1998
Exxon Corp and Mobil Corp
FTC
The FTC required the companies to divest the Exxon California refining and marketing assets to a single acquirer and also limited the companies' ability to form future contracts.
Completed.
- 58) 1/13/1999
Rohm & Haas Co and Morton International Corp
FTC
The FTC required the companies to divest all rights, titles, and interests in and to Intellectual Property relating in any way to the research, development, manufacture, or sale of Morton Floor Care Products.
Completed.
- 59) 2/18/1999
General Dynamics Corp and Newport News Shipbuilding
Pentagon
Defense Secretary William Cohen said that the proposed \$2 billion deal would have meant just one supplier for aircraft carrier and nuclear submarines. It also would have reduced competition in other sectors of military shipbuilding, and any cost saving to the Navy would not justify that less competition.
Withdrawn.
- 60) 2/22/1999
Dominion Resources and Consolidated Natural Resources
FTC
The FTC approved the merger provided that Dominion divests CNG's Virginia Natural Gas subsidiary.
Completed.
- 61) 3/8/1999
Allied Waste Industries Inc and Browning-Ferris Industries Inc
DOJ
Allied waste has agreed to sell to Republic services certain waste services assets, which include four landfill operations, eleven transfer stations and a subset of small container commercial hauling assets from 5 collection operations, with combined reported historical revenue of approximately \$123 million. The assets are located in Akron/Canton, Ohio; Atlanta, Georgia; Chicago, Illinois; Charlotte, North Carolina; Oakland, California; Rockford, Illinois and Kalamazoo, Michigan.
Completed.
- 62) 3/29/1999
Computer Associates International Inc. and Platinum Technology International Inc.
DOJ
The Department of Justice reached an agreement with Computer Associates International Inc. that allows the company to go forward with its purchase of Platinum Technology International Inc., provided that Computer Associates sells six Platinum mainframe systems management software products and related assets.
Completed.

- 63) 4/22/1999
AT&T and MediaOne
FCC
The FCC granted the merger conditional approval. The Federal Communication Commission required that AT&T comply with rules barring any company from owning more than 30 percent of the nation's market for subscription-television services, including cable and satellite.
Completed.
- 64) 4/28/1999
Libbey Inc and Oneida Ltd
Oneida board members said they rejected Libbey's proposal because it includes substantial contingencies and uncertainties including concerns about financial and antitrust laws.
Withdrawn.
- 65) 5/6/1999
Litton Industries and Newport News Shipbuilding
FTC
Michael R. Brown, Litton chairman, president and chief executive officer, said that it is evident that our proposed transaction is unlikely to receive the necessary government approval at this time. Although we are disappointed by this outcome, we respectfully withdraw our proposal.
Withdrawn.
- 66) 5/17/1999
Precision Castparts Corp and Wyman-Gordon Corp
FTC
The FTC required the companies to divest the Albany Facility assets.
Completed.
- 67) 6/21/1999
Abbott Laboratories and Alza Corp
FTC
The companies abandoned their planned merger after failing to agree on terms with the Federal Trade Commission to satisfy its concerns relating to the merger.
Withdrawn.
- 68) 7/15/1999
Compuware Corporation and Viasoft Inc.
DOJ
The parties have terminated the agreement due to uncertainty associated with civil action filed by the U.S. department of Justice on Friday 29, 1999 to enjoin Compuware's acquisition of Viasoft, as well as the substantial costs associated with the litigation. Accordingly, the parties determined that it was in the best interest of both companies to terminate the agreement.
Withdrawn.
- 69) 8/4/1999
Dow Chemical Company and Union Carbide Corp
FTC
The FTC required the companies to divest the Dow Global Ethyleneamines business.
Completed.
- 70) 8/11/1999
Alcoa Inc and Reynolds Metals Co
DOJ
Alcoa sold its stake in a western Australian alumina refinery to satisfy the requirements of government regulators in its purchase of Reynolds Metals Inc.
Completed.

- 71) 9/7/1999
Viacom Inc. and CBS Corp
FCC
The FTC required the merged company to comply with rules barring any firm from owning stations that serve more than 35 percent of the nationwide television audience.
Completed.
- 72) 10/4/1999.
Clear Channel Communications Inc and AMFM Inc
FCC and DOJ
The Federal Communications Commission and the Justice Department required the companies to shed a total of 122 radio stations in 37 areas to satisfy antitrust concerns and federal limits on ownership concentration in local markets.
Completed.
- 73) 10/5/1999
DTE Energy Corp and MCN Energy Group Inc
FTC
The FTC required the companies to divest all rights, titles, and interest acquired by DTE from MCN pursuant to the merger in all assets and businesses relating to the transportation, distribution, and storage of natural gas, and the marketing and sale of natural gas distribution services, for Electric Displacement Load in the overlap area.
Completed.
- 74) 11/4/1999
Pfizer and Warner-Lambert Co
FTC
The FTC required the companies to terminate the Celexa Co- promotion agreement and Celexa amendment.
Completed.
- 75) 1/17/2000
JDS Uniphase Corporation and E-TEK Dynamics Inc.
DOJ
The companies agreed to sell supply contracts for the manufacture of thin-film filters, which the Department of Justice argued would be monopolized under the merged companies.
Completed.
- 76) 2/29/2000
Telecorp PDS Inc. and Tritel Inc.
FCC
The FCC required that the companies sell part of its spectrum that overlaps in Bowling-Glasgow County, Ky.
Completed.
- 77) 5/23/2000
United Airlines Corporation and US Airways
DOJ
The companies terminated the planned merger following the announcement of the Department of Justice that will block the deal.
Withdrawn.
- 78) 6/25/2000
Philip Morris Companies and Nabisco Holding Corp
FTC

To resolve Federal Trade Commission's competitive misgivings about the merger, Philip Morris agreed to sell Nabisco's U.S dry-packaged dessert baking powder businesses to the Jel Fert Co and its mints operations to Hershey Foods Corp.
Completed.

79) 6/26/2000

Valspar Corp and Lilly Industries

FTC

The FTC required the companies to divest all of Valspar's business, assets, properties, and goodwill tangible and intangible relating to the research, development, manufacture, quality assurance, customer support, marketing or sale of Mirror Coatings.

Completed.

80) 7/10/2000

JDS Uniphase Corporation and SDL Inc.

DOJ

JDS Uniphase agreed to sell 980 nanometer pump laser chip business to Nortel Networks in order to resolve antitrust concerns about its proposed acquisition of SDL Inc. The Department of Justice said that the deal as originally proposed would have led to the loss of head-to-head competition in the production of 980 nm pump laser chips, resulting in higher prices for businesses and less product innovation. Under the divestiture, JDS Uniphase has agreed to sell its entire Uniphase Laser Enterprise division to Nortel Networks in a transaction valued at about \$3 billion.

Completed.

81) 7/17/2000

Georgia-Pacific Corporation and Fort James Corporation

DOJ

Georgia-Pacific agreed to sell its commercial tissue business to resolve Department of Justice investigation.

Completed.

82) 9/5/2000

Worldcom and Intermedia

FCC

Worldcom agreed to shed all of Intermedia's business operations except its valuable controlling stake on Digex Inc., a leading operator of computer centers that run Web sites.

Completed.

83) 10/16/2000

Chevron Corp and Texaco Inc

FTC

The FTC required the companies to divest their Equilon interest.

Completed.

84) 4/25/2001

General Dynamics Corp and Newport News Shipbuilding

DOJ

The Department of Justice filed an antitrust lawsuit to block the proposed acquisition.

Withdrawn.

85) 5/4/2001

Valero Energy Corp and Ultramar Diamond Shamrock Corp

FTC

The FTC required the companies to divest the Golden Eagle CARB Refining and Marketing assets.

Completed.

- 86) 7/31/2001
Zebra Technologies and Fargo Electronics
FTC
In a joint release, the companies said that based on talks with representatives of the Federal Trade Commission, Zebra and Fargo believe it is unlikely that the FTC will clear the transaction as currently proposed. Accordingly, the companies agreed to a mutual termination of their acquisition agreement and neither party will pay break-up fee.
Withdrawn.
- 87) 10/25/2001
NetRatings Inc. and Jupiter Media Metrix Inc
FTC
Both companies called the merger off after the FTC indicated it would challenge the deal.
Withdrawn.
- 88) 11/18/2001
Phillips Petroleum Co and Conoco Inc
FTC
The FTC required the companies to divest Phillips Woods Cross assets.
Completed.
- 89) 12/17/2001
Amgen Inc and Immunex Corp
FTC
The FTC required the companies to divest the Leukine assets.
Completed.
- 90) 2/19/2002
Cytec Corporation and Digene Corporation
FTC
The FTC decided to go to court to block the deal. Charles M. Fleischman, Digene's president, chief financial officer and chief operating officer, said "It's not in the best interests of the company to go through a potentially protracted and uncertain dispute in the courts with the FTC."
Withdrawn.
- 91) 2/22/2002
Northrop Grumman Corporation and TRW Inc.
DOJ
To win the approval of the Department of Justice, Northrop agreed to sell satellite sensors to competitors at a fair price.
Completed.
- 92) 4/2/2002
Quest Diagnostics Inc. and Unilab Inc
FTC
The FTC required the companies to divest the purchased assets to LabCorp pursuant to and in accordance with the LabCorp purchase agreement.
Completed.
- 93) 7/15/2002
Pfizer Inc and Phamacia Corp
FTC
The FTC required the companies to divest the Darifenacin assets.
Completed.

Vita

Adel Bino was born in Amman, Jordan, on September 22, 1972 and received his BSc in Accounting from Yarmouk University in 1993. He worked in a local bank for three years and then joined the MBA program at the University of Jordan in 1999. Upon graduation, he was hired as instructor in finance at the University of Jordan and received a scholarship to continue his graduate studies. In August 2002, he enrolled in the doctoral program at the University of New Orleans and worked under the supervision of Dr. Sudha Krishnaswami and Dr. Tarun Mukherjee, and received Doctorate of Philosophy in Financial Economics in Spring of 2007.