

TWO ESSAYS IN FINANCE

By

THOMAS W. DOELLMAN

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To my mother, Erica, my sister - Kendy, my niece - Lainie, my grandparents,
my father, and the GWC
Your love and support have not gone unnoticed

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TABLE OF CONTENTS

| | <u>page</u> |
|--|-------------|
| ACKNOWLEDGMENTS..... | 4 |
| LIST OF TABLES..... | 7 |
| ABSTRACT | 9 |
| CHAPTER | |
| 1 INTRODUCTION | 11 |
| Overview of Chapter 2 | 12 |
| Overview of Chapter 3 | 13 |
| 2 CONFLICTS OF INTEREST AND THE CROSS-SECTIONAL VARIATION IN 401(K) PLAN PERFORMANCE AND COSTS | 16 |
| Relevant Literature and Industry Background..... | 24 |
| BrightScope Sample and Data Description..... | 34 |
| Measuring Performance Differences Across 401(k) Plans..... | 38 |
| Plan-Level Performance – Menu Option Investment Returns..... | 38 |
| Plan-Level Investment Costs..... | 49 |
| Estimating the Direct Effect of Conflicts of Interest on Plan Performance..... | 53 |
| Conflicts Identified from the SEC's Investment Adviser Public Disclosure Form..... | 54 |
| Holdings of Non-Mutual Fund Company Proprietary Funds | 58 |
| Examining the Costs of 401(k) Plans at the Administrative Level | 60 |
| Analysis of Direct Administrative Costs | 61 |
| Determining the Significance of Excessive Expense Ratios | 64 |
| Chapter 2 Concluding Remarks..... | 66 |
| 3 THE INITIAL MARKET ASSESSMENT OF ACQUISITION SUCCESS: NEW EVIDENCE FROM GOODWILL IMPAIRMENTS | 94 |
| Overview of SFAS 142..... | 100 |
| Overview of Relevant Goodwill Impairment Literature | 102 |
| Sample Selection..... | 107 |
| Match Sample Selection..... | 111 |
| Descriptive Statistics..... | 112 |
| Results for Acquisition Announcement Returns and Impairments | 116 |
| Multivariate Results – Main Model Specifications..... | 117 |
| Multivariate Results – Alternative Model Specifications | 121 |
| Results for Longer Impairment Windows of 5 Years | 126 |
| Chapter 3 Concluding Remarks..... | 128 |

| | |
|--|-----|
| 4 CONCLUSION..... | 146 |
| 5 DETERMINING THE IMPAIRMENT SAMPLE..... | 150 |
| LIST OF REFERENCES | 154 |
| BIOGRAPHICAL SKETCH..... | 158 |

LIST OF TABLES

| <u>Table</u> | | <u>page</u> |
|--------------|---|-------------|
| 2-1 | Plan-Level descriptive statistics for the overall sample..... | 69 |
| 2-2 | Plan-Level descriptive statistics for final sample..... | 70 |
| 2-3 | Plan size by plan characteristics..... | 71 |
| 2-4 | Descriptive statistics for plan-level investment options..... | 72 |
| 2-5 | Overall average plan-level performance..... | 73 |
| 2-6 | Average plan-level performance by third-party plan administrator type..... | 74 |
| 2-7 | Alternative regression specifications measuring plan-level performance. | 75 |
| 2-8 | Differences in the coefficients from Table 2-7 | 77 |
| 2-9 | Popularity of the Big Five in sample plans..... | 78 |
| 2-10 | Alternative regression specifications measuring plan-level expense ratios | 79 |
| 2-11 | Measuring plan-level undisclosed mutual fund transaction costs. | 81 |
| 2-12 | Popularity of the Big Five by category and “No Conflicts”..... | 83 |
| 2-13 | Conflicts of interest and plan-level net performance..... | 84 |
| 2-14 | Holdings of TPA’s proprietary funds in sample plans. | 86 |
| 2-15 | Proprietary funds and plan-level net performance | 88 |
| 2-16 | Alternative regression specifications measuring plan-level administrative costs. | 90 |
| 2-17 | Excessive expense ratios | 92 |
| 3-1 | Sample by industry and acquisition year | 130 |
| 3-2 | Impairment acquisitions and charges by year | 131 |
| 3-3 | Impairment sample and match sample descriptive statistics | 132 |
| 3-4 | Descriptive statistics for dummy variables..... | 134 |
| 3-5 | Mean and median paired data comparison tests for select sample variables... | 135 |

| | | |
|------|--|-----|
| 3-6 | Descriptive statistics for market adjusted returns | 136 |
| 3-7 | Mean and median paired data comparison tests for market adjusted returns .. | 137 |
| 3-8 | Alternative regression specifications with MAR(-1, +1) as the dependent variable..... | 138 |
| 3-9 | Alternative regression specifications controlling for acquisition related characteristics..... | 140 |
| 3-10 | Alternative regression specifications controlling for bidder overvaluation..... | 142 |
| 3-11 | Robustness specifications expanding the impairment window to within 5 years..... | 144 |
| A-1 | Matching impairment observations to specific acquisitions | 152 |
| A-2 | Breakdown of how various important sub-samples of the data was identified.. | 153 |

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By

Thomas W. Doellman

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In this study, I examine two distinct topics in finance. The first part of the study examines the impact of conflicts of interest in the 401(k) industry on the investment performance of 401(k) plan participants. Specifically, I examine whether differences in plan performance and costs are significantly related to the type of financial institution administering the plan and whether these differences are related to conflicts of interest. I find that plans administered by companies that we characterize as asset management advisors or large commercial banks tend to significantly underperform plans administered by all other types of companies in the sample. We argue that this poor performance is associated with their particular susceptibility to conflicts of interest. Further evidence that these performance differences are indeed driven by conflicts of interest is provided by using a proxy for an administrator's susceptibility to conflicts of interest and by controlling for plan holdings in their proprietary funds. In both cases plan underperformance is magnified.

In the second part of the study, I use significant goodwill impairments to identify poor acquisitions and to ascertain if the capital markets can identify poor acquisitions at merger announcement. After matching the poor acquisitions identified by this criterion

with acquisitions that have similar industry, size, and time characteristics (but without significant goodwill impairments), I determine whether the market returns at the announcement of the acquisition identifies the poor acquisitions in the overall sample. The cross-sectional results suggest that acquirer market adjusted returns at the acquisition announcement are significantly lower for the sample of acquisitions with ex-post impairments. This finding provides evidence that the market is able to discriminate to some degree between good and bad acquisitions at acquisition announcement events, even though these acquisitions involve considerable intangible assets and private firms. Additionally, while goodwill impairments are judgmental in nature, they do reflect poor acquisition investments undertaken by managers.

CHAPTER 1 INTRODUCTION

In the two chapters that constitute this study, I examine two distinct topics in the field of finance: issues related to the 401(k) industry and merger and acquisition activity on the part of U.S. corporations. The first part of the study, Chapter 2, investigates the growing concern regarding the negative effect conflicts of interest on the part of third-party administrators may have on the investment performance of plan participants in the 401(k) industry. Despite the importance and interest in this topic, there is limited academic research addressing these issues – primarily because of a lack of data. I am able to address this issue by utilizing a unique database consisting of 6,809 401(k) plans provided by BrightScope Inc. Specifically, I determine whether cross-sectional variation in plan performance and costs are dependent on the type of company acting as the third-party plan administrator since this company is most likely to influence the plan menu of investment options.

In the second part of the study, Chapter 3, I examine the ability of capital markets to discriminate between good and poor acquisitions. There is a pre-existing literature that studies this topic, but the main contribution of my study is to use an alternative method to identify poor acquisitions: firms that take substantial goodwill impairment charges related to a prior acquisition. Since goodwill is the difference between what is paid for the acquisition and the book value of identifiable assets, this approach can identify cases where the premium paid above book value is no longer justified. While tangible asset values may also be changing, this is an excellent indicator of acquisition “failure” in that the price paid is revealed to have been too high. Evidence of the

market's ability to identify poor acquisitions *ex ante* would call into question the intention of the managers of the bidding corporations.

Overview of Chapter 2

Given the growing significance of employer-sponsored 401(k) plans, the governance and performance of this employment benefit is of obvious interest to plan participants as well as plan sponsors (the company providing a plan to its employees) and policymakers. In this chapter, I determine whether the cross-sectional variation in plan performance and costs are dependent on the identity of the party most likely to influence the plan menu of investment options, third-party plan administrators. Third-party plan administrators are financial institutions hired by the plan sponsor to administer the plan and to provide advice on plan investment options. In this way, the framework for these relationships can be thought of in the same manner as the typical corporation. The plan participants are the shareholders, the plan sponsor is the board of directors that hires and monitors the agent, and the third-party plan administrator is the primary agent responsible for delivering expected performance. Thought of in this manner, it is clear that, just as in any principal-agent scenario, there are potential conflicts of interest that exist.

Based on specific conflicts highlighted in a Government Accountability Office report and on anecdotal evidence from current lawsuits, I hypothesize that certain types of financial institutions serving as the third-party plan administrator should be more susceptible to conflicts than others. Thus, I would expect to find significant differences in plan-level performance and costs based on the type of company administering the plan. I categorize third-party plan administrators into one of seven groups: traditional mutual fund companies, asset management advisory companies, investment banks,

large commercial banks, small/regional banks, insurance companies, and companies specializing in 401(k) plan services.

The most persistent finding documented in this chapter is that plans administered by companies I characterize as asset management advisors or large banks tend to have the poorest performance. For example, plans administered by asset management advisory companies underperform plans administered by companies in the mutual fund category by roughly 40 basis points (bps) per year. Asset management advisory companies in the sample are primarily in the business of providing asset management services rather than focusing exclusively on marketing a family of mutual funds, as would a traditional mutual fund company. Since some of these companies may have proprietary funds and since the companies that do not have proprietary funds typically work with preferred mutual fund families with which they have business arrangements, companies in this category are particularly likely to have incentives outside of the plan participants' best interest when it comes to suggesting funds for the plan. Similarly, companies in the Large Bank category also tend to have proprietary funds that are likely included in the 401(k) plan regardless of whether better performing funds in the mutual fund marketplace exist. Thus, I argue that these specific groups are likely particularly susceptible to conflicts of interest in the 401(k) industry. The significant underperformance I document is consistent with this hypothesis.

Overview of Chapter 3

Event studies that measure abnormal stock returns around the announcement of merger and acquisition activity have long been relied on by finance researchers to measure the wealth effects of these events. The main contribution of the analysis in Chapter 3 is to use significant goodwill impairments to identify poor acquisitions and to

ascertain whether the capital markets can identify poor acquisitions at merger announcement. Since goodwill represents the residual of the difference between what is paid for an acquisition and the book value of identifiable assets, significant impairment charges related to prior acquisitions represent cases where the premium paid above book value is no longer justified. This is an excellent indicator of acquisition failure in that the price paid is revealed to have been too high. Thus, the identification of the specific acquisitions responsible for these substantial goodwill impairments provides a sample of poor acquisitions. After matching these poor acquisitions with acquisitions that have similar industry, size, and time characteristics (but without significant goodwill impairments), I then determine whether the market returns at the announcement of the acquisition identifies the poor acquisitions in the overall sample.

The cross-sectional results suggest that acquirer market adjusted returns at the acquisition announcement are significantly lower for the sample of acquisitions identified as poor investments. The acquirer returns to the impairment acquisitions are, on average, 5.40 percentage points lower than those for the match acquisitions. This finding is robust to the inclusion of control variables that take into account the overvaluation of the acquiring firms, the relative size of the acquisition, the private versus public nature of targets, and the use of stock in the purchase price consideration.

An implication of this finding could be that impairment charges seem to confirm market expectations to some degree. That is the good news. The bad news is potentially twofold. First, for the impairment acquisition sample, management did not respond to derail many objectively poor acquisitions. Second, arguably the markets would have suggested that impairment charges be taken far sooner based on “fair”

value than ex-post was the case. Of course, management admitting failure shortly after an acquisition is completed is perhaps an unrealistic expectation.

CHAPTER 2

CONFLICTS OF INTEREST AND THE CROSS-SECTIONAL VARIATION IN 401(K) PLAN PERFORMANCE AND COSTS

In this chapter I study the conflicts of interest on the part of plan administrators in the 401(k) industry and the effect of these conflicts on participant investment performance. Employer sponsored 401(k) plans have become an increasingly important vehicle for retirement savings. In 1981, when the 401(k) plan was first introduced, defined benefit (DB) plans covered nearly 40 percent of private sector employees.¹ However, as companies have steadily moved away from DB plans to avoid the financial burden of guaranteeing employee retirement income, defined contribution (DC) plans have become much more prevalent. As of March 2008, only about 20 percent of private sector employees were covered by DB plans while 43 percent of such employees were covered by DC plans. Given their growing significance, the governance and performance of 401(k) plans have garnered great interest from plan participants as well as plan sponsors (the company providing a plan to its employees) and policymakers.² Indeed, anecdotal evidence suggests some reasons for concern.

In September 2011, employees of Ameriprise Financial filed a lawsuit against their employer alleging losses in retirement income. The plaintiffs argued that the inclusion of Ameriprise's proprietary RiverSource mutual funds in the company's 401(k) plan

1 U.S. Bureau of Labor Statistics. Defined-contribution plans more common than defined-benefit plans. 2009. <<http://www.bls.gov/opub/perspectives/issue3.pdf>>.

2 Other important issues considered by the academic literature include the adequacy of plan menu investment options to allow for adequate diversification opportunities (see Elton et al., 2006; Tang et al., 2010) and the education of plan participants so that they can make intelligent risk/return tradeoffs with their allocation decisions (see Lusardi and Mitchell, 2011; Tang et al., 2010). While there is evidence that the plan investment menus are increasingly more comprehensive (Doellman and Sardarli, 2011), it appears that investors do not exploit available diversification opportunities (see Tang et al., 2011; Huberman and Jiang, 2006).

resulted in relatively high fees and poorer performance than what could have been earned investing in similar funds offered by other mutual fund families. Besides the direct financial benefit to Ameriprise, the suit goes further by alleging that the motivation for including some of the RiverSource funds was to seed new and unproven investments to increase their appeal to retail investors.³ This lawsuit, and numerous others like it, has grabbed the attention of government agencies. A recent Government Accountability Office (GAO) report on 401(k) plans highlights both the government and the industry's growing concern regarding conflicts of interest in the 401(k) industry.⁴

Despite the importance and interest in this topic, there is limited academic research addressing these issues – primarily because of a lack of data. I address this issue by utilizing a unique database consisting of 6,809 401(k) plans provided by BrightScope Inc. A key feature of this dataset is the identification of various service providers to the plans. Specifically, I focus on the provider most likely to influence the plan menu of investment options, third-party plan administrators. Third-party plan administrators (TPA) are financial institutions hired by the plan sponsor to administer the plan and to provide advice on plan investment options. The framework for this relationship can be thought of in the same manner as the typical corporation. Plan participants are the shareholders, the plan sponsor is the board of directors that hires and monitors the agent, and the third-party plan administrator is the primary agent responsible for delivering expected performance. Thought of in this manner, it is clear that, just as in any principal-agent scenario, there are potential conflicts of interest that

3 Nicklaus, D. 2011. Spotlight on 401(k) fees may help many saving for retirement. *stltoday.com* (October 25). <http://www.stltoday.com/business/columns/david-nicklaus/article_c3246a4b-0d63-508d-9cd9-5524d2bd97c3.html>.

4 United States Government Accountability Office. 401(K) Plans: Improved Regulation Could Better Protect Participants from Conflicts of Interest. 2011. <<http://www.gao.gov/new.items/d11119.pdf>>.

may exist. Based on specific conflicts highlighted in the GAO report reference above and on anecdotal evidence from numerous current lawsuits, I hypothesize that certain types of financial institutions serving as the TPA may be more susceptible to these conflicts than others. If true, one might expect to find significant differences in plan-level investment performance based on the type of company administering the plan.

In this study, I focus on two primary mechanisms through which plan-level investment performance may vary across 401(k) plans. First, plan funds may provide poor gross investment returns as a result of inferior underlying investment strategies. Fund companies may be motivated to include underperforming funds in 401(k) plans to increase the flow of assets into that fund, thereby making the fund more marketable to retail investors. This may be accomplished either by a TPA with proprietary funds suggesting their own investment products for the plan (e.g., the Ameriprise lawsuit summarized above) or by a fund company enticing TPAs to choose certain funds within their family based on higher revenue sharing payments.⁵ The second primary cause of poor investment performance is relatively high fees and expenses which drag down net investment returns to plan participants. This would primarily include high expense ratios charged by funds in the plan; however, differences in undisclosed mutual fund transaction costs (e.g., brokerage commissions, market impact costs, spread costs, etc.) also play an important role in the net performance differences across mutual funds.

Whether the result of underlying investment strategies or relatively high fees, the general concern is that poor performance may be related to a service provider choosing

⁵ Revenue sharing in the 401(k) industry includes any indirect payments made to a service provider of the plan (e.g., the plan administrator) by any other third party to the plan in connection with services provided. An example would be a mutual fund manager reimbursing a plan administrator for record keeping services provided to the plan.

plan investment options based primarily on its own interests rather than on what is in the best interest of plan participants. Given the significant size of the sample, plans can be categorized into one of seven groups based on TPA type while still preserving enough statistical power for the tests. This then allows me to explore whether the potential conflicts faced by these different types of TPAs leads to economically and statistically significant differences in plan-level investment performance and costs. These categories include: traditional mutual fund companies, asset management advisory companies, investment banks, large commercial banks, small/regional banks, insurance companies, and companies specializing in 401(k) plan services.⁶ As hypothesized, I do indeed find significant variation in risk-adjusted plan-level performance across some of the different types of TPAs.

One persistent finding documented in this study is that plans administered by TPAs characterized as Asset Management Advisory companies tend to have the poorest performance. Relative to the average risk-adjusted net return for a plan administered by a mutual fund company, plans administered by asset management advisory companies underperform, on average, by roughly 40 basis points (bps) per year. Asset management advisory companies in the sample are primarily in the business of providing asset management services rather than focusing exclusively on marketing a family of mutual funds, as would a traditional mutual fund company. Since some advisory companies use a proprietary set of funds and since the companies that do not have proprietary funds typically work with preferred mutual fund families with which they have business arrangements, companies in this category are particularly

⁶ All seven categories are defined in detail with a discussion of potential susceptibilities to conflicts of interest in Relevant Literature and Industry Background section.

likely to have incentives outside of the plan participants' best interest when it comes to suggesting funds for the plan. Thus, I argue that the consistent underperformance in this category is due to a particular susceptibility to conflicts of interest. As evidence of this argument, when using the answers to certain questions included in the SEC's Investment Adviser Public Disclosure database as a proxy for a TPA's susceptibility to conflicts of interest, I find a high level of reported activities consistent with conflicts of interest for firms in the asset management advisory category. As expected, not just for advisory management firms, but within most classifications, TPAs most susceptible to conflicts have significantly poorer plan-level performance.

Additionally, I find that plans underweighting the mutual funds of the largest fund families (i.e., Fidelity, Vanguard, T. Rowe Price, American Funds, and Franklin Templeton) tend to underperform. This underperformance even holds for plans administered by smaller mutual fund companies that underweight investment in the funds of these large fund families. I argue that these results are consistent with conflicts of interest on the part of certain third-party plan administrators. Avoiding investments in the funds of large successful mutual fund families with high levels of reputational capital and economies of scale in asset management is consistent with administrators using funds that they may manage or benefit from via the availability of revenue sharing arrangements.

Possible alternative explanations to conflicts of interest for the performance differences documented here could be that the TPAs in the underperforming categories are either simply poor at picking better performing funds or that they were unlucky that the funds chosen performed poorly over the particular sample period. However, by

using a proxy for a TPA's susceptibility to conflicts of interest, I show that underperformance tends to be magnified in plans administered by a TPA identified as being sensitive to conflicts. Hence, the participants of these particular plans are forced to choose from funds with relatively higher expense ratios and lower gross investment performance. I also directly control for plan holdings of the proprietary funds of the TPA. Here I find that increasing the holdings of the proprietary funds of non-mutual fund company TPAs significantly reduces plan-level performance. This is especially true for TPAs in the Asset Management Advisory and Large Commercial Bank categories. In contrast, plans administered by the larger mutual fund families overweight their own funds and perform better than plans administered by other parties. While they face the same principal-agent conflicts as other third-party plan administrators, these dominant industry players arguably have not only scale economy advantages, but also highly valuable reputational capital that likely serves as a disincentive to charge excessive fees and/or include funds with relatively poor track records. Taken together, this evidence would provide support for the plaintiffs' claims in a few ongoing lawsuits involving the negative effect on investment performance due to the inclusion of a TPA's proprietary funds (e.g. Ameriprise Financial).

In general, I document that the underperformance across administrator type is largely, but not solely due to gross investment performance as expense ratios and undisclosed transaction costs also play an important role. These costs, which tend to be a more persistent element of investment performance in the mutual fund business (see Elton et al., 1996; Carhart, 1997), are higher and detract from performance for plans (even those run by the smaller mutual fund families) that underweight the large

mutual fund families cited above. This is consistent with the scale economy advantages one would expect from the larger fund families.

Finally, I also examine costs associated with plan administration. These costs have largely been overlooked in the academic literature and even by plan participants; but the transparency of these particular fees is an important aspect of new fee disclosure regulations that will go into effect in the second half of 2012.⁷ I document that these annual costs are not trivial as they average 20 bps for those plans in the sample that report them. Again, these costs vary based on administrator type and tend to be relatively high for firms whose plans are administered by asset management advisory companies. I also document that many plans pay expense ratios above institutional and retirement share class fees despite the asset balance in that fund being greater than the advertised investment minimum for these cheaper share classes. This could arguably be attributed to a lack of due diligence at the administration level. These excessive fees cost plan participants in the sample, on average, an additional 10.5 bps per year. Whether this oversight is in fact due to a lack of diligence and/or a problem of agency conflicts, the costs are not trivial and reveal an avenue by which plan participants' net of expense performance could seemingly be enhanced rather easily.

This study contributes to the sparse literature on the agency concerns in the 401(k) industry. For example, Cohen and Schmidt (2009) find that a mutual fund family acting as a TPA for a large publicly traded company tends to significantly overweight the plan sponsor's stock in their funds relative to other mutual fund families. The implication

⁷ The majority of the time administrative fees are not included in a participant's quarterly reports. But there's a question as to whether this matters as the typical participant may not even bother looking over their report or may not know what to look for if they did. This is one argument against the added cost of detailing the various costs of a 401(k) plan in quarterly statements as part of the new fee disclosure regulations.

here might be a quid pro quo for securing the consistent asset flows of a large 401(k) plan. Furthermore, a current working paper on target-date funds suggests reasons for concern regarding potential agency problems (Sandhya, 2010). The author finds that target-date funds comprised of the fund family's proprietary investment products strategically include funds with relatively high expense ratios and low net flows. Considering the extreme popularity of target-date funds in 401(k) plans, this issue is directly related to the issues explored in my study.⁸ However, my study differs from previous studies in the 401(k) literature in that the unique dataset allows me to explore, for the first time, a broader view of the direct negative impact potential conflicts of interest on the part of TPAs may have on participant investment performance. In this way, the issues explored in this study also relate to the broader financial literature on conflicts of interest in asset management and financial intermediation (e.g., IPO spinning (Liu and Ritter, 2010); option back dating (Yermack, 1997); "strategic pricing" in IPO underwriting (Chen and Ritter, 2000); etc.).

The remainder of this study proceeds as follows. I first discuss the relevant literature and important details of the 401(k) industry followed by a description of the data used in the analysis. Next, I present the results regarding whether the net of cost performance of the investments offered in a particular 401(k) plan differs significantly depending on the type of company servicing the plan. The following section provides further evidence tying the documented underperformance differences to conflicts of interest on the part of TPAs. The additional effect of costs attributed to plan

⁸ In 2009, approximately 25 percent of all participants in Vanguard managed 401(k) plans allocated all of their retirement income into a single automatic investment such as a target-date fund (Phipps, 2010).

administration on plan-level performance concludes the analysis. Finally, I summarize the results in the chapter's concluding remarks.

Relevant Literature and Industry Background

It is important to 401(k) plan participants that net performance of plan investment options be as high as possible given the risk of investment. Since the mutual fund industry consists of a vast array of investment alternatives, the options chosen for the plan may or may not be the best available funds in the market. Elton et al. (2007) considered this issue using data collected from 11-k forms from 1994-1999 and found that the funds held by a 401(k) plan significantly outperformed a random set of similar funds not held by the plan. The generalization of these results to plans today, however, is somewhat limited given the date of the sample period and the fact that the analysis is based on only 43 unique plans of publicly traded companies.

Sialm and Starks (2011) also examines the characteristics of mutual funds (specifically domestic equity funds) within 401(k) plans by determining whether mutual fund managers cater to the tax preferences of their clientele. Mutual funds with holdings dominated by 401(k) plans are presumed to be less sensitive to the tax efficiency of the fund's underlying investment strategy. Consistent with this hypothesis, the authors find that those funds held primarily by 401(k) investors have significantly higher long-term capital gains distributions. The authors also show that those funds with high DC plan holdings relative to those funds with little tend to have lower expense ratios, greater assets under management, lower turnover, and a larger number of stocks in the fund. However, they do not find a significant difference in the performance of those funds held primarily by 401(k) plans relative to those funds with low DC plan ownership.

Taken together, the results from Elton et al. (2007) and Sialm and Starks (2010) suggest that the characteristics of mutual funds held in 401(k) plans are relatively beneficial to plan participants. However, the relative performance difference reported in Elton et al. (2007) is found to have been driven largely by the fact that the funds used in the random match sample are on average three times smaller than the funds held in the sample plans. Noting that expense ratios tend to fall as assets under management increase, the authors show that the difference in the expense ratios explained much of the performance differences. As for Sialm and Starks (2010), while they do find that mutual fund managers cater to the tax preferences of 401(k) investors, they do not consider total plan performance variation across the 401(k) industry. Instead of comparing the performance of funds within 401(k) plans to some other benchmark group of funds within the mutual fund industry, the analysis examines the cross-sectional variation in the plan-level performance and expenses of plans within the industry and whether that variation is explained by the identity of third-party plan administrator and investment selection variables. I also relate the potential for differences in performance and expenses to conflicts of interest faced by these administrators.

A study more directly related to the issues studied here concerns the conflicts of interest related to target-date funds (TDFs). One merit of TDFs is that these investment products likely provide more appropriate allocations across assets classes than would be achieved by the average participant choosing among several plan menu options. This is the main reason TDFs were approved as a Qualified Default Investment

Alternative (QDIA) and have become the primary default option in 401(k) plans.⁹

Despite the perceived beneficial aspects of TDFs, however, current empirical research has shown that target-date funds suffer from agency problems (see Sandhya, 2010). Specifically, TDFs comprised of the fund family's proprietary funds strategically include assets with relatively high expense ratios and low net inflows. These agency problems are likely brought on by the relatively passive nature and lower sophistication of the average retirement plan participant, as these investors make up 87% of the ownership stake in the TDF market. Accordingly, these conflicts of interest may appear more broadly within the 401(k) industry.

Often plan sponsors (the company providing the plan to its employees) rely on the investment expertise of service providers when developing the company's 401(k) plan. This is especially true for companies that lack the financial means or expertise to devote resources to an in-house plan investment committee. In these circumstances, relying on a third-party financial institution for this advice creates potential principal-agent conflicts as the service provider may recommend plan investment options based primarily on its own interests rather than on what is in the best interest of plan participants. Plan sponsors may lack the financial sophistication to monitor this activity, especially for smaller plans that are less worthwhile to expend resources monitoring. For instance, a service provider may advocate particular funds based on revenue sharing arrangements with specific money managers (discussed below). Alternatively, a service provider with proprietary funds may choose to include its own funds in the plan. In either case, if similar, better performing or lower cost funds exist in other fund

⁹ In 2008, 87% of Vanguard administered plans and 96% of Fidelity administered plans provided target date funds as the plan's default option (see Sandhya, 2010).

families, plan participants would clearly be better off had their best interests been the service provider's primary consideration. As mentioned in the introduction, these potential principal-agent conflicts are not simply hypothetical. The growing number of lawsuits (e.g., Ameriprise Financial) in the 401(k) industry provides anecdotal evidence for their existence and the Government Accountability Office has issued a report documenting these conflicts.¹⁰

With the help of industry experts and insiders, the GAO report referenced in the introduction carefully outlines the various conflicts of interest that exist in the 401(k) industry. The first conflict highlighted in the report is that of revenue sharing. Since plan service providers may benefit from third-party payments or other business arrangements with specific fund managers, the selection of investment options for a particular plan may depend more on these factors than on satisfying the needs of the participants. An example of this type of conflict is if the adviser of the plan has revenue sharing arrangements based on marketing a specific mutual fund family's products. This business arrangement incentivizes the service provider to advise that these funds be included in the plan regardless of performance or fee considerations. Thus, this type of conflict could lead to relatively poorer performance or higher costs, either of which will reduce participants' future retirement income. A 2005 SEC investigation referenced by the GAO report found that of 24 pension consultants studied, 13 failed to disclose to plan sponsors business affiliations and revenue sharing arrangements with money

10 It is important to note that this study can be viewed in the larger context of the corporate finance literature on principal-agent conflicts and their effect on corporate decision making (see Jensen and Meckling, 1976). In this context, the results in this study are related to the literature that focuses on how misaligned incentives on the part of agents can result in negative consequences for individual investors (e.g., option backdating, Heron and Lie, 2007; IPO spinning, Liu and Ritter, 2010; collusion in investment banking fees, Chen and Ritter, 2000).

managers associated with the plans. However, often times you can identify whether a TPA has preferred fund partners by simply going to their website. For example, Edwards Jones lists on their website their preferred fund families. Closer examination of their website reveals a page in which Edward Jones shares disclosure information on their revenue sharing arrangements:

Virtually all of Edward Jones' transactions relating to mutual funds, 529 plans, insurance products and retirement plans involve product partners that pay revenue sharing to Edward Jones. We want you to understand that Edward Jones' receipt of revenue sharing payments creates a potential conflict of interest in the form of an additional financial incentive and financial benefit to the firm, its financial advisors and equity owners in connection with the sale of products from these product partners. For the year ended December 31, 2011, Edward Jones received revenue sharing payments of approximately \$98.1 million from mutual fund and 529 product partners and \$54.1 million from insurance product partners. For that same period, Edward Jones' net income was \$481.8 million.¹¹

When the service provider is a financial institution that has its own lineup of investment products the conflict is much more direct. In these scenarios, the service provider would be expected to include its own funds in the plan due to the valuable revenue stream generated by regular participant cash inflows. These particular service providers would be incentivized to include their own funds irrespective of whether lower cost or better performing funds exist in competing fund families. This conflict is at the heart of the Ameriprise Financial lawsuit highlighted in the introduction. Arguably, this problem could be avoided if 401(k) plans used families of funds that have track records of success and that are relatively large in size so as to keep expense ratios down. Plan sponsors may also provide some oversight on the activities of fund advisors, though this

¹¹ Edward Jones. *Disclosure Information*, 2012. <https://www.edwardjones.com/en_US/disclosures/rev_sharing/description_information/index.html>. 5 Apr. 2012.

may be limited by the financial sophistication of the sponsors. For many smaller businesses, this sophistication may be short in supply.

Subtransfer agent (Sub-TA) fees are related to another type of revenue sharing arrangement that is also highlighted by the GAO report. Sub-TA fees are reimbursements from a mutual fund company to a plan's record keeper for services provided to participants that the mutual fund company would have otherwise had to provide. These reimbursements may lead companies providing record keeping services to the plan to suggest including funds that offer higher reimbursements. Industry experts interviewed by the GAO suggested that Sub-TA fees can be as high as 40 basis points (bps). If the reimbursements are passed directly through to the plan, then these arrangements could be cost-neutral to plan participants. However, industry experts suggested that it is not uncommon for service providers to only include funds that offer these reimbursements and that these arrangements are not always disclosed to plan sponsors. The inclusion of funds based on their level of Sub-TA fees, and without regard to the participants' best interest, likely costs the plan participants in investment performance at the fund level.

Given the conflicts of interest outlined above, there is reason to believe that some types of service providers might be more susceptible to acting on these conflicts than others. For instance, major players in the 401(k) industry that rely on an impeccable reputation to build market share would likely be less susceptible (e.g., Vanguard or Fidelity). Given their significant reputational capital and the fact that this reputation is also a result of the performance of their own family of funds, plans administered by these companies or plans comprised of mainly their funds would be expected to perform

relatively well. Plans that include the funds of these large mutual fund companies also benefit from the scale economies that result in lower expense ratios and better fund management. Other mutual fund companies that are relatively smaller players in the industry may have less reputational capital at stake within the industry and are likely to include their own funds in the plans regardless of whether fund families such as Vanguard and Fidelity offer better performing or lower cost funds. The other players may also be more inclined to selectively choose certain funds in their family to boost asset flows into that fund and increase its appeal to retail investors.

Commercial banks may also be less susceptible to the conflicts of interest facing the 401(k) industry due to the fact that they may have additional reputational capital at risk through banking relationships with the plan sponsor. This might be especially true for smaller regional banks that likely serve smaller, more local businesses with which they likely have closer business relationships. For larger commercial banks, however, the susceptibility may be less clear since many offer proprietary funds directly or through subsidiaries. A perfect example of this is highlighted by a lawsuit against SunTrust Banks that is very similar in nature to the lawsuit involving Ameriprise Financial. This suit also involves a company getting sued by its own employees alleging losses in retirement income. The plaintiffs argue that had SunTrust included comparable low-cost mutual funds in its plan, such as those offered by Vanguard, rather than SunTrust's affiliated proprietary funds, participants would have had an additional \$110 million in retirement assets.¹² If this has indeed taken place in its own 401(k) plan,

¹² Duffy, M. N. 2011. SunTrust Employees Sue Their Company Over Pensions. *Institutional Investor Online* (August 12). <<http://www.institutionalinvestor.com/Article/2882771/SunTrust-Employees-Sue-Their-Company-Over-Pensions.html?ArticleId=2882771>>.

it is hard to imagine it would not occur in clients' 401(k) plans SunTrust administers.

Indeed, of the 51 plans in the sample in which SunTrust acts as the TPA, on average more than 30 percent of a plan's assets are invested in SunTrust proprietary funds.

As suggested in the introduction, asset management advisory firms may be the most susceptible of all. The companies in this group that operate proprietary funds face the same conflict as TPAs with proprietary funds in the Large Commercial Bank category. And those companies in this group that do not have proprietary funds often have preferred fund families with which they work. Thus, these companies are likely to have business arrangements and relationships with these specific fund families. An asset management advisory firm is also likely to have relatively less reputational capital at stake since their role as a service provider to the plan is likely its only business relationship with the firm. Small companies would be particularly susceptible to these types of service providers since smaller companies are more likely to rely considerably on the advisor's investment expertise.

For those plan service providers that act on these conflicts of interest, one might expect plan participants to be protected under ERISA fiduciary standards. According to these standards, any company providing investment advice to plan sponsors for direct or indirect compensation legally qualifies it as a fiduciary of the plan and it is thus subject to the standards outlined in ERISA. These standards include the requirement that fiduciaries minimize all conflicts of interest and fully disclose to plan sponsors any conflicts that may exist. However, the Employee Benefits Security Administration (EBSA) has established an additional five-part test to determine if a service provider qualifies as a fiduciary to the plan. Given that all five parts of this test must be satisfied

to qualify as a fiduciary, industry experts told the GAO that service providers often make sure that they do not meet all of the criteria outlined by the EBSA. Since one of the requirements is that the investment advice must be given on a regular basis, service providers can simply provide one-time advice through the general investment education materials created as part of setting up the plan. This serves the dual purpose of also allowing service providers to highlight the specific funds in the plan that are providing them with the highest revenue sharing arrangements or to highlight the provider's proprietary funds in the plan if they have any. In addition, some service providers simply state in their contracts that they are not fiduciaries of the plan. Industry experts suggested that smaller plans would be particularly vulnerable to conflicts of interest since larger companies are much more likely to have the resources to hire a service provider that will act as a fiduciary to the plan.

Finally, while the varying revenue sharing arrangements across a mutual fund's share classes could incentivize service providers to include higher fee share classes in a plan despite qualifying for a lower fee, needlessly high fees can also be the result of much less deliberate actions. This has been the focal point of important on-going litigation within the 401(k) industry. In 2007, plan participants in Southern California Edison's 401(k) plan sued Edison International (*Tibble v. Edison International*) for, among other claims, breaching its duty of prudence under ERISA federal laws.¹³ When deciding to add new mutual funds to the plan menu, the plan's investment committee chose to include the retail share class of these particular funds. In 2010, the United

¹³ Being a large public corporation, Edison International had the resources to have an in-house investment committee run its plan. Thus, Edison International was the plan's primary service provider and fiduciary.

States District Court of the Central District of California ruled that since lower-fee share classes were available, specifically an institutional share class, the investment committee breached its duty of prudence by not including this share class in the plan.¹⁴ Ultimately, Edison was held liable for close to \$400,000 in damages. This case is now in the court of appeals, but the ramifications have had a ripple effect across the industry.

Overall, the unique dataset provided by BrightScope Inc. allows for the investigation of the issues at the heart of both the GAO report discussed earlier and the current litigation within the 401(k) industry. In the analysis I take advantage of the service provider information available in the data to determine whether plan performance varies importantly based on the type of company administering the plan. It is then determined whether these variations are consistent with the likely conflicts facing the different types of service providers in the sample. Plan performance at the investment level is first considered by examining risk-adjusted plan-level performance net of the funds' expense ratios paid in the plan. Then I consider the additional impact costs at the plan administration level have on plan performance across TPA type. These costs include the direct administrative costs charged to plan participants for services rendered to the plan (e.g., recordkeeping, auditing, custodian and trustee services, financial advising, etc.). Also considered are the indirect costs of plan participants paying fees in excess of the lowest-fee share class available despite qualifying for the lower fee. This will identify areas where plan sponsors could

¹⁴ It is important to mention, as discussed in the introduction, that participants may also be needlessly paying for higher fee share classes because of what has been popularly labeled in the financial press as fee creep.

presumably improve participant investment performance through more diligent plan administration.

BrightScope Sample and Data Description

BrightScope is a financial information company that provides individuals with the resources they need to be better educated about their personal retirement and investment decisions. Among its two main services, BrightScope provides ratings for thousands of company-sponsored DC plans based on its analysis of the critical characteristics of a plan. BrightScope's extensive proprietary database currently covers over 55,000 companies. The specific data provided by BrightScope is a cross-sectional snapshot of plans at the end of 2007. Items included in the data that are important to the analysis include: plan size, fund options available in a plan, fund balances, expense ratios, administrative costs, and plan sponsor and service provider information.

While BrightScope provided data on over 25,000 DC plans, the analysis here only focuses on a company's primary 401(k) plan. If a company offers more than one unique DC plan, the Department of Labor (DOL) identifies a primary plan based on the number of participants in the various plans. Using these codes provided by the DOL to identify the primary plans in the data, the initial sample in the analysis consists of 17,386 unique plans. Descriptive statistics on this initial sample are reported in Table 2-1. The average plan in the sample has \$22.1 million in assets and 22 plan investment options with an average balance of \$1.23 million. As the largest provider of information on 401(k) participants with coverage of almost 50 percent of all 401(k) plan assets, it is important to note that the average plan size in the dataset provided by BrightScope is very comparable to the average plan size (\$25.3 million) in EBRI's 2007 dataset.

Data requirements for the main analysis limit the number of plans in sample used for the analysis. To determine a plan's overall risk-adjusted performance, complete return data availability from either CRSP or Morningstar is required for every mutual fund in the plan. I also require complete plan data availability from BrightScope, including fund balances, expense ratios, and third-party plan administrator identification.¹⁵ These requirements lead to a large number of plans being dropped, with the final sample being 6,809 unique plans. However, despite losing a significant number of plans to data requirements, the final sample has over six times as many plans as even the largest samples used in the current literature.¹⁶ Table 2-2 provides descriptive statistics for the final sample so that they can be compared to those of the initial sample. The average size of a plan in the final sample is larger (\$32.5 million) than in the original sample, but the average number of plan investment options (20) is quite similar. Consistent with the larger plans in the final sample, the average fund balance is also higher relative to the initial sample (\$1.69 million).

The seven administrator categories used in the analysis can be found in Table 2-3, along with plan size characteristics across these different categories. Most of the categories are self-explanatory, but a few require more detail. The Asset Management Advisory category includes companies that are primarily in the business of providing investment advice and solutions to investors. This may include full-service financial

15 Plan administrator information comes from a company's Form 5500 and plan audit reports filed with the Department of Labor. However, a plan sponsor only lists service providers to the plan on the form if they are paid out of the assets of the plan. Some larger companies with significant resources also choose to have an in-house investment committee act as the plan administrator. So some companies may not have a third-party plan administrator.

16 For example, Elton et al. (2006) uses 417 unique plans, Elton et al. (2007) uses 43 unique plans, and, as one of the largest samples in the current literature, Tang et al. (2010) uses 1,003 Vanguard-sponsored plans.

institutions such as Principal Financial Group, companies specializing in trust services, or a company like Edward Jones that specializes more in advisory services and asset management. For those companies that provide a host of financial services, including asset management services and life insurance products, the category is determined based on which line of business generated the majority of company revenues at the end of fiscal year 2007 (e.g., Principal Financial Group's life and health insurance segment generated 43 percent of annual revenues, thus it is in the Asset Management Advisory category). Companies primarily focused in the life insurance and annuities industry (e.g., Valic, Metlife, Minnesota Life, etc.) make up the insurance category. Finally, the 401(k) services category includes smaller financial institutions that specialize in providing services to the 401(k) industry. This category includes companies like Diversified Investment Advisors, Benefit Plan Administrators, and the Alliance Benefit Group.

From Table 2-3 one can see that the average plan administered by insurance firms, small commercial banks, and 401(k) services companies are smaller than the average plan in the other categories. For small regional banks and the 401(k) services category, this is to be expected since these companies tend to market their services to smaller companies. However, as a major player in this industry, it may be surprising to see that the average plan in the insurance category is relatively small as well. Since many of the large insurance companies have proprietary funds that do not have return data available in CRSP or Morningstar (e.g., Metlife, Valic, etc.), the insurance category is somewhat underrepresented in the final sample. This is one drawback to the analysis in this study, but without return data availability it is impossible to measure the

performance of the plans administered by these companies. It is also worth noting that the mutual fund category dominates the number of plans in the final sample. This could be a byproduct of requiring return availability in the analysis; but, these companies, particularly Fidelity and Vanguard, are indeed some of the most dominant players in the 401(k) industry.

The bottom of Table 2-3 also provides information on whether the plan sponsors in the sample also offer DB plans or supplemental DC plans. Since the existence of either could be a proxy for a greater level of sophistication on the part of plan sponsors or an important factor in securing volume discounts from plan service providers, these variables are controlled for in the analysis. As one might expect, the average company with a DB plan or multiple DC plans has a 401(k) plan in the sample that is significantly larger than the average plan in the overall sample (around \$100 million compared to the overall sample average of \$22.1 million).

Finally, Table 2-4 provides information on the characteristics of investment options available in the sample plans. The plans in the data hold, on average, roughly fourteen domestic equity funds, two domestic bond funds, two international funds, and three “other” funds. The “other” funds category in Table 2-4 includes guaranteed investment contracts, stable value funds, money market funds, and government bond funds. These investment options are not included in the analysis since they are either riskless or at least very low risk investments. Almost all of the plans in the final sample include at least one mutual fund in each of these four categories.¹⁷

¹⁷ The ratio of plans containing at least one mutual fund in each of the three categories is also very similar to the statistics reported in Table 1 of Tang et al. (2010).

Measuring Performance Differences Across 401(k) Plans

In this section, the cross-sectional variation in the performance of plan investment options is examined. In light of the conflicts of interest highlighted previously, I specifically test whether plan performance and expenses relate significantly to the type of company administering the 401(k) plan. First, the risk-adjusted net and gross investment performance of the funds available in a specific plan will be calculated and compared across third-party plan administrator type. Second, the expense ratios and undisclosed transaction costs of the funds offered will be examined to determine whether important difference in these costs across TPA type exist and, if so, whether they help explain potential variation in plan-level investment performance across the different TPA categories.

Plan-Level Performance – Menu Option Investment Returns

To determine whether the performance of a plan's investment options differ significantly based on what type of company is administering the plan, I must first establish a measure of fund performance. As is often done in the mutual fund literature, a risk-adjusted measure of fund performance is determined by estimating a variation of Jensen's alpha. Specifically, I calculate an alpha for each fund within the plan and then average across these alphas to get a plan-level risk-adjusted measure of performance. I compute a simple equally weighted average and also a fund balance weighted average based on the proportion of assets held in each fund within the plan. The fund balance weighted average is more representative of participant preferences at the aggregate plan level.

The following regression is used to estimate an alpha for each fund within a specific plan:

$$R_{i,t} - R_{rf,t} = \alpha_i + \sum_{j=1}^{36} \beta_{i,j} (I_{j,t} - R_{rf,t}) + \varepsilon_{i,t} \quad (2-1)$$

where $R_{i,t}$ is the return (either net or gross of fees depending on the analysis) on mutual fund i in month t ; $R_{rf,t}$ is the return on the 30-day Treasury bill in month t ; $\beta_{i,j}$ is the sensitivity of fund i on index j ; $I_{j,t}$ is the return on index j in month t ; and $\varepsilon_{i,t}$ is the residual for fund i in month t .

Following the methodology of Elton et al. (2007), when calculating a fund's alpha a set of benchmark indices is specified specific to domestic equity, domestic bond, and international mutual funds. This accounts for the appropriate risk characteristics specific to each type of fund. For the equity funds the CRSP value-weighted market index, the MSCI EAFE index, and the Barclays Government/Credit index is utilized. I also control for value versus growth and size factors as advocated by Fama and French (1995).¹⁸ The benchmarks used for bond funds include the Credit Suisse/First Boston High-Yield index, the Barclays Government/Credit and Fixed-Rate Mortgage-Backed Securities indices, and the Citigroup Non-Dollar World Government Bond index.¹⁹ Finally, the international fund model consists of MSCI's Europe, Pacific, and Emerging Markets indices, the CRSP value-weighted market index, and the Citigroup Non-Dollar World Government Bond index.²⁰

¹⁸ I should note that in the regressions using the Fama-French factors I do not subtract out the risk-free rate.

¹⁹ At the time of Elton et al. (2007), the Government/Credit and Fixed-Rate Mortgage-Backed Securities indices were provided by Lehman. Since Lehman's demise, Barclays has been providing these indices.

²⁰ The bond and the international stock indices are included in the equity fund model because many equity mutual funds have bond and international equity holdings. The bond fund model includes the international bond fund because of the potential for international bond holdings. Failure to account for these types of holdings would not appropriately capture the risk characteristics of these funds.

To determine a plan's risk-adjusted performance, the following analysis requires that all mutual funds within the plan are identified in the CRSP mutual fund database and that complete data on monthly returns are available.²¹ Monthly returns prior to the plan year are not used in the analysis due to the finding in Elton et al. (2007) that plan sponsors tend to add funds to the menu that have performed well in the years leading up to inclusion. Therefore, the evaluation period used here is from 2007 to 2009 to avoid the bias that funds recently added to the plans may introduce.²² The final sample used in the following analysis includes 6,809 unique plans that represent \$221.05 billion in plan participant assets.

As a means of comparison to the findings in Elton et al. (2007), Table 2-5 simply reports average plan-level performance across all plans in the sample. I report average plan-level alphas based on gross returns and on returns net of the expense ratios paid in the plans.²³ Performance net of the average expense ratio across the different share classes of each fund in the plan as well as net of the minimum fee available for each fund in the plan is also reported in Table 2-5. These additional measures provide some context for how high fees in the plans are relative to what is available in the mutual fund marketplace. The average annualized plan-level alpha based on gross returns was

21 I also checked Morningstar for data on funds that had incomplete data available in CRSP, but the majority of the funds in the sample use data collected from CRSP.

22 Since I use the plan-year returns (2007), it is possible funds were added to the plan sometime during 2007 based on previous superior performance. This too would bias the performance of the funds within 401(k) plans, although this bias should be very small relative to the overall study period.

23 It should be noted that since I was only provided with one year of expense ratio data from BrightScope, net performance is net of these expense ratios for all three years of the analysis. Expense ratios certainly change overtime, so I also conducted the analysis using performance net of mean annual expense ratios in CRSP and find that the results throughout this section are quantitatively similar and qualitatively the same.

found to be 49.8 bps.²⁴ Interestingly, the fund balance weighted average for gross performance (35.8 bps) is actually lower than the simple average (49.8 bps). Despite this relatively impressive performance, the expense ratios paid in the plans as reported by BrightScope reverse this performance and lead to an average annual plan-level alpha of -37.6 bps.²⁵ This is quite similar to the -31.2 bps estimated in Elton et al. (2007). While the fund balance weighted gross performance was actually less than that based on a simple average, the fund balance weighted net performance (-35.5 bps) is slightly higher than the corresponding simple average. This implies that investors seem to gravitate towards funds with relatively lower fees. The average plan-level performance net of plan-fund expense ratios falls in between the same measures calculated net of average and minimum expense ratios from CRSP and Morningstar, with the actual performance being closer to that based on a mutual fund's average expense ratio.

Table 2-6 breaks down the fund balance weighted performance measures found in Table 2-5 by the type of company administering the plan. Given large mutual fund families' significant presence in the 401(k) industry, it is not all that surprising that this category of service providers performs relatively well. Given our priors regarding asset management service providers' potential susceptibility to conflicts of interest within the 401(k) industry, Table 2-6 provides the first bit of evidence that these priors are valid.

24 Although the analysis uses monthly returns in all regression specifications, I have annualized all alphas reported throughout this study.

25 While consistent with the findings of Elton et al. (2007), the underperformance found here is not as severe as the -65 bps per year found from 1985 to 1994 in Gruber (1996). As suggested by Wermers (2000), the underperformance of mutual funds is not solely due to expense ratios and transaction costs. The returns on non-equity holdings in mutual funds also drag down performance relative to the benchmark.

Plans administered by the Asset Management Advisory category are easily the worst performing plans in the sample as the average performance net of expense ratios paid in the plan for this category is statistically significantly lower than all other categories. The next subgroup of poor performers is large commercial banks and 401(k) services companies. The plans in the Large Bank category statistically significantly underperform plans in all other categories (outside of the asset management category of course), including small banks. This suggests, as was hypothesized might be the case, that large banks are indeed susceptible to conflicts despite their potential for additional business relationships with plan sponsors. For the 401(k) services category, industry expertise should not be the problem since they specifically specialize in servicing the 401(k) industry. Their poor relative performance despite industry expertise would be consistent with conflicts involving revenue sharing arrangements (e.g., potentially Sub-TA fees since these providers also specialize in record keeping services). However, without controlling for other potentially important determinants of cross-sectional performance, it is not clear what role conflicts may play in the differential performance across third-party plan administrator categories.

Of the additional potentially important determinants of cross-sectional plan performance, the most obvious determinant of performance omitted from the analysis might be plan size. As size increases, the plan becomes eligible for lower fee share classes and sponsors of very large plans may even be able to negotiate fees beyond what is available in the market.²⁶ Plan size could also be a proxy for larger companies that may have greater resources or knowledgeable in-house investment committees

26 For some of the larger plans in the sample, I do in fact see instances where the plan-fund expense ratio is lower than any fee available according to the CRSP and Morningstar data.

that take a more active role in plan design. Companies with large plans, as mentioned by the GAO report discussed earlier, are also more likely to have service providers acting as a fiduciary to the plan and, thus, should be less affected by conflicts of interest due to the threat of liability.

I also control for whether a company has a DB plan. These companies are likely to either have knowledgeable in-house investment committees or established relationships with investment advisory firms. This may also serve as an additional relationship with the service provider administering the plan which creates greater reputational capital between the service provider and the plan sponsor. Additionally, the existence of a DB plan represents a potential for discounts from the third-party plan administrator due to a greater volume of business. As mentioned in the data section, the plans in the sample only include a firm's primary DC plan. Since complete data on a particular firm's supplemental plans is not always available in the data, I cannot control for all of the assets held in a company's plans. The existence of these additional plans is important since they represent the opportunity for scale economies with the third-party plan administrator. Thus, I control for the existence of alternative DC plans by including a dummy variable in the regression if a particular company offers multiple 401(k) plans.²⁷

Finally, although this issue was not considered in Elton et al. (2007), plan-level alphas cannot be assumed to be independent across plans. This assumption is flawed because a particular mutual fund can and often does appear in many different plans

²⁷ It is not clear whether this variable will be significant since, by definition, a company's primary plan is the largest it offers. Therefore, the size of this plan likely controls for most of the effect of total participant assets.

causing the plan-level alphas in the sample to be correlated. Thus, the precision of the estimates on which the conclusions from Table 2-5 and Table 2-6 are drawn is overstated. This correlation is controlled for in the multivariate regressions by clustering the standard errors by unique service provider. Assuming a particular service provider tends to promote particular mutual funds or mutual funds from specific fund families, clustering the standard errors should significantly reduce the bias in the precision of the estimated average plan-level alphas across category type.

Model 1 in Table 2-7 examines the cross-sectional variation in plan-level performance controlling for the type of company administering the plan, the size of the plan, and whether the company sponsoring the plan also offers a DB plan or other supplemental DC plans.²⁸ From Model 1 one can see that plans administered by mutual fund families are among the best performers (represented by the coefficient on the constant term) while asset management sponsored plans perform statistically significantly poorer than all other categories with the exception of large banks and 401(k) services companies.²⁹ Relative to the mutual fund family category (the benchmark group in Model 1), asset management sponsored plans have a risk-adjusted plan-level alpha that is, on average, 40.1 bps more negative.³⁰ This reinforces the previous finding that the significantly poor relative performance of plans administered by

28 The plan-level alphas used in the specifications in Table 2-7 are fund balance weighted. Net performance is calculated net of the expense ratios paid in the plan.

29 It is important to note that clustering the standard errors by unique service provider does have a significant impact on the test statistics as can be seen by comparing the standard errors in Table 2-7 to their respective coefficients.

30 Given the other dummy variables and the demeaned plan size variable, the benchmark group is technically a mutual fund administered plan of average size sponsored by a company with no supplemental DC plans and no DB plan.

TPAs in the Asset Management Advisory category is consistent with their susceptibility to the conflicts of interest.

Large commercial banks and 401(k) service companies also significantly underperform plans sponsored by mutual fund companies, as well as small banks and investment banks. As mentioned previously, since companies in the 401(k) Services category typically provide record keeping services to the plan, the results are consistent with these companies maximizing revenue sharing arrangements pertaining to Sub-TA fees or other possible arrangements. As for large commercial banks, since they often have proprietary funds (e.g., SunTrust Banks), it is possible that this specific conflict influences these service providers to include proprietary funds in the plan regardless of whether better performing or lower cost funds exist in competing fund families. Even though these large commercial banks possibly have other business relationships with plan sponsors, the temptation to include its proprietary funds in the plan is likely too strong. Related to this point, it is worth noting that the small banks in the sample do not have proprietary mutual funds and the average plan performance in this category is statistically significantly better than the performance in the large bank category while not being significantly worse than that in the mutual fund category.

It is important to note that the coefficients on the additional determinants included in Model 1 all had the expected sign. Nevertheless, the effects on performance due to whether a plan sponsor also offers a DB plan or supplemental DC plans are not economically or statistically significant. Rather surprisingly, the effect of plan size on net performance is also not statistically significant. But, as was hypothesized earlier, we

will see later in this section that plan size is important in reducing plan-level fund balance weighted expense ratios.

The same specification in Model 1 is used in Model 2 to examine the cross-sectional variation in gross performance. By comparing the coefficients across the two models one can get an idea of whether gross performance or higher fees explains the performance differentials across service provider type. The fact that the coefficients in Model 1 are generally lower than in Model 2 suggests that expenses do play an important role. In general, however, the differences in the magnitudes of the coefficients are not as large as one might expect and none of the coefficients are statistically significantly different across the two models. This might suggest that the performance differences across service provider type depend more on the differences in the underlying investment strategies, but it is difficult to say for certain since the coefficient for the base group, mutual fund companies, also changes. We will come back to this issue when I directly examine plan-level variation in expense ratios in Table 2-10.

While clustering the standard errors by unique service provider in Models 1 and 2 helps to significantly mitigate the bias in the precision of the estimates, correlation in plan-level alphas is still unaccounted for if the funds of certain fund families are commonly held in plans regardless of TPA type. Thus, one way to further control for the correlation across plan-level alphas is to include variables in the regression specifications that control for the holdings of these fund families. Controlling for a TPA's preference for the funds of large popular fund families also serves the purpose of determining whether, as has been assumed to this point, it is advantageous to hold the

funds of dominant players in the mutual fund industry due to lower fund fees and better fund management. As of the end of 2007 there were two tiers of large mutual fund families, in terms of assets under management (AUM), which separated themselves from the rest of the industry. The top tier consisted of Vanguard, Fidelity, and American Funds, all of which had right around \$1 trillion in AUM. The second tier included Franklin Templeton and T. Rowe Price, both of which had roughly \$300 billion in AUM.³¹ Models 3 and 4 in Table 2-7 control for the proportion of plan assets held in the funds of these five fund families. For brevity purposes, throughout the rest of this study these five fund families will be collectively referred to as the “Big Five”.

The first thing to consider in Model 3 of Table 2-7 is the fact that, in general, holding more assets in the Big Five mutual fund families increases plan-level net performance. For example, all else equal, a one standard deviation increase (0.1486) in plan-level holdings of T. Rowe Price funds leads to a 19 bps increase in average plan-level net performance. This is consistent with the assumption that these large fund families benefit from scale economies, and potentially superior fund management ability as well. Due to the inclusion of these added control variables, it is also important to note that the benchmark group has now changed considerably. The benchmark group is now plans sponsored by mutual fund companies that do not offer the funds of these five fund families.³² Controlling for the superior performance earned by holding the funds of the Big Five, the coefficient on the constant term in Model 3 is 27.2 bps lower

³¹ Barclays Global Investors is also in the second tier with about \$300 billion in assets but I do not control for the holdings of Barclays funds since its funds are not commonly held in this particular sample.

³² Again, given the other dummy variables and the demeaned plan size variable, the benchmark group is technically a mutual fund family that administers an average size plan for a company with no supplemental DC plans and no DB plan.

than it was in Model 1. The difference is economically significant and it is statistically significant at the 1% level. These other mutual fund families likely include their own proprietary funds in the plan despite the availability of better performing or lower cost funds in competing fund families. In contrast, as can be seen in Table 2-9, plans administered by one of the Big Five significantly overweight holdings in their own plans which leads to, in general, better overall plan-level performance.

Considering the significantly more negative coefficient on the constant term in Model 3, one can see that the performance attained by the other TPAs in the sample is, all else equal, on par with plans administered by mutual fund companies. However, just because the differences between the various categories and the base group (mutual fund companies) are not statistically significant does not imply the differences between the other categories are not significant. To see this more clearly, Table 2-8 reports the difference in plan-level net performance between each pair of categories in Model 3 of Table 2-7. As has been a theme throughout the analysis so far, even after controlling for holdings in the Big Five, average plan-level net performance for plans in the Asset Management Advisory category is statistically significantly worse than the average performance in all other categories but the Large Bank and 401(k) Services categories. Large bank-sponsored plans also continue to underperform as plans in the Small Bank, Investment Bank, and Insurance Company categories all provide economically and statistically significant higher returns.

One last interesting takeaway from Model 3 in Table 2-7 is the fact that plans in the 401(k) Services category no longer underperform plans in the Small Bank category once holdings in the Big Five is considered. Since one might expect these companies

to have a somewhat similar clientele as far as working with relatively smaller, regional companies, the difference in performance between these two categories could be driven by Small Bank-sponsored plans holding more assets in the Big Five. This would be consistent with Small Banks being less susceptible to conflicts due to stronger business relationships with the clients and, therefore, offering more funds in the Big Five.

Looking again at Table 2-9, one can see that, on average, plans sponsored by small banks do indeed invest more assets in the funds of the Big Five relative to the 401(k) Services category, as well as all other non-Big Five TPAs.

Finally, Model 4 in Table 2-7 examines differences in gross performance controlling for the percentage of plan assets held in the most popular fund families. Comparing the coefficients across Models 3 and 4 provides some evidence for the fact that gross performance accounts for much of the performance difference across third-party plan administrator type. One exception to this conclusion would be plans administered by the Big Five. The difference in net performance for the mutual fund category (i.e., the coefficient on the constant term) is significantly larger across Models 1 and 3 than is the difference between gross performance for this group across Models 2 and 4. Significantly lower expense ratios in the plans administered by the Big Five would explain this finding. Vanguard is the most significant example of this as the gross performance of plans with higher Vanguard holdings is relatively poor while the net performance of these same plans is relatively good.

Plan-Level Investment Costs

To get a clearer idea of exactly what role expense ratios play in the performance differences across plan administer types, Table 2-10 runs the same two specifications from Table 2-7 using a plan's fund-balance weighted expense ratio as the dependent

variable. As had been concluded from before, the expense ratios do play an important role in the differences in plan-level performance across TPA type, but they do not drive the results. In Model 1, the average fund-balance weighted plan-level expense ratio for plans in the Asset Management Advisory category is statistically significantly higher than that in the plans administered by Large Banks, Small Banks, and Mutual Fund companies. In addition, plans in the Small Bank category have a statistically significantly lower plan-level expense ratio than all other categories except the Mutual Fund category. This is likely due to the fact that Small Banks overweight holding in the Big Five and one can see from Model 2 in Table 2-10 that holdings in the funds of these families tend to significantly reduce plan-level expense ratios.

Similar to the effect in Table 2-7, when holdings in the Big Five are controlled for, the control group experiences a negative consequence. Again, the constant now represents the average plan-level expense ratio for plans administered by mutual fund companies that do not hold any plan assets in the Big Five. As opposed to the net performance results where this coefficient was not significantly different than that on the other categories, here one can see that the average plan-level expense ratio for these particular plans is actually significantly higher than that for the Large Bank, Small Bank, Insurance Company, and 401(k) Services categories. As far as the plans in the Asset Management category, plan-level expense ratios stick true to form as the average is significantly higher than the other categories, with the exception of the Investment Bank category.

It is also important to point out that the effect of plan size and of offering a DB plan is economically and statistically significant in Model 1 of Table 2-10. This finding

suggests that plan size and the potential sophistication and/or bulk discount associated with a company also managing a DB plan works primarily to limit plan-level expenses, while not significantly affecting net performance (as seen in Table 2-7). This would make sense in the scenario in which TPAs still have a strong say in what funds are included in the plan while the employers for these plans are more active in negotiating for or making certain that the plan does not pay excessive fees. In terms of plan size, holding all else equal, the effect in Model 1 of doubling plan size at the median leads to a plan-level expense ratio that is 7 bps lower. In the second model one can see that the effects on plan size and the existence of a DB plan are somewhat diminished (more so for the effect of DB plans) once the holdings in the Big Five are considered. This might suggest that plans can simply get scale economies by investing in the large funds of the Big Five.

While the differences in plan-level expense ratios across TPAs are significant in some cases, they do not necessarily explain as much of the difference in net performance from Table 2-7 as one might expect. However, there are important costs that are captured by the net performance analysis that are not captured by the expense ratio analysis. Brokerage commissions, market impact costs, and spread costs are transaction costs that are not disclosed by mutual fund families and are thus not included in the expense ratios they report. These costs do, however, still affect the net returns used to calculate plan-level performance in Table 2-7. The implication here is that some of the net performance differences across TPAs could be further explained by variation in these undisclosed costs across TPA type. BrightScope has an algorithm for estimating these undisclosed transaction costs that relies on four key pieces of

information: brokerage commissions collected from a fund's Statement of Additional Information (SAI), fund turnover and total net assets collected from a fund's prospectus, and asset allocation across different asset classes collected from a fund's quarterly holdings.³³ Using BrightScope's measure of total undisclosed transaction costs, Table 2-11 explores whether these costs vary significantly across TPA type.

By examining Model 1 of Table 2-11 one can see once again that plan size and the offering of a DB plan significantly reduce the level of undisclosed transaction costs within plans. This finding is consistent with what was seen in the plan-level expense ratio analysis. All else equal, plans in the Small Bank category actually offer funds with the lowest average level of undisclosed transaction costs. However, the advantage of plans in the Small Bank category is driven by the relatively significant investments in the funds of the Big Five. Looking at Model 2, one can again see that significant holdings in the funds of the Big Five lead to significantly lower plan-level transactions costs. Once a plan's holding in the Big Five is controlled for, the effect of being in the Small Bank category is no longer significant relative to the constant, even despite the fact that the coefficient on the constant decreases relative to Model 1. As far as differences across the TPA categories in Model 2, there is not as much variation in these undisclosed transaction costs as was seen in the other tests regarding net performance and expense ratios. All else equal, average plan-level transaction costs are statistically significantly higher in the Asset Management category than in the Small Bank and even

33 It is important to note that the significantly negative effect of fund turnover on performance has been extensively documented in the academic literature, most notably in Carhart (1997). It is widely accepted in the mutual fund industry as well that this is a reasonable proxy for fund trading costs. However, BrightScope believes that the additional factors give a more accurate view of total undisclosed transaction costs. For additional information, you can locate a whitepaper on their transaction cost algorithm at: <<http://www.brightscope.com/media/docs/TransactionCosts.pdf>>. See the reference list for more information.

Large Bank categories; but this difference is relatively small and is bordering on economic significance. Overall, it seems as though most of the contribution of investment costs to differences in net performance is due to expense ratios.

Estimating the Direct Effect of Conflicts of Interest on Plan Performance

The results of the analysis in the previous section suggest that third-party plan administrators' varying degree of susceptibility to conflicts of interest in the 401(k) industry leads to important differences in average plan-level performance across the TPA categories. For instance, the significant underperformance of plans in the Asset Management Advisory category is consistent with a particular susceptibility to conflicts on the part of TPAs in this category. As mentioned previously, TPAs in this category likely either have proprietary funds that may underperform (e.g. the Ameriprise Financial lawsuit) or business relationships with their preferred fund providers that likely cause a conflict due to revenue sharing arrangements (e.g. Edward Jones discussed above). However, to this point the analysis has been predominantly suggestive. Alternative explanations for these findings could be that TPAs in certain categories are simply not as skilled at designing efficient plan menus as TPAs in other categories, which would lead to relatively poor performance. Another explanation may be that the TPAs in certain categories simply had bad luck regarding investment performance during the particular study period. After all, one could possibly make that argument for Vanguard given its emphasis on passive portfolio management during a tumultuous market period. On the other hand, as a fund company with a reputation for superior active fund management, it is possible that this particular period served T. Rowe Price well. Therefore, in an attempt to determine whether conflicts of interest seem to be the true

driver of performance differences, the analysis in this section will employ two methods of directly controlling for a TPA's sensitivity to conflicts.

Conflicts Identified from the SEC's Investment Adviser Public Disclosure Form

If one could simply separate plans in the sample into one of two buckets based on whether or not a particular plan has a third-party plan administrator acting as a true fiduciary, it would be reasonable to attribute existing differences in performance between the two samples to the effect of conflicts of interest. If within the same TPA category there were significant differences in plan-level performance between TPAs acting as a fiduciary and those that were not, the evidence would be even stronger. Unfortunately, there is no way to know whether a TPA is acting as a fiduciary without personally talking with each plan sponsor in the sample. And even then it would not necessarily be that straightforward as often times plan sponsors are not clear on whether the TPA is indeed acting as a true fiduciary under ERISA standards (as noted in the GAO report highlighted throughout). Therefore, I turn to Form ADV in the SEC's Investment Adviser Public Disclosure database as an alternative measure of a TPA's susceptibility to conflicts of interest.³⁴

Form ADV is an application form all investment advisers must complete to become a registered investment adviser with the SEC. The section of this application that is of interest is Item 8, "Participation or Interest in Client Transactions." In this item, the company is asked several questions about their everyday business dealings with respect to clients' transaction. There are three questions in particular that I use to proxy for a company's susceptibility to conflicts:

34 United States Securities and Exchange Commission. *Investment Adviser Public Disclosure: Investment Adviser Search*, 2012. <www.adviserinfo.sec.gov>. 5 Apr. 2012.

- “A. (3) Do you or any related person recommend securities (or other investment products) to advisory clients in which you or any related person has some other proprietary (ownership) interest...?”
- “B. (3) Do you or any related person recommend purchase or sale of securities to advisory clients for which you or any related person has any other sales interest (other than the receipt of sales commissions as a broker or registered representative of a broker-dealer)?”
- “E. Do you or any related person receive research or other products or services other than execution from a broker-dealer or a third party in connection with client securities transaction?”

In general, the purpose of the questions in Item 8 is to identify the potential conflicts of interest investment advisers may face when working with their clients. The specific questions highlighted above are most directly related to the conflicts outlined previously in this study: these deal with whether or not the TPA has proprietary funds, whether or not the TPA receives revenue sharing beyond simple broker commissions, and whether or not the TPA receives soft dollars. Creating a dummy variable (“No Conflicts”) that is equal to 1 if the TPA answers no to all three of these questions yields the measure for whether a TPA is susceptible to conflicts in their everyday business dealings.

It is important to note that this proxy for a TPA’s susceptibility to conflicts of interest is an imperfect measure. Companies that answer yes to one or all of these questions can certainly still act as a fiduciary to a plan and those that answer no to all three could still act on conflicts of interest. In either case, however, the noise created in this measure would act to work against finding significant results. By looking at Table 2-12 one can see that the definition of conflicts seems to be quite strict. In general, a relatively small percentage of plans in any particular category are identified as having a TPA without conflicts. This is even true for those plans in the Small Bank category;

although it is relatively higher for this category than the others, with the exception of the 401(k) Services category. The relatively high percentage of plans administered by TPAs without conflicts in the 401(k) Services category is likely due to the fact that many of these companies are not registered investment advisors and instead rely on outside investment advisors recommended for the plan. With the exception of the Small Bank category, Table 2-12 also shows that plans in the “No Conflicts” subcategory hold, on average, a greater percentage of plan assets in the funds of the Big Five. In the case of the Small Bank category, plans in the “No Conflicts” subcategory actually hold, on average, a smaller percentage of assets in the funds of the Big Five.

To determine the effect of the proxy for a TPA’s susceptibility to conflicts on plan-level net performance, Table 2-13 provides the same net performance specifications from Table 2-7 with the addition of the “No Conflicts” dummy variable interacted with each TPA category. One important difference is that the Mutual Fund and Investment Bank categories have been dropped from the specifications. This is due to the fact that none of these companies were able to answer no to all three of the questions used to create the “No Conflicts” dummy variable. This is not particularly troublesome since it is predominantly the performance differences across the other categories that are of interest (e.g. determining what seems to be driving the relative underperformance of plans in the Asset Management Advisory and Large Bank categories). The base group in these specifications is Small Bank-sponsored plans in which the TPA did not answer no to all three questions.

The first thing to notice in Model 1 of Table 2-13 is that the effect of being designated as a TPA with no conflicts has the expected positive sign for all categories.

Partly due to differences in sample size across category, some of the effects are not precisely measured. However, the sum of the coefficient on each category's dummy variable and its interaction with the “No Conflicts” dummy, which would be average plan-level performance for those plans run by TPAs with no conflicts, is not statistically significantly different from the base group. However, once again, the base group is Small Bank-sponsored plans with susceptibility to conflicts of interest. Adding the constant to the coefficient on the Small Bank category interacted with the “No Conflicts” dummy, which would be Small Bank-sponsored plans with no conflicts, yields statistically significantly better performance than in the subsamples of the Asset Management Advisory, Large Bank, and 401(k) Services categories with no conflicts. It is somewhat curious that Small Bank-sponsored plans with TPAs that have conflicts still provide similar plan performance as the other categories' subsamples with conflicts. But this is consistent with what was seen from Table 2-12, as the plans in the Small Bank category that are identified as having conflicts still invest, on average, a relatively significant percentage of plan assets in the Big Five. This is further evidence of the idea that the additional reputation capital a small bank may have with the plan sponsor discourages the TPA to act on conflicts of interest, even if the TPA is identified by the proxy as being susceptible to conflicts. Overall, the positive and significant coefficients on the interaction terms for the Asset Management Advisory and Large Bank categories is very encouraging as far as providing evidence for the fact that conflicts of interest do indeed seem to play an important role in the net performance differences seen in Table 2-7.

Model 2 in Table 2-13 shows once again that increased holdings in the Big Five leads to significantly better plan-level performance. With the mutual fund companies eliminated from the specifications in Table 2-13, one can see that the positive effect of holding the Big Five funds for the non-mutual fund company-sponsored plans is more significant in some cases. For instance, the effect of holding Vanguard funds is much higher than in Table 2-7 and is now statistically significant. Also, the effect of holding investments managed by American Funds is no longer negative and significant as it was in Table 2-7. In addition, since the base group is the subsample of Small Bank TPAs identified as having conflicts and since these plans have large holdings in the Big Five, the average performance for this group is significantly poorer once holdings in the Big Five are accounted for in Model 2. Consequently, the coefficients on the subsamples of the Asset Management Advisory, Large Bank, and 401(k) Services categories with conflicts are no longer significantly lower than that on the base group. However, as was seen in Model 1, the effect of being identified as a TPA with no conflicts is positive for every category and it is economically and statistically significant for the Asset Management Advisory and Large Bank categories.

Holdings of Non-Mutual Fund Company Proprietary Funds

The proxy for a TPA's susceptibility to conflicts of interest in the previous section did account for whether a TPA, in general, recommends products to clients in which it has a proprietary interest. This was an important feature of that measure, as I have assumed throughout this study that TPAs with proprietary funds will be tempted to include its funds in the plan regardless of whether better performing and/or lower fee options exist in other fund families. This has much to do with the valuable steady flow of investment dollars to funds within a 401(k) plan. In this section, the proportion of plan

assets that are held in the TPA's proprietary funds is directly controlled for to determine whether the holdings in proprietary funds within certain categories (e.g. Large Bank and Asset Management Advisory) explains some of the net performance differences across TPA type that have been seen in previous tables. Table 2-14 provides some initial information on what percentage of the plans within each of the categories has holdings in the TPA's proprietary funds.³⁵ Anywhere from roughly 25 percent to 50 percent of the plans in the non-mutual fund family categories have holdings in the TPA's proprietary funds. The table also provides information regarding the average percentage of plan assets that are held in the funds of the Big Five and the average percentage of plan assets held in the proprietary funds of the TPA. While a larger percentage of the plans in the Large Bank category relative to the Asset Management Advisory category have holdings in the TPA's proprietary funds (47 percent versus 25 percent), those plans in the Asset Management Advisory category hold, on average, a much greater percentage of plan assets in the TPA's proprietary funds relative to plans in the Large Bank category (60 percent versus 31 percent). In general, the plans in the subcategories that have holdings in the TPA's proprietary funds hold, on average, significantly less plan assets in the funds of the Big Five relative to plans in the subcategories without holdings in the TPA's proprietary funds.

In Table 2-15 the same net performance specifications used in Tables 2-7 and 2-12 are used to examine the effect across category type of investing in a TPA's proprietary funds. Since TPAs in the Small Bank and 401(k) Services category do not have proprietary mutual funds, plans in these categories are omitted from the analysis.

³⁵ This table, and the analysis in this section, does not include plans in the Small Bank and 401(k) Services categories since TPAs in these categories do not have proprietary funds.

As can be seen from both models in Table 2-14, the effect on plan-level net performance of holding plan assets in the proprietary funds of Asset Management Advisory and Large Bank TPAs is economically and statistically significantly negative. Within the Asset Management Advisory category, a one standard deviation (0.3059) increase in the holdings of proprietary funds leads to, on average, a 52 bps decrease in plan-level performance. As for the Large Bank category, a one standard deviation (0.2366) increase in the holdings of proprietary funds leads to, on average, a 10 bps decrease in plan-level performance.³⁶ In contrast to these two categories, the effect of holding more assets in the proprietary funds of mutual fund company TPAs is positive and significant. This is not at all surprising given the significantly positive effect of holding the funds of the Big Five and the fact that a large proportion of the plans in the Mutual Fund category are sponsored by these companies. In general, the findings here are consistent with the arguments made by plaintiffs in the SunTrust and Ameriprise lawsuits mentioned earlier. If these companies are representative of the subsample of Asset Management Advisory and Large Bank TPAs with proprietary funds, then one could make a strong case for the fact that participants in those plans would be much better off if the plans were administered by a different TPA.

Examining the Costs of 401(k) Plans at the Administrative Level

In the previous sections the performance and costs of the plan at the investment level have been the primary focus. Having established that the type of company administering a 401(k) plan does affect risk-adjusted net performance and that these

36 In un-tabulated results, I find that holding a TPA's proprietary funds in the Asset Management Advisory and Large Bank categories significantly increases both the plan-level expense ratio and the plan-level undisclosed mutual fund transaction costs. Taken together, these two costs seem to account for a significant amount of the underperformance found in these two categories throughout the analysis. These results are available upon request.

differences are consistent with the conflicts of interest facing the industry, I now turn our focus to the costs of the plan at the administrative level and determine what additional impact these often-overlooked costs may have on overall plan performance. In this section I examine the direct administrative cost of running the plan and the implicit administrative cost of paying excessive mutual fund expense ratios because of a potential lack of due diligence on the part of plan sponsors.

Analysis of Direct Administrative Costs

The direct administrative costs of administering a 401(k) plan include all fees charged to the plan for the various services that must be provided for plan participants (e.g., recordkeeping, auditing, financial advising, custodian or trustee services, etc.). These costs are often overlooked in the academic literature; and since these costs are often not included in a participant's quarterly statements, most individuals do not realize how significant these costs can be and may not even know they exist. A recent article in *The New York Times Online* highlights this issue by discussing the details of an impending lawsuit involving ABB Incorporated.³⁷ This lawsuit, and many others of its kind, has prompted the Department of Labor to recently pass new regulations regarding greater transparency in the disclosure of these fees in participants' quarterly statements.

The specific expenses examined here are those found in Schedule H of Form 5500 filed with the DOL. There are four expense categories that make up the total administrative expense line item in the Income and Expense Statement: professional fees, contract administrator fees, investment advisory and management fees, and other

³⁷ Lieber, R. 2011. Revealing Excessive 401(k) Fees. *The New York Times* (June 3). <<http://www.nytimes.com/2011/06/04/your-money/401ks-and-similar-plans/04money.html>>.

fees. It is important to note that these expenses only show up in this statement if the expenses are paid for out of plan assets, as opposed to being paid for by the plan sponsor. In the following analysis only the 6,091 plans in the sample with non-zero administrative costs, as reported on the Form 5500, are examined. For this sample, total administrative expenses equal, on average, \$26,578, or 0.2246 percent of total plan assets. For all 6,091 plans, the total administrative expense paid is \$162 million, or 0.08 percent of the study sample's total plan assets. From these basic sample statistics, it is clear that these additional costs are economically important to plan participant investment performance.

While examining how administrative costs vary across third-party plan administrator type is of interest, it is important to note that attributing possible differences to conflicts of interest is difficult. For example, without knowing whether a third-party plan administrator is collecting Sub-TA fees and whether these reimbursements are passed on to the plan, it is impossible to tell whether a plan is needlessly being drained of participant wealth. Nevertheless, as a significant cost to plan participants, it is important to examine cross-sectional variation in these expenses to get a complete picture of overall plan-level performance and costs.

Table 2-16 examines the cross-sectional variation in the administrative costs of sample plans using the same two basic specifications from previous tables. The dependent variable is a plan's total administrative costs as a proportion of total plan assets. From Model 1 one can see that plans sponsored by mutual fund companies have, on average, the lowest costs in the sample. This should not be surprising since these administrators tend to include proprietary funds in the plan. Since some of the

administrative costs should be factored into their funds' expense ratios, the costs reported in Schedule H should be lower. This is precisely the idea behind Sub-TA fees in the first place. Consistent with this logic, it seems as though administrators that do not offer proprietary funds (i.e., the Small Commercial Bank and 401(k) Services categories) have the highest expenses; although plans administered by TPAs in the Asset Management Advisory category also have relatively high fees. However, an alternative explanation for why TPAs in the Small Bank and 401(k) Services category have higher administrative fees is a clientele effect. It is possible that the plan sponsors that seek out the services of these particular TPAs demand a higher level of personalized service, which entails higher costs. Finally, it is important to point out that economies of scale is important as plan size has a significantly negative effect on administrative costs as a proportion of plan assets. All else equal, moving from the median in plan assets to the seventy-fifth percentile leads to an administrative cost as a proportion of plans assets that is 19 bps lower.

In Model 2 dummy variables for plans administered by each of the Big 5 mutual fund companies are included rather than controlling for the proportional of plan assets held in the Big Five. The purpose of this is that there is no obvious reason why the holding of some particular family's funds would reduce the administrative fees charged by the TPA. However, as major players in the 401(k) industry, it is possible that scale economies or better technology could lead to significantly lower costs when hiring one of the Big Five mutual fund companies to administer the plan. Overall the results from Model 2 provide similar conclusions to those found in Model 1 with the exception that American Funds and Franklin Templeton administered plans have significantly lower

costs than other mutual fund families. In general, however, plans administered by large mutual fund families tend to have the lowest administrative costs.

Determining the Significance of Excessive Expense Ratios

It was determined in the previous section that plan-level administrative costs do have an economically significant effect on plan-level performance. Tacking on as much as an additional 30 bps or more in overall plan costs will certainly affect the annual compounded return of plan assets over time. Without knowing whether TPAs are receiving Sub-TA fees (or some other type of revenue sharing) that are not passed along to the plan, it is hard to comment on whether these fees are reasonable. But one can confidently assert that plans paying mutual fund expense ratios in excess of what the plan sponsor or TPA could demand or negotiate for is not reasonable. Instances of this violates the fiduciary's (i.e. plan sponsor and possible TPA) duty of prudence as discussed previously with the Souther California Edison lawsuit. In general, this issue could be an agency problem on the part of the TPA, but a reasonable effort towards administrative oversight on the part of the plan sponsor could help prevent this needless transfer of wealth to the investments industry. And, in fact, there is a term that has been coined in the industry for describing a plan sponsor's complacence with regards to carefully tracking plan-fund costs, "fee creep". As fund balances increase due to contributions and appreciating asset values over time, some of the balances will cross an investment minimum threshold that makes the plan eligible for a cheaper share class. However, these savings are only captured if plan sponsors or third-party plan administrators are paying attention to fund balances and expenses. In light of current

litigation and an emphasis on this issue in the financial press, plan sponsors are now being forced to pay closer attention.³⁸

To determine whether plan sponsors are forfeiting participant wealth in the form of needlessly high fees, each fund balance within a plan is simply compared to the investment minimum required for the institutional share class of that fund.³⁹ In cases where there is a retirement share class available, this share class is used instead of the institutional share class. If the investment minimum for the institutional share class (or retirement share class) is exceeded by the fund balance, then I determine whether the expense ratio paid in the plan exceeds that of the institutional share class.⁴⁰ In the cases where the plan is paying an excessive fee, the difference is multiplied by the fund balance to determine the cost in dollars to plan participants. Based on the sample of 6,809 plans, I find that a plan, on average, incurs \$8,728.62 in excessive expenses. Aggregated across all plans in the sample, these excessive fees cost plan participants a total of \$59.43 million.⁴¹

Table 2-17 uses the same two specifications employed throughout this study to determine whether these excessive costs are significantly related to the type of company administering the plan. The dependent variable for both models is the total

38 Laise, E. 2010. Earlier Retirement: Beating Back High Fees. *Wall Street Journal* (March 6). <<http://online.wsj.com/article/SB10001424052748703943504575095632895464968.html>>.

39 Since I only compare the fund balance against the investment minimum required for the institutional share class, the analysis actually provides a minimum estimate of the money wasted on these needlessly high fees.

40 I realize that not all mutual funds have institutional share classes. I loosely refer to the share class with the lowest available fee in the CRSP and Morningstar data as the “institutional share class”.

41 To be clear, this analysis compares the expense ratios provided by BrightScope to the appropriate historical returns in the CRSP and Morningstar databases; however, the investment minimum thresholds collected are based on current minimums advertised by fund families.

dollar loss as a percentage of total plan assets. Model 1 reveals that there is not much variation across TPA type when it comes to these excessive fees. This suggests some randomness in the plans that are most susceptible to paying excessive expense ratios. I do find, consistent with the fee and cost analysis up to this point, that plan size and the existence of a DB plan does significantly reduce a plan's susceptibility to excessive fees. This would suggest that at least the larger and/or more sophisticated plan sponsors pay close attention to the fees and expenses of the plans

In Model 2 plan holdings in the Big Five are controlled and I again find significant benefits to holding these families' funds. A significant holding in Vanguard and T. Rowe Price funds actually almost completely nullifies excessive fees. For Vanguard especially, this finding is not overly surprising since it funds do not tend to have as many share classes as many other fund families and differences in expenses across their share classes are not significant. Another result in Model 2, however, is somewhat curious. Given the finding from Table 2-10 that greater holdings in American Funds leads to significantly lower expense ratios, it is rather surprising that greater holdings in the funds of American Funds leads to larger plan-level excessive fees. In general, however, average plan-level excessive fees are somewhat small in the sample and do not seem to be particularly significant. On the other hand, any amount of participant investment assets being drained by excessive fees is arguably significant.

Chapter 2 Concluding Remarks

Using a unique proprietary data set on 401(k) plans, I evaluate whether risk-adjusted plan-level performance and the costs faced by plan participants are significantly related to the type of company administering the plan. This analysis is motivated by the general concern over conflicts of interest faced by third-party plan

administrators in the 401(k) industry. Based on the specific conflicts highlighted in a recent Government Accountability Office report, I hypothesize that certain service providers should be relatively more susceptible to these conflicts than others. Therefore, I examine whether there are significant differences in plan-level performance based on the type of company administering the plan. The results provide evidence consistent with this hypothesis.

Consistent with their prominence in the 401(k) industry, the net performance of plans with significant holdings in the funds of the Big Five mutual funds companies (Fidelity, Vanguard, American Funds, T. Rowe Price, and Franklin Templeton) generally perform significantly better than plans that do not make funds from these families available. Plans administered by other companies in the sample do not fare as well. For example, a common theme throughout this study is the finding that plans administered by asset management firms and large banks tend to experience the poorest performance. Many of the third-party plan administrators in these categories are susceptible to conflicts of interest either through the marketing of their own proprietary funds to the plan or through close business relationships with particular fund managers with whom the TPA may have revenue sharing arrangements. Thus, it is not surprising that significant underperformance in these categories is found.

By using a proxy for a plan administrator's susceptibility to conflicts of interest and by controlling directly for a plan's holdings of their TPA's proprietary funds, I provide convincing evidence for the fact that the underperformance identified in these two categories is indeed driven by conflicts of interest. Using this proxy, the plans in the Asset Management Advisory and Large Bank categories (and in all other categories for

that matter) that are identified as having a TPA that is not conflicted experience significantly better plan-level investment performance relative to those plans in the category that are administered by TPAs with conflicts. In addition, the more plan assets that are invested in the proprietary funds of TPAs in the Asset Management Advisory and Large Bank categories, the significantly worse in plan-level investment performance.

As an often overlooked cost to plan participants, I also examine the additional effect of costs at the administrative level on plan performance. Since administrative costs are not typically reported in quarterly statements, plan participants are not likely to understand the importance of these additional expenses. I determine that these costs are economically important to participant investment performance and that accounting for them further magnifies the differential performance across third-party plan administrator categories. The implicit costs of poor plan administration is also examined. These costs relate to the investment performance forfeited by plan participants due to paying needlessly high expense ratios on funds in the plan. As evidenced by a growing number of lawsuits in the 401(k) industry, it is not uncommon for participants to pay for a higher fee share class when they should be eligible for lower fees. By comparing fund balances to the investment minimums required for institutional share classes, I determine that it is quite common for plans to be paying higher fees despite being eligible for lower fee share classes. However, this issue is more random across plans in the different categories as the type of TPA administering the plan does not significantly affect these excessive fees.

Table 2-1. Plan-Level descriptive statistics for the overall sample. This table reports descriptive statistics for the size of plans and fund balances in the overall sample provided by BrightScope. These only include 401(k) plans that are deemed a company's primary defined contribution plan by the Department of Labor. (N = 17,386)

| Variable | Mean | Standard Deviation | 25th percentile | Median | 75th percentile |
|---------------------------|--------|--------------------|-----------------|--------|-----------------|
| Plan Size (000's) | 22,100 | 111,000 | 2,534 | 5,894 | 13,700 |
| Average Fund Size (000's) | 1,228 | 8,456 | 133 | 313 | 734 |
| Number of Fund Options | 22.13 | 15 | 15 | 19 | 26 |

Table 2-2. Plan-Level descriptive statistics for final sample. Since data limitations require the elimination of a large number of plans from the main analysis, this table reports descriptive statistics for this final sample. (N = 6,809)

| Variable | Mean | Standard Deviation | 25th percentile | Median | 75th percentile |
|---------------------------|--------|--------------------|-----------------|--------|-----------------|
| Plan Size (000's) | 32,465 | 149,991 | 3,890 | 8,350 | 20,063 |
| Average Fund Size (000's) | 1,692 | 7,336 | 213 | 457 | 1,078 |
| Number of Fund Options | 19.79 | 8.09 | 11 | 18 | 25 |

Table 2-3. Plan size by plan characteristics. This table reports descriptive statistics on plan size by the type of company administering the 401(k) plan and whether the plan is sponsored by a company that also offers a defined benefit (DB) plan or multiple defined contribution (DC) plans.

| Plan Size (000's) | Number of Plans | Mean | Standard Deviation | Median | Max |
|----------------------------|-----------------|---------|--------------------|--------|-----------|
| Mutual Fund Families | 3,242 | 40,772 | 148,500 | 10,824 | 4,653,318 |
| Asset Management Advisory | 908 | 23,111 | 118,855 | 6,446 | 2,273,720 |
| Investment Banks | 316 | 60,385 | 422,845 | 9,922 | 7,200,897 |
| Large Commercial Banks | 969 | 27,053 | 84,900 | 7,971 | 1,156,332 |
| Small/Regional Comm. Banks | 281 | 13,804 | 32,610 | 5,391 | 376,515 |
| Insurance Firms | 492 | 18,284 | 35,017 | 7,839 | 509,778 |
| 401(k) Services Companies | 601 | 16,157 | 79,004 | 6,034 | 1,628,331 |
| Offers DB Plan | 949 | 111,134 | 371,920 | 22,491 | 7,200,897 |
| Offers Multiple DC Plans | 693 | 95,900 | 383,337 | 20,453 | 7,200,897 |

Table 2-4. Descriptive statistics for plan-level investment options. This table reports the plan-level average number of fund investment options available in each fund type category used in the risk-adjusted return analysis. The last column reports the percentage of plans in the final sample that have at least 1 investment option in the corresponding investment category. (N = 6,809)

| Investment Category | Mean Number of Plan Options | Standard Deviation | Ratio of Plans Containing |
|-----------------------|-----------------------------|--------------------|---------------------------|
| Domestic Equity Funds | 13.89 | 6.99 | 100% |
| Domestic Bond Funds | 1.64 | 0.94 | 93.16% |
| International Funds | 1.97 | 1.38 | 97.44% |
| “Other” Funds | 2.45 | 0.98 | 99.43% |

Table 2-5. Overall average plan-level performance. This table reports average plan-level performance as measured by alpha. These alphas are calculated using various return series for the mutual funds within the plans. “Net of Mean Expense Ratio” is the average plan-level alpha net of the average expense ratio available across the different share classes offered for a specific fund. “Net of Min. Expense Ratio” is the average plan-level alpha net of the minimum expense ratio available across the different share classes offered for a specific fund. “Net of Actual Expense Ratio” is the average plan-level alpha net of the actual expense ratios paid by a plan as reported by BrightScope. T-values are reported in parentheses.

| Average Plan-Level Alpha | N | Equally Weighted | Fund Balance Weighted |
|-----------------------------|------|----------------------------|----------------------------|
| Gross Returns | 6809 | 0.498%*** (47.78) *** | 0.358%*** (32.14) ** |
| Net of Mean Expense Ratio | 6809 | -0.459%*** (-42.48) *** | -0.430%*** (-38.53) *** |
| Net of Min. Expense Ratio | 6809 | -0.140%*** (-13.84) *** | -0.154%*** (-14.32) *** |
| Net of Actual Expense Ratio | 6809 | -0.376%*** (-35.39) *** | -0.355%*** (-32.12) *** |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-6. Average plan-level performance by third-party plan administrator type. This table breaks down the same measures of plan-level performance found in Table 2-5 by the type of company administering the 401(k) plan. Thus, the definitions and calculations of the variables in this table are identical to that found in Table 2-5. All values are calculated using fund balance weights. T-values are reported in parentheses.

| Service Provider: Company Type | N | Gross Returns | Net of Mean Expense Ratio | Net of Min. Expense Ratio | Net of Actual Expense Ratio |
|------------------------------------|-------|----------------------|------------------------------|------------------------------|--------------------------------|
| Mutual Fund Families | 3,242 | 0.466%*** (32.35) | -0.231%*** (-16.39) | -0.043%*** (-3.14) | -0.213%*** (-15.26) |
| Asset Management Advisory | 908 | 0.155%*** (-4.45) | -0.743%*** (-21.11) | -0.378%*** (-10.70) | -0.640%*** (-17.87) |
| Investment Banks | 316 | 0.530%*** (7.53) | -0.413%*** (-6.93) | -0.017% (-0.268) | -0.267%*** (-4.42) |
| Large Commercial Banks | 969 | 0.196%*** (6.96) | -0.648%*** (-22.41) | -0.314%*** (-11.18) | -0.508%*** (-17.72) |
| Small/Regional Commercial Banks | 281 | 0.359%*** (6.10) | -0.392%*** (-6.83) | -0.117%** (-2.06) | -0.293%** (-5.13) |
| Insurance Companies | 492 | 0.353%*** (8.03) | -0.545%*** (-12.47) | -0.160%*** (-3.71) | -0.398%*** (-8.95) |
| 401(k) Services Companies | 601 | 0.260%*** (7.08) | -0.608%*** (-16.17) | -0.246%*** (-6.80) | -0.480%*** (-12.84) |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-7. Alternative regression specifications measuring plan-level performance. The following specifications examine the cross-sectional variation in plan-level performance controlling for the type of service provider administering the plan, the size of the plan, and the existence of other plans offered by the company. Standard errors are clustered by unique service provider. The dependent variable for the Net Performance regressions have been calculated using returns net of the expense ratios paid by plan participants. All plan-level alphas have been calculated using fund balance weights, annualized in percentage terms, and winsorized at the 99% level. Plan Size includes the sum of the balances of just those funds for which an alpha is measured as part of the overall plan-level alpha. This variable has also been demeaned. Offer DB is a dummy variable equal to one if the company offers a DB plan in addition to the 401(k) plan. Mult DC Plans is a dummy variable equal to one if the company offers supplemental DC plans in addition to the primary 401(k) plan studied. Proportion Vanguard/Fidelity/T. Rowe Price/American Funds/Franklin Templeton represents the proportion of assets in the plan that is held in these respective fund families. The benchmark group in the regressions is mutual fund companies. Standard errors are in parenthesis.

| Variable | (1) Net Performance | (2) Gross Performance | (3) Net Performance | (4) Gross Performance |
|--------------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|
| Asset Management Advisory | -0.4012*** (0.129) | -0.3224** (0.151) | -0.1434 (0.117) | -0.1524 (0.118) |
| Investment Bank | -0.0712 (0.128) | 0.0225 (0.161) | 0.1624 (0.138) | 0.1283 (0.138) |
| Large Commercial Bank | -0.2847*** (0.077) | -0.2765** (0.113) | -0.0889 (0.064) | -0.1616** (0.063) |
| Small/Regional Commercial Bank | -0.0738 (0.082) | -0.1385 (0.110) | 0.0854 (0.082) | 0.0376 (0.078) |
| Insurance Company | -0.1486 (0.097) | -0.1064 (0.130) | 0.0888 (0.096) | 0.0310 (0.091) |
| 401(k) Services Companies | -0.2485*** (0.088) | -0.2334** (0.104) | 0.0007 (0.083) | -0.0447 (0.067) |
| Ln(Plan Size) | 0.0161 (0.016) | -0.0325 (0.020) | 0.0110 (0.012) | -0.0156 (0.012) |
| Offer DB | 0.0050 (0.034) | -0.0775* (0.041) | -0.0130 (0.037) | -0.0558 (0.036) |
| Mult DC Plans | 0.0415 (0.044) | 0.0118 (0.047) | 0.0346 (0.037) | 0.0188 (0.039) |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-7. Continued

| Variable | (1) Net Performance | (2) Gross Performance | (3) Net Performance | (4) Gross Performance |
|----------------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|
| Proportion Vanguard | | | 0.0993 (0.088) | -0.5506*** (0.082) |
| Proportion Fidelity | | | 0.3854*** (0.088) | 0.2239*** (0.084) |
| Proportion T. Rowe Price | | | 1.2677*** (0.100) | 1.0566*** (0.095) |
| Proportion American Funds | | | -0.2048* (0.110) | -0.4304** (0.100) |
| Proportion Franklin Templeton | | | 0.4219** (0.171) | 0.4783*** (0.176) |
| Constant | -0.2206*** (0.058) | 0.4873*** (0.160) | -0.4926*** (0.081) | 0.3985*** (0.076) |
| Observations | 6809 | 6809 | 6809 | 6809 |
| R-Square | 0.0339 | 0.0252 | 0.0912 | 0.1105 |

, **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-8. Differences in the coefficients from Table 2-7. The following table provides the differences between the coefficients across the various third-party plan administrator categories used in Table 2-7. All else equal, the coefficients reported here provide the differences in plan-level net performance between two categories. Each difference represents the coefficient from the row category minus the coefficient from the column category. For example, the first number in the Asset Management Advisory row would suggest that, all else equal, the average plan-level alpha net of the expense ratios paid in the plan is 30.59 bps per year lower for the Asset Management Advisory category relative to the average plan in the Investment Banks category.

| (Row – Column) | Asset Mgmt Advisory | Investment Banks | Large Commercial Banks | Small Commercial Banks | Insurance Companies | 401(k) Services Companies |
|---------------------------------|---------------------|----------------------|------------------------|------------------------|----------------------|---------------------------|
| Asset Management Advisory | | -0.3059* (0.179) | -0.0546 (-0.124) | -0.2288* (-0.134) | -0.2322* (-0.139) | -0.1441 (-0.133) |
| Investment Banks | 0.3059* (0.179) | | 0.2513* (-0.136) | 0.0771 (-0.150) | 0.0737 (0.151) | 0.1618 (0.146) |
| Large Commercial Banks | 0.0546 (0.124) | -0.2513* (-0.136) | | -0.1743** (0.084) | -0.1776** (0.091) | -0.0895 (0.080) |
| Small/Regional Commercial Banks | 0.2288* (-0.134) | -0.0771 (-0.150) | 0.1743** (0.084) | | -0.0033 (0.108) | 0.0848 (0.097) |
| Insurance Companies | 0.2322* (-0.139) | -0.0737 (0.151) | 0.1776** (0.091) | 0.0033 (0.108) | | 0.0881 (0.104) |
| 401(k) Services Companies | 0.1441 (-0.133) | -0.1618 (0.146) | 0.0895 (0.080) | -0.0848 (0.097) | -0.0881 (0.104) | |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-9. Popularity of the Big Five in sample plans. This table examines the percentage of a plan's assets that is held in Vanguard, Fidelity, and T. Rowe Price funds. These percentages are then averaged across plans based on service provider category to determine which types of plan administrators tend to use these fund families. An example of how the table reads is as follows: the percentage of assets held in Vanguard funds for the plans administered by Vanguard is, on average, 92.55%.

| Category | % Assets Held in Vanguard | % Assets Held in Fidelity | % Assets Held in T. Rowe Price | % Assets Held in American Funds | % Assets Held in Franklin Templeton | % Assets Held in All Five |
|---------------------------------|---------------------------|---------------------------|--------------------------------|---------------------------------|-------------------------------------|---------------------------|
| Vanguard | 92.55% | 0.40% | 0.63% | 0.98% | 0.16% | 94.73% |
| Fidelity | 0.38% | 85.46% | 0.53% | 0.70% | 0.23% | 87.29% |
| T. Rowe Price | 1.57% | 0.54% | 88.32% | 1.49% | 0.03% | 91.95% |
| American Funds | 0.27% | 1.01% | 1.08% | 75.62% | 1.48% | 78.49% |
| Franklin Templeton | 1.52% | 0.66% | 0.13% | 5.65% | 65.63% | 73.59% |
| Other Mutual Fund Family | 6.19% | 2.20% | 5.20% | 13.39% | 1.60% | 28.58% |
| Asset Management Advisory | 5.89% | 4.73% | 2.01% | 19.75% | 1.47% | 33.87% |
| Investment Banks | 4.11% | 6.23% | 2.49% | 10.62% | 1.13% | 24.58% |
| Large Commercial Banks | 7.88% | 7.79% | 4.99% | 15.97% | 2.67% | 39.32% |
| Small/Regional Commercial Banks | 21.15% | 8.91% | 6.39% | 13.61% | 1.11% | 51.18% |
| Insurance Companies | 4.74% | 4.11% | 2.57% | 19.77% | 5.56% | 36.75% |
| 401(k) Services Companies | 8.73% | 4.26% | 2.57% | 21.19% | 1.84% | 38.59% |

Table 2-10. Alternative regression specifications measuring plan-level expense ratios.

This table examines the cross-sectional variation in plans' fund balance weighted expense ratios controlling for the type of service provider administering the plan, the size of the plan, and the existence of other plans offered by the company. Standard errors are clustered by unique service provider. The dependent variable for each model is a plan's fund balance weighted cost of investment based on the fund expense ratios paid by participants in the plan. All independent variables are defined as they were in previous tables. The benchmark group in the regressions is mutual fund companies. Standard errors are in parenthesis.

| Variable | (1) Weighted Plan-Level Expense Ratio | (2) Weighted Plan-Level Expense Ratio |
|--------------------------------|---|---|
| Asset Management Advisory | 0.1209** (0.061) | -0.0052 (0.031) |
| Investment Bank | 0.1637** (0.064) | -0.0133 (0.027) |
| Large Commercial Bank | 0.0493 (0.059) | -0.0678*** (0.024) |
| Small/Regional Commercial Bank | -0.0663 (0.059) | -0.0644** (0.023) |
| Insurance Company | 0.0828 (0.083) | -0.0594** (0.027) |
| 401(k) Services Companies | 0.0320 (0.070) | -0.0605* (0.035) |
| Ln(Plan Size) | -0.0710*** (0.015) | -0.0447*** (0.004) |
| Offer DB | -0.0660*** (0.013) | -0.0185** (0.007) |
| Mult DC Plans | -0.0211* (0.011) | -0.0049 (0.006) |
| Proportion Vanguard | | -0.7903*** (0.030) |
| Proportion Fidelity | | -0.2412*** (0.033) |
| Proportion T. Rowe Price | | -0.2786*** (0.027) |
| Proportion American Funds | | -0.3114*** (0.032) |
| Proportion Franklin Templeton | | 0.1002** (0.031) |
| Constant | 0.8272*** (0.056) | 1.0786*** (0.029) |

*, **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-10. Continued

| Variable | (1) Weighted Plan-Level Expense Ratio | (2) Weighted Plan-Level Expense Ratio |
|--------------|---|---|
| Observations | 6809 | 6809 |
| R-Square | 0.2201 | 0.5943 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-11. Measuring plan-level undisclosed mutual fund transaction costs. This table examines the cross-sectional variation in plans' fund balance weighted undisclosed transactions costs as estimated by BrightScope's transaction cost algorithm. This algorithm takes into account a fund's brokerage commissions, market impact costs, and spread costs. In the following specifications, I control for the type of service provider administering the plan, the size of the plan, and the existence of other plans offered by the company. Standard errors are clustered by unique service provider. The dependent variable for each model is a plan's fund balance weighted undisclosed transaction cost measure. All independent variables are defined as they were in previous tables. The benchmark group in the regressions is mutual fund companies. Standard errors are in parenthesis.

| Variable | (1) Weighted Plan-Level Transaction Cost | (2) Weighted Plan-Level Transaction Cost |
|--------------------------------|--|--|
| Asset Management Advisory | -0.0010 (0.054) | 0.0287 (0.021) |
| Investment Bank | 0.0922 (0.065) | 0.0869* (0.043) |
| Large Commercial Bank | -0.0409 (0.051) | -0.0101 (0.016) |
| Small/Regional Commercial Bank | -0.0852* (0.050) | -0.0187 (0.014) |
| Insurance Company | 0.0141 (0.054) | 0.0528** (0.025) |
| 401(k) Services Companies | -0.0454 (0.057) | 0.0009 (0.019) |
| Ln(Plan Size) | -0.0191*** (0.006) | -0.0076* (0.004) |
| Offer DB | -0.0347*** (0.007) | -0.0209*** (0.006) |
| Mult DC Plans | -0.0053 (0.007) | 0.0003 (0.006) |
| Proportion Vanguard | | -0.2915*** (0.019) |
| Proportion Fidelity | | 0.0161 (0.017) |
| Proportion T. Rowe Price | | -0.1921*** (0.017) |
| Proportion American Funds | | -0.2602*** (0.021) |
| Proportion Franklin Templeton | | -0.3119** (0.046) |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-11. Continued

| Variable | (1) Weighted Plan-Level Expense Ratio | (2) Weighted Plan-Level Expense Ratio |
|--------------|---|---|
| Constant | 0.4248*** (0.048) | 0.4732** (0.017) |
| Observations | 6809 | 6809 |
| R-Square | 0.0619 | 0.1477 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-12. Popularity of the Big Five by category and “No Conflicts”. This table examines the percentage of a plan’s assets that is held in Vanguard, Fidelity, T. Rowe Price, American Funds, and Franklin Templeton funds. These percentages are then averaged across plans based on service provider category and whether or not the TPA’s dummy variable for “No Conflicts” is equal to 1. An example of how the table reads is as follows (first number in the Vanguard column): the percentage of assets held in Vanguard funds for the plans administered by a TPA in the Asset Management Advisory category that has a “No Conflicts” dummy variable equal to zero is, on average, 5.73 percent. The first column provides information on what percentage of a category’s sample falls within each subcategory based on the “No Conflicts” dummy variable. Overall, roughly 20 percent of the plans in the below categories were identified as having a “No Conflicts” dummy variable equal to one.

| Category | % of Category Plans | % Assets in Vanguard | % Assets in Fidelity | % Assets in T. Rowe Price | % Assets in American Funds | % Assets in Franklin Templeton | % Assets in Big Five |
|----------------------------------|---------------------|----------------------|----------------------|---------------------------|----------------------------|--------------------------------|----------------------|
| Asset Mgmt Conflicts | 83.16% | 5.73% | 4.68% | 1.73% | 17.82% | 1.13% | 31.19% |
| Asset Mgmt No Conflicts | 16.84% | 6.64% | 4.95% | 3.33% | 28.14% | 3.00% | 46.07% |
| Large Banks Conflicts | 92.97% | 7.95% | 7.94% | 5.05% | 15.43% | 2.67% | 39.04% |
| Large Banks No Conflicts | 7.03% | 6.39% | 4.04% | 3.54% | 28.92% | 2.63% | 45.53% |
| Small Banks Conflicts | 77.94% | 23.67% | 9.57% | 5.85% | 14.10% | 1.02% | 54.21% |
| Small Banks No Conflicts | 22.06% | 11.68% | 6.42% | 8.44% | 11.74% | 1.46% | 39.75% |
| Insurance Co. Conflicts | 92.90% | 4.16% | 4.03% | 2.50% | 19.60% | 5.88% | 36.18% |
| Insurance Co. No Conflicts | 7.10% | 13.60% | 5.37% | 3.66% | 22.40% | 0.55% | 45.57% |
| 401(k) Services Co. Conflicts | 59.78% | 7.01% | 4.25% | 2.31% | 20.28% | 1.86% | 37.66% |
| 401(k) Services Co. No Conflicts | 40.22% | 11.22% | 4.26% | 2.74% | 21.83% | 1.82% | 39.92% |

Table 2-13. Conflicts of interest and plan-level net performance. This table examines the cross-sectional variation in plan-level net performance while using a proxy for a TPAs susceptibility to conflicts of interest. The dummy variable 'No Conflicts' is equal to 1 for those TPAs that answered "no" to certain questions relating to conflicts of interest in the SEC's Investment Adviser Public Disclosure database. Plans administered in the mutual fund and investment bank category have been omitted from the regressions. Further details are provided in the text of this study. Standard errors are clustered by unique service provider. The dependent variable is calculated using returns net of the expense ratios paid by plan participants. All plan-level alphas have been calculated using fund balance weights, annualized in percentage terms, and winsorized at the 99% level. The constant represents the Small/Regional Bank category. Standard errors are in parenthesis.

| Variable | (1) Net Performance | (2) Net Performance |
|-------------------------|------------------------|------------------------|
| Asset Mgmt Adv | -0.3297** (0.147) | -0.1938 (0.152) |
| Asset Mgmt Adv * | 0.3549** (0.143) | 0.3264** (0.129) |
| No Conflicts | | |
| Large Commercial Bank | -0.1643** (0.081) | -0.1000 (0.104) |
| Large Commercial Bank * | 0.1939** (0.095) | 0.2429*** (0.058) |
| No Conflicts | | |
| Insurance Company | -0.0245 (0.106) | 0.0935 (0.129) |
| Insurance Company * | 0.1199 (0.107) | 0.0829 (0.100) |
| No Conflicts | | |
| 401(k) Services Co. | -0.1696* (0.097) | -0.0578 (0.118) |
| 401(k) Services Co. * | 0.0991 (0.127) | 0.1008 (0.119) |
| No Conflicts | | |
| Small/Reg. Bank * | 0.3048 (0.204) | 0.3213 (0.203) |
| No Conflict | | |
| Ln(Plan Size) | 0.0366** (0.015) | 0.0313** (0.015) |
| Offer DB | 0.0052 (0.052) | -0.0564 (0.047) |
| Mult DC Plans | 0.1050 (0.065) | 0.0823 (0.067) |
| Proportion Vanguard | | 0.2761** (0.127) |
| Proportion Fidelity | | 0.5989*** (0.130) |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-13. Continued

| Variable | (1) Net Performance | (2) Net Performance |
|-------------------------------|------------------------|------------------------|
| Proportion T. Rowe Price | | 1.2991*** (0.177) |
| Proportion American Funds | | -0.0613 (0.124) |
| Proportion Franklin Templeton | | 0.3363** (0.177) |
| Constant | -0.3537*** (0.065) | -0.5397*** (0.118) |
| Observations | 3251 | 3251 |
| R-Square | 0.0259 | 0.0552 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-14. Holdings of TPA's proprietary funds in sample plans. This table examines the percentage of a plan's assets that is held in funds of the Big 5 fund families and in the proprietary funds of the plan's TPA. These percentages are then averaged across plans based on service provider category and whether or not some of the plan's assets are invested in the proprietary funds of the plan's TPA. An example of how the table reads is as follows (first number in the Big 5 column): the percentage of assets held in the funds of the Big Five mutual fund families for the plans administered by a TPA in the Asset Management Advisory category that have holdings in the proprietary funds of its TPA is, on average, 17.90%. The first column reports the percentage of the plans in a particular category that fall into the subcategory in question (either those plans without holdings in the TPA's proprietary funds or those with holdings in the TPA's proprietary funds).

| Category | % of Category Plans | % Assets Held in Big 5 | % Assets Held in Proprietary Funds |
|--|---------------------|------------------------|------------------------------------|
| Asset Mgmt Advisory with Proprietary Holdings | 24.78% | 17.90% | 60.10% |
| Asset Mgmt Advisory with No Proprietary Holdings | 75.22% | 39.10% | 0.00% |
| Large Comm. Banks with Proprietary Holdings | 46.96% | 30.79% | 31.21% |
| Large Comm. Banks with No Proprietary Holdings | 53.04% | 46.82% | 0.00% |
| Investment Banks with Proprietary Holdings | 27.22% | 12.94% | 48.46% |
| Investment Banks with No Proprietary Holdings | 72.78% | 28.92% | 0.00% |
| Insurance Co. with Proprietary Holdings | 34.76% | 31.42% | 27.28% |
| Insurance Co. with No Proprietary Holdings | 65.24% | 39.59% | 0.00% |

Table 2-14. Continued

| Category | % of Category Plans | % Assets Held in Big 5 | % Assets Held in Proprietary Funds |
|---|---------------------|------------------------|------------------------------------|
| Non-Big 5 MF Co. with Proprietary Holdings | 61.67% | 17.97% | 45.31% |
| Non-Big 5 MF Co. with No Proprietary Holdings | 38.33% | 35.17% | 0.00% |
| Big 5 MF Co. with Proprietary Holdings | 98.55% | 89.01% | 87.48% |
| Big 5 MF Co. with No Proprietary Holdings | 1.45% | 30.83% | 0.00% |

Table 2-15. Proprietary funds and plan-level net performance. This table examines the cross-sectional variation in plan-level net performance while controlling for plan holdings in the proprietary funds of the TPA. Since TPAs in the Small Bank and 401(k) Services categories do not have proprietary mutual funds, the plans in these categories have been omitted for these tests. Standard errors are clustered by unique service provider. The dependent variable is calculated using returns net of the expense ratios paid by plan participants. All plan-level alphas have been calculated using fund balance weights, annualized in percentage terms, and winsorized at the 99% level. Proportion Proprietary is simply the proportion of a plan's assets held in its TPA's proprietary funds. The constant represents plans in the Mutual Fund category without holdings in the TPA's proprietary funds. Standard errors are in parenthesis.

| Variable | (1) Net Performance | (2) Net Performance |
|-------------------------|------------------------|------------------------|
| Asset Mgmt Adv | 0.1133** (0.058) | 0.1902*** (0.063) |
| Asset Mgmt Adv * | -1.7146*** (0.202) | -1.8026*** (0.208) |
| Proportion Proprietary | | |
| Large Commercial Bank | 0.0366 (0.062) | 0.0582 (0.072) |
| Large Commercial Bank * | -0.4170** (0.162) | -0.4782*** (0.169) |
| Proportion Proprietary | | |
| Investment Bank | 0.1780* (0.099) | 0.1929* (0.117) |
| Investment Bank * | 0.0858 (0.677) | 0.0500 (0.685) |
| Proportion Proprietary | | |
| Insurance Company | 0.1457* (0.089) | 0.1945** (0.094) |
| Insurance Company * | -0.3684 (0.377) | -0.3685 (0.403) |
| Proportion Proprietary | | |
| Mutual Fund Family * | 0.3381*** (0.086) | 0.2477** (0.099) |
| Proportion Proprietary | | |
| Ln(Plan Size) | 0.0144 (0.016) | 0.0147 (0.013) |
| Offer DB | 0.0029 (0.037) | -0.0044 (0.038) |
| Mult DC Plans | 0.0185 (0.044) | 0.0139 (0.039) |
| Proportion Vanguard | | -0.1794 (0.116) |
| Proportion Fidelity | | 0.1060 (0.124) |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-15. Continued

| Variable | (1) Net Performance | (2) Net Performance |
|-------------------------------|------------------------|------------------------|
| Proportion T. Rowe Price | | 1.0449*** (0.128) |
| Proportion American Funds | | -0.4911*** (0.104) |
| Proportion Franklin Templeton | | 0.1845 (0.155) |
| Constant | -0.4780*** (0.037) | -0.4616*** (0.066) |
| Observations | 5927 | 5927 |
| R-Square | 0.1057 | 0.1623 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-16. Alternative regression specifications measuring plan-level administrative costs. This table examines the cross-sectional variation in plan-level administrative costs controlling for the type of service provider administering the plan, the size of the plan, and the existence of other plans offered by the company. Standard errors are clustered by unique service provider. The dependent variable for each model is the total administrative costs paid out of plan assets according to the plan's Form 5500. This expense is measured as a percentage of total plan assets. Only plans with non-zero administrative costs are examined in this analysis. All independent variables are defined as they were in previous tables, except that dummy variables are used for Vanguard, Fidelity, T. Rowe Price, American Funds, and Franklin Templeton. The benchmark group in the regressions is mutual fund companies. Standard errors are in parenthesis.

| Variable | (1) Administration Costs | (2) Administration Costs |
|--------------------------------|-----------------------------|-----------------------------|
| Asset Management Advisory | 0.1559* (0.090) | 0.0731 (0.115) |
| Investment Bank | -0.0074 (0.031) | -0.0879 (0.075) |
| Large Commercial Bank | 0.0768* (0.046) | -0.0046 (0.080) |
| Small/Regional Commercial Bank | 0.1646*** (0.061) | 0.0813 (0.084) |
| Insurance Company | 0.0262 (0.056) | -0.0559 (0.085) |
| 401(k) Services Companies | 0.2976** (0.114) | 0.2140* (0.113) |
| Ln(Plan Size) | -0.1464*** (0.054) | -0.1502*** (0.057) |
| Offer DB | 0.0662 (0.048) | 0.0606 (0.047) |
| Mult DC Plans | 0.0353 (0.026) | 0.0321 (0.024) |
| Vanguard Dummy | | 0.0089 (0.099) |
| Fidelity Dummy | | -0.1043 (0.074) |
| T. Rowe Price Dummy | | -0.0294 (0.089) |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-16. Continued

| Variable | (1) Administration Costs | (2) Administration Costs |
|--------------------------|-----------------------------|-----------------------------|
| American Funds Dummy | | -0.2180* (0.083) |
| Franklin Templeton Dummy | | -0.1917* (0.102) |
| Constant | 0.1561*** (0.029) | 0.2386*** (0.074) |
| Observations | 6091 | 6091 |
| R-Square | 0.0412 | 0.0423 |

* , **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-17. Excessive expense ratios. This table examines the cross-sectional variation in excessive expense ratios paid by plan participants. By comparing a fund's balance within a plan to the investment minimum required of that fund's institutional share class, instances where plans pay excessive fees is determined. These fee differentials are then multiplied by the fund balance to determine the resulting loss. The dependent variable in both models is the total loss across all funds in the plan as a percentage of total plan assets. All independent variables are defined as they were in previous tables. The benchmark group in the regressions is mutual fund companies. Standard errors are in parenthesis.

| Variable | (1) Excess Expense Ratio Loss | (2) Excess Expense Ratio Loss |
|--------------------------------|-------------------------------------|-------------------------------------|
| Asset Management Advisory | 0.0090 (0.007) | 0.0003 (0.004) |
| Investment Bank | 0.0625*** (0.010) | 0.0186*** (0.006) |
| Large Commercial Bank | -0.0053 (0.005) | -0.0005 (0.004) |
| Small/Regional Commercial Bank | -0.0044 (0.007) | 0.0012 (0.004) |
| Insurance Company | 0.0115 (0.008) | 0.0018 (0.005) |
| 401(k) Services Companies | 0.0082 (0.007) | 0.0019 (0.005) |
| Ln(Plan Size) | -0.0245*** (0.003) | -0.0271*** (0.002) |
| Offer DB | -0.0010*** (0.002) | -0.0041*** (0.002) |
| Mult DC Plans | -0.0001 (0.003) | 0.0022 (0.002) |
| Proportion Vanguard | | -0.0644*** (0.005) |
| Proportion Fidelity | | -0.0007 (0.004) |
| Proportion. Rowe Price | | -0.0476*** (0.006) |
| Proportion American Funds | | 0.0333*** (0.006) |

* , **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2-17. Continued

| Variable | (1) Excess Expense Ratio Loss | (2) Excess Expense Ratio Loss |
|-------------------------------|-------------------------------------|-------------------------------------|
| Proportion Franklin Templeton | | 0.0050 (0.013) |
| Constant | 0.0498*** (0.007) | 0.0566*** (0.003) |
| Observations | 6809 | 6809 |
| R-Square | 0.2554 | 0.3351 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

CHAPTER 3
THE INITIAL MARKET ASSESSMENT OF ACQUISITION SUCCESS: NEW
EVIDENCE FROM GOODWILL IMPAIRMENTS

The ability of capital markets to accurately assess the information content of economic events has long been a focus of financial economics research (see e.g., Fama (1970)). In particular, event studies that measure abnormal stock returns around the announcement of economic events have long been relied on by researchers to measure the wealth effects, or at least the information content, of those events. This has been especially true in assessing the effects of merger and acquisition activity on shareholder wealth. Numerous studies have examined the average wealth implications of acquisition activity for bidding and target firms using event studies (see e.g., see Jensen and Ruback (1983), Mulherin and Boone (2000), and Andrade, Mitchell, and Stafford (2001)). Besides estimating average wealth effects, however, discerning the cross-sectional variation in returns has additional importance. For instance, Eckbo (1983) and Stillman (1983) examine abnormal returns to acquirers and competitors to assess the antitrust implications of horizontal mergers. Mitchell and Lehn (1990) and Scholten (2005) present evidence that poor returns at merger announcement signal poor investment strategies that lead to hostile takeovers and/or managerial turnover. Numerous other studies use cross-sectional variation in announcement returns to ascertain the information content of merger financing (see e.g. Travlos (1987) and Houston and Ryngaert (1996)).

This study specifically examines the ability of capital markets to discriminate between good and poor acquisitions. There is a pre-existing literature. One method to assess acquisition success is to examine the link between acquisition announcement returns and future profitability. Healy, Palepu, and Ruback (1992) find that the merged

firms (the fifty largest acquisitions from January 1979 to June 1984) have significantly larger post-merger operating cash flow returns than industry peers. They interpret the statistically significant positive correlation between the abnormal returns at announcement and the post-merger cash flow performance as evidence that the market is indeed pricing future performance at the time of announcement. Houston, James, and Ryngaert (2001) document similar findings for a sample of large banking mergers.

¹ One limitation of these studies, however, is the inability to distinguish between the ex-post performance of the acquiring firm and the performance of the acquired unit. There is also the limitation of using short-term accounting measures to assess the long-term valuation implications of a merger.

Kaplan and Weisbach (1992) take a different approach to determine the market's efficiency in predicting the success of a particular acquisition. The authors track a sample of 271 large acquisitions completed between 1971 and 1982 and determine which of the targets are divested by the end of 1989. By reading press releases and company financial reports, the authors determine which of the divestitures were due to poor financial performance. Once the authors identify the poor acquisitions, they evaluate whether or not the acquirer returns at announcement predicted future performance. They find that the mean acquirer abnormal return for unsuccessful divestitures was -4.42%, as opposed to -0.64% for successful divestitures and -1.11% for non-divested acquisitions. Thus, for their particular sample, Kaplan and Weisbach provide evidence that the market has some capability of identifying poor acquisitions at

¹ Houston, James, and Ryngaert (2001) also use synergy estimates provided by firms and analysts and show they are related to the announcement returns to acquirers and total combined announcement return of acquirers and targets. These estimates, of course, are not actual metrics of future success, though they are ultimately correlated with better accounting profitability measures.

announcement. Nevertheless, determining the success of an acquisition based on whether or not it was divested on good terms severely limits the definition of success. For instance, a division might perform reasonably well and there may be no compelling reason to divest it, but its cash flows might not justify the price paid in the acquisition. Furthermore, CEOs might be reluctant to publicly admit their failures by divesting a substandard division.

While the approaches taken by Healy et al. (1992) and Kaplan and Weisbach (1992) have what might be considered rough proxies for deal failure/success specific to their respective studies, they also share two other important limitations. The first is the size of the samples studied in each paper. Healy et al. focus on only the fifty largest acquisitions over their sample period.. Kaplan and Weisbach focus on a sample of 271 acquisitions, with only 119 of their acquisitions being divested by 1989 and only 37 of these were identified as poor acquisitions.

Second, the samples of acquisitions studied in these papers are not representative of most acquisition activity, especially in more recent years. First, they are unusually large acquisitions of primarily publicly traded targets. Such acquisitions probably receive greater scrutiny and the firms involved may be well understood. Second, the acquisitions are in “older industries” which, for instance, probably have fewer harder to assess intangible assets. Given the timing of the studies, this is unavoidable. Hence, these studies are limited in their ability to determine if the markets can effectively assess the value of acquisitions of targets that are much smaller, with considerable intangible assets, many of which are not publicly traded.

In this study I use an alternative method to identify poor acquisitions: firms that take substantial goodwill impairment charges related to a prior acquisition. Since goodwill is the difference between what is paid for the acquisition and the book value of identifiable assets, this approach can identify cases where the premium paid above book value is no longer justified. While tangible asset values may also be changing, this is an excellent indicator of acquisition “failure” in that the price paid is revealed to have been too high. Additionally, annual impairment assessments are mandated by GAAP rules (at least since 2002), unlike divestitures, and they take into account future cash flows forecasts from an acquisition. Finally, since impaired acquisitions have significant goodwill assets, they are likely to be associated with harder to assess acquisitions involving the utilization and preservation of intangible assets.

I identify from Compustat data a sample of firms taking significant goodwill impairment charges relative to assets. I then examine a firm’s 10-Ks to determine if I can identify the acquisition the impairment is associated with if it occurs within 3 years of the acquisition and if I can identify an announcement event date for the acquisition.² I then identify from SDC a control firm that is in the same two digit industry making an acquisition of similar magnitude during the same approximate time period that did not take significant subsequent impairment charges. The result is a sample of 462 acquisition announcements (including the control firms). Approximately 74% of the purchased firms in the sample are private companies and the sample consists of many young companies in rapidly evolving technology areas with substantial intangible assets. I find that the market adjusted returns surrounding the announcements of

² Within 3 years means if the deal closed in fiscal year 2002, it must have an impairment by fiscal year 2005.

impairment acquisitions are significantly negative while the corresponding returns for the matched acquisitions are significantly positive. The result is robust to several different model specifications and to the addition of relevant control variables. The results provide compelling evidence that the market has considerable ability to identify poor acquisitions even in situations where assessments may be difficult.

While it seems rather intuitive that the cause of significant goodwill impairments is the result of poor acquisitions, there is at least one important reason why this may not be the case. Shleifer and Vishny (2003) argue that by using overpriced shares to purchase relatively less overpriced targets, firms can actually increase shareholder value in the long run. Once the market realizes the original overvaluation, the bidder will experience significantly negative post-acquisition returns; but this price reversal will be lessened by the purchase of the less overvalued target. The byproduct of this potential phenomenon could inevitably be significant goodwill impairment for targets that were initially overvalued. In other words they “overpaid” but did so with “overvalued stock.” Under this scenario, the goodwill impairments would not truly signify a bad acquisition, the goodwill impairments would provide no evidence as to the quality of the acquisition. Nevertheless, such acquisitions could result in more negative announcement returns for acquisitions that were subsequently impaired due to overvalued bidders using stock as an acquisition currency. The acquisition signals (or confirms) that the appearances of overvaluation may real.

Gu and Lev (2011) provides compelling evidence that a large fraction of goodwill impairments are caused by poor acquisitions. Using a proxy for overvaluation, Gu and Lev (2011) show that firms make more acquisitions using stock when seemingly

overvalued and that these firms accumulate more goodwill and that they subsequently experience higher levels of goodwill impairments. That said, by comparing the post-acquisition returns of bidders using overvalued stock as currency to a sample of similarly overvalued firms not taking part in acquisition activity, Gu and Lev (2011) actually show that firms engaged in acquisition activity experience a *more* severe price reversal.³ Also, while not tying the impairments to specific acquisitions, they report that long run returns for firms with impairments are quite low relative to long returns for firms making acquisitions with no impairments. Hence, Gu and Lev (2011) argue that “a goodwill write-off is an important business event that calls for a reassessment of the firm’s investment strategy.”

Given Gu and Lev’s (2011) results, I include regressions of market adjusted returns at acquisition that control for overvaluation proxies, amount of stock used in an acquisition, and various interactions of those items. The results continue to be consistent with the market pricing in impairment independent of those variables, though there is weak evidence that stock financed acquisitions, with higher levels of estimated overvaluation, and subsequent impairments have slightly lower announcement returns. Nevertheless, the results suggest that while goodwill impairments are subject to considerable judgment and potential managerial bias, it appears that those that reported impairments are consistent with bad acquisition investments, which capital markets price out with some success at the acquisitions announcement.

3 An alternative explanation may be that overvaluation proxies are noisy signals of overvaluation. Firms making acquisitions with seemingly overvalued stock confirm the signal while those not making acquisitions convey that there is more noise than signal in their overvaluation proxy.

The remainder of this chapter is organized as follows. First I will provide a brief overview of SFAS No. 142, *Goodwill and Other Intangible Assets*, (SFAS 142) and discusses the relevant findings in the literature relating to goodwill impairment. Next, I will describe the sample design and the descriptive statistics for the main sample. The following section reports and discusses the main empirical results. I then report the results of the robustness tests. Finally, I will conclude with a summary of the findings and provides suggestions for future research.

Overview of SFAS 142

Before the adoption of SFAS No. 141, *Accounting for Business Combinations* (SFAS 141), and SFAS 142, purchased goodwill was only recorded when a company used the purchase method to account for an acquisition, as opposed to the pooling-of-interest method. In addition, any goodwill recorded in connection with an acquisition was to be amortized over a period of up to forty years. Following the adoption of SFAS 141, however, all acquisitions taking place after July 2001 were required to be recorded using the purchase method exclusively. Concurrent with this standard change, SFAS 142 required that goodwill be tested annually for impairment rather than amortizing it over some fixed period of time. This standard provided much needed clarification regarding the testing of goodwill. Prior to SFAS 142, SFAS 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to be Disposed Of*, provided the main guidance for identifying and measuring goodwill impairment. However, this standard accounted for both tangible and intangible assets and relied on certain trigger events to prompt companies to test assets for impairment. SFAS 142 removed any question or discretion in deciding whether to test goodwill for impairment by requiring the annual test. SFAS 142 was required to be adopted by all companies

with fiscal years beginning after December 15, 2001. In some situations, early adoption of SFAS 142 was permitted.

As described in most companies' 10-K reports, the annual test for goodwill impairment is a two-step process. First, all assets and liabilities, including goodwill and indefinite-lived intangible assets, are assigned to identifiable reporting units⁴. Companies, or third-party independent analysts, then use such techniques as discounted cash flow analysis and comparative market analysis to estimate the fair value of each reporting unit. Step one of the test is completed by comparing the fair value of each reporting unit to its carrying value. If the carrying value of a reporting unit exceeds its fair value, then impairment exists and step two of the test must be completed.

Step two of the test involves comparing the carrying value and fair market value of the goodwill within the impaired reporting unit. This is done by estimating the fair value of the tangible and intangible assets and liabilities within the reporting unit. These values are subtracted from the total fair value estimate of the reporting unit from step one of the test. The residual is the fair value of the goodwill in the reporting unit. If the carrying value of goodwill exceeds the implied fair value, the difference is written off and recorded as a goodwill impairment. Goodwill impairments recorded within six months of the adoption of SFAS 142 were accounted for as a cumulative effect of a change in accounting principle. All subsequent impairments are accounted for as a charge against operating income.

⁴ The test for goodwill impairment is done at the reporting unit level. A reporting unit is defined as the lowest level of the overall company. Each reporting unit may represent a separate subsidiary, division, operating unit, business unit, etc.

Overview of Relevant Goodwill Impairment Literature

While using goodwill impairments is one approach to identifying a broader set of poor acquisitions, it still has its own difficulties. The accounting standard governing the annual testing of goodwill does leave itself open to managerial discretion and possible manipulation. Bens, Heltzer, and Segal (2007) examine the information content of goodwill impairments following the implementation of SFAS 142. In particular, the authors are interested in testing whether the information content of the announcements of goodwill impairments is different under SFAS 142, a fair value method, than under SFAS 121, an undiscounted cash flow method. Acknowledging the fact that the market will have some expectations of a possible goodwill impairment, Ben, Heltzer, and Segal use a model to estimate the unexpected component of the goodwill impairment. This component, and its interaction with various dummy variables, is the explanatory variable of interest in their regressions explaining the impairment announcement period abnormal returns. Using analyst coverage as a proxy for a firm's level of information asymmetry, one of the main findings is that the information content of goodwill impairments for firms with low analyst coverage is reduced following the implementation of SFAS 142. The authors interpret this as evidence that the fair value nature of SFAS 142 allows for more managerial manipulation of the tests, causing the outcomes of the tests to be less informative for investors (p. 27). But, for the purposes of this study, the annual test for impairment is still considered to be superior to SFAS 121 because it forces assessments to be made rather than waiting for certain events to trigger the test. After all, discretion on the part of managers was surely used under the rules of SFAS 121 as well.

Hayn and Hughes (2006) also provide evidence of the potential susceptibility of SFAS 142 to managerial manipulation. Their study examines whether publicly available disclosures about the post-acquisition performance of targets are capable of predicting future goodwill impairments. The sample includes pre-SFAS 142 period acquisitions that have goodwill disclosures that closely resemble those required by SFAS 142. Using characteristics of the acquisition at announcement as well as post-acquisition performance disclosures, the authors estimate the likelihood of future goodwill impairment charges. Interestingly, acquisition characteristics, such as the premium paid, the use of stock in the purchase consideration, and the amount of goodwill recorded, were relatively more informative than the post-acquisition performance disclosures. Specifically, the authors show that more negative acquisition announcement abnormal returns increase the likelihood of future goodwill impairments. The precision in estimating the coefficient, however, is rather weak as evidenced by the p-value of 0.12. Also, while it is not the focus of their analysis, they find that acquisitions with some impairment have an announcement return of – 3.3% and -1.1% for those without an impairment. Since it is not the focus of their study no further analysis is conducted, but their results may differ from those in this study in that I focus on large impairments, use much smaller event window returns, and control for other characteristics of the offer that could drive results (like presence of equity financing (higher in the Hayn and Hughes (2006)), relative size of bidder and target, and proxies for overvaluation of bidder.

One conclusion of Hayn and Hughes (2006) and Bens, Heltzer and Segal (2007) is that managerial judgment and discretion results in many managers not writing off

goodwill for poor acquisitions or waiting for an excessive period to record legitimate goodwill charges. Hayn and Hughes (2006) note that about one-third of the acquirers in their sample take impairment charges only after several years of persistently poor performance on the part of the target business segment. It could also simply be considered denial of a problem by management for a prolonged period of time. Either way, the evidence from Hayn and Hughes and Bens et al. suggests that ex-post goodwill impairments may be an imperfect method of identifying *all* poor acquisitions over some sample period.

It is important to note, however, that goodwill impairment charges taken multiple years after the acquisition are not necessarily the consequence of managerial manipulation or denial. Industry shocks or macro-level economic shocks can also be the catalyst for goodwill impairment. If such shocks are the cause of impairments taken several years down the road, it may be unreasonable to expect the market to predict these events at the time of the acquisition announcement. Therefore, there is some ambiguity as to whether goodwill impairments taken several years into the future could have been recognized by the market at the time of announcement. Due to this ambiguity, the main sample in this study consists of acquirers with significant impairments within three fiscal years of the acquisition and five years for robustness purposes.⁵ Also, the time periods for flagging large impairments used to screen for poor performance do not extend beyond June 2008 so as to minimize the impact of the financial crisis (a macro shock) on impairment charges taken.

⁵ Additionally, if a firm takes an impairment on an acquisition after 7 or 8 years, the profits earned in the years leading up to the impairment could mean the acquisition was not nearly as bad as the impairment may imply.

A final important point relating to goodwill impairments as precise measures of an acquisition's failure is that an impairment can occur for a firm, but it may not apply to ex-post poor performance of a particular acquisition made by the firm. Consider what I will call Acquisition X. As mentioned, impairment tests are done at the operating segment level. Hence, if a firm has done multiple acquisitions, an impairment may come from a segment that does not include Acquisition X. One would not consider that an impairment for Acquisition X. Alternatively, an impairment may occur in Acquisition X's segment. Now, the firm may have had only one acquisition, but even that does not mean that Acquisition X is the problem. For instance, Acquisition X may be a west coast semiconductor business that is doing fine, but the east coast semiconductor unit may be failing. Since they are in the same segment, however, an impairment may still be taken against goodwill because the value of the segment has dropped below tangible book value. In such cases, unless otherwise stated, it is assumed the impairment relates to Acquisition X. In other cases, there may be multiple acquisitions in X's segment, and it is hard to ascertain which one is the problem (or if it just across the board weakness in the segment). In some cases, a firm will disclose which unit is responsible for the impairment and then the impairment can be traced to that specific acquisition. In other cases, there may be no mention as to what part of the segment is at fault. In these cases, if possible, I pro-rate the impairment across acquisitions within the segment. For instance, if there was a \$200 million impairment and the firm had \$400 million of goodwill in the segment, it is assumed that each acquisition with reported goodwill has a 50% impairment of its goodwill. Since a 5% cutoff is required

for impairment related to an acquisition to total firm assets, the procedures will result in noisy proxies for impaired acquisitions in certain cases.

Between managerial delays in reporting impairments, subjectivity in measuring impairments, impairments caused by unforeseen macro shocks, and lack of clarity in the responsibility of a particular acquired business's responsibility for an impairment of a segment, it is clear that impairment charges for a given acquisition will contain considerable error in variable. The error in variable lessens the odds of finding a relationship between announcement returns and subsequent impairment charges even if markets can predict poor acquisitions at announcement time. Hence, the results may understate the market's ability to foretell poor acquisitions.

A final issue, as argued by Shleifer and Vishny (2003), is that managers of an acquirer have an incentive to seemingly "overpay" in an acquisition if they are paying for the acquisition with overpriced stock as long as the overvaluation of the acquirer is greater than the overvaluation of the target. Since firms often acquire firms in the same (overvalued) sector, it may not be uncommon for an acquirer to use overpriced stock to pay for an overvalued target (e.g., during the tech bubble). If pricing latter becomes rational, the acquisition may require a goodwill impairment to conform to fair valuation levels and the acquirer's stock price falls, even though the acquisition may have destroyed no value. Gu and Lev (2011) present evidence consistent with this story. Firms with higher overvaluation proxies tend to make more acquisitions, have more stock financed mergers, and add more goodwill to their balance sheets. They subsequently experience more impairment of that goodwill and negative abnormal stock returns. However, as previously discussed, Gu and Lev (2011) provide compelling

evidence that the price reversal of overvalued bidders is *more* significant compared to overvalued firms without acquisitions and even worse for firms with impairments. Thus, Gu and Lev (2009) suggest that at least part of any value decline in bidders with impairments may be due to acquisitions that were poor investments as well as the consequence of a correction in overpriced acquirer shares.

The analysis in this study controls for the effect of overvaluation on acquisition activity using the methodology developed by Rhodes-Kropf, Robinson, and Viswanathan (RRV) (2005). By decomposing a firm's log market-to-book ratio into a mispricing component (log market-to-value) and a growth options component (log value-to-book), RRV (2005) allows one to measure a firm's misvaluation given systematic differences in growth options across firms and industries.⁶ By controlling for misvaluation and the bidder's purchase consideration, the analysis will shed light on whether or not the results found here, like those found in Gu and Lev (2011), are partially driven by overvalued bidders using their stock as currency. Assuming markets are perceptive enough to interpret stock acquisitions by firms that appear to be potentially overvalued as attempts to opportunistically issue overvalued stock, then these acquirers should experience more negative returns at announcement, particularly in cases of impairment, where arguably the proxies for overvaluation may have proven correct and were a motivating force in making a high priced acquisition.

Sample Selection

Although SFAS 142 was required to be adopted by all companies with fiscal years beginning after December 15, 2001, firms were allowed to adopt the standard

6 For a more detailed discussion of their methodology, please refer to RRV (2005).

retroactive to April 1, 2001. Consequently, I downloaded financial data from COMPUSTAT for all firms with fiscal years ending between March 31, 2002 and June 30, 2008. This dataset was trimmed down to a sample of firms with significant goodwill impairments by only considering those observations with goodwill impairments (Item 369 – GDWLIA – “Impairments of Goodwill After-tax”) that were at least five percent of previous fiscal year-end total assets (Item 6 – AT – “Assets-Total”). Given that impairments taken within six months of adoption were recorded as a cumulative effect of a change in accounting principle, I also considered the extraordinary items variable in COMPUSTAT (Item 192 – XI – “Extraordinary Items”). Hypothetically, a firm with a fiscal year beginning just before December 15, 2001 may not have recorded its adoption period impairment until fiscal year-end December 1, 2003. Therefore, any charge to extraordinary items that was at least five percent of previous fiscal year-end total assets during this period was considered a possible goodwill impairment and the observation was included in the initial sample of impairment candidates. This process resulted in a sample of 1358 observations. Of these observations, 594 were immediately eliminated from the potential sample because of various data limitations and restrictions. The most common reasons for exclusion from the sample included the lack of a CIK identifier from COMPUSTAT (125 observations) or the fact that the acquirer’s fiscal year-end total assets amounted to less than \$50 million (287 observations).⁷

For each of the remaining 764 observations, it was necessary to search the acquirer’s 10-K in the SEC’s database using its online tool, EDGAR

⁷ For a more detailed breakdown of the reasons behind the elimination of these 594 observations, please refer to Appendix I.

(www.sec.gov\edgar). Each company has a section in the body of its 10-K that carefully describes SFAS 142 and the results of the test, as well as a section in the footnotes that often provides greater detail. As mentioned previously, the goodwill resulting from an acquisition is assigned to a reporting unit and it is the company's reporting units that are tested for impairment. This method of testing goodwill can make it very difficult, and in many cases impossible, to precisely identify the specific acquisition responsible for the impaired goodwill. While some companies do identify the specific acquisition, many simply specify the reporting unit. For those instances in which the company specifies a reporting unit, searching past 10-Ks sometimes reveals that the reporting unit in question was formed following a past acquisition. In some other cases certain statements describing the impairment make it fairly obvious that a specific acquisition was responsible for the impaired goodwill in question. In still other cases, I pro-rate the impairment by goodwill attributable to each acquisition in a segment (if such data is available). After carefully searching each firm's 10-Ks, I was able to confidently match 327 of the goodwill impairments to specific acquisitions where the estimated impairment exceeded 5% of total firm assets. Some goodwill impairments were attributed to multiple acquisitions. As long as each acquisition's charge was at least 5% of total firm assets, then multiple acquisitions were included in the sample for a single impairment charge. In other cases, impairments for the same company occurring in different reporting periods were the cause of the same acquisition. These acquisitions only occur once in the analysis. The final number of unique acquisitions included in the sample was 328. Of these acquisitions, seven reverse acquisitions were immediately eliminated from the sample.⁸

⁸ Once again, complete details on how the sample of 328 acquisitions resulted in the final sample can be

To measure market-adjusted returns at announcement, it was required that the acquirer have stock return data available from CRSP. Next, I required that each of the sample acquisitions have a match firm (details provided below) with the same two-digit SIC code and an acquisition in the month of, the two months before, or the two months after the corresponding sample acquisition. This requirement trimmed the sample down to 284 unique acquisitions.

Finally, I decided to limit the final sample to impairments that occurred within the three fiscal years following the acquisition announcement. As previously discussed, management does have some degree of discretion over the timing an impairment, and Hayn and Hughes (2006) argue this often means waiting out several years of persistently poor performance before a write-off is taken. While this may argue for a longer impairment window, there are two problems. First, impairments more distant from the acquisition may register impairments due to economic shocks that occur many years after the acquisition. These shocks, perhaps of a macro variety like the financial crisis, may be virtually impossible to forecast at the time of the of the acquisition announcement. Second, if an impairment takes place 7 or 8 years after an acquisition, the profits made in the first 6 or 7 years may more than offset the reduced value placed on the acquired business at the time of impairment. Therefore, using goodwill impairments distant from the original acquisition charges may not be very telling about the market's ability to foretell acquisition success. By focusing on the impairments that take place within the first three years of the acquisition, I am able to isolate a sample of 231 unique acquisitions that are identified as poor investments ex-post on a fairly quick basis. As a robustness check, however, the main model specifications are also

found in Appendix I.

estimated using an expanded sample of impairment acquisitions in which I use impairments that occurred within five years of the initial acquisition. This expands the sample of impaired acquisitions to 268 firms.

As previously mentioned, the following analysis will also control for differences in bidder misvaluation using the methodology developed by RRV (2005). For these particular specifications, this methodology resulted in the loss of additional observations due to data constraints or firm characteristics. The most common reason an observation is lost is that the bidder had negative book common equity at the fiscal year-end prior to the acquisition. As a result of the methodology in RRV, firms with negative book common equity values have missing values for their overvaluation measure. Since a set of matched acquisitions is employed for each observation (see below), there were 484 total acquisitions for which the bidder and its match had the necessary data to produce a mis-valuation measure for the five year impairment window sample. There were only 206 acquisitions with impairments within three fiscal years of deal announcement for which the bidder and its match had the necessary data (or 412 total acquisitions) for the primary sample of impairments within 3 years of acquisition.

Match Sample Selection

The match sample was obtained by first downloading all acquisitions by domestic acquirers between January 1, 1998 and December 31, 2008 from the Thomson Financial Securities Data's SDC Platinum Mergers & Acquisitions Database. The main characteristic desired from the match sample is that the firms in the sample do not themselves have significant goodwill impairments. Therefore, I eliminated as potential matches all of the acquirers comprising the original impairment sample of 1358 observations. From the resulting sample of acquisitions, I then extracted all acquisitions

in which the acquirer had the same two-digit SIC code as an acquirer in the impairment sample. I also required that the match sample acquirers have acquisition announcement dates either in the same month or in the two months before or after the corresponding impairment acquisition announcement. These matching criteria were chosen to control for inherent differences across industries and to control for the time-variation in market conditions.

In nineteen of the cases, there were no matches that met the above criteria and these observations were excluded from the impairment sample. Of the remaining impairment acquisitions, all observations had more than one potential match. I chose the match acquisition that was closest to the sample acquisition in terms of the 'Relative Size' of the target to the acquirer (measured as the target's price according to the SDC database divided by the acquirer's total assets at the end of the fiscal year prior to the acquisition). This criterion was chosen because I wanted the match acquisitions to be as close in relative importance to the sample acquisitions as possible. This helps to ensure that the market reactions to the two acquisition announcements do not differ mainly due to the fact that one acquisition is relatively less significant than the other. The impairment sample and the resulting match sample result in a sample of 536 acquisitions. However, the 231 acquisitions with goodwill impairments within three fiscal years following the announcement, along with the match firms for these bidders, account for the 462 observations of impairment firms and matched firms in the descriptive statistics below and the main specifications of the analysis.

Descriptive Statistics

Table 3-1 provides a breakdown of the impairment sample by three-digit SIC code. The largest concentration of firms is in the technology sector. Fifty-five of the acquirers

are classified as “Computer & Data Processing Services” and 29 are classified as “Electronic Components & Accessories”. Another 36 are classified as either “Communications Equipment” or “Computer & Office Equipment”. No other industry as defined by three-digit SIC codes accounts for more than 10 of the remaining 111 observations. Table 3-2 provides a breakdown of the impairment sample by the year of the acquisition announcement. Since the overall sample of impairments identified (1358) ends in the middle of 2008, there are only a handful of poor acquisitions identified with announcement dates in 2006 and 2007. The majority of the impairment acquisitions (222/231) took place between 1999 and 2005, with the most (65) occurring in 2000. This feature of the sample highlights the need to match the acquisitions on time to control for the time-variation in the economy over the sample period.

Table 3-2 provides a breakdown of the sample by the year of the impairment charge. Although a majority of the charges in the sample take place between 2002 and 2003,⁹ I am not concerned about the added incentive managers had to take impairments during the six-month adoption period in which charges could be accounted for as a charge to extraordinary items. Only 35 of the 155 charges in these two years were accounted for as exclusively charges to extraordinary items. Another 20 observations had two separate impairment charges in the same year for the same acquisition, with one charge being accounted for as a charge to extraordinary items and one as a charge against operating income. All other impairment charges identified in the sample were accounted for as a charge against operating income exclusively.

⁹ Some impairments come in 2001, but they are reported annual reports for firms with years ending in March 2002 and thereafter.

Table 3-3 provides the statistics for the impairment acquisitions and the match acquisitions separately. Table 3-4 provides information regarding the dummy variables used in the analysis. As mentioned in the introduction, the impairment sample includes acquirers of all sizes, including many that are smaller relative to the firms that comprise the samples of earlier studies. The acquirers from the impairment sample have median lagged assets of \$156.90 million and a median market capitalization (“bidder value”) of \$429.78 million, compared to \$346.00 million and \$963.99 million for the match acquisitions, respectively. However, the relative size of the targets to the bidders suggests that the vast majority of the acquisitions are significant transactions with likely important implications on the future success of the combined companies. Unfortunately for the acquiring shareholders in the impairment sample, the large goodwill impairments relative to lagged assets ($\text{Impairment}/\text{Assets}_{(\text{Imp Year} - 1)}$) reinforces the fact that these acquisitions turn out to be poor investments *ex post*.¹⁰ On average, the impairment charge accounts for almost twenty percent of the company’s assets (measured at the end of the fiscal year prior to the charge). Finally, the RRV (2005) misvaluation measures suggest that, if anything, the bidders in the *match sample* are relatively more overvalued.

Comparing the descriptive statistics for the two samples, it seems quite apparent that the acquirers in the match sample are relatively larger than those in the impairment sample. Table 3-5 provides the p-values of the mean and median-comparison tests (paired data) for key variables used in the analysis. As can be seen in this table, the

¹⁰ Although those firms that made up the overall sample of 1358 impairment observations were eliminated as potential matches, some of the match acquisitions were still responsible for goodwill impairments that were less than five percent of lagged assets. The descriptive statistics for this variable in the match sample are available in Table 3-3.

median comparison test suggests that the acquirers from the match sample are in fact statistically significantly larger, based on both lagged assets and bidder market value of equity, than those in the impairment sample. The targets in the two samples, however, are not significantly different with their median paired-difference being especially small. Although it appeared as though the match sample bidders were more overvalued than their counterparts, there was no statistical difference found based on the paired-difference tests.

Finally, the potentially most relevant statistic is the size of the targets relative to the acquiring companies. As described in Table 3-3, the Relative Size of an acquisition is measured as the ratio of the target's value (total purchase consideration) to the acquirer's total assets at the end of the fiscal year prior to the acquisition. On the other hand, the 'Relative Value' of an acquisition is the ratio of the target's value to the bidder's market value, which is the market capitalization of the acquirer six trading days prior to the acquisition announcement. So, as to eliminate outliers, in both cases, I take the natural log of one plus the relative size or value ratio. According to both the mean and median-comparison tests in Table 3-5, the relative values of the impairment acquisitions are significantly larger than those for the match sample. This characteristic of the overall sample is not a concern, however, because the acquisitions in both samples are still significant investments relative to the bidder's value. If the acquisitions from the match sample were not necessarily meaningful investments, then there would be some concern as to whether the match sample was an adequate benchmark to use in the analysis. Nevertheless, this difference between the two samples is controlled for in the main regressions in the next section.

Results for Acquisition Announcement Returns and Impairments

The market reaction to the acquisition announcements was estimated by taking the average of the accumulated market adjusted returns for each observation over the event window. The CRSP equally weighted index was used as the benchmark for this estimation. Market adjusted returns were used as opposed to market model returns because of the well-known fact that many bidders experience a significant run-up in equity value leading up to an acquisition. This is especially a concern for this particular sample as many of the bidders are indeed overvalued companies using stock as currency in the transaction. Therefore, using market model cumulative returns may bias the results due to positive and significant alphas over the estimation period.

Table 3-6 provides the average market adjusted returns (MAR) for both the sample of acquisitions with impairments within three years and its match sample. As expected, the mean cumulative return for the impairment sample is negative; however, the mean announcement return for the match sample is actually positive. According to the mean and median-comparison tests in Table 3-7, the main hypothesis is confirmed. The market adjusted returns for the firms with impairment acquisitions is -2.60 percent over a -1 to +1 window and the market adjusted returns are a positive 2.43 percent for the control group. The results are virtually identical for various other event windows and for all presented windows the difference in means for the impairment and control group samples are statistically significant at the 1% level. This finding implies that the market reaction to the acquisition announcements in the sample is related to the acquisition's eventual success. This provides preliminary evidence of the fact that, even with a sample of potentially difficult to assess acquisitions, the market demonstrates a reasonable ability to identify poor investments at the announcement of the acquisition.

Multivariate Results – Main Model Specifications

The mean and median-comparison tests from Table 3-7 do not control for other variables that may help explain the market adjusted returns at the acquisition announcements. Table 3-8 provides cross-sectional regressions that account for these other potential determinants. The dependent variable in these regressions is the market adjusted returns accumulated from the day before the acquisition announcement to the day after¹¹. The main independent variable of interest in Table 3-8 is a dummy variable, ‘Impairment Dummy’, which is equal to one if the acquisition is from the impairment sample.

Several other control variables are included in the specifications as well. Consistent with the multivariate regressions in Kaplan and Weisbach (1992), the regressions in Table 3-8 include a dummy variable, ‘Some Stock’, that is equal to one if part of the purchase consideration includes the bidder’s stock. It has been well documented that acquisitions financed with stock experience significantly lower returns at announcement than those financed with cash (Kaplan and Weisbach (1992), Brown and Ryngaert (1991), and Fuller, Netter, and Stegemoller (2002), among others). One rationale for this finding is that the managers of the bidder will want to use stock in the purchase consideration if they believe the company is overvalued by the market (Myers and Majluf (1984)).

Furthermore, Fuller, Netter, and Stegemoller (2002) find that the bidder gains at announcement are significant and positive when acquiring a private firm or a subsidiary

¹¹ This is in contrast to the studies done by Kaplan and Weisbach (1992) and Healy et al. (1992) which focus on an eleven day window starting five days prior to the announcements. The results in Table 3-8 are qualitatively the same regardless of the event window used.

of a public firm, while the average acquisition of a public target results in negative announcement returns. Their rationale for these findings is that bidders receive a liquidity discount when purchasing non-public firms or entities. This discount is due to the fact that the assets of private firms or subsidiaries are purchased in a much less liquid market than the assets of publicly traded firms. It is also possible that bidders fare better with private firms because free-rider/holdout problems are eliminated. Fuller et al. (2002) also show that bidders acquiring private firms or subsidiaries experience even greater returns when stock is used in the purchase consideration, whereas acquisitions of public firms using stock do worse. One reason for this is that the use of stock provides the target owners the ability to delay the tax liability of the transaction. Thus, the target owners may be willing to accept a lower price given this flexibility. Another potential rationale is that the typical nature of private firms being more closely held allows the target shareholders to be more efficient in monitoring the acquiring firm. Accordingly, Model 1 includes a dummy variable, 'Private', that equals one if the target in the acquisition is a private firm or a subsidiary of a public firm. The regression also includes a dummy variable, 'PrivStock', which equals one if the target is private and the purchase consideration includes stock.

Model 1 also controls for simultaneous acquirer press releases involving other firm news. This data was collected by searching Factiva for news related to the acquirers over the relevant announcement period window. A dummy variable, 'PosNews', equals one if the acquirer had positive news unrelated to the acquisition during the event window. Similarly, a dummy variable, 'NegNews', equals one if the acquirer had

negative news unrelated to the acquisition during the event window.¹² Finally, as discussed in the previous section, the mean and the median of the paired differences of the relative value of the target is statistically significantly different than zero. This difference between the two samples is controlled for by including Relative Value and Relative Size in the main specifications in Table 3-8.

Controlling for the abovementioned independent variables, Model 1 suggests that the market adjusted returns for the acquisitions of targets classified as unsuccessful investments based on impairments are, on average, 5.40 percentage points lower than those for the match acquisitions. The effect of being classified as an impairment acquisition is economically meaningful and is statistically significant at the 1% level. Hence, the results are consistent with the results of the simple mean and median-comparison tests in Table 3-7.

It is important to note that some of the other independent variables included in the model have important effects on the market adjusted returns as well. Due to the inclusion of Private and PrivStock, SomeStock is interpreted as the effect of acquiring a public firm using stock in the purchase consideration. Consistent with previous findings (Kaplan and Weisbach (1992), Brown and Ryngaert (1991), etc.), the returns to these acquisitions are significantly lower. Consistent with the results in Fuller et al. (2002), it is also found that bidders acquiring private firms with stock ('PrivStock' in Table 3-8) experience significantly higher returns at announcement relative to the other transaction types.

12 Concurrent news announcements that justified being designated as positive included: announcing unexpected dividends, beating EPS estimates, increasing revenue/EPS guidance, divesting units to streamline operations, and positive surprises in quarterly revenues. Negative news announcements included: missing analyst EPS/revenue estimates, issuing equity through a private placement to fund the acquisition, decreasing EPS/revenue guidance, and negative revenue surprises in quarterly results.

The simultaneous news announcement variables also have the expected signs. Both effects are economically significant and statistically significant at the 1% level. Finally, the natural log of (1+Relative Value), was used to control for size differences in the sample. Model 1 indicates that the larger the target relative to the bidder's equity market value the greater is the positive reaction from the market; however, this effect is not statistically significant.. To investigate this effect further, I interact this variable with the Impairment Dummy in Model 2. One might expect larger deals that experience impairment might be worse. The results in Model 2, however, show about the same relative value effect and a small insignificant coefficient on the interaction variable.

Rather than controlling for Relative Value, Models 3 and 4 controls for Relative Size defined as the natural log of ($1 + \text{target value}/\text{bidder assets before acquisition}$). The results in Model 3 are more consistent with what one might expect. The effect of acquiring a relatively larger target (as measured by Relative Value) is statistically different between the two samples, with significantly lower announcement period returns for the impairment sample compared to the match sample. However, the effect of larger acquisitions is positive for the control group, but the net effect of relative size in the impairment sample is not statistically significantly different than zero in Model 4.¹³ Controlling for this difference between the two samples does not eliminate the impact on the impairment dummy variable. It remains significant. Holding other determinants equal, the announcement period returns for the impairment sample are, on average, 6.11 percentage points lower at the impairment sample mean for the natural log of

13 The coefficient for the effect of Relative Size on announcement period returns for the impairment sample is $(-0.0494+0.0484) = -0.0010$ and the p-value is 0.933.

Relative Size¹⁴. Therefore, despite the differences in the relative size of the targets to the bidders between the two samples seen in Table 3-5, the effect of being an acquisition in the impairment sample is economically and statistically significant.

Multivariate Results – Alternative Model Specifications

By comparing the results in Models 2 and 4 of Table 3-8, we get our first clue that bidder overvaluation could have an important effect on the results. Those bidders that are most overvalued are going to have a large market value relative to previous fiscal year-end total assets. Thus, if those are the bidders that are responsible for large goodwill impairments, then one may expect this to be the cause of the odd difference between the results in the two models when controlling for the relative size of the acquisitions.

Model 3 in Table 3-8 provides a simple OLS model in which the variable of interest is the goodwill impairment resulting from the acquisition scaled by the acquirer's total assets at the end of the fiscal year prior to the charge. Recall that this variable was also determined for the acquisitions in the match sample. Although all of the bidders making up the original sample of 1358 impairment observations were eliminated as potential matches, some of the acquisitions in the match sample were still responsible for less significant impairments. Here, the idea is that the bigger the relative impairment, the larger the negative market adjusted return should be. The results in Model 5 suggest that a one standard deviation (13.46% for the overall sample) change in the impairment charge relative to lagged assets results in an announcement period return that is 2.38 percentage points lower. At the mean in the impairment sample, announcement period

14 (-0.0494*0.6206) + (-0.0347) = -0.0611

returns are 3.20 percentage points lower. Overall, the results from Table 3-8 imply that the market adjusted returns to acquirer shareholders are significantly related to the identification of acquisition success based on future goodwill impairments.

To further test the robustness of the results in Tables 3-7 and 3-8, Tables 3-9 and 3-10 accounts for additional determinants that may be important when explaining the difference in announcement period returns between the two samples. The models in Table 3-9 control for characteristics of the bidders' purchase price allocation of the targets. It may be that markets simply dislike deals with more goodwill and intangible assets, regardless of ex-post impairment. Logically, impaired deals would have more of those assets. Models 1 and 2 control for the amount of intangible assets recorded in the acquisition relative to the bidder's lagged assets. Thus, the variable of interest in Models 1 and 2 is the amount of intangible assets recorded in the acquisition interacted with the impairment dummy variable. The only difference between the two models is that Model 1 includes only those acquisitions for which I could identify the amount of intangible assets recorded for both the impairment acquisition and its match (designated as "Paired" at the bottom of the table). Model 2 includes all acquisitions for which I was able to identify the amount of intangible asset recorded for any firm in the sample (designated as "All" in the table). Intangible assets include items like trademarks and customer relationships in addition to goodwill. Similarly, the variable of interest in Models 3 and 4 is the just the amount of goodwill recorded in the acquisition interacted with the impairment dummy variable. Notice that the sample size for these specifications is less than that for the entire sample of 462 observations. There were instances in which I could not identify the purchase price allocation of the target in the

bidder's 10-K. The samples in Models 1 and 2 are greater than those in Models 3 and 4 because some bidders aggregated all intangible assets into one line item in the allocation breakdown; therefore, I was able to identify the amount of total intangible assets recorded but not the specific amount allocated to goodwill.

Interestingly, in all of the models in Table 3-9 the greater the amount of intangible assets recorded in the acquisition relative to the bidder's lagged assets the higher are the announcement period returns. However, this effect is offset by the effect of being an acquisition in the impairment sample. In fact, the impact on event period returns of acquiring more intangible assets in a transaction in the impairment sample is not statistically significant in any of the models.¹⁵ Once again, the inclusion of additional determinants does not diminish the importance of the impairment dummy variable in the regressions. For instance, holding all other determinants in Model 4 equal, the average marginal effect of impairment at the mean relative transaction size for impaired firms is a 5.77 percentage point lower announcement period return.¹⁶ Thus, the results in Table 3-9 provide further evidence that the announcement period returns are significantly less for the sample of impairment acquisitions and not just a function of acquisitions that contain more goodwill and intangible assets.

Finally, the specifications in Table 3-10 control for the potential market misvaluation of the bidder's equity. As discussed earlier, the mispricing measures used in the analysis are derived from the methodology developed in RRV (2005). As indicated at the bottom of Table 3-10, the first two models control for total firm

15 For instance, in Model 3 the effect of recording more goodwill relative to the acquirer's size in the impairment sample is 0.0261 ($0.0658 + -0.0397$) and the p-value is 0.312.

16 The overall sample mean of the natural log of goodwill relative to bidder size is 0.3711. Therefore, the average marginal effect of impairment in Model 4 of Table 3-9 is: $-0.0352 + (-0.0605 * 0.3711) = -0.0577$.

misvaluation (firm-specific plus industry-specific misvaluation) whereas Models 3 and 4 control for only the bidder's firm-specific misvaluation. Given Gu and Lev's (2011) finding that overvalued firms using stock in acquisitions is a primary cause of goodwill impairments, Models 2 and 4 include the interaction of the impairment dummy variable with the misvaluation measure and a dummy variable indicating whether stock was the primary currency used in the purchase price. This is to ascertain if the use of overvalued stock as an acquisition currency is driving the result of market recognition of what I call "poor acquisitions" as defined by ex-post impairments. It may also reflect market markdowns on overvalued companies issuing stock that later result in impairment.

When simply controlling for the cross-sectional variation in the misvaluation measures across the entire sample (Models 1 and 3), the effect of being more overvalued is weakly statistically significant but the economic significance is minimal. In Model 3, the effect of a one standard deviation change in the firm-specific overvaluation measure is a 1.10 percentage point reduction in the announcement period returns.¹⁷ Additionally, the inclusion of the misvaluation measures in Models 1 and 3 do not alter the previous findings in the analysis as the announcement period returns are, on average, about five percentage points lower for the impairment acquisitions.

More interesting are the results in Models 2 and 4. Given Gu and Lev's findings, the lower announcement period returns in the impairment sample could be due to the fact that the relatively more overvalued bidders in the impairment sample systematically use stock in the purchase price consideration relative to the match sample. To

¹⁷ The standard deviation of the firm-specific misvaluation measure for the overall sample of 412 observations is 0.8274; therefore, the effect can be measured as: $0.8274 * -0.0133 = -.0110$.

determine if this is the primary driver in the previous findings, I include a series of interaction terms in Models 2 and 4. Ultimately, the variables of interest are the impairment dummy variable and the triple interaction between the impairment dummy, the overvaluation measure, and a dummy variable equal to one if the majority of the purchase price consideration was stock. If the difference in the market reaction between the two samples is primarily driven by relatively more overvalued bidders using stock in the impairment sample, then one would expect the triple interaction term to be negative and potentially eliminate the effect from the impairment dummy variable. The coefficient on the triple interaction term captures the variation in market adjusted returns specific to the impairment sample (relative to the match sample) given the bidder's level of misvaluation and the fact that the bidder used a majority of stock financing in the purchase consideration. The coefficient on the impairment dummy variable is the effect of being in the impairment sample above and beyond the effect of misvaluation or purchase consideration.

Once again, Model 2 in Table 3-10 controls for a firm's overall overvaluation as measured by RRV (2005) while Model 4 controls for only the firm-specific component of the overvaluation measure. In Model 2, one can see that the simple interaction between the stock dummy and OVERVAL is positive, but statistically insignificant. This suggests that non-impaired firms are not further penalized by capital markets for making acquisitions using stock that has an apparently high valuation (higher level of OVERVAL). The coefficient on the triple interaction term (dummy if using majority stock x dummy if impaired x OVERVAL) is negative, consistent with the market assuming that those with high valuations (high level of OVERVAL) that use stock may

be “overpaying” in the impairment subsample, but that overpayment might be done with overvalued stock. Hence, if markets are that deductive, some of the negative impairment effect may be due to signaling of overvaluation. The coefficient on the triple interaction, however, is not significant at the 10% level. Also, the interaction of the majority stock dummy and impairment is positive, but statistically insignificant, suggesting the use of stock by the subsequent impairment group is not divined as an independent signal of overvaluation (relative to the control group). Most importantly, the coefficient on the impairment dummy is still -4.39 percent and significant at the one percent level. So, an impairment effect independent of financing and overvaluation is still present.

The mean of OVERVAL for firms in the impairment subsample using a majority of stock in the acquisition is 0.5237. Hence, I can say that evaluated at this mean, the impact of a stock acquisition by an impaired firm with a level of OVERVAL equal to 0.5237 compared to a control group firm with the same level of OVERVAL is -5.78%, derived as: -4.39% (impairment effect) + 0.29% x 1 (use of stock effect by impaired) + 1.32% x 0.5237 (impaired interaction with OVERVAL) – 4.53% x .5237 x 1 (impaired interaction with stock used dummy and OVERVAL). The same calculation for a stock deal evaluated at OVERVAL equal to 0 for the impaired versus non-impaired subgroups would yield -4.10%. So, the results are not primarily driven by overvalued firms paying exorbitant prices. The effects in Model 4, which uses the firm-specific overvaluation measure, are qualitatively the same and support the findings in Model 2.

Results for Longer Impairment Windows of 5 Years

Table 3-11 presents the specifications using longer windows for meeting the impairment sample criteria, namely 5 years after the acquisition. As previously

discussed, the sample of impairment acquisitions used in the main regressions only includes those acquirers with a significant goodwill impairment charge within the first three fiscal years following the acquisition announcement. Part of the motivation for this was the potential ambiguity involved with the market predicting failed mergers based on impairment charges taken too long after the acquisition announcement. On the other hand, if managers are slow to admit error, perhaps some poor acquisitions are excluded that the market priced out (partially) at announcement. To determine the effect of this potential ambiguity on the main results presented in this study, the main sample of 231 impairment acquisitions was expanded to include impairment acquisitions in which the goodwill impairment was taken within the first five fiscal years following the acquisition announcement. This change results in an impairment sample of 268 acquisitions and, consequently, an overall sample of 536 acquisitions.

Model 1 in Table 3-11 is simply the main model specification from Table 3-8 expanded to include the additional acquisitions. It was expected that the difficulty in anticipating later impairment charges at the time of the acquisition could reduce the magnitude and precision of the estimated coefficient on the impairment dummy variable. While the magnitude of the effect is smaller in Table 3-11, acquisitions in the impairment sample have announcement period market adjusted returns that are, on average, 4.64 percentage points lower relative to the match sample. In general, the magnitude of the coefficients on the variables of interest in the other specifications is smaller relative to the specifications in the main analysis; but the effects remain economically and statistically significant. In Model 5 of Table 3-11, the effect of being in the impairment sample, above and beyond the effect of misvaluation and purchase consideration,

remains economically significant with market adjusted returns being almost 3 percentage points lower relative to the match sample. Thus, even when expanding the sample window to include acquisitions with impairments as many as five years after the acquisition announcement, the market again shows an ability, albeit slightly weaker ability, to identify the poor acquisitions in the sample.

Chapter 3 Concluding Remarks

By employing a new criterion for identifying poor acquisitions, the analysis in this study provides additional evidence regarding the market's ability to identify poor acquisitions at the announcement of these events. Under a relatively new fair value accounting rule (SFAS 142) passed in late 2001, a firm must annually test its goodwill for impairment. Since goodwill represents the residual of the difference between what is paid for an acquisition and the book value of identifiable assets, significant impairment charges related to prior acquisitions represent cases where the premium paid above book value is no longer justified. If impairment charges are accurate and consistently applied, this is an excellent indicator of acquisition failure in that the price paid is revealed to have been too high. Thus, the identification of the specific acquisitions responsible for these substantial goodwill impairments provides a sample of poor acquisitions. After matching these poor acquisitions with acquisitions that have similar industry, size, and time characteristics (but without significant goodwill impairments), I then determine whether the market returns at the announcement of the acquisition identifies the poor acquisitions in the overall sample.

The cross-sectional results suggest that acquirer market adjusted returns at the acquisition announcement are significantly lower for the sample of acquisitions identified as poor investments. The acquirer returns to the impairment acquisitions are, on

average, 5.40 percentage points lower than those for the match acquisitions. This finding is robust to the inclusion of control variables that take into account the overvaluation of the acquiring firms, the relative size of the acquisition, the private versus public nature of targets, and the use of stock in the purchase price consideration. Despite the conclusion in Gu and Lev (2011) that goodwill impairments are primarily driven by overvalued firms using stock as currency to make relatively poor acquisitions, I find that the control group bidders are actually more “overvalued” using the Rhodes-Kropf, Robinson, and Viswanathan (2005) proxy for overvaluation. Controlling for overvaluation still leaves a strong independent market anticipation effect of poor acquisitions as signaled by large impairments. Thus, this suggests that there is something more to the story than just overvalued firms using stock to make poor acquisitions driving announcement returns. The market’s ability to anticipate these poor acquisitions is encouraging given the fact that the acquisitions in the sample involve much smaller firms, more private firms and firms with considerable intangible assets relative to previous studies examining the market’s ability to predict poor acquisitions.

Another implication of this study could also be that impairment charges seem to confirm market expectations to some degree. That is the good news. The bad news is potentially twofold. First, for my acquisition sample, management did not respond to derail many objectively poor acquisitions. Second, arguably the markets would have suggested that impairment charges be taken far sooner based on “fair” value than ex-post was the case. Of course, management admitting failure shortly after an acquisition is completed is perhaps an unrealistic expectation.

Table 3-1. Sample by industry and acquisition year. This table reports the acquirers from the impairment sample by three-digit SIC Code. Although the sample matching was done based on two-digit SIC codes, the listing of industries by three-digit SIC codes provides more detail as to the specific industries responsible for the goodwill impairments.

| Industry: 3-Digit SIC Code | Number | | Number |
|--------------------------------------|--------|--|--------|
| COMPUTER & DATA PROCESSING | 55 | GAS PRODUCTION & DISTRIBUTION | 1 |
| ELECTRONIC COMPONENTS | 29 | GENERAL INDUSTRY MACHINERY | 1 |
| COMMUNICATIONS EQUIPMENT | 20 | HOUSEHOLD AUDIO & VIDEO EQUIPMENT | 1 |
| COMPUTER & OFFICE EQUIPMENT | 16 | INDUSTRIAL INORGANIC CHEMICALS | 1 |
| DRUGS | 10 | MANIFOLD BUSINESS FORMS | 1 |
| MISCELLANEOUS BUSINESS SERVICES | 8 | MEDICAL SERVICE & HEALTH INSURANCE | 1 |
| RESEARCH & TESTING SERVICES | 7 | MEN'S & BOYS' FURNISHINGS | 1 |
| TELEPHONE COMMUNICATION | 7 | MISCELLANEOUS AMUSEMENT, RECREATION | 1 |
| MEASURING & CONTROLLING DEVICES | 5 | MISCELLANEOUS CHEMICAL PRODUCTS | 1 |
| EATING & DRINKING PLACES | 4 | MISCELLANEOUS ELECTRICAL EQUIPMENT | 1 |
| SECURITY BROKERS, DEALERS | 4 | MISCELLANEOUS HEALTH & ALLIED SERVICES | 1 |
| ADVERTISING | 3 | MISCELLANEOUS INVESTING | 1 |
| MANAGEMENT & PUBLIC RELATIONS | 3 | MISCELLANEOUS MANUFACTURING | 1 |
| MEDICAL INSTRUMENTS & SUPPLIES | 3 | MISCELLANEOUS NONDURABLE GOODS | 1 |
| MOTOR VEHICLES & EQUIPMENT | 3 | MISCELLANEOUS PERSONAL SERVICES | 1 |
| REFRIGERATION & SERVICE MACHINERY | 3 | MISCELLANEOUS SHOPPING GOODS STORES | 1 |
| SPECIAL INDUSTRY MACHINERY | 3 | NEWSPAPERS | 1 |
| COMMERCIAL PRINTING | 2 | NONRESIDENTIAL BUILDING CONSTRUCTION | 1 |
| DRUG STORES & PROPRIETARY STORES | 2 | NONSTORE RETAILERS | 1 |
| ELECTRIC LIGHTING & WIRING EQUIPMENT | 2 | OFFICES & CLINICS OF MEDICAL DOCTORS | 1 |
| MISCELLANEOUS DURABLE GOODS | 2 | PAPERBOARD MILLS | 1 |
| OIL AND GAS FIELD SERVICES | 2 | PLASTICS MATERIALS & SYNTHETIC | 1 |
| PERSONNEL SUPPLY SERVICES | 2 | PLUMBING & HEATING, EXCLUDING ELECTRIC | 1 |
| AIRCRAFT & PARTS | 1 | RADIO & TELEVISION BROADCASTING | 1 |
| COMMUNICATIONS SERVICES | 1 | RADIO, TELEVISION, & COMPUTER STORES | 1 |
| EDUCATIONAL SERVICES | 1 | REAL ESTATE AGENTS & MANAGERS | 1 |
| ELECTRIC DISTRIBUTION EQUIPMENT | 1 | SANITARY SERVICES | 1 |
| ELECTRICAL INDUSTRIAL APPARATUS | 1 | SCREW MACHINE PRODUCTS, BOLTS, ETC. | 1 |
| ENGINEERING, ARCHITECTURAL SERVICES | 1 | VOCATIONAL SCHOOLS | 1 |
| FABRICATED STRUCTURAL METAL | 1 | | |

Table 3-2. Impairment acquisitions and charges by year. This table reports the impairment acquisitions by acquisition year, as well as the impairment charges by year for the sample of impairments taking place within three fiscal years following the acquisition.

| IMPAIRMENT ACQUISITIONS BY YEAR | | IMPAIRMENT CHARGES BY YEAR | |
|------------------------------------|--------|-------------------------------|-------------------|
| Year | Number | Year | Number |
| 1998 | 4 | 1998 | - |
| 1999 | 23 | 1999 | - |
| 2000 | 65 | 2000 | - |
| 2001 | 47 | 2001 | - |
| 2002 | 30 | 2002 | 117 ¹⁸ |
| 2003 | 19 | 2003 | 38 |
| 2004 | 25 | 2004 | 16 |
| 2005 | 13 | 2005 | 27 |
| 2006 | 3 | 2006 | 16 |
| 2007 | 2 | 2007 | 12 |
| 2008 | 0 | 2008 | 5 |
| Total | 231 | | 231 |

¹⁸ Although there is a clustering of impairments in the adoption year of SFAS 142, I am not concerned about potential biases created by the added incentive for managers to take impairments during the transition period. Only 35 of the 158 charges in 2002 and 2003 were accounted for as exclusively charges against extraordinary items. Another 20 observations had separate impairment charges in the same year for the same acquisition accounted for as a charge against extraordinary items and as a charge against operating income. All other impairment charges identified in the sample were accounted for as a charge against operating income exclusively.

Table 3-3. Impairment sample and match sample descriptive statistics. This table includes the descriptive statistics for the 231 acquisitions in the impairment sample and the 231 acquisitions used as matches. Lagged Assets (measured in millions) is equal to COMPUSTAT's total assets variable for the acquirer at the end of the fiscal year prior to the acquisition announcement date. Bidder Value (measured in millions) is equal to the number of shares outstanding times the closing market price, both measured six days before the acquisition announcement, for the acquiring firm. Target Value (measured in millions) is the total purchase consideration according to the acquirer's 10-K. $(\text{Impairment}) / (\text{Assets}_{\text{Imp Year - 1}})$ is equal to the goodwill impairment resulting from the purchase of the target divided by the acquirer's COMPUSTAT total assets variable recorded at the end of the fiscal year prior to the impairment charge. %Stock is simply equal to the fraction of stock used in the purchase consideration. RelVal is equal to the target value divided by the bidder value. RelSize is equal to the target value divided by the bidder's lagged assets. Overval is the sum of the bidder's firm- and industry-specific mispricing measures as defined by Rhodes-Kropf, Robinson, and Viswanathan (RRV) (2005). Firm-Spec OV is the firm-specific mispricing measure as defined by RRV (2005). $\ln(1+\text{Intang}/\text{BidSize})$ is the amount of intangible assets (including goodwill) recorded in the acquisition scaled by lagged assets. $\ln(1+\text{GW}/\text{BidSize})$ is the amount of goodwill recorded in an acquisition scaled by lagged assets. (N = 231)

| Variable | IMPAIRMENT SAMPLE | | | MATCH SAMPLE | | |
|-------------------------|-------------------|--------------------|--------|--------------|--------------------|--------|
| | Mean | Standard Deviation | Median | Mean | Standard Deviation | Median |
| Lagged Assets | 1182 | 4367 | 157 | 1496 | 4383 | 346 |
| Bidder Value | 3994 | 17708 | 430 | 5276 | 18414 | 964 |
| Target Value | 2171 | 23157 | 87 | 522 | 1895 | 112 |
| %Stock | 0.619 | 0.416 | 0.800 | 0.434 | 0.452 | 0.300 |
| $\ln(1+\text{RelVal})$ | 0.250 | 0.228 | 0.163 | 0.184 | 0.233 | 0.101 |
| $\ln(1+\text{RelSize})$ | 0.621 | 0.719 | 0.366 | 0.378 | 0.400 | 0.228 |

Table 3-3. Continued

| Variable | IMPAIRMENT SAMPLE | | | MATCH SAMPLE | | |
|--|-------------------|--------------------|--------|--------------|--------------------|--------|
| | Mean | Standard Deviation | Median | Mean | Standard Deviation | Median |
| OverVal (N = 210) | 0.3317 | 0.9470 | 0.1413 | 0.4290 | 0.9718 | 0.2528 |
| Firm-Spec OV (N = 210) | 0.2571 | 0.7785 | 0.1306 | 0.3133 | 0.8747 | 0.1566 |
| (Impairment) / (AssetsImp _{Year - 1}) | 0.1800 | 0.1418 | 0.1300 | 0.0009 | 0.0058 | 0.0000 |
| Ln(1+Intang/BidSize) (N = 231, N = 198) | 0.5761 | 0.7121 | 0.3303 | 0.2889 | 0.3527 | 0.1592 |
| Ln(1+GW/BidSize) (N = 220, N = 178) | 0.4964 | 0.6296 | 0.2328 | 0.2163 | 0.2891 | 0.1083 |

Table 3-4. Descriptive statistics for dummy variables. This table provides information on the dummy variables used in the analysis. All Stock (All Cash) is a dummy variable equal to 1 if the transaction was an all-stock (cash) acquisition. SomeStock is a dummy variable equal to 1 if there was any amount of stock used in the purchase consideration. Stock50 is equal to 1 if the majority of the purchase price consideration was the bidder's stock. Target Public is a dummy variable equal to 1 if the company purchased in the transaction is a public company (not including subsidiaries of public companies). Target Foreign is equal to 1 if the purchased company's headquarters are in a country other than the United States. The positive and negative news variables are equal to the number of positive or negative simultaneous news announcements within the 3 or 11 day event window.

| Variable | Impairment Sample (D = 1) | Match Sample (D = 1) |
|----------------|------------------------------|-------------------------|
| All Stock | 0.4069 | 0.3247 |
| All Cash | 0.2554 | 0.4632 |
| SomeStock | 0.7446 | 0.5238 |
| Stock50 | 0.6262 | 0.3981 |
| Target Public | 0.2771 | 0.2424 |
| Target Foreign | 0.1818 | 0.1688 |
| PosNews3 | 0.1169 | 0.0692 |
| PosNews11 | 0.1212 | 0.0823 |
| NegNews3 | 0.0433 | 0.0433 |
| NegNews11 | 0.0476 | 0.0649 |

Table 3-5. Mean and median paired data comparison tests for select sample variables.

This table reports the p-values of mean and median-comparison tests for paired data. The null hypothesis for the mean-comparison test is that the mean of the paired differences (Impairment Sample Value - Match Sample Value) is equal to zero; whereas the alternative hypothesis is that the mean is not equal to zero. The null hypothesis for the median-comparison test is that the median of the paired differences (Impairment Sample Value - Match Sample Value) is equal to zero; whereas the alternative hypothesis is that the median is not equal to zero. The median comparison test is equivalent to testing the hypothesis that the true proportion of positive (negative) signs is one-half. The variable definitions are the same as those found in Table 3-3. The p-values are in parenthesis.

| Variable | N | Mean Paired-Difference | Median Paired- Difference |
|---------------|-----|---------------------------|------------------------------|
| Lagged Assets | 234 | -313.92 (0.4199) | -71.99*** (0.0001) |
| Target Value | 234 | 1651.16 (0.2766) | -9.31 (0.1476) |
| Bidder Value | 234 | -1282.28 (0.4032) | -259.72*** (0.0001) |
| Ln(1+RelVal) | 234 | 0.0653*** (0.0004) | 0.0449*** (0.0001) |
| Ln(1+RelSize) | 234 | 0.2429*** (0.0001) | 0.0599*** (0.0001) |
| Overal | 210 | -0.0973 (0.1820) | -0.0177 (0.7272) |
| Firm-Spec OV | 210 | -0.0562 (0.4287) | -0.0111 (0.7277) |

*, **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-6. Descriptive statistics for market adjusted returns. This table reports the descriptive statistics for the MARs surrounding the acquisition announcements. MAR (-A, +B) is the acquirer's cumulative market adjusted return from A days before the acquisition announcement to B days after.

| IMPAIRMENT SAMPLE | | | | MATCH SAMPLE | | | |
|-------------------|---------|--------------------|---------|--------------|--------|--------------------|--------|
| Variable | Mean | Standard Deviation | Median | Variable | Mean | Standard Deviation | Median |
| MAR (-1,+1) | -0.0260 | 0.1370 | -0.0200 | MAR (-1,+1) | 0.0243 | 0.1056 | 0.0142 |
| MAR (-1,+2) | -0.0259 | 0.1491 | -0.0259 | MAR (-1,+2) | 0.0255 | 0.1166 | 0.0135 |
| MAR (-3,+3) | -0.0221 | 0.1790 | -0.0233 | MAR (-3,+3) | 0.0220 | 0.1400 | 0.0128 |
| MAR (-5,+5) | -0.0232 | 0.1974 | -0.0051 | MAR (-5,+5) | 0.0299 | 0.1590 | 0.0279 |

Table 3-7. Mean and median paired data comparison tests for market adjusted returns.

This table reports the p-values of mean and median-comparison tests for paired data. The null hypothesis for the mean-comparison test is that the mean of the paired differences (Impairment Sample Value - Match Sample Value) is equal to zero; whereas the alternative hypothesis is that the mean is not equal to zero. The null hypothesis for the median-comparison test is that the median of the paired differences (Impairment Sample Value - Match Sample Value) is equal to zero; whereas the alternative hypothesis is that the median is not equal to zero. The median comparison test is equivalent to testing the hypothesis that the true proportion of positive (negative) signs is one-half. The variable definitions are the same as those found in Table 3-3. The p-values are in parenthesis.

| Variable | N | Mean Paired-Difference | Median Paired-Difference |
|-------------|-----|------------------------|--------------------------|
| MAR (-1,+1) | 231 | -0.0503*** (0.0001) | -0.0479*** (0.0004) |
| MAR (-1,+2) | 231 | -0.0514*** (0.0001) | -0.0384*** (0.0037) |
| MAR (-3,+3) | 231 | -0.0441*** (0.0048) | -0.0365** (0.0177) |
| MAR (-5,+5) | 231 | -0.0531*** (0.0020) | -0.0404* (0.0869) |

Table 3-8. Alternative regression specifications with MAR(-1, +1) as the dependent variable. This table presents the results of alternative regressions of cumulative market adjusted returns on different variables of interest, and other acquisition characteristics. The dependent variable in each regression is MAR (-1,+1), which is the acquirer's cumulative market adjusted return from the day before the acquisition announcement to the day after. The variable of interest in Model 1 is 'Impairment Dummy', which is equal to one if the observation is from the sample of acquisitions with significant goodwill impairments. The Impairment Dummy and the Impairment Dummy interacted with RelVal are the variables of interest in Model 2. RelVal is equal to the target's value divided by the bidder's value. The variable of interest in Model 3 is once again the Impairment Dummy. This model controls for the relative size (RelSize) of the acquisition rather than the relative value as in Model 1. The Impairment Dummy and its interaction with the relative size of the acquisition are the variables of interest in Model 4. The variable of interest in Model 5 is '(Impairment) / (AssetsImp Year - 1)', which is equal to the goodwill impairment resulting from the purchase of the target divided by the acquirer's total assets at the end of the fiscal year prior to the impairment charge. SomeStock is equal to one if the acquirer includes any amount of equity in the purchase consideration. Private is equal to one if the target is a private company or a subsidiary of a public firm. PrivStock equals one if the target is private and any amount of equity is used by the acquirer in the purchase consideration. PosNews3 and NegNews3 are equal to one if a positive or negative simultaneous news announcement occurs within the three-day announcement period window. Standard errors are in parenthesis.

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|
| Some Stock | -0.0583** (0.023) | -0.0583** (0.024) | -0.0569** (0.023) | -0.0626*** (0.023) | -0.0568** (0.023) |
| Private | 0.0038 (0.020) | 0.0038 (0.020) | 0.0036 (0.020) | 0.0034 (0.020) | 0.0039 (0.020) |
| PrivStock | 0.0572** (0.026) | 0.0572** (0.026) | 0.0512** (0.025) | 0.0520** (0.025) | 0.0456* (0.025) |
| PosNews3 | 0.1102*** (0.023) | 0.1102*** (0.023) | 0.1107*** (0.023) | 0.1123*** (0.023) | 0.1086*** (0.023) |
| NegNews3 | -0.0717*** (0.026) | -0.0717*** (0.026) | -0.0688*** (0.026) | -0.0661** (0.026) | -0.0626** (0.027) |
| Ln(1+RelVal) | 0.0476 (0.031) | 0.0471 (0.036) | | | |
| Ln(1+RelSize) | | | 0.0093 (0.011) | 0.0484** (0.020) | 0.0193* (0.011) |
| Impairment Dummy | -0.0540*** (0.011) | -0.0543*** (0.015) | -0.0527*** (0.011) | -0.0304** (0.013) | |

*, **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-8. Continued

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------|-------------------|-------------------|-------------------|------------------|-------------------|
| Ln(1+RelVal) * | | 0.0010 | | | |
| (Imp. Dummy) | | (0.058) | | | |
| Ln(1+RelSize) * | | | -0.0494** | | |
| (Imp. Dummy) | | | (0.021) | | |
| (Impairment) / | | | | -0.1770*** | |
| (AssetsImp Year - 1) | | | | (0.044) | |
| Constant | 0.0184 (0.018) | 0.0185 (0.019) | 0.0250 (0.018) | 0.0129 (.018) | 0.0118 (0.018) |
| Observations | 462 | 462 | 462 | 462 | 462 |
| R-Square | 0.1740 | 0.1740 | 0.1686 | 0.1778 | 0.1552 |

, **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-9. Alternative regression specifications controlling for acquisition related characteristics. This table presents the results of alternative regressions of cumulative market adjusted returns on different variables of interest, and other acquisition characteristics. The dependent variable in each regression is MAR (-1,+1), which is the acquirer's cumulative market adjusted return from the day before the acquisition announcement to the day after. Variables from Table 3-7 have the identical definition in Table 3-8. The variables of interest in Model 1 are the Impairment Dummy and (Intang/BidSize) interacted with the Impairment Dummy. 'Intang' is the amount of intangible assets recorded as a result of the acquisition. 'BidSize' is simply the bidder's lagged assets as described in previous tables. If this variable is missing for either the impairment acquisition or its match, the pair of observations was eliminated from the sample. The variables of interest in Model 2 are again the Impairment Dummy and (Intang/BidSize) interacted with the Impairment Dummy. This specification, however, only eliminates those single observations for which the Intang variable is missing; not the pair of observations as in Model 1. The variables of interest in Model 3 are the Impairment Dummy and its interaction with (GW/Bidder Value). GW is the amount of goodwill recorded as a result of the acquisition. If this variable was not found for either the impairment acquisition or its match, the pair of observations was eliminated from the sample. The variables of interest in Model 4 are again the Impairment Dummy and its interaction with (GW/Bidder Value). This specification, however, only eliminates those single observations for which the GW variable is missing; not the pair of observations as in Model 3. Standard errors are in parenthesis.

| Variable | Model 1 (Paired) | Model 2 (All) | Model 3 (Paired) | Model 4 (All) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| Some Stock | -0.0692*** (0.023) | -0.0688*** (0.023) | -0.0777*** (0.026) | -0.0707*** (0.025) |
| Private | 0.0032 (0.020) | 0.0037 (0.020) | 0.0099 (0.024) | 0.0050 (0.023) |
| PrivStock | 0.0566** (0.025) | 0.0576** (0.025) | 0.0536* (0.029) | 0.0577** (0.028) |
| PosNews3 | 0.1116*** (0.026) | 0.1154*** (0.025) | 0.0992*** (0.026) | 0.1149*** (0.025) |
| NegNews3 | -0.0618** (0.028) | -0.0722*** (0.026) | -0.0539* (0.032) | -0.0724*** (0.026) |
| Impairment Dummy | -0.0303** (0.014) | -0.0268** (0.013) | -0.0393*** (0.015) | -0.0352*** (0.013) |
| Ln(1+Intang/BidSize) | 0.0370* (0.020) | 0.0367* (0.020) | | |
| Ln(1+Intang/BidSize)* (Impairment Dummy) | -0.0438* (0.026) | -0.0456** (0.023) | | |

* , **, *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-9. Continued

| Variable | Model 1 (Paired) | Model 2 (All) | Model 3 (Paired) | Model 4 (All) |
|-------------------------|---------------------|-------------------|---------------------|----------------------|
| Ln(1+GW/Bidder Value) | | | 0.0658** (0.026) | 0.0628** (0.027) |
| Ln(1+GW/Bidder Value) * | | | -0.0397 (0.034) | -0.0605** (0.029) |
| (Impairment Dummy) | | | | |
| Constant | 0.0159 (0.018) | 0.0153 (0.018) | 0.0152 (0.021) | 0.0152 (0.021) |
| Observations | 396 | 429 | 338 | 398 |
| R-Square | 0.1799 | 0.2164 | 0.1848 | 0.1962 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-10. Alternative regression specifications controlling for bidder overvaluation.

This table presents the results of alternative regressions of cumulative market adjusted returns on different variables of interest, and other acquisition characteristics. The dependent variable in each regression is MAR (-1,+1), which is the acquirer's cumulative market adjusted return from the day before the acquisition announcement to the day after. All independent variables are as defined in the previous two tables. 'Stock50' is a dummy variable that is equal to 1 if the purchase consideration included more than fifty percent stock. As denoted at the bottom of the table, 'Overval' in Models 1 and 2 refers to the sum of the bidder's firm- and industry-specific mispricing measures as defined by Rhodes-Kropf, Robinson, and Viswanathan (RRV) (2005). 'Overval' in Models 3 and 4 refers to just the firm-specific mispricing measure. The variables of interest in Model 1 are the Impairment Dummy and the sum of the bidder's firm- and industry-specific mispricing measures ('Overval'). The variables of interest in Model 2 are the Impairment Dummy and its interaction with 'Overval' and 'Stock50'. The variables of interest in Model 3 are the Impairment Dummy and the firm-specific mispricing measure ('Overval'). The variables of interest in Model 4 are the Impairment Dummy and its interaction with 'Overval' and 'Stock50'. Standard errors are in parenthesis.

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|---------------------|------------------------|------------------------|--------------------------------|--------------------------------|
| Some Stock | -0.0552** (0.023) | | -0.0551** (0.023) | |
| Stock50 | | -0.0417* (0.024) | | -0.0390* (0.023) |
| Private | 0.0047 (0.020) | 0.0171 (0.019) | 0.0051 (0.020) | 0.0177 (0.019) |
| PrivStock | 0.0455* (0.025) | 0.0300 (0.026) | 0.0444* (0.025) | 0.0287 (0.026) |
| PosNews3 | 0.1006*** (0.025) | 0.1022*** (0.025) | 0.1008*** (0.025) | 0.1017*** (0.025) |
| NegNews3 | -0.0526** (0.023) | -0.0462** (0.021) | -0.0519** (0.023) | -0.0486** (0.022) |
| Ln(1+RelSize) | 0.0109 (0.013) | 0.0174 (0.013) | 0.0110 (0.013) | 0.0178 (0.013) |
| Impairment Dummy | -0.0498*** (0.011) | -0.0439*** (0.015) | -0.0494*** (0.011) | -0.0421*** (0.013) |
| Overval | -0.0101 (0.007) | -0.0010 (0.013) | -0.0133* (0.007) | -0.0022 (0.012) |
| (Overval)*(Stock50) | | 0.0014 (0.017) | | 0.0020 (0.017) |
| | Total Overvaluation | Total Overvaluation | Firm-Specific Overvaluation | Firm-Specific Overvaluation |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-10. Continued

| Variable | Model 1 | Model 2 | Model 3 | Model 4 |
|----------------------|---------------------|---------------------|-----------------------------|-----------------------------|
| (Overval)* | | 0.0132 | | -0.0016 |
| (Impairment Dummy) | | (0.026) | | (0.031) |
| (Stock50)* | | 0.0029 | | -0.0015 |
| (Impairment Dummy) | | (0.022) | | (0.023) |
| (Overval)*(Stock50) | | -0.0453 | | -0.0319 |
| * (Impairment Dummy) | | (0.030) | | (0.035) |
| Constant | 0.0238 (0.018) | 0.0044 (0.018) | 0.0218 (0.017) | 0.0041 (0.018) |
| Observations | 412 | 412 | 412 | 412 |
| R-Square | 0.1520 | 0.1654 | 0.1946 | 0.1621 |
| | Total Overvaluation | Total Overvaluation | Firm-Specific Overvaluation | Firm-Specific Overvaluation |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-11. Robustness specifications expanding the impairment window to within 5 years. This table presents robustness checks. The main sample of 231 impairment acquisitions used throughout this study is expanded to include impairment acquisitions in which the goodwill impairment is taken within the five fiscal years following the acquisition announcement. This change results in an impairment sample of 268 acquisitions and, consequently, an overall sample of 536 acquisitions. All variable definitions are the same as in the previous tables. The dependent variable in each regression is MAR (-1,+1). Standard errors are in parenthesis.

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Some Stock | -0.0648*** (0.019) | -0.0689*** (0.020) | -0.0612*** (0.020) | -0.0849*** (0.023) | |
| Stock50 | | | | | -0.0428** (0.021) |
| Private | 0.0044 (0.017) | 0.0031 (0.017) | 0.0047 (0.017) | 0.0019 (0.021) | 0.0166 (0.016) |
| PrivStock | 0.0570*** (0.022) | 0.0538** (0.022) | 0.0468** (0.022) | 0.0648** (0.026) | |
| (Private)*(Stock50) | | | | | 0.0286 (0.023) |
| PosNews3 | 0.0952*** (0.020) | 0.0965*** (0.020) | 0.0938*** (0.019) | 0.0862*** (0.023) | 0.0897*** (0.021) |
| NegNews3 | -0.0859*** (0.025) | -0.0824*** (0.025) | -0.0786*** (0.026) | -0.0701** (0.030) | -0.0596*** (0.022) |
| Ln(1+RelVal) | 0.0447* (0.024) | | | | |
| Ln(1+RelSize) | | 0.0446** (0.019) | 0.0182 (0.011) | | 0.0181 (0.012) |
| Impairment Dummy | -0.0464*** (0.010) | -0.0242** (0.014) | | -0.0374*** (0.014) | -0.0298** (0.013) |
| Ln(1+RelSize) * (Impairment Dummy) | | -0.0473** (0.021) | | | |
| (Impairment) / (Lagged Assets) | | | -0.1743*** (0.041) | | |
| Ln(1+GW/BidSize) | | | | 0.0481 (0.025) | |
| Ln(1+GW/BidSize) * (Impairment Dummy) | | | | -0.0273 (0.034) | |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3-11. Continued

| Variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|-------------------|-------------------|-------------------|-------------------|--------------------|
| Overval | | | | | 0.0022 (0.011) |
| (Overval)*(Stock50) | | | | | 0.0025 (0.016) |
| (Overval)* (Impairment Dummy) | | | | | 0.0024 (0.020) |
| (Stock50)* (Impairment Dummy) | | | | | -0.0127 (0.020) |
| (Overval)*(%Stock) * (Impairment Dummy) | | | | | -0.0339 (0.025) |
| Constant | 0.0234 (0.016) | 0.0196 (0.016) | 0.0182 (0.016) | 0.0280 (0.019) | 0.0086 (0.015) |
| Observations | 536 | 536 | 536 | 370 | 484 |
| R-Square | 0.1682 | 0.1693 | 0.1556 | 0.1749 | 0.1650 |

* , ** , *** denotes statistical significance at the 10%, 5%, and 1% levels, respectively.

CHAPTER 4 CONCLUSION

In this study I focus on two separate topics in the finance literature: the concerns regarding conflicts of interest in the 401(k) industry and goodwill impairments following questionable acquisitions on the part of corporate managers. While each topic is quite different, the underlying thread of my research in these two areas is the effect of agency conflicts on corporate decision making. Using a unique proprietary data set on 401(k) plans, the first part of the study, Chapter 2, evaluates whether risk-adjusted plan-level performance and the costs faced by plan participants are significantly related to the type of company administering the plan. Based on the specific conflicts highlighted in a recent Government Accountability Office report and on anecdotal evidence from current lawsuits, I hypothesize that certain service providers should be relatively more susceptible to these conflicts than others. Therefore, I examine whether there are significant differences in plan-level performance based on the type of company administering the plan. The results provide evidence consistent with this hypothesis.

Consistent with their prominence in the 401(k) industry, the net performance of plans with significant holdings in the funds of the Big Five mutual funds companies (Fidelity, Vanguard, American Funds, T. Rowe Price, and Franklin Templeton) generally perform significantly better than plans that do not make funds from these families available. Plans administered by other companies in the sample do not fare as well. For example, a common theme throughout the paper is the finding that plans administered by asset management firms and large banks tend to experience the poorest performance. Many of the third-party plan administrators in these categories are susceptible to conflicts of interest either through the marketing of their own

proprietary funds to the plan or through close business relationships with particular fund managers with whom the TPA may have revenue sharing arrangements. Thus, it is not surprising that we find significant underperformance in these categories.

By using a proxy for a plan administrator's susceptibility to conflicts of interest and by controlling directly for a plan's holdings of their TPA's proprietary funds, we provide convincing evidence for the fact that the underperformance identified in these two categories is indeed driven by conflicts of interest. Using our proxy, the plans in the Asset Management Advisory and Large Bank categories (and in all other categories for that matter) that are identified as having a TPA that is not conflicted experience significantly better plan-level investment performance relative to those plans in the category that are administered by TPAs with conflicts. In addition, the more plan assets that are invested in the proprietary funds of TPAs in the Asset Management Advisory and Large Bank categories, the significantly worse in plan-level investment performance.

In Chapter 3 of this study, I employ a new criterion for identifying poor acquisitions to provide additional evidence regarding the market's ability to identify poor acquisitions at the announcement of these events. Under a relatively new fair value accounting rule (SFAS 142) passed in late 2001, a firm must annually test its goodwill for impairment. Since goodwill represents the residual of the difference between what is paid for an acquisition and the book value of identifiable assets, significant impairment charges related to prior acquisitions represent cases where the premium paid above book value is no longer justified. Thus, the identification of the specific acquisitions responsible for these substantial goodwill impairments provides a sample of poor acquisitions. After

matching these poor acquisitions with acquisitions that have similar industry, size, and time characteristics (but without significant goodwill impairments), I then determine whether the market returns at the announcement of the acquisition identifies the poor acquisitions in the overall sample.

The cross-sectional results suggest that acquirer market adjusted returns at the acquisition announcement are significantly lower for the sample of acquisitions identified as poor investments. The acquirer returns to the impairment acquisitions are, on average, 5.40 percentage points lower than those for the match acquisitions. This finding is robust to the inclusion of control variables that take into account the overvaluation of the acquiring firms, the relative size of the acquisition, the private versus public nature of targets, and the use of stock in the purchase price consideration. Despite the conclusion in Gu and Lev (2011) that goodwill impairments are primarily driven by overvalued firms using stock as currency to make relatively poor acquisitions, I find that the control group bidders are actually more “overvalued” using the Rhodes-Kropf, Robinson, and Viswanathan (2005) proxy for overvaluation. Controlling for overvaluation still leaves a strong independent market anticipation effect of poor acquisitions as signaled by large impairments. Thus, this suggests that there is something more to the story than just overvalued firms using stock to make poor acquisitions driving announcement returns. The market’s ability to anticipate these poor acquisitions is encouraging given the fact that the acquisitions in my sample involve much smaller firms, more private firms and firms with considerable intangible assets relative to previous studies examining the market’s ability to predict poor acquisitions.

Another implication of the findings in this chapter could be that impairment charges seem to confirm market expectations to some degree. That is the good news. The bad news is potentially twofold. First, for my acquisition sample, management did not respond to derail many objectively poor acquisitions. Second, arguably the markets would have suggested that impairment charges be taken far sooner based on “fair” value than ex-post was the case. Of course, management admitting failure shortly after an acquisition is completed is perhaps an unrealistic expectation.

APPENDIX DETERMINING THE IMPAIRMENT SAMPLE

There were 1368 observations identified over the sample period in which a firm had a goodwill impairment or extraordinary items charge that was at least five percent of lagged assets. From this sample, observations were eliminated if the CIK variable from COMPUSTAT was missing or if the acquirer's total assets from the fiscal year-end prior to the acquisition were less than \$50 million. Additional observations were lost if the COMPUSTAT data could not reliably be matched to the CRSP database. Of the firms that were matched to the CRSP database, some observations did not have trade data available before the time of the impairment. Of the remaining observations, several did not have 10K filings available online through EDGAR. Finally, four observations were lost simply because the cause of the extraordinary items write-off was not due to the impairment of goodwill. In total, these data cuts reduced the number of potential goodwill impairment observations to be identified to 764. Of these 764 observations, I could not confidently match the goodwill impairment to a specific acquisition in 437 cases. The most common reason for this was that the reporting unit responsible for the impairment was identified and not the acquisition itself. Since many of the firms with goodwill impairments are quite active with respect to mergers and acquisitions, it was often impossible to attribute the impairment to a specific acquisition within the reporting unit identified. Table A-1 provides a visual breakdown of this identification into greater detail.

As can be seen in Table A-1, there were 327 goodwill impairment observations matched to specific acquisitions. The number of impairments identified and the number of unique acquisitions identified is different for two reasons. First, some of the firms in

the sample had impairments in multiple reporting periods that were due to the same acquisition. At the same time, some of the larger impairments in the sample were actually caused by multiple acquisitions. Once I account for these two factors, the 327 impairments identified were the result of 328 unique acquisitions. From here, for several reasons which were explained in the body of the study, the elimination of some of these acquisitions resulted in the final sample of 269 acquisitions with goodwill impairments within five fiscal years of the announcement date. The analysis in this study focuses on subsets of this overall sample. For instance, the acquisitions with goodwill impairments within three years of the announcement date (234) are the focus of the analysis. For the analysis that required the bidder's firm- and industry-specific mispricing measures as defined by Rhodes-Kropf, Robinson, and Viswanathan (RRV) (2005), observations are again lost due to data constraints or particular firm characteristics. There were two main reasons firms in the sample did not have an overvaluation measure. The most common reason was that the bidder had negative common equity at the fiscal year-end prior to the acquisition. As a result of the methodology in RRV, firms with negative common equity values have missing values for their overvaluation measure. The other reason was that firms with an acquisition within three months of the prior fiscal year-end use COMPUSTAT data from the fiscal year-end two periods before the acquisition. In some cases, data two fiscal years before the acquisition announcement was not available as many of the bidders in the sample are relatively small, young public companies. Table A-2 provides a visual breakdown of this identification into greater detail.

Table A-1. Matching impairment observations to specific acquisitions. This table shows the breakdown from the total number of impairment observations identified to the final number of impairment acquisitions identified.

| | |
|--|------------|
| Total Impairment Observations | 1368 |
| No CIK Number | (125) |
| < \$50 Million in Lagged Total Assets | (287) |
| Failed Link Between CRSP and COMPUSTAT | (82) |
| No Pre-Window Trade Data | (16) |
| No 10-K on EDGAR | (80) |
| XI Not from a Goodwill Impairment | (4) |
| Total Possible Impairment Observations to be Identified | 764 |
| Impairment Could Not be Confidently Matched to a Specific Acquisition | (437) |
| Total Impairment Observations Matched to a Specific Acquisition | 327 |

Table A-2. Breakdown of how various important sub-samples of the data was identified.
 This table shows the breakdown total number of impairment acquisitions identified to various final samples used in the analysis.

| | |
|---|------------|
| Total Impairments Identified | 327 |
| Same Acquisition Responsible for Multiple Impairments | (22) |
| Same Impairment Responsible for Multiple Acquisitions | 23 |
| Total Unique Acquisitions Identified | 328 |
| Reverse Acquisitions | (7) |
| No One Acquisition at least 5% of Lagged Assets | (8) |
| Insufficient CRSP Data around Acquisition Announcement | (10) |
| No Match Acquisition Satisfying Matching Criteria | (19) |
| Impairment Taken More Than 5 Fiscal Years Following Acquisition | (16) |
| Unique Acquisitions With Impairments Within 5 Fiscal Years of the Announcement Date Meeting All Criteria | 268 |
| Overvaluation Data Not Available for Either the Impairment Acquisition or the Match | (26) |
| Unique Acquisitions Within 5 Fiscal Years of the Announcement Date with Overvaluation Data | 242 |
| Unique Acquisitions With Impairments Within 3 Fiscal Years of the Announcement Date Meeting All Criteria | 231 |
| Remaining Acquisitions with Overvaluation Date | 206 |

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BIOGRAPHICAL SKETCH

Tom graduated from Southern Illinois University Edwardsville (SIUE) as a Chancellor's Scholar with B.S. degrees in management information systems and economics. After also earning his M.S. degree in economics and finance from SIUE, he joined the PhD program in finance at the University of Florida in the fall of 2007. In the fall of 2011, Tom accepted a position at Saint Louis University. After completing his PhD in the spring of 2012, Tom will join the finance department at Saint Louis University as an assistant professor of finance.