MCDONALD'S CORPORATION AND THE OPTIMAL CREDIT RATING STRATEGY DECISION

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PREFACE

The original aim of this paper was to answer the question, as posed by McDonald's:

> *McDonald's Corporation is the world's #1 fast food company with 2004 sales of $19 billion, a net income of $2.3 billion, and over 30,000 restaurants worldwide. Interest expense during 2004 was about $358 million. Standard & Poor's lowered McDonald's corporate credit rating in May, 2003 from A+ to A and the rating of its subordinated debt from A to A-. What is/was the comprehensive cost of this downgrade to McDonald's?*

Soon after preliminary research got underway, however, two things became clear: 1) the answer to the above question is quite narrow in scope (partially because the downgrade was minor and still left MCD well into investment grade territory), and 2) it would be a more useful undertaking if we could give MCD management a broader and well-researched view of the credit ratings game that would help them plan and respond optimally going forward.

With the above in mind, the following paper was written as a sort of credit rating agency handbook for McDonald's. The paper reviews comprehensively the workings and methodologies of the agencies as well as their biases. It also considers the various potential costs to McDonald's of ratings downgrades and opens up the important corresponding question: what might it cost McDonald's to maintain a given rating? The paper concludes with the realization that the rating process is fraught with biases that an individual company cannot necessarily affect, and consequently, maintaining a given credit rating is not always a company's optimal strategy. Aiming for the highest credit rating possible is certainly sub-optimal for McDonald's.

While it does attempt to quantify certain costs of various McDonald's ratings movements, the heart of the paper is more theoretical in nature, e.g., How can we broadly model

downgrade costs? How could we think about quantifying costs of future downgrades? What model should we use to compare the costs of a downgrade versus the improved flexibility attendant with a lower credit rating? Is a downgrade necessarily a bad thing? How do we get diverse constituencies to buy into our ratings strategy? Etc.

I would like to thank the following people for their input into this paper: Darin Aprati at McDonald's Corporation, Richard Cantor and Peggy Holloway at Moody's Investors Service, and Professors Ravi Jagannathan and Mitchell Petersen at The Kellogg School of Management. Each of these individuals has been helpful beyond justifiable expectations, and without them, this paper could not have reached its present form.

TABLE OF CONTENTS

INTRODUCTION

This paper aims to tackle the question posed by McDonald's Corporation: What are the costs to McDonald's from a rating downgrade? To answer this question, we have taken a broader approach, reviewing the workings of credit rating agencies and then balancing the costs required to preserve ratings against those associated with ratings deterioration.

In the theoretical world of Modigliani and Miller where information flows freely to those who seek it and financing decisions do not impact firm value, credit agencies and their ratings (as well as all other financial intermediaries) should be irrelevant. Indeed, some market participants contend that even with imperfect markets, such is the case. However, while active traders may find little value in credit rating agencies, many passive, or at least more encumbered traders utilize credit scores in powerful ways. Whether credit scores contain "original" information then becomes irrelevant, since the fact that these scores are directionally employed itself affects markets. Credit ratings, therefore, do impact companies, and it is the aim of this paper to offer a viewpoint on and framework for evaluating how they affect McDonald's Corporation.

Table 1: Recent History of MCD Senior Debt Ratings

Date:	S&P Rating	Moody's Rating
January 1, 2001	AA	Aa2
October 29, 2001	***A+***	***Aa3***
February 21, 2003	A+	***A2***
May 8, 2003	***A***	A2
Today	A	A2

Source: Moody's Investors Service, Standard and Poor's

PART I: CREDIT AGENCIES AND RATINGS

CREDIT AGENCIES OVERVIEW

Credit rating agencies have been important players in the financial markets since the early 1900's. John Moody, the forerunner of Moody's Investors Service, invented his now famous letter ratings in 1909. Fitch Ratings (then Fitch Publishing) adopted a similar scoring system in 1924. Historically, credit agencies' stated primary function has been to provide investors with an independent assessment of "the credit risks associated with fixed-income securities."[1] Agencies' assessments of the creditworthiness of corporations and issuances are based on public "accounting" numbers as well as proprietary research. The overall assessment is encapsulated by a simple credit rating, or grade, typically ranging from Aaa to C. Increasingly, whether by design or chance, credit ratings are also being employed for regulatory purposes.

Today, there are three primary ratings agencies used by investors in the United States. The two most widely followed, Moody's Investors Service and Standard and Poor's, are global powerhouses. Fitch Ratings, with ties to London's IBCA Limited and Paris's Fimalac, is a significant player in the United States and a growing presence abroad. Fitch Ratings acquired Duff and Phelps, another prominent rating agency, in 2000. Today, all three of the major agencies cover McDonald's corporation.

In recent years, there has been considerable discussion devoted to the question of whether agencies stay ahead of the market or lag behind it (alternatively, this question could be posed as: do agencies provide information to the market or simply take information from the market) (see Goh and Ederington, 1993).[2] If the agencies simply react to market events after they happen, their use to investors would seemingly be limited. In response

[1] http://moodys.com/moodys/cust/AboutMoodys/AboutMoodys.aspx?topic=intro&redir_url=/cust/AboutMoodys/staticRedirect.asp

[2] Goh, J. C. and Ederington, L. H. "Is a Bond Rating Downgrade Bad News, Good News, or No News for Stockholders?" *The Journal of Finance* Vol. 48 (1993): 2001-8.

to allegations like these, the agencies have broadened their services in recent years to include more timely credit risk analysis. In 2002, Moody's acquired KMV, a cutting edge developer of real-time credit risk management software. Similarly, S&P acquired Capital IQ, a developer of global private and public capital market data analysis software, in 2004.

However, whether the credit rating agencies lead or follow the markets is, to some extent, a moot question. Because of their rich history and aggressive marketing, the major agencies are now interwoven into the fabric of lending and institutional investing. For conservative investors and money managers with diverse constituencies, employing old and "reliable" credit ratings offers a prudent strategy and limits culpability in some senses. Viewed in this light, credit ratings can function as catalysts for investors. In fact, most major institutional investors, such as pension funds like CalPERS, today have written bylaws forcing them to close positions in securities of a company should that company's credit rating (by the fund's favored agency or agencies) fall below a pre-specified level. This "trigger" impact of ratings has also worked its way beyond investment decisions and into the very structuring of corporate financing deals.

In its "Analysis of U.S. Corporate Rating Triggers,"[3] Moody's found that triggers are now ubiquitous in bond and debt indentures (over 90% of rated companies have at least one rating trigger), especially for debt rated A1 and lower. Furthermore, Moody's finds that the very existence of the triggers can, in many instances, reduce the credit quality of a company since triggers often place greater limitations on companies' access to capital at the times when they are most in need of increased capital. Table 2 presents a list of the most common trigger provisions found within the corporate debt of rated companies.

[3] Stumpp, Pamela M. and Coppola, Monica M. "Moody's Analysis of U.S. Corporate Rating Triggers Heightens Need for Increased Disclosure." *Moody's Investors Service Global Credit Research* (July, 2002).

Table 2: Most Common Trigger Provisions Structured into Corporate Debt

Effect of Trigger	Percent of All Triggers
Increased Collateral and Bonding	21.6%
Increased Pricing on Outstanding Debt	21.1%
Self-Insurance Limitation/Outside Insurance Requirement	12.0%
Termination of Agreement	8.5%
Put and Default Provisions	8.3%
Increased M&A Limitations	7.0%
Acceleration of Debt	4.0%
Miscellaneous	17.5%

Source: Moody's Investors Service, July 2002

We flag these trigger issues here because investment-decision-triggers and terms-of-financing-triggers wind up being two of the most important factors that a company should consider when approaching the issue of optimizing credit rating. We discuss this in more detail later.

CREDIT RATING METHODOLOGY

In general, it is thought and indeed appears that the major credit rating agencies use quite similar credit rating methodologies. However, the exact formulae employed in producing credit scores are famously obscure. We will focus here on the available information about the methodologies employed by S&P and Moody's.

RATINGS HORIZONS AND THROUGH-THE-CYCLE RATING

Both S&P and Moody's issue ratings to measure *long term* risk. In describing ratings horizons, Standard and Poor's states:

> Standard and Poor's credit ratings are meant to be forward looking; that is, the time horizon extends as far as is analytically foreseeable. Accordingly, the anticipated ups and downs of business cycles … should be factored

> into the credit rating all along. This approach is in keeping with Standard and Poor's belief that the value of its rating products is greatest when its ratings do not fluctuate with near term performance. *Ratings should never be a mere snapshot of the present situation*.[4] (emphasis added by author)

The long horizon of ratings has important implications for the methodology by which said ratings are constructed. Agencies strive to achieve considerable shelf life and relative rating stability through two key mechanisms.

The first important mechanism behind agencies' long term horizons is their use of a **"through-the-cycle" methodology**. This methodology aims to evaluate companies without respect to their current positions within business cycles. In some cases, business cycles occur within the space of two quarters; in other cases, business cycles may last for a few years. The agencies attempt to ignore a company's particular position within a cycle at the time of evaluation and focus instead on its relative efficiency and position compared to previous cycles. In short, "in contrast to one-year default prediction models, agency ratings place less weight on short-term indicators of credit quality."[5]

To demonstrate the importance the "through-the-cycle" methodology has on ratings, consider the following statement from Moody's December, 2004 "U.S. Restaurant Industry Outlook":

> "The rating outlook for the restaurant industry remains stable even after the modest revenue growth that many restaurant companies have experienced over the past 12 months. Virtually all segments of the restaurant industry, including the quick service, casual dining, and white-tablecloth segments, have achieved higher average unit volumes in 2004 relative to the several previous years. **However, Moody's does not believe that this cyclical upturn will lead to lasting improvements**

[4] "Corporate Rating Criteria." *Standard and Poor's* (2003).
[5] Altman, Edward and Rijken, Herbert. "How Ratings Agencies Achieve Rating Stability." *Working Paper, Stern School of Business* (April, 2004).

(emphasis added by author) in credit quality at most restaurant companies … so upward rating actions in 2005 will be limited."[6]

A second important facet of the long term horizon of credit ratings is the **prudent migration policy**. To be relevant for long windows of time, credit ratings must not fluctuate back and forth in the short term. To ensure that ratings do not fluctuate on a daily or monthly basis, agencies set rating migration triggers at points where the difference between the actual agency rating and that of a real-time model prediction exceeds some pre-specified threshold. "When rating migrations are triggered, agencies adjust their ratings only partially, consistent with the known serial dependency of agency rating migrations."[7] One clear implication of the prudent migration policy is that regardless of whether a company makes headway in increasing its creditworthiness or whether it continues to decline, credit ratings will not react immediately. The critical lesson? Efforts undertaken on behalf of credit ratings will not bear immediate fruit.

STANDARD AND POOR'S RATING CRITERIA

In general, S&P evaluates large-cap non-financial and non-sovereign corporate debt issuers across nine broad categories.[8]

- *Industry risk*: Defined as the strength of the industry vis-à-vis the overall economy and relative to economic trends. Factors evaluated include the industry's volatility, cyclicality, capital intensity, regulations, labor force, product/service inputs, stability, and predictability. S&P notes this ratings criteria category as "slightly more equal than all the others," meaning that it receives more weight in Standard and Poor's analysis than other factors. We note that this important criterion is one that an individual company, such as McDonald's, cannot affect.

[6] Baldwin, Richard; Holloway, Peggy and Marshella, Tom. "U.S. Restaurant Industry Outlook." *Moody's Investors Service Global Credit Research* (December, 2004).
[7] Altman, Edward and Rijken, Herbert. "How Ratings Agencies Achieve Rating Stability." *Working Paper, Stern School of Business* (April, 2004).
[8] This information was gleaned from *Standard & Poor's Credit Overview:* "Industrials Criteria." 1985 and discussions with analysts at S&P.

- *Issuer's market position within its industry*: S&P evaluates "a company's sales position in its major fields, its historical protection of its position, and its projected ability to continue that protection into the future."

- *Issuer's operating efficiency relative to its comparables*: This category covers "a company's historical operating margins and its ability to maintain or improve them."

- *Strength of management*: S&P evaluates management's past performance, ability to meet previously stated objectives, and use of debt.

- *Accounting quality*: Here, S&P compares a company's accounting practices to that of its larger industry. Inventory accounting, depreciation schedules, and more are considered.

- *Earnings protection*: S&P looks at each firm's long-term earnings potential and the extent to which fixed charges are covered. Common metrics are operating income as a percentage of sales, pretax return on average invested capital, before-tax interest coverage, and before-tax coverage of interest and total rents.

- *Financial leverage and asset protection*: Here, S&P looks at total debt (including off-balance sheet financing) as a percentage of capitalization. S&P also looks for assets that may be significantly undervalued on the books due to LIFO accounting and assets that may be overvalued, such as intangibles.

- *Cash flow adequacy*: This category deals with the relationship between cash flow and leverage and the ability of a company's cash flow to meet all cash needs. Cash flow as a percent of total debt is a key metric. S&P also forecasts cash flows and projects capital needs to assess a company's future cash flow position.

- *Financial Flexibility*: Here, S&P attempts to evaluate companies' financing needs, plans, and alternatives. This reflects a company's ability to accomplish financing without damaging creditworthiness. Companies that need to go to the capital markets multiples times a year are considered to have limited flexibility.

MOODY'S RATING CRITERIA[9]

Moody's employs what it calls a "multidisciplinary" or "universal" approach in analyzing credit risk. Moody's analysts gather information on a variety of risk factors, from financial to regulatory risks, and then run various scenarios to understand companies' overall risk profiles. While Moody's applies specific criteria to each industry and sector, the following broad criteria apply to all large-cap, non-financial, non-sovereign corporate debt issuers:

- *Emphasis on qualitative factors*: While Moody's affirms the importance of financial ratio analysis, it also insists that companies must be evaluated within their broader qualitative contexts. What is the state of labor relations? What does labor turnover look like? Is the minimum wage likely to be raised? What are the latest diet fads? Do the input industries look healthy? What has been the history of the industry? For example, "Moody's has observed a long-term history of high mortality among restaurant debt issuers."[10] Moody's emphasis on qualitative criteria has two important implications: 1) financial statement numbers can never fully explain a rating, and 2) there is no certain way to guarantee that a company attains a rating, regardless of how much it solidifies its balance sheet.

- *Predictability*: Companies and industries that exhibit volatile earnings and cash flows are considered to be less credit worthy than those that exhibit steady and stable growth. Moody's looks not only at historical stability but at what the future portends. Companies with larger scale and more diversification are considered to

[9] The information presented here on Moody's rating criteria comes principally from conversations with Richard Cantor at Moody's; *Moody's Investors Service's* December, 2004 "U.S. Restaurant Industry Outlook" and "Rating Methodology: Global Packaged Goods Industry"; and www.moodys.com
[10] Baldwin, Richard; Holloway, Peggy and Marshella, Tom. "U.S. Restaurant Industry Outlook." *Moody's Investors Service Global Credit Research* (December, 2004): 6.

be less volatile and therefore more predictable. Industries on the cusp of deregulation, however, would be considered less predictable. Of restaurants, Moody's says "disposable income available for restaurant spending varies with consumer confidence and Moody's considers expected volatility of restaurant sales when formulating ratings."[11]

- *Franchise strength and defensibility of market position*: Like S&P, Moody's considers a company's ability to protect its position important. On restaurants: "Low barriers to entry in the restaurant industry will limit debt-protection measure improvements even if consumer confidence is strong."[12]

- *Cash Flows and Profitability*: Moody's primary emphasis is on a company's ability to generate sufficient cash flow to service its debt and cover its cash business needs. Net income is also considered an important factor insofar as a positive net income reflects a company's ability to service its obligations and replenish its capital needs.

- *Accounting quality*: Here, Moody's attempts to pierce the accounting veil to evaluate the true market value of a company's operations and assets.

- *Operational discipline and efficiency*: How good is the company at squeezing value out of existing assets? It is believed the companies that operate more efficiently will be better positioned to respond to changing market conditions. EBIT/Assets is one ratio Moody's considers in evaluating this criterion.

- *Leverage*: Based on the simple principle that, ceteris paribus, a company with less debt is less likely to default, Moody's rewards companies that minimize use of debt in capital structure.

[11] Baldwin, Richard; Holloway, Peggy and Marshella, Tom. "U.S. Restaurant Industry Outlook." *Moody's Investors Service Global Credit Research* (December, 2004): 3.
[12] IBID

- *Strength of management*: Here, Moody's considers management's historic ability to respond with agility to changing market conditions. McDonald's receives high marks in this category: "The ability to strategically adapt to changing consumer tastes can impact performance and credit worthiness. McDonald's, the most important player in the restaurant industry, has achieved worldwide comparable store sales growth … Moody's believes that the primary causes are the introduction of relevant new menu items, such as salads, and reemphasis on restaurant fundamentals such as good quality food, efficient service, and cleanliness."[13]

We discuss ratings methodology here in some detail because later in this paper, said methodologies will become important as we seek to gauge the costs of maintaining a given credit rating versus permitting potential rating deterioration.

Table 3: Key Comparables and Their Ratings

Company	Ticker	Standard & Poor's Rating*
McDonald's Corp.	MCD	A
Darden Restaurants	DRI	BBB+
Wendy's Inc.	WEN	BBB+
Brinker Intl.	EAT	BBB
Yum Brands	YUM	BBB-
Jack In The Box	JBX	BB
Domino's Inc.	DPZ	BB-**
O'Charley's	CHUX	BB-
AFC Enterprises	AFCE	B+
CKE Restaurants	CKR	B
Denny's Corp.	DENN	B
Friendly's Ice Cream	FRN	B
New World Restaurant Group	NWRG	CCC+
Sbarro	none	CCC

*Source: Standard and Poor's ratings on Long Term Senior Unsecured Debt

**S&P does not rate DPZ; comparable Moody's Rating is Ba3 ~ BB-

Furthermore, we should state here that it is our opinion that Standard & Poor's and Moody's 2003 downgrades of McDonald's Corporation had as much to do with the agencies' growing discomfort over having any restaurant company rated too highly in the

[13] ibid

current economic environment as they did with lasting changes in McDonald's financial structure or performance (unless the agencies, which purport to place such emphasis on the long term mistook a temporary two-quarter downturn in McDonald's (Q4, 2002 – Q1, 2003) results as a lasting trend). As the highest-rated dedicated restaurant company (see Table 3), McDonald's occupies a position of important symbolic significance to the agencies. If the agencies believe that the restaurant industry is going into decline, it is the top end, namely McDonald's Corporation, which must come down since the bottom end of the spectrum already extends well into the depths of junk status. (Wendy's, the next highest rated fast-food restaurant company is currently on review for downgrade by Moody's.)

Table 4: Snapshots of MCD Senior Debt Ratings and Financial Condition

Date:	S&P Rating	Moody's Rating	Trailing 4Q Debt/TEV	Trailing 4Q Int. Cov.	Trailing 4Q Op. Margins	Market Cap
January 1, 2001	AA	Aa2	16.9%	7.3	22%	$39B
January 1, 2002	***A+***	***Aa3***	19.7%	6.5	19.9%	$35B
February 21, 2003	A+	***A2***	23.7%	7.9	19.1%	$24B
May 8, 2003	***A***	A2	27.0%	7.6	18.7%	$18B
Today	A	A2	19.6%	11.3	20.7%	$38B

Source: Moody's Investors Service, Standard and Poor's, Compustat

Table 4 provides concrete evidence of some of the concepts discussed thus far. As we will see later in this paper, a regression analysis reveals that taken together, Debt to Total Enterprise Value, Pre-tax Interest Coverage, Operating Margins, and Market Capitalization are powerful statistical predictors of credit ratings (see Appendix 2). Between 2001 and mid-2003, these statistics follow the trend we would expect. As McDonald's financial and liquidity positions seemed to deteriorate, its credit rating was downgraded from AA in early 2001 to A by May, 2003. At present, McDonald's credit rating remains at A. Based on McDonald's financial condition today (as captured by these ratios) and assuming the agencies have not made their ratings more stringent (as some claim)[14], however, we would predict a senior credit rating of A+ or AA-. After all, Debt to T.E.V. is lower than it was in January, 2002 (though adjusted debt to T.E.V.

[14] For a full discussion on whether credit rating agencies are becoming tougher in evaluating companies, see: Blume, Marshall E.; Lim, Felix and Mackinlay, Craig A. "The Declining Credit Quality of U.S. Corporate Debt: Myth or Reality?" *The Journal of Finance* Vol. 53, No. 4 (Aug., 1998): 1389-413. Many financial officers also contend that credit rating agencies have become tougher still in the wake of the Enron-era scandals.

remains slightly higher than in January, 2002), just after McDonald's was downgraded from AA; similarly, interest coverage, operating margins, and market capitalization are all higher today than they were in January, 2002. The following McDonald's credit default swap (CDS) history lends strong evidence to our hypothesis that McDonald's is at least as strong financially today as it was in 2001.

Chart 1: Recent History of Spreads on MCD 5-yr Credit Default Swaps

Source: Barclays Capital, 2005

Note that the spreads on McDonald's Credit Default Swaps today are lower than any point in 2002 when McDonald's was rated A+. While credit default swaps constitute an emerging and illiquid market that does not correspond perfectly to the bond market, they nevertheless represent a powerful indicator of the market's perception of creditworthiness.[15] How, then, can we explain the fact that McDonald's is still rated only A? The methodology employed by ratings agencies offer a few potential answers.

[15] For an interesting discussion on the relationship between corporate bonds and credit default swaps, see: Blanco, Roberto; Brennan, Simon and Marsh, Ian W. "An Empirical Analysis of the Dynamic Relationship Between Investment Grade Bonds and Credit Default Swaps." *Banco de España* (May, 2003). In general, Blanco et. al. find that CDSs offer a better measure of strict default risk, whereas bond spreads also incorporate tax concerns and systematic risk. Also see: Elton, Edward; Gruber, Martin J.; Agrawal,

For instance, consider that both Standard and Poor's and Moody's use a through-the-cycle methodology to rate companies "as far as is analytically foreseeable." Coupled with Moody's opinion that the restaurant industry is in a "cyclical upturn" that will not "lead to lasting improvements," we arrive at a plausible explanation for McDonald's continued A rating.

Yet another explanation for McDonald's current rating could be the agencies' prudent migration policy. Agencies set rating migration triggers at points where the difference between the actual agency rating and that of a real-time model prediction exceeds some pre-specified threshold. Perhaps McDonald's has not yet crossed that invisible threshold. The agencies hesitate to upgrade a company if they think there is a significant probability of a near-term re-downgrade. As noted earlier, efforts undertaken on the behalf of bettering credit ratings will not, by agency design, bear immediate fruit.

Other factors considered by the agencies but not captured by the ratios above that could explain McDonald's continued A rating include industry risk, accounting quality, strength of management, and qualitative factors such as dieting fads.

OVERVIEW OF RESEARCH ON MARKET EFFECTS OF CREDIT RATING CHANGES

The typical methodology employed to test whether changes in credit ratings (studies have been done on Moody's, S&P, and Fitch independently and considered together) affect market securities has been to observe whether stock or bond prices move abnormally in the days and weeks surrounding rating change and watchlist announcements. If credit rating changes in fact convey new information to the market or cause trigger effects (which, if substantial, can affect the company and essentially cause new information),

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Deepak and Mann, Christopher. "Explaining the Rate Spread on Corporate Bonds." *The Journal of Finance* Vol. 56, No. 1 (Feb., 2001):247-77.

both stock and bond prices should react immediately (or at the next trade in the case of the less liquid bond market) to the news of a rating change, presuming, in the latter case, that investors are aware of the ratings triggers ex-ante. If the information on which the credit ratings were developed has already been incorporated into the market, any observed reaction to credit announcements will be due solely to trigger effects (which for our purposes include both debt covenant triggers as well as rating-change-mandated portfolio recalibrations by institutional investors).

There is a significant body of literature on the effects of ratings announcements. Most studies have produced mixed results, but in composite, they generally affirm the following limited observations:

- Ratings upgrades convey no information to the market and have no effect on security prices (Holthausen and Leftwich, 1996[16]; Hand et al., 1992[17]; Dichev and Piotroski, 2001[18]). (Note that triggers are typically set against downgrades; upgrades, therefore, rarely trip triggers.)

- Negative abnormal security returns are *sometimes* observed at (Griffin and Sanvicente, 1982)[19] and leading up to (Glascock, Davidson, and Henderson, 1987)[20] downgrade reviews (Norden and Weber, 2004)[21] and announcements. Negative returns are not always observed, and some suggest that their occurrence hinges on the basis of the downgrade (for instance, negative returns are typically not observed when downgrade is attributed solely to increased leverage (Goh and

[16] Holthausen, R. W., and Leftwich R. W. "The Effect of Bond Rating Changes on Common Stock Prices." *Journal of Financial Economics* 17 (1986): 57-89.
[17] Hand, John; Holthausen, Robert W.; and Leftwich, Richard W. "The Effect of Bond Rating Agency Announcements on Bond and Stock Prices." *The Journal of Finance* Vol. 47, No. 2 (June, 1992): 733-52.
[18] Dichev Ilia D. and Piotroski, Joseph D. "The Long-Run Stock Returns Following Bond Ratings Changes." *The Journal of Finance* Vol. 56, No. 1 (Feb., 2001): 173-203.
[19] Griffin, P. A. and Sanvicente A. Z. "Common Stock Returns and Rating Changes: A Methodological Comparison." *The Journal of Finance* Vol. 37 (1982): 103-20.
[20] Glascock, J.L, Davidson, W. N. and Henderson, G. V. "Announcement Effects of Moody's Bond Rating Changes on Equity Returns." *Quarterly Journal of Business and Economics* Vol. 26 (1987): 67-78.
[21] Norden, Lars and Weber, Martin. "Informational Efficiency of Credit Default Swap and Stock Markets: The Impact of Credit Rating Announcements." *Journal of Banking and Finance* Vol. 28 (2004): 2813-43.

Ederington, 1993)[22]).

- Observation of negative abnormal returns depends greatly on a firm's initial credit rating level (and to a lesser extent on the "width" of the downgrade). The effects of a downgrade, from security price movement to trading volume, on securities that are moving into junk territory for the first time or moving further down into junk territory are more pronounced than downgrades for investment grade bonds. Consequently, each downgrade has more negative potential than the last! (Hand et al., 1992[23]; Hite and Warga, 1997[24];) This last finding is a critical point for companies pondering optimal credit rating strategy.

- In general, the market can and does predict and account for upgrades and downgrades well before they occur (Steiner and Heinke, 2001[25]; Hite and Warga, 1997[26]; Purda, 2003[27]).

The general conclusion seems to be that rating changes and, by implication, rating agencies, offer little new information to the market. If it is true that rating agencies offer only a repackaging of pre-existing data, one is left to question why the agencies exist at all. Do not stock price movements, which theoretically incorporate all known data, perform the same function as rating agencies, only at a much more detailed and timely level? Or what about credit default swaps? CDSs explicitly reflect real time market evaluation of default probabilities. As mentioned above, one argument is that agencies provide passive investors and other stakeholders important trigger value.

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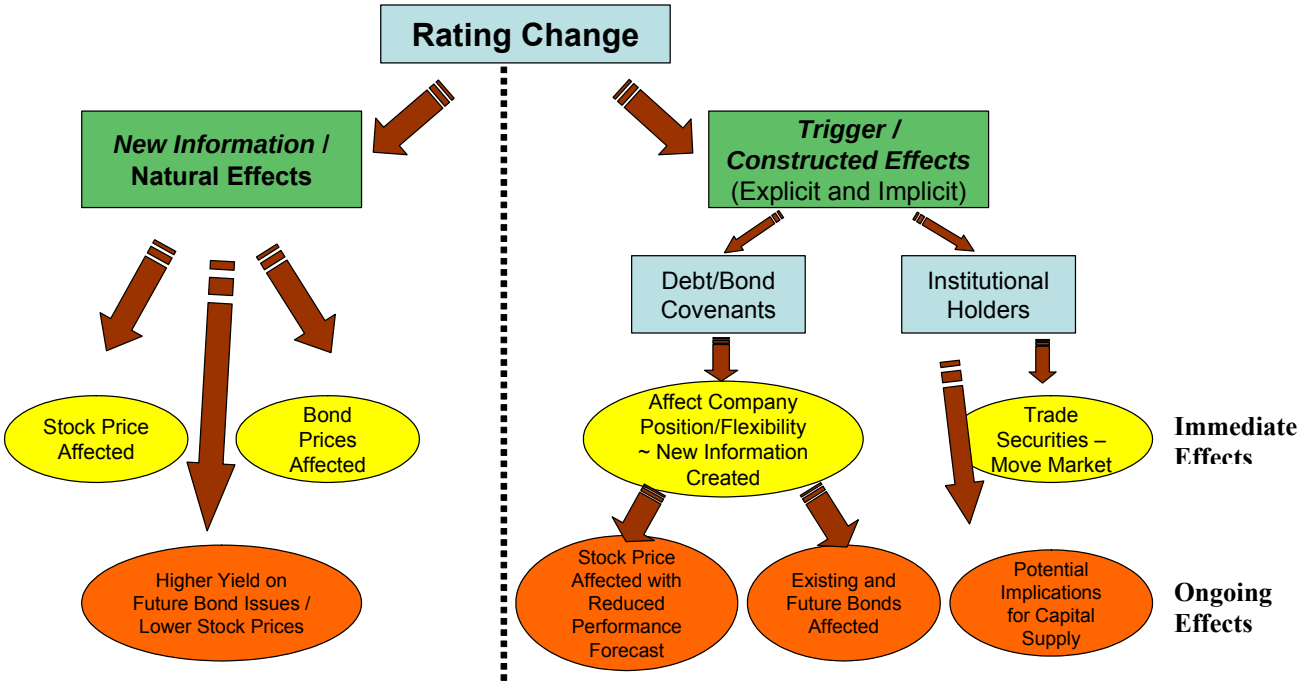
[22] Goh, J. C. and Ederington, L. H. "Is a Bond Rating Downgrade Bad News, Good News, or No News for Stockholders?" *The Journal of Finance* Vol. 48 (1993): 2001-8.
[23] Hand, John; Holthausen, Robert W.; and Leftwich, Richard W. "The Effect of Bond Rating Agency Announcements on Bond and Stock Prices." *The Journal of Finance* Vol. 47, No. 2 (June, 1992): 733-52.
[24] Hite, G. and Warga, A. "The Effect of Bond-Rating Changes on Bond Price Performance." *Financial Analysts Journal* Vol. 53 (May, 1997): 35-51.
[25] Steiner, M. and Heinke V. G. "Event Study Concerning International Bond Price Effects on Credit Rating Actions." *International Journal of Finance and Economics* Vol. 6 (2001): 139-57.
[26] Hite and Warga, 1997.
[27] Purda, Lynnette. "Controlling for Anticipation in Stock Price Reactions to Credit Downgrades." *Working Paper* (January, 2003).

Investors value timeliness of information, yet they don't want to rebalance portfolios minute-by-minute. In providing a signal that a company has passed a point of no near-future return, perhaps agencies provide investors value by allowing them safe waiting space between recalibrations. Or consider the investor who delegates his asset allocation to an investment manager. If he says, "I want to put 40% of my assets into relatively safe bonds," perhaps credit ratings provide a valuable marker of "relatively safe" and help limit the liability of the investment professional.

PART II: EFFECTS OF DOWNGRADE ON MCDONALD'S

Based on our discussion above of credit ratings and the various ways they can affect rated companies (directly, by revealing new information to the market, or indirectly, through embedded covenant agreements and investment triggers, etc.), we can develop the following framework to consider the potential costs attendant with a credit rating downgrade.

Chart 2: Framework for Evaluating Potential Effects of Credit Rating Downgrade



On the left hand side of Chart 2, we see how a credit rating change (or addition to a watch list) can affect a company if this change reveals new information to the market. In this case, the market will immediately recalibrate its forecasts for the company in question, and stock and bond prices will immediately reflect the new information. Because the

market tends to gather information in advance of agency announcements, we rarely see "New Information / Natural Effects" after a downgrade.

On the right hand side of a chart, we see how a rating change can affect a company because of triggers. It is important to bear in mind that there are two types of triggers: those a company constructs in its own debt agreements, and those placed upon companies by holders or would-be-holders of that company's securities. If either of these types of triggers is tripped by a downgrade, new (generally negative) information is essentially immediately created. Consider a downgrade from A to BBB. Let's say this downgrade tripped three triggers such that a) a significant portion of outstanding debt is repriced at a higher rate, b) operational limitations (such as no new acquisitions) are now placed on the company because of debt covenants, and c) two major institutional investors will no longer hold the company's bonds. Whereas the actual downgrade itself may not have revealed information and in no way changed the company, as one can clearly see, the trigger ramifications of the downgrade can quickly and substantially change the facts of a company's existence. In this case, the ratings don't reveal new information, but they cause new information to be created, changing the prospects of and reasonable forecasts for a company. We feel it is worth repeating that this second category of rating change effects becomes much more significant the lower the starting credit rating is (as we will show later in this paper). Whereas a downgrade from AA- to A+ may cause few or no "Trigger / Constructed Effects" on a company, a downgrade from BBB to B can push a company into financial distress based solely on these effects.[28]

Finally, for our framework to be truly complete, it should include a third category: "Consumer Perception and Behavior Effects." For companies that manufacture durable goods that require servicing (such as General Motors, IBM, and many others), this may well be a significant cost category. For instance, if Dell were downgraded into junk status, sophisticated corporate buyers might well migrate away from Dell products for fear that Dell might not be around in the future to service its machines or provide

[28] Hand, John; Holthausen, Robert W.; and Leftwich, Richard W. "The Effect of Bond Rating Agency Announcements on Bond and Stock Prices." *The Journal of Finance* Vol. 47, No. 2 (June, 1992): 733-52.

replacement parts and upgrades. Thus could a downgrade imply substantial top line costs for Dell. As we will discuss later in this paper, however, we find no "Consumer Perception and Behavior Effects" associated with a credit rating downgrade for McDonald's.

Having laid the theoretical and conceptual frameworks for considering ratings changes, let us now turn to the particular case of McDonald's May, 2003 downgrade by Standard and Poor's from A+ to A.

DOWNGRADE COSTS ON BONDS AND DEBT

BONDS

The effects of a downgrade on corporate bonds can be divided into two broad categories: changes in the market prices of outstanding bonds and changes in the required yield of new issues. From McDonald's Corporation's perspective, the latter category is the most relevant. Increased costs because of higher required yields on new bond issuances can, to the extent that demand for these higher yields relies upon rating agency assessments rather than individual investors' personal assessments, be viewed as trigger costs. The downgrade of a company represents a threshold trigger for passive and conservative investors: they will now demand a higher premium for a bond that is perceived as "riskier." One is left to wonder, however, whether most market participants would not demand the same yields even if credit agencies did not exist. As the following data illustrates, relevant yields can vary within a band for any given credit rating and tend to trend up in advance of a credit rating downgrade. Similarly, as a company improves its performance, even if the credit rating is not changed, required yields will trend down, to an extent. Market participants are watching!

Table 5: Snapshots of Recent MCD 10-12-Year Domestic Bond Issues

1	**Issue Date**	4/17/2001	2/22/2002	5/22/2003	2/6/2004	3/30/2004	7/28/2004
2	**MCD Credit Rating (S&P)**	AA	A+	A	A	A	A
3	**Life (years)**	10	10	10	11	12	12
4	**Principal Amount**	$340M	$300M	$150M	$50M	$30M	$25M
5	**Callable?**	Yes	Yes	Yes	Yes	Yes	Yes
6	**Likelihood of Call**	Low	Low	Low	Low	Medium	Medium
7	**Coupon on Face**	6.00%	5.75%	4.13%	5.00%	5%	5.20%
8	**Revenue on Bond Sale**	$338M	$299.55M	$148.66M	$49.79M	$30M	$24.2M
9	**Actual Yield at Sale**	6.04%	5.76%	4.16%	5.02%	5%	5.38%
10	**Benchmark Treasury Rate**	5.15%	4.87%	3.38%	4.17%	3.95%	4.54%
11	**Spread on Treasury**	0.89%	0.89%	0.78%	0.85%	1.05%	0.84%
12	**Spread as Percent of Treasury**	17.19%	18.25%	23.14%	20.41%	26.58%	18.50%

Sources: MCD 424Bs, Bloomberg, Standard and Poor's, Federal Reserve Statistical Release

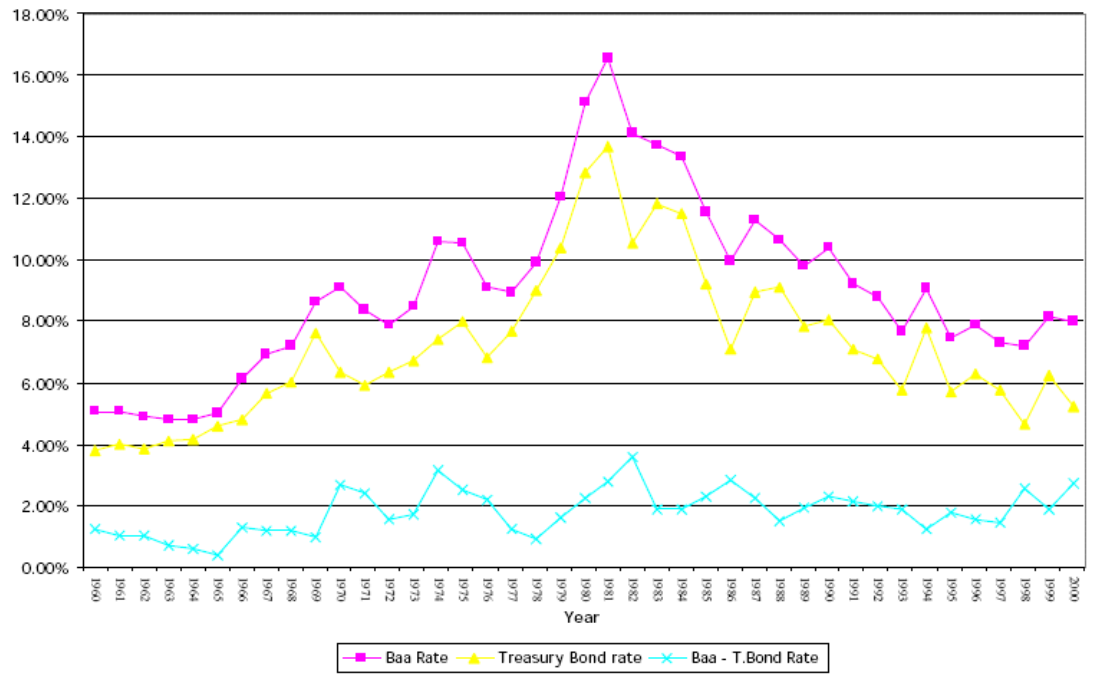
Table 5 shows six of McDonald's bond issuances from April, 2001 to July, 2004, during which time McDonald's underwent a steady downward rating migration. These issuances were chosen because they have similar expiration periods (10 to 12 years) and similar covenants and indentures (ie, all are callable, generally at the greater of fair market value or complete principal repayment).

When we consider the spread over the treasury rate (the additional yield McDonald's must offer above the benchmark "risk-free" treasury rate of similar expiry) imposed by the market on these issuances, no clear trend is observed (see row 11 in chart above). In the first two issuances, when McDonald's had a rating in AA/A+ territory, the spread over the comparable treasury rate was 89 basis points. In the latter four issuances, the spread over the treasury ranged from 78 to 105 basis points. In three of the latter four issuances, the spread over the treasury was actually lower than the issuance in which McDonald's was rated AA!

But perhaps spread over treasury is not the most informative figure to consider. While it captures the situation of a single bond issue, spread over treasury tells us nothing about the movement in the underlying treasury rate or the current economic and market climates. It seems reasonable to expect that on average, as the treasury rate increases, so too does the spread over the treasury which investors will demand. Imagine a 10-year treasury rate of only 3.38% (as was observed on 5/22/2003). In such a low rate environment, investors might happily buy an A rated bond for an additional 80 basis

points of yield (they settled for 78 basis points on the MCD bond issuance of the same date). But now, imagine an environment in which the 10-year treasury rate, is, say, above 14% (as it was during 22 weeks of 1981). In this environment, when investors can earn 14+% with no risk, they will probably not be willing to take on the additional risk associated with an A rating for a mere 80 basis points. Indeed, throughout 1981, the average spread over treasury on a 10-year A rated bond was almost 3%!

Chart 3: Baa Bond Rates, 10-Yr Treasury Rates, and Average Spreads, 1960-2000



Source: Moody's, taken from Damodaran, A. 2002: http://pages.stern.nyu.edu/~adamodar/pdfiles/valn2ed/ch7.pdf

Chart 3 demonstrates that required spreads for a given grade of 10-year bonds do indeed fluctuate over time. (In foreign and especially emerging markets, spreads vary in a much greater range,[29] which is another reason we focus on domestic issuances here.) The correlation between the size of the spread for 10-year bonds and the level of the corresponding U.S. treasury rate is about 0.5.[30] Within 3-year bands that encompass

[29] Damodaran, Aswath. Corporate Finance : Theory and Practice. *John Wiley & Sons, Inc.* 2nd Edition, 2001.

[30] This is based on our analysis, using figures from Moody's and BondMarkets.com. We analyzed spread trends on bonds of varying lifecycles, and the correlation between spread and treasury varied from 0.25 to 0.6. The other critical factor seems to be economic condition. Holding the treasury rate constant, spreads

periods of similar and stable overall economic tenor, the correlation between spread and treasury increases to almost .7. If we could control for bond covenants and indentures, we suspect the correlation over short periods of time would be higher still.

The following table shows explicitly the correlation between the base treasury rate and the magnitude of spread. Note that the treasury rate was higher in the period from 1987 to 1991 when the economy was uncertain and that it was lower in the period of economic prosperity between 1992 and 1996. Correspondingly, spreads were higher when the base treasury rates were higher.

Table 6: Treasury Rates and Spreads Across Varying Maturities and Credit Ratings

Maturity	Treasuries
2	7.56
3	7.76
4	7.93
5	8.07
6	8.17
7	8.24
8	8.3
9	8.35
10	8.38

Industrial Sector, 1987-1991		
AA	A	BBB
0.436	0.707	1.312
0.441	0.78	1.339
0.504	0.824	1.347
0.572	0.853	1.349
0.629	0.872	1.348
0.675	0.886	1.347
0.711	0.897	1.346
0.74	0.905	1.345
0.764	0.912	1.344

Maturity	Treasuries
2	5.265
3	5.616
4	5.916
5	6.15
6	6.326
7	6.461
8	6.565
9	6.647
10	6.713

Industrial Sector, 1992-1996		
AA	A	BBB
0.392	0.536	1.022
0.396	0.58	1.07
0.406	0.606	1.072
0.415	0.623	1.062
0.423	0.634	1.049
0.429	0.642	1.039
0.434	0.649	1.03
0.438	0.653	1.022
0.441	0.657	1.016

Differences, 1987-91 Spreads - 1992-96 Spreads				
Maturity	Treasuries	AA	A	BBB
2	2.295	0.044	0.171	0.29
3	2.144	0.045	0.2	0.269
4	2.014	0.098	0.218	0.275
5	1.92	0.157	0.23	0.287
6	1.844	0.206	0.238	0.299
7	1.779	0.246	0.244	0.308
8	1.735	0.277	0.248	0.316
9	1.703	0.302	0.252	0.323
10	1.667	0.323	0.255	0.328

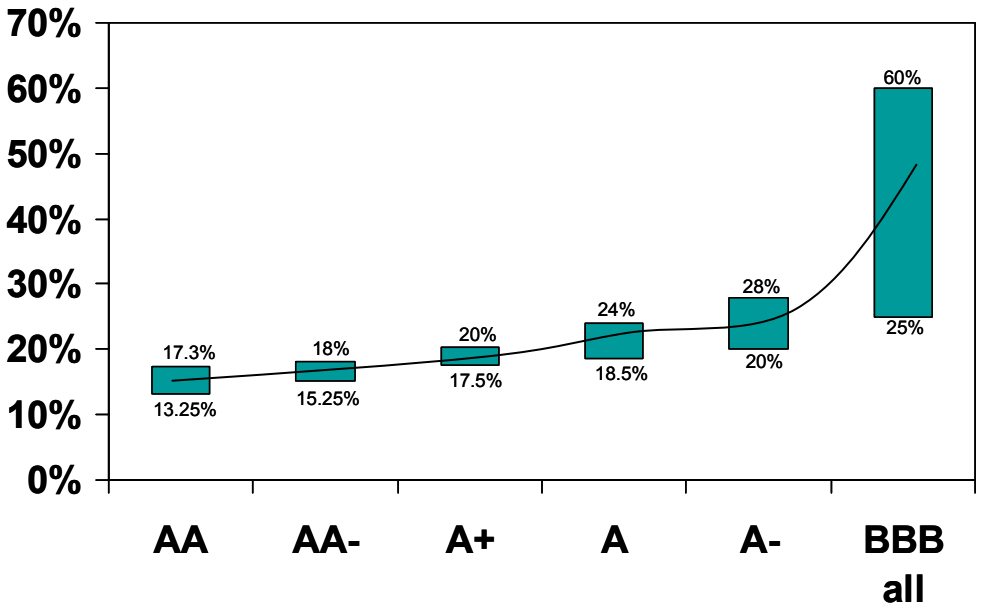
Source: Elton, Gruber, Agrawal, and Mann (2001), Author Analysis

seem to narrow during economic booms and widen during economic contractions (this observation has been confirmed by Professor Aswath Damodaran of Stern (2001)). Spreads also seem to widen when investors have strong expectations that treasury rates or inflation will increase.

Given that it is not enough to simply look at a bond's spread over the treasury rate in measuring the cost of a downgrade, we turn to an imperfect but more useful statistic: *credit spread as a percentage of the corresponding treasury rate.* Henceforth, we will refer to this ratio as delta.

Δ = *credit spread as a percentage of the corresponding treasury rate*

Chart 4: 2002-2004 Spread as % of Treasury (Δ) for 10-Year Bonds (Industrials); 10-Year Treasury between 3% and 5%



Source: Bloomberg, Standard and Poor's, Federal Reserve, SEC Filings, Author Analysis

Δ will help us compare McDonald's costs of debt for any level of the treasury rate.

Γ = *change in **Δ** per 1% increase in treasury*

While **Δ** mostly controls for treasury rate (as long as the movements in the treasury rate are not too large; note that the relationship between treasury rate and the required spread as a percentage of treasury has a slightly decreasing slope as the treasury rate increases, that is, **Γ** is negative), this statistic does not control for important factors including the state of the economy, market demand for fixed income products at issuance, and inflation

expectations. This is why we constrain our analysis to intervals of only a few years (by which constraint we assume that market, economic, and inflation conditions will be of a similar tenor in any, say, three-year period).

Over short periods of time (2 to 5 years) and assuming stable economic conditions, **Δ** turns out to be a fairly precise indicator of credit cost. The following table offers a range of **Δ** for randomly selected bond issuances (selected from the universe of 10-12 year restaurant, food, and consumer goods issuances between 2002 and present) of various ratings since 2002. Ideally, we would have constructed our table of comparables exclusively from the fast-food restaurant industry, since we know "industry risk" is a major factor in rating agencies' analyses and we would like to control for it. However, since McDonald's is the highest rated company in its category and since many companies have not issued 10-year bonds since 2002, finding sufficient fast-food comparables proved impossible. Nevertheless, the following table illustrates a clear trend of increasing delta as we move down credit rating categories. Table 7 also shows that delta increases at an accelerating rate as we move down ratings categories.

Table 7: Snapshots of Recent Comparable 10-12-Year Domestic Bond Issues

Company	Gillette	KMB	P&G	BUD	Campbell's	Wendy's	Brinker	YUM	O'Charley's
Issue Date	2/5/2003	2/8/2002	8/10/2004	8/16/2004	12/2/2002	6/17/2002	9/2/2004	6/28/2002	5/26/2004
Credit Rating	AA	Aa2/AA-	AA-	A+	A/A3	BBB+	BBB	BBB-	BB-
Life (years)	10	10	10	11	10	12	10	10	9.5
Principal Amount ($M)	3.175	400	900	250	400	225	300	400	125
Callable?	Y	Y	Y	Y	Y	Y	Y	Y	Y
Likelihood of Call	Low	Low	Low	Low	Low	Low	Medium	Low	Medium
Coupon on Face	4.50%	5.63%	4.95%	5.00%	5.00%	6.20%	5.75%	7.70%	9.00%
Revenue on Bond Sale ($M)	3.2	396.6	897.0	249.5	399.3	224.3	300.0	397.8	125.0
Actual Yield at Sale	4.51%	5.67%	4.97%	5.01%	5.01%	6.22%	5.75%	7.66%	9.00%
Benchmark Treasury Rate	3.98%	4.92%	4.28%	4.26%	4.14%	4.90%	4.20%	4.84%	4.71%
Spread on Treasury	0.53%	0.75%	0.69%	0.75%	0.87%	1.32%	1.55%	2.82%	4.29%
Δ	13.3%	15.3%	16.0%	17.6%	21.0%	26.9%	36.9%	58.2%	91.1%

Sources: SEC 420 Filings, Bloomberg, Moody's, Standard and Poor's, Federal Reserve Treasury Data, Author Analysis

Δ also follows a clear trend within McDonald's credit ratings:

Table 8: Spread as % of Treasury on MCD 10-12-Year Bond Issues since 2000

S&P Credit Rating	AA	A+	A
Average Spread as % of Treasury Rate	17.19%	18.25%	22.16%

Sources: MCD 424Bs, Bloomberg, Federal Reserve Statistical Release

As McDonald's has been downgraded from AA to A, the spread as a percent of the treasury rate on 10-year issues has increased from 17.19% to an average of 22.16%. It is worth noting, however, that the **Δ** on McDonald's most recent 10-year bond issue (July, 2004) was 18.5%, not far above the **Δ** of 18.25% associated with an A+ rating. As can be deduced from Table 9, the relatively low spread on McDonald's July, 2004 bond issuance was most likely due to McDonald's strong performance and financial condition in the preceding four quarters. Arguably, from a creditworthiness standpoint, McDonald's was as strong if not stronger in July, 2004 as it was in January of 2002, when it had only recently been downgraded to A+ from an AA rating (the fact that McDonald's rating is still A probably reflects the agencies' rating policy of prudent migration).[31] Going back to our earlier discussion, the low credit spread on the A rated July, 2004 debt issue confirms our hypothesis that credit ratings do not necessarily reflect timely or new information and that many market participants evaluate credit worthiness for themselves. Referring back to our model in Chart 2, the extra 25 basis points in the credit spread as a percentage of the corresponding treasury rate (when compared to the **Δ** associated with an A+ rating) is probably due to implicit trigger effects. Regardless of financial performance, conservative institutional investors will not invest in a bond of a given grade without a minimum required yield.

Table 9: Snapshots of MCD Senior Debt Ratings and Financial Condition

Date:	S&P Rating	Trailing 4Q Debt/TEV	Trailing 4Q Int. Cov.	Trailing 4Q Op. Margins	Adj. Debt/TEV	Market Cap
January 1, 2001	AA	16.9%	7.3	22%	39%	$39B
January 1, 2002	A+	19.7%	6.5	19.9%	43%	$35B
February 21, 2003	A+	23.7%	7.9	19.1%	60%	$24B
May 8, 2003	A	27.0%	7.6	18.7%	60%	$18B
28-Jul-04	A	22.7%	10.2	20.5%	47%	$34B

Source: Standard and Poor's, Compustat, finance.yahoo.com

[31] This view has been partially confirmed by discussions with Peggy Holloway at Moody's. According to Peggy, Moody's real time markets-implied credit rating for McDonald's on May 23, 2005 was A1/A+ (v. Moody's official long-term rating of A2). It was suggested that to get back to A1 or Aa, McDonald's would have to continue demonstrating a strengthening of the balance sheet.

Armed with all this information, we can now begin to develop a generalized forward-looking idea of the bond-related costs of a downgrade. Let us start by making several assumptions (which we can later relax). 1) Let us first assume that the performance of the U.S. economy over the next five years will mirror the lukewarm performance of the last three years (implying that our bandwidth estimates for spread as a percentage of treasury remain relevant). 2) Let us also assume that treasury rates will increase slightly each year. 3) The value-weighted average lifespan of bonds issued by McDonald's since 1998 is about 10.9 years; for simplicity, we will assume that all future bond issues by McDonald's have a 10-yr expiry. 4) Between 1998 and 2004, on average (though with a high degree of variance), McDonald's issued about $400M of face value in bonds per year; for simplicity, we will assume that McDonald's issues exactly $400M in bonds at the beginning of each year going forward. For simplicity, we assume that coupons are paid annually (this will cause our costs to be slightly understated). 5) We will also assume that McDonald's credit rating remains at A through 2010, and that the average spread, as a percentage of the treasury rate, required of an A rated bond is 22% (roughly the average of the observations from Table 4). 6) Finally, reflecting data from Table 4, we assume (for our basis of comparison) that the required spread as a percentage of the treasury rate required for an AA McDonald's bond is 17% (decreasing slightly as treasury increases), and the required spread for an A+ McDonald's bond is 18.25% (decreasing slightly as treasury increases)[32]. We will only consider new bond issuance and their attendant coupon payments since we are trying to understand the costs of the downgrade going forward. Because of the large number of assumptions, we will only calculate potential costs through 2012 (a longer forecast period than we are completely comfortable with).

[32] Technically, to account for $\boldsymbol{\Gamma}$, we multiply $\boldsymbol{\Delta}$ by $(.99)^n$ of its initial value for each 25 basis point increase in the treasury rate. This method most closely reflects the "decreasing slope" trend we observe in the data.

Table 10: Base Case Additional Bond Costs

Year	Q3-4, 2005	2006	2007	2008	2009	2010	2011	2012
Face Value of Bonds Issued ($M)	200	400	400	400	400	400	400	400
U.S. 10-year Treasury Rate	4.25%	4.50%	4.75%	5.00%	5.25%	5.50%	5.75%	5.75%
AA 10-year Corporate Bond Rate	4.97%	5.26%	5.54%	5.82%	6.11%	6.39%	6.67%	6.67%
A+ 10-year Corporate Bond Rate	5.03%	5.31%	5.60%	5.89%	6.17%	6.45%	6.74%	6.74%
A 10-year Corporate Bond Rate	5.19%	5.48%	5.77%	6.07%	6.36%	6.65%	6.94%	6.94%
Cumulative Stream of AA Coupons ($M)	0	9.9	31.0	53.1	76.4	100.9	126.4	153.1
Cumulative Stream of A+ Coupons ($M)	0	10.1	31.3	53.7	77.2	101.9	127.7	154.7
Cumulative Stream of A Coupons ($M)	0	10.4	32.3	55.4	79.7	105.1	131.7	159.5
Future Value Cost of A Relative to AA ($M)	0	0.4	1.3	2.2	3.2	4.2	5.3	6.4
Future Value Cost of A Relative to A+ ($M)	0	0.3	1.0	1.7	2.4	3.2	4.0	4.8
Discounted Cost of A Relative to AA ($M)		0.41	1.21	1.95	2.63	3.23	3.77	4.25
Discounted Cost of A Relative to A+ ($M)		0.31	0.91	1.46	1.97	2.42	2.83	3.19
Present Value of Cost of A Relative to AA ($M)	$ 17.5							
Present Value of Cost of A Relative to A+ ($M)	$ 13.1							

As one can see from Table 10, when compared to a rating of AA, the present value of the additional bond costs for a rating of A amount to almost $18M through 2012, given the assumptions above. If we compare the bond costs of an A rating to those of an A+ rating, the present value of additional costs amounts to about $13M.[33]

Having established a base case for additional bond costs to McDonald's, we now develop a band width of potential outcomes. In the up scenario, we will assume that the economy performs well, average spreads narrow slightly, the treasury rate remains where it is today, McDonald's regains it's A+ rating in 2007, and McDonald's gradually reduces the amount of its future bond issuances. (Though we call this the "up" scenario, it seems entirely plausible, especially if McDonald's financial performance continues on its current trajectory.) We also assume that the starting credit spread as a percentage of the treasury rate remains the same as that of McDonald's July, 2004 bond issue, namely 18.5% (barely above the comparable spread ratio associated with an A+ rating).

[33] Technically, from the perspective of financial theory, this number would be a little bit lower than $13M. If the downgrade indicated a change in the risk of the company, we would need to subtract off the increased "benefit" of being able to default which would have gotten larger had probability of default increased with the lower rating. Since the true probability of default fluctuates day-to-day, and since credit ratings, which may have become more stringent in recent years, do not necessarily reflect pure probability of default, we ignore this effect in this analysis.

Table 11: Up Scenario Additional Bond Costs

Year	Q3-4, 2005	2006	2007	2008	2009	2010	2011	2012
Face Value of Bonds Issued ($M)	200	400	350	300	250	250	250	250
U.S. 10-year Treasury Rate	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%
AA 10-year Corporate Bond Rate	4.93%	4.93%	4.92%	4.92%	4.91%	4.91%	4.90%	4.90%
A+ 10-year Corporate Bond Rate	5.02%	5.01%	5.01%	5.01%	5.00%	5.00%	4.99%	4.99%
A 10-year Corporate Bond Rate	5.04%	5.04%	5.04%	5.04%	5.04%	5.04%	5.04%	5.04%
Cumulative Stream of AA Coupons ($M)	0	9.9	29.6	46.8	61.5	73.8	86.1	98.4
Cumulative Stream of A+ Coupons ($M)	0	10.0	30.1	47.6	62.6	75.1	87.6	100.1
Cumulative Stream of A Coupons ($M)	0	10.1	30.2	47.8	62.8	75.3	87.8	100.3
Future Value Cost of A Relative to AA ($M)	0	0.2	0.7	1.0	1.2	1.5	1.7	1.9
Future Value Cost of A Relative to A+ ($M)	0	0.04	0.1	0.1	0.1	0.1	0.1	0.1
Discounted Cost of A Relative to AA ($M)		0.21	0.61	0.86	1.04	1.17	1.28	1.38
Discounted Cost of A Relative to A+ ($M)		0.04	0.13	0.13	0.13	0.13	0.13	0.13
Present Value of Cost of A Relative to AA ($M)	$ 6.5							
Present Value of Cost of A Relative to A+ ($M)	$ 0.8							

For the down scenario, we will assume that the economy performs poorly, average spreads widen slightly, treasury rate growth accelerates slightly above the base case, and McDonald's slightly increases the principal amount of its future bond issuances. (The down scenario, while not likely, is also not entirely implausible.)

Table 12: Down Scenario Additional Bond Costs

Year	Q3-4, 2005	2006	2007	2008	2009	2010	2011	2012
Face Value of Bonds Issued ($M)	200	400	425	450	475	500	500	500
U.S. 10-year Treasury Rate	4.25%	4.60%	4.90%	5.20%	5.50%	5.80%	6.10%	6.50%
AA 10-year Corporate Bond Rate	4.99%	5.40%	5.74%	6.08%	6.42%	6.77%	7.11%	7.56%
A+ 10-year Corporate Bond Rate	5.04%	5.44%	5.79%	6.13%	6.48%	6.82%	7.16%	7.62%
A 10-year Corporate Bond Rate	5.21%	5.62%	5.98%	6.34%	6.69%	7.04%	7.39%	7.86%
Cumulative Stream of AA Coupons ($M)	0	10.0	31.6	56.0	83.3	113.9	147.7	183.2
Cumulative Stream of A+ Coupons ($M)	0	10.1	31.8	56.4	84.0	114.8	148.9	184.7
Cumulative Stream of A Coupons ($M)	0	10.4	32.9	58.3	86.8	118.6	153.8	190.8
Future Value Cost of A Relative to AA ($M)	0	0.4	1.3	2.4	3.5	4.7	6.1	7.6
Future Value Cost of A Relative to A+ ($M)	0	0.3	1.1	1.9	2.8	3.8	4.9	6.0
Discounted Cost of A Relative to AA ($M)		0.41	1.23	2.03	2.83	3.59	4.31	4.93
Discounted Cost of A Relative to A+ ($M)		0.33	0.98	1.63	2.26	2.87	3.45	3.95
Present Value of Cost of A Relative to AA ($M)	$ 19.3							
Present Value of Cost of A Relative to A+ ($M)	$ 15.5							

Forecasting through 2012, we can predict that relative to an AA rating, the present value of the bond-related costs of an A rating will amount to between $7M (best case) and $19M (worst case). Relative to an A+ rating, the present value of this cost falls between $800,000 (recall that in the best case, McDonald's credit spread *continues* to act very

much like that for an A+ bond spread until McDonald's regains its A+ rating in 2007, thus bringing costs relative to A+ to 0 thereafter) and $16M (in the worst case). It is the opinion of the author that the best estimate for the costs of the May, 2003 downgrade falls somewhere between the base case and best case/up scenario detailed above.

BANK DEBT

Accurately analyzing the non-bond debt costs associated with a ratings downgrade presents several logistical problems. Foremost is the fact that it is impossible to evaluate the exact structure of a company's bank debt at any given time from publicly available financial statements. Financial statements tell us the amount of debt outstanding at given points and interest expense for given periods, but we cannot observe how debt arrangements were structured, how old outstanding debt is, whether interest payments were front-loaded or delayed, whether there have been debt-structuring trends as management experiments with new arrangements over time, etc. Essentially, increased debt costs caused today might not show up in financial statements until years later; or, looking only at today could overstate the additional costs, depending on how debt was structured. Table 13 illustrates the difficulty of capturing changing debt costs based solely on financial statements. McDonald's interest expense as a percentage of debt oscillates but generally seems to follow a downward trend as McDonald's credit rating deteriorates. Further confounding this, the implied spread as a percentage of the corresponding 10-year treasury rate varies widely, decreasing as McDonald's ratings deteriorate and going negative in the most recent quarters!

Table 13: MCD Ratings and Interest Ratios

Year	2001	2001	2002	2002	2003	2003	2004	2004	2005
Quarter	1	3	1	3	1	3	1	3	1
S&P Rating	AA	AA	A+	A+	A+	A	A	A	A
Trailing 4Q Interest Expense/Debt	5.5%	5.4%	4.8%	4.1%	3.9%	4.0%	3.9%	3.8%	4.0%
Average 10-year Treasury Rate	5.1%	5.0%	5.1%	4.3%	3.9%	4.2%	4.0%	4.3%	4.3%
Implied Spread	0.4%	0.4%	-0.3%	-0.2%	0.0%	-0.2%	-0.1%	-0.5%	-0.3%

Probably the best we can do with bank debt is to analyze the bond-related costs associated with a downgrade and make the assumption that however debt is structured, ultimately, from a present value perspective, the cost of new bank debt will wind up

being similar to that of bond issuances. Fortunately for this analysis, the vast majority of McDonald's debt exists in the form of bonds, making this a small stretch.

Given the difficulties addressed above, we will estimate the present value of additional bank debt costs (through 2012 as compared to an A+ rating) associated with McDonald's 2003 downgrade with the following simplified equation: *(PV of Additional Bond Costs / Value of Bonds Outstanding) * (Value of Bank Debt Outstanding).* Using Bloomberg, this yields the following: ($13.1M / $8,500M) * ($550M) = $850,000. Thus can we estimate that the present value of the bank debt costs from the downgrade amount to roughly $1M. Employing our up and down cases above, we can develop a range for this cost of [$55,000, $1.01M]

Having come up with estimates for the debt-cost related to McDonald's 2003 downgrade, we turn briefly to the question of how McDonald's should think about potential future downgrades. In short, the debt cost of further downgrades could be estimated in a manner very similar to that of the methodology employed above. *However*, it is critical to remember the well-established fact that debt costs of downgrades accelerate as starting credit scores get lower.[34]

Academics commonly apply the following equation[35] to describe how investors (and investment managers) view their portfolios and individual investments therein:

> Utility = Expected Return - .5(Risk Aversion Coefficient)(σ^2) [36]
> where σ is portfolio or security volatility

[34] Again, we refer you to [Hand, John; Holthausen, Robert W.; and Leftwich, Richard W. "The Effect of Bond Rating Agency Announcements on Bond and Stock Prices." *The Journal of Finance* Vol. 47, No. 2 (June, 1992): 733-52.] for a good starting point on the academic literature on the escalating danger of downgrades. They do not use the utiliy framework above, but their findings yield the same results.
[35] See the Association of Investment Management and Research, or Bodie, Zvi; Kane, Alex and Marcus, Alan J. Investments. *McGraw Hill* 6th Edition (2005): 165-96.
[36] Note that this equation applies to single assets or composite portfolios. If we consider a bond as one piece of a broader portfolio, its covariance with other securities begins to matter more than its individual variance. Nevertheless, absent other information, we deduce that variance does have an exponential effect on required return.

We can easily revise this equation to consider McDonald's bonds. If we substitute *expected return* for *required* Δ and *volatility* for *rating-implied-risk*, we get:

$$\text{Utility} = \text{Required } \Delta - .5(\text{Risk Aversion Coefficient})(\text{rating-implied-risk}^2)$$

From this equation, we first deduce that for a given utility, an investor will require a higher Δ for a higher rating-implied-risk. We next observe that for a constant utility, the required Δ increases at an exponential rate vis-à-vis rating-implied-risk increases. Imagine an investor with a risk aversion coefficient of 1 who seeks a utility of 0.1. If this investor is content to purchase McDonald's May 22, 2003 bond at issuance (recall from Table 5 that this bond had a Δ of 0.2314), the rating implied risk must be 0.513 (that is, $0.2314 - 0.5(1)(0.513)^2 = 0.1 = \text{Utility}$). (Note also that rating-implied risk could vary within a defined band depending on concurrent market and company circumstances.) In our imaginary world, therefore, our rating-implied-risk for McDonald's 2003 A bond is 0.513. Now notice that for every 0.1 that the rating-implied-risk increases, delta must increase at an accelerating rate to maintain a utility of 0.1. To offer a utility of 0.1, a rating-implied-risk of 0.613 must be accompanied by a Δ of 0.2879 (0.0565 higher than before). If the rating-implied-risk increases to 0.713, Δ must now be 0.3542 to offer a utility of 0.1 (0.1228 higher than our original delta). The point we are trying to illustrate is that as perceived credit risk increases, the required delta for a given investor also increases, but at an accelerating rate. McDonald's, therefore, when considering the potential cost of further downgrades must be aware that each downgrade costs significantly more than the last, especially as it approaches the speculative grade-bond-boundary (as can be clearly seen in Chart 4). This result is borne out by the data in Table 7. Notice that delta increases a greater amount for each subsequent move down in bond grade. We will refer to this as the "escalating danger" to downgrades.

DOWNGRADE EFFECTS ON STOCK PRICES

As described in Part I, academic studies on the subject find that credit rating changes typically have little effect on stock price. The exception seems to be when an unexpected downgrade occurs or when enough triggers are associated with a downgrade that demand for the company's securities is adversely affected.

To study the effect, if any, of a downgrade on McDonald's stock, we analyzed MCD daily stock data from January 2, 2001 through May 2, 2005. We focused our attention on the dates of the two Standard & Poor's downgrades in that range: October 29, 2001 and May 8, 2003. First, we present some summary statistics.

Table 14: Daily Stock Returns 1/2/2001 – 5/2/2005, Selected Statistics

	Daily High-Low Spread	Daily Log-Normal Return	Daily Volume
Average	0.606	-0.012%	5,507,787
Standard Deviation	0.299	1.803%	2,955,787
May 8, 2003	0.45	-0.808%	6,003,200
October 29, 2001	1.62	-5.942%	7,589,000

May 7, 2003 Open	$17.64
May 9, 2003 Close	$17.58
October 26, 2001 Open	$28.00
October 30, 2001 Close	$25.99

January 2, 2001 Open	$ 33.81	
May 2, 2005 Close	$ 29.57	
Lowest Close	$ 12.38	March 12, 2003
Highest Close	$ 34.69	January 17, 2001
Largest Volume	35,334,900	
Smallest Volume	1,280,900	
Widest Daily Spread	$ 2.87	
Smallest Spread	$ 0.15	

Based on the information in Table 14, it appears that the May, 2003 downgrade from A+ to A conveyed no information to the market and had no noticeable effect on McDonald's stock. Daily lognormal returns on May 8 were less than 0.5 standard deviations from the

mean. Trading volume on that day was very near the mean, indicating the market's indifference to the downgrade.

The downgrade of October 29, 2001, on the other hand, appears to have moved the market. The negative return on that day was a full three standard deviations below the mean.[37] It is hard to determine why this downgrade affected the stock as it did—perhaps because the downgrade spanned two notches, from AA, through AA-, to A+ in one movement. Perhaps this tripped some triggers or caught some conservative investors by surprise. Whatever the reason for the stock movement, it is harder still to quantify the costs associated with it. It seems that the market was already punishing MCD stock before the downgrade; MCD at the time was trading in a two-month malaise below $30. The downgrade appears to have knocked about two more dollars out of the stock which then stagnated until May, 2002, trading in the $26 to $28 range.[38] The stock picked back up in the second quarter of 2002, before taking a much larger, non-downgrade-related fall later that year.

If one assumes that the 2001 downgrade did indeed cause McDonald's stock to trade temporarily at a $2 discount to what it would have traded at otherwise (given that we have not proved causality, this remains an assumption), how do we quantify the cost of this to McDonald's? The answer, we believe, is that stock price effects of downgrade, a priori, have no detrimental effects on a company.

If the stock price drops after a downgrade, one of two things has happened: a) new information has been revealed to the market and the company is now trading at fair value, or b) the market has overreacted, and the stock will correct itself over the course of a few months, weeks or days. In the former situation, we cannot view the drop in stock price as a cost to the company so much as a realignment with reality. In the latter case of market overreaction, the stock price effect could benefit or cost the company. If the company

[37] Note that the S&P 500 itself dropped by about 2% on October 29, 2001. While this drop was about two standard deviations from the mean for the S&P in that time period, it was still nowhere near the 6% drop in MCD's share price.
[38] The S&P 500 index was also choppy in this time period but it performed substantially better than MCD (higher average daily returns with less volatility).

had planned to issue shares at a date shortly after the downgrade, the costs are clear and easily calculable. The company will now receive roughly $2 less in capital for each share issued. This scenario is unlikely and would simply represent the confluence of unfortunate circumstances. If, on the other hand, the company was not planning to issue shares, market overreaction could be viewed as providing an opportunity to benefit the company. If the company wants to buy back shares on the cheap, there are few better opportunities than a market overreaction. And since overreactions correct themselves, absent a stock issuance, there are no real stock-related costs associated with a downgrade.

The above analysis, of course, does not factor in the fact that management need always be concerned with shareholder sentiment. Regardless of whether it impacts stock price or not, the average shareholder will most likely be displeased with a rating downgrade. Given that assumption, and given that ratings are, to a large extent, beyond immediate management control, we maintain that it is in management's best interest to take advantage of a market overreaction. While doing so does not address shareholder morale in the short-term (and there is little management could do in the short term to appease the downgrade-related drop in morale), it strengthens the company for the long-term, which, we imagine, is more important to most McDonald's investors anyway. It also takes those investors who are most displeased with the downgrade (and thus most willing to sell their stock) out of the picture.

WHAT ABOUT WACC?

How should McDonald's think about the effects of a downgrade on its weighted average cost of capital? Consider the following formula (note that we have not included a term for preferred equity since McDonald's has issued none):

$$WACC = \left[(E/V)\times \mathrm{Re}\right] + \left[(D/V)\times Rd\times(1-Tc)\right] \quad \text{where:}$$

WACC = Weighted Average Cost of Capital
D = Market Value of Debt
E = Market Value of Equity
V = Total Enterprise Value
Re = Investors' Required Return on Equity
Rd = Required Return on Debt
Tc = Corporate Tax Rate

From the equation above, the most obvious potential effect of a downgrade on WACC occurs in the Rd term. With a downgrade, Rd presumably increases (we make this assumption because with a downgrade, we assume that the risk premium increases by a small amount because of various triggers whereas the true probability of default is unaffected by an announcement that contains no new information).[39] (And as we have shown, with each subsequent downgrade, Rd grows by an increasingly larger amount.) For example, consider McDonald's May, 2003 bond issuance that offered a yield of 4.16%, 78 basis points above the 3.38% treasury rate. Recall that this bond was issued approximately three weeks after McDonald's was downgraded to A. For the sake of simplicity (and consistent with our analysis above), let's assume McDonald's could have achieved a **Δ** of around 19% on this issuance, which corresponds to a treasury spread of 64 basis points and a yield of 4.02%, had it not been downgraded. The first effect of the downgrade on WACC, then, was an increase in Rd of 4.16% - 4.02% = 14 basis points on this issuance. As we have described earlier, 10-year issuances are good proxies for the average life of McDonald's debt.

[39] Rd = Rf + Risk Premium = (1-p)Rp + p(Rdef) where Rp = 1/(1-p)[Rf + Risk Premium – p(Rdef)]

An increase in Rd, however, implies a decrease in the market value of outstanding debt. Investors will now discount outstanding debt at a rate appropriate to that of the downgraded status of the bond. If we assume that the market value of outstanding debt equaled the book value of $10.01B just before the downgrade (a brave assumption, but we will stick with it for the ease of illustration), and increase in Rd of .14% implies a decrease in the value of outstanding debt to $9.89B

Looking at the second term from our WACC equation (D/V*Rd*(1-Tc)) and assuming a tax rate of 33%, the debt-related (backward-looking) effect of McDonald's 2003 downgrade can be summed up as follows:

8-May-03	**Rd**	**D**	**V**	**1-Tc**	**[D/V*Rd*(1-Tc)]**
Before Downgrade:	4.02%	$10.01B	$31.73B	77%	0.977%
After Downgrade:	4.16%	$9.89B	$31.61B	77%	1.002%

The cumulative (and mostly mutually offsetting) D and Rd effect of the downgrade on WACC was an increase of .026%. Running a similar analysis on a downgrade to BBB+ (delta = .3), we get a hypothetical increase in WACC (looking *only* at the D and Rd terms) of .07%. Finally, running this analysis on a downgrade to BBB- (delta = .6), we find an increase in WACC of .24%. The point of this analysis is that a credit rating downgrade will lead to an increase in the second term of WACC, but since the increase in Rd is mostly offset by a decrease in D, the effect is minimal.

It is important to note that the WACC calculations above pertain to McDonald's existing enterprises. New enterprises should be evaluated using a WACC specific to those projects. That is, they should be evaluated at a forward-looking WACC. What is the difference? Any new debt issued to fund a project will not be subject to the dilution of the value of outstanding debt noted above. New debt will most likely be worth at or very near its full face value at issuance. For future projects, the only effect of a credit downgrade on WACC will be a small increase in Rd. There will be no offsetting

decrease in D. That is, the effect on a forward-looking WACC of debt-related downgrade costs can be calculated by (Increase in Spread Due to Downgrade) * (Portion of Project Funded with Debt).

The next potential effect of a downgrade on WACC occurs in the E term. In general, studies on the subject find that downgrades sometimes affect the value of equity but more often do not (as with McDonald's 2003 downgrade). As we have seen from McDonald's October, 2001 downgrade, however, if new information is revealed (or in the case of a market overreaction, if misinformation is believed), the value of a firm's equity, and consequently the value of the total enterprise, V, can drop substantially. Consider that on October 29, 2001, the value of MCD stock dropped from $28.55 to $27.28. On the following day, MCD closed at $25.99. Over the next half year, the stock stagnated in the $26 to $28 range. It is difficult to determine the exact amount of the loss in equity value that we can attribute to the downgrade, but for illustrative purposes, let us assume here that the $1.27 drop in the stock on the day of the downgrade alone is attributable to the downgrade. The consequence of this drop in stock price is that E fell by $1.6B. Ignoring effects on D for the moment, the drop in E also caused V to fall by $1.6B.

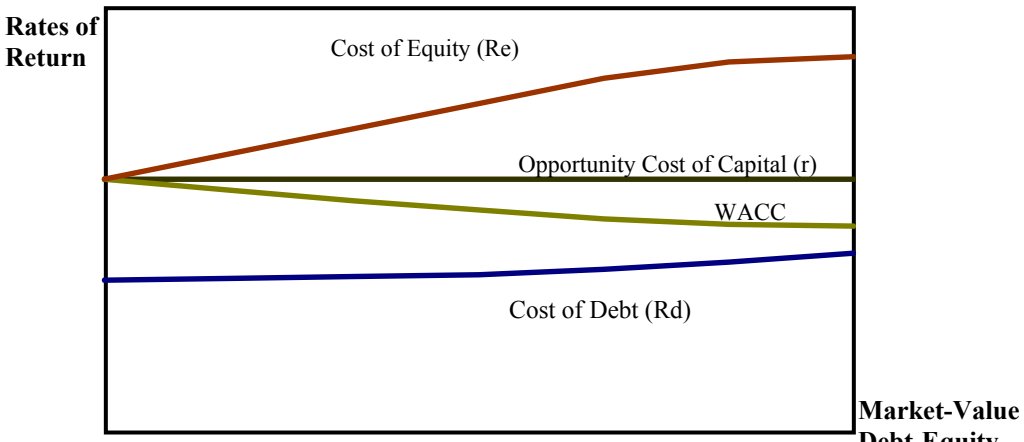
29-Oct-01	**E**	**V**	**E/V**
Before Downgrade:	$36B	$44.7B	81%
After Downgrade:	$24.4B	$43.1B	80%

From the above numbers, we observe that even though E and V drop by equal amounts, a drop in stock price always results in a decline of the ratio E/V (except in the case of zero-debt where E = V). This decrease in (E/V) has two implications: 1) Re will now play a relatively smaller role in WACC, and 2) D/V, by its inverse nature defined by D + E = V, increases. An increase in D/V increases the market leverage of the company and by definition, increases the riskiness of the equity. That is, an increase in D/V will cause the required return on equity, Re, to increase.[40] Using the capital-asset pricing model[41] and

[40] Brealy, Richard A. and Myers, Stewart C. Principles of Corporate Finance. *McGraw-Hill Irwin* 7th Edition (2003): 523-50.

inputting a β of 0.94,[42] a risk free rate of 4.1%,[43] and a historically derived market risk-premium of 7.1%,[44] we find that McDonald's current required return on equity, Re, is approximately 10.8%. This number will increase or decrease as D/V increases or decreases respectively.

Chart 5: Weighted Average Cost of Capital – Relationship to Inputs



Source: Taken from Brealey and Myers (2003)

Chart 5 summarizes the relationship of WACC to its inputs. While there are various and somewhat offsetting factors at play, increasing market-value D/V generally decreases WACC (because Rd*(1-Tc) is so much less than Re). To the extent that a downgrade causes a higher Rd but does not affect equity, a downgrade invariably increases the weighted average cost of capital (usually by small amounts in the investment grade territory). If the downgrade also causes a decrease in the value of equity, and thus an increase in D/V, the WACC of the existing enterprise will be lowered. In total, the effects of a downgrade on WACC seem limited.

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[41] Recall that according to the capital-asset pricing model, $Rmcd = Rf + \beta mcd \times (Rm - Rf)$

[42] Thomson One Analytics at http://www.thomsononeanalytics.com

[43] The 10-year treasury rate as of 5/13/2005.

[44] Professor Tim Thompson of Kellogg has suggested that the market risk premium is between 7% and 7.5%. This 7.1% estimate comes from: Damodaran, Aswath. "Estimating Equity Risk Premiums." *Stern School of Business Working Paper* (1999): 10.

TRIGGER COSTS[45]

We have no specific information on trigger provisions within McDonald's existing debt. However, as the vast majority of McDonald's debt is in the form of non-puttable bonds, we expect that the issue of debt covenant triggers is, at the moment, minimal for McDonald's. With this in mind, but realizing that triggers could someday factor more heavily into McDonald's credit rating strategy calculus, we offer a brief overview of the current thinking on trigger costs.

While trigger effects can be as far ranging as requiring companies to get third-party insurance on leases or prohibiting further merger and acquisition activity, almost half of existing triggers involve either simple repricing grids (a pre-specified increase in interest charges associated with any given credit rating score by pre-specified agency(s)) or increased collateral provisions. More severe trigger provisions include elimination of back-up credit facilities in the event of a downgrade or debt that can be "put" back in the event of a downgrade. All told, various forms of put, termination, and acceleration triggers amount to about 25% of existing triggers. Ironically, the lower a company's starting credit rating, the more likely it is that said company will have these more severe trigger provisions within its debt agreements. Typically, more severe triggers are usually set against rating movements into "junk" status or further down the junk ladder. As Moody's points out, "Such triggers exacerbate liquidity strains at the precise moment when an issuer is least able to deal with such problems."

How do triggers relate to ratings levels? According to Moody's, about 85% of all existing triggers occur within the debt of companies rated A3 or lower. Excepting one trigger-heavy A2 rated company, about 5% of outstanding triggers (including investment and speculative grades) occur in debt rated A2. About 3% of all outstanding triggers can be found in A1 rated debt, and debt rated AA3 and higher constitutes less than 5% of

[45] The vast majority of the information in this section comes from discussions with Moody's analysts and the article: Stumpp, Pamela M. and Coppola, Monica M. "Moody's Analysis of U.S. Corporate Rating Triggers Heightens Need for Increased Disclosure." Moody's Investors Service Global Credit Research (July, 2002). All quotes within this section are taken from this report.

existing triggers! As Table 15 reflects, the lower a company's rating, the more likely it is that lenders will require debt triggers or at least a tradeoff between higher yield and the existence of triggers. Therefore, while triggers may not currently be an issue for McDonald's, the desire to avoid triggers should figure into McDonald's calculus of the cost of further downgrades.

Table 15: Frequency of Trigger Occurrence in Investment Grade Debt

Moody's Rating	% of Total Triggers
Aaa	0.7%
Aa1	0.8%
Aa2	1.2%
Aa3	2.7%
A1	6.0%
A2	11.7%
A3	15.6%
Baa1	18.1%
Baa2	20.1%
Baa3	23.1%

Source: Moody's (2002)

Moody's has begun requesting information on triggers from all its rated companies with the expectation of factoring this information into its credit analysis. In general, existence of triggers will be seen as making a company less creditworthy, varying by degree and severity of triggers. Failure of a company to produce information on its debt triggers will reflect negatively in credit score.

Table 16: Most Common Trigger Locations

Trigger Location	% of Total Triggers
Bank Agreements	30.8%
Sale Leaseback Agreements	15.4%
ISDA/Swap/Derivative	13.9%
Commercial Agreements	10.5%
Bond Indentures	8.2%
Lease Agreements	8.2%
A/R Securitizations	5.0%

Source: Moody's (2002)

We believe that triggers are not a pressing issue for McDonald's at the moment. Now that McDonald's is rated A, or should it be downgraded further, there is an increased probability, however, that triggers will become more important to MCD. The overall effect of triggers is that they limit a company's flexibility and/or increase its cost of capital. Because triggers often have these effects at the moments when companies need the most flexibility, we advise that McDonald's strongly consider acceptance of trigger provisions in is debt. Lenders may require higher rates to forego trigger provisions. In the short run, a company that does not find it likely that it will be downgraded will be tempted to accept the triggers, or even propose them en lieu of a higher rate. However, history shows that companies are downgraded, even when they expect otherwise, and trigger costs, when realized, can be far more damaging than an extra 25 basis points in coupon payments.

COSTS TO MCDONALD'S SUPPLIER NETWORK

We believe that the potential costs associated with a downgrade to McDonald's mostly dedicated supplier network represent an important area of exploration. However, since we had very limited access to McDonald's suppliers, we have little to say on this topic. We report the results of our single interview, which we believe are likely representative for a significant portion of McDonald's suppliers.

The essential result of our conversation is that the supplier we talked to does not feel it was directly affected by Standard and Poor's downgrade of McDonald's. The financial officer with whom we spoke said that "credit is our own issue. We only use bank loans and lines of credit [not bonds], and when we apply for them, the banks evaluate us exclusively on the strength of our financial structure and our recent income statements. They see us, not McDonald's." To the extent that a slowdown in McDonald's performance reduces demand for a supplier's products, McDonald's can have a powerful impact (via reduced revenues and net income) on the perceived creditworthiness of its suppliers. On the other hand, however, to the extent that a downgrade of McDonald's is

based on changes in McDonald's financial structure that are not driven by performance, a downgrade will have no effect on McDonald's suppliers. In fact, based on this interview, we would surmise that MCD downgrades *never* really affect McDonald's suppliers. If suppliers are affected, it is because of McDonald's performance, of which a downgrade may be a signifier, but it was not the downgrade itself that slowed demand for suppliers' products and weakened their income statements.

EFFECTS ON CONSUMERS?

To gauge the potential effects of a credit rating downgrade on McDonald's customers, we constructed a brief survey and went out and talked to McDonald's customers at three locations across two states (48 customers in IL and 16 in TN). To broaden our sample (in case there were any customers who switched to another restaurant because of McDonald's downgrade, we also interviewed Burger King Customers (22 in total). The survey we employed can be found in Appendix 1. For ease of administration, the survey included five simple yes/no questions which the surveyor asked to the customer, whose answers the surveyor then recorded.

The results of our surveys can be summarized as follows: About half of respondents had heard of Standard and Poor's and/or Moody's. About 75% of these reported knowing something of what these companies do (though one asked if we were talking about religious schools). Less than 10% of the customers surveyed claimed to be aware that Standard and Poor's had downgraded McDonald's. None of these customers reported any effect on their consumption behavior based on the downgrade. Of the more than 90% of customers who were not aware of the downgrade, one customer reported that he would be less likely to eat at McDonald's if he knew it had been downgraded.

PART III: CONCLUSION AND DISCUSSION

This paper has reviewed the various potential sources of cost for McDonald's in the event of a credit rating downgrade. In general, we have found that the costs of the last two downgrades themselves (in 2001 and 2003) to McDonald's have been minimal. This result stems from three general bases: 1) To date, McDonald's external non-financial constituencies (customers and suppliers) appear to be indifferent to downgrades (we note that this could change (with respect to suppliers) if McDonald's moved out of investment grade territory), 2) the markets have generally factored all information into their expectations and forecasts before the downgrades have occurred rendering the downgrades themselves without impact (the exception here being the drop in stock price after the 2001 downgrade), and 3) McDonald's has always been well into investment grade territory, regardless of the downgrades.

Given that the costs of the downgrades we have studied are relatively small, we turn now to discuss briefly the costs incurred in trying to maintain a given rating or achieve an upgrade.

TAX SHIELDS

Perhaps the most obvious way to improve a company's credit rating is to reduce its debt and operating leases burden. To support this hypothesis with concrete evidence, we ran a number of ordered logit maximum likelihood regressions on a set of about 70 comparable rated companies. Explanatory variables ranged from market capitalization to long-term debt to assets. Please see Appendix 2 for variables, comparables, and regression analyses. Our analysis confirms that a higher credit rating is associated with increased interest coverage, lower long-term debt to assets, and higher cash flow to total debt. (Note that because of our scoring system, a negative regression coefficient implies that as the variable in question increases so too does the likelihood of a higher credit rating.) There

is also a highly significant positive correlation between better ratings vis-à-vis market cap and operating margins.

Using a derivative technique to interpret the ordered logit coefficients and then comparing the results with the summary data in Appendix 2, we find that, *all else equal*, McDonald's could increase its rating from A to AA or AA- by reducing its debt by about 40%.[46] (There are many other factors by which to affect credit rating; we are looking only at debt here! This "in a vacuum" approach essentially says: 'if McDonald's Q1 2005 balance sheet showed 40% less debt and nothing else changed, it would have been rated at least AA-.') Doing so, however, has a serious implicit cost: the reduction of tax shields.

Calculating the loss in enterprise value resulting from a 40% reduction in debt requires numerous important assumptions. We can, however, calculate a conservative base case relatively easily by simply using the most recent year's interest payments and the following equation.

PV of Tax Shield = (effective tax rate, t*) x (expected interest payment) / (Rd)

The issue here becomes determining the appropriate effective tax rate, t*, that accurately accounts for the corporate tax rate as well as stakeholders' personal tax rates on equity and debt income. Professor John Graham at Duke's Fuqua School of Business estimates that the net tax benefits of debt (which include personal tax rates) are about half the size of the gross benefits (which consider only the corporate tax rate).[47] For the purposes of our analysis and in keeping with our goal of establishing a low-end base case, we will assume a t* of 15%.[48] Taken in tandem with a 5% cost of debt and McDonald's roughly

[46] Note that this result, when taken in tandem with Table 9, would seem to lend strong supporting evidence to the hypothesis presented earlier in this paper that the credit rating agencies have become more stringent in recent years in their evaluation of companies' (at least investment grade companies) creditworthiness.
[47] Graham, John R. "How Big Are the Tax Benefits of Debt?" *The Journal of Finance* Vol. LV, No. 5 (Oct., 2000): 1901-1942.
[48] This is also in keeping with Myers' (2001) research (built upon the research of many others) that finds that the after-personal-tax benefit of tax shields averages out to between 13% and 20%.

$360M in interest expense in 2004, we calculate that a 40% reduction in debt (that is maintained going forward) would lead to a $432M drop in enterprise value.

(40% x $360M x .15) / .05 = $432M

Keep in mind, however, that this is a base case. Among other things, it assumes that the size of the McDonald's enterprise does not grow into the future (so that McDonald's maintains roughly $5.5B of debt into perpetuity). If we make the more realistic assumption that McDonald's will grow by, say, 2.5% per annum into perpetuity (and thus debt and equity will also grow by 2.5% per annum), the loss in value associated with a 40% reduction in debt jumps to nearly $1B! The debt shield alone, then, vastly outweighs the less than $100M of value loss associated with McDonald's downgrades to date.

FLEXIBILITY

Though harder to quantify than tax shields, we see the loss of flexibility, both operational and financial, as perhaps the greatest cost of ratings maintenance. To improve perceived creditworthiness and thus credit rating, McDonald's must become a more conservative entity. It is well established, however, that risk is correlated with reward.[49] Becoming more apparently creditworthy, therefore, in essence amounts to restricting growth opportunities. Below we offer a few examples.

- In one credit report we read on McDonald's, the rating agency noted with concern the continual year-on-year increase in McDonald's off-balance sheet operating leases. We could not help wondering how growing operating leases (at a reasonable, measured rate such as that displayed by MCD) for a company such as McDonald's that operates numerous stores could be viewed as a negative. How could McDonald's grow if it did not take on additional leases?

[49] This is, in fact, the cornerstone of modern financial theory.

- Consider a period of time in which McDonald's believed its equity was undervalued by the market. If, during this period, an acquisition opportunity emerged, McDonald's would be left to choose between financing the acquisition with debt or suboptimally diluting any returns from the acquisition by financing it with undervalued equity. However, to maintain its current credit rating (or if MCD hopes to improve its credit rating) McDonald's cannot let debt to long-term assets increase or interest coverage decrease (see regression analysis in Appendix 2 for confirming evidence), and yet, these would surely be results of a debt-financed acquisition. Should McDonald's let a valuable opportunity escape in the name of maintaining a credit rating? We do not believe so.

- The credit rating agencies state that they like stability and predictability. In fact, they like it a lot. The implication for shareholders of a company like McDonald's maintaining lock-step stability is lower expected returns. Predictability means no risk. No risk means constrained reward.

- What if the industry is downgraded? We believe that a significant portion of McDonald's cumulative downgrade to A can be explained by the agencies' declining view on the restaurant industry and their increased risk aversion more generally. How can a company respond to these broader forces? Should a company respond to these broader forces? We do not think so. Essentially, by lowering its forecasts for an industry, rating agencies also effectively reduce the highest rating any company within the industry can achieve. As pointed out earlier, McDonald's is almost as financially sound now as when it was rated AA. Its credit default swap spreads and required bond Δs increasingly reflect this. If the market understands the truth of McDonald's situation, focusing on an artificial and externally imposed credit score is a suboptimal use of McDonald's managers' time, energy, and focus.

DIVERSE CONSTITUENCIES

In this paper so far, we have generally concluded (in Section II) that the costs of McDonald's downgrades to date have been relatively small and (in Section III) that a primary goal of maintaining and/or improving credit ratings is sub-optimal for a company like McDonald's. (It bears repeating here that these conclusions rest on two premises: 1) the relative dearth of triggers in McDonald's debt and 2) the fact that McDonald's is nowhere near junk status. If either of these premises should change, so too would our conclusions regarding how concerned McDonald's should be about its credit ratings.) We have reached these results because of the frame of reference we have employed to evaluate downgrades; namely, we have assumed that McDonald's only goals are to maximize shareholder value and achieve any corporate mission it may have. Surely, however, the issue of credit ratings is complicated for McDonald's management by its diverse constituencies. On the one hand, management faces bondholders (who are often times stockholders as well) that do not fit into the framework above, and on the other, management must answer to a board of directors that has likely become more risk averse in the post-Enron era.

Investors (broadly construed) in McDonald's Corporation will likely respond to ratings downgrades in a variety of ways. Sophisticated equity investors will most likely disregard credit ratings all together. These investors make their own forecasts and calculations and use more timely information than that which the credit rating agencies offer. Sophisticated equity investors seeking high returns might even view a downgrade (depending on the reasons for it) favorably. Retail equity investors, on the other hand, will probably assume, a priori, that a downgrade must be bad news. Bondholders, in general, we believe, are sophisticated (and usually institutional). They will have generally priced a company's creditworthiness into their debt holdings before a down/upgrade occurs. Downgrades, then, only represent bad news to the extent that they reflect that a company is moving closer to whatever lower creditworthiness boundary a bond-investor may have set.

For all its classes of investors, we believe it would serve McDonald's well to proactively react to a downgrade with an informational strategy. McDonald's should point out the healthy things the company is doing to bolster returns, even though these strategies may lead to lower credit scores in the short run. McDonald's could point out concretely that shareholder return is increased with reasonable leverage, and that McDonald's has never defaulted on any of its loans and remains concerned with protecting its debt holders. If McDonald's can successfully relay this information to its retail investors, we believe it can substantially diffuse any temporary concern investors may have.

Another important constituency for McDonald's managers is the board of directors. In the post-Sarbanes-Oxley world, boards are more conservative and risk averse than ever.[50] And while we have no research on the subject, we strongly suspect that in today's environment, boards generally frown upon downgrades and smile upon upgrades. With regards to its board of directors, then, we believe the strategy of McDonald's management around credit ratings should be the same as its strategy with investors. It is important that McDonald's board understand that in the vast majority of cases, attempting to achieve the highest credit rating possible is a value-destructive proposition. It is also important that the board understand that a downgrade given to a company in the name of increasing returns to shareholders and achieving its corporate mission should not be viewed as a negative event.

IMPROVING CREDIT RATING

If McDonald's truly wants to improve its credit rating, we see two general strategies:

1) McDonald's could change its capital structure by issuing equity and using proceeds to payoff debt until it gets its debt-to-equity ratio down to a level that corresponds to McDonald's desired credit rating. As noted earlier (again from our regression analysis in Appendix 2), getting back to a AA rating today would require retiring as much as 40% of

[50] See Jansen, David. "Yellow Light." www.thedeal.com *Judgement Calls* (2002).

McDonald's outstanding debt. Such a strategy, however, would inevitably lead to a decrease in the value of McDonald's per share equity (dilution of existing shareholders, loss of tax shields, signaling, etc.)[51] as well as a decrease in the value of the enterprise and thus should only be pursued if McDonald's believes its equity is substantially overvalued. If McDonald's believes its equity is currently undervalued, in real terms, this strategy would be prohibitively costly.

2) As a somewhat milder alternative to the above, McDonald's could cut or temporarily stop dividend payments and use the savings to reduce debt. In the past three years, McDonald's has raised dividends per share from $.24 to $.55. In 2004 alone, dividend payments amounted to nearly $700M. If McDonald's were to reduce its dividends by 75%, it could reduce its debt by 10% within two years. All else held constant, this would increase McDonald's interest coverage to about 13, putting McDonald's well into the A1/A+ territory. Of course, the empirical research indicates that cutting dividends by as much as 75% would likely lead to a decrease in stock price upon announcement of the plan. However, if McDonald's announced its plan as a two-year program and explained its aim to investors, stock price damage could be mitigated. Again, we see this as a suitable strategy only if McDonald's truly believes its stock is overvalued.

We must also point out that these two strategies will only work if the agencies believe they reflect long-term changes to McDonald's ongoing capital structure, and even if they do believe this, the credit agencies will likely be slow to upgrade McDonald's, given their policies of prudent migration.

[51] See: Barclay, Michael J. and Smith, Clifford W. "The Capital Structure Puzzle: Another Look at the Evidence" The New Corporate Finance: Where Theory Meets Practice. *McGraw-Hill Irwin* 3rd Edition, Ed: Donald H. Chew, Jr. (2001): 197-209.

CONCLUSION

The costs associated with ratings downgrades are relatively small within the confines of investment grade territory. In general, downgrades themselves only reflect an accumulation of information weighing more heavily in a positive or negative direction. As this paper has shown repeatedly, ratings rarely convey new information to the market. To the extent then, that ratings really only reflect the condition of the greater economy and the risks/projects/initiatives that management has already undertaken, management need not pay overly much heed to ratings. Instead, management should continue to focus on the maximizing of shareholder value and accomplishment of the corporate mission statement. If following this maxim entails a shift from McDonald's current strategy, there are sufficient early market indicators of a strategy going afoul such that management need not await a ratings downgrade to trigger the needed change. On the other hand, if management believes its strategies have a long incubation period, it should not let ratings changes that occur between the investment (which might require taking on significant debt) and the later payoff sway it from its course.

In closing, we conclude that the best credit rating a company could potentially achieve is generally not its optimal credit rating (from a shareholder value and corporate mission point of view). We certainly believe this is true for McDonald's. We believe that McDonald's management should not include maintaining or achieving credit ratings among its primary goals (so long as its rating does not sink below BBB+, after which point we believe management should take a reasonable interest in ratings). We further believe that given the current credit rating agency environment, McDonald's management should be content with an A or A- rating, which allows the company to operate with needed flexibility to maximize shareholder return. To justify this position, we close with the following rationales:

1) A successful company must be able to take on risky projects and new opportunities. Sometimes, these decisions, in hindsight, will be mistakes that must be corrected. But sometimes, even if they take years to incubate, these decisions will be a company's

salvation. Established and mature companies, ever at risk of stagnation, must not let the prospect of ratings deterioration in the interim prohibit them from innovation and staying ahead of the curve.

2) In a world with taxes and tax shields, it is apparent that "too little debt—at least in large, mature companies—can lead to overinvestment and low returns on capital."[52] Ultimately, the only way for a large, mature company (where credit default risk is well captured by the two statistics: D/V and interest coverage) to continually improve and/or maintain its credit rating is to reduce its debt. Following a strategy of debt reduction for the sake of credit rating improvement, however, will inevitably lead to sub-optimal shareholder returns. "A consistently profitable company that volunteers to pay more taxes by having substantial unused debt capacity… is leaving considerable value on the table."[53]

3) A company will often need more flexibility than an AAA or AA rating will allow. Few responsibly run investment grade companies ever default within five years of any date in which they enjoyed investment grade status.[54] To that extent, the relevance for debt holders of an AA rating versus a BBB rating is not that great. Meanwhile, the flexibility that a BBB+ company has gives it far greater capability to return maximum value to its shareholders than an AAA rated counterpart. Some companies, because of special patents or technologies, are cash machines: they will never need to take on significant debt, they will always have astronomical interest coverage, and they will therefore find themselves with a natural AA or higher rating. These are not the benchmarks against which McDonald's should compare itself. For companies with numerous locations and/or heavy infrastructure requirements (such as McDonald's), focusing on maintaining an Aa2 or higher rating will almost certainly come at the cost of potential growth and shareholder value.

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[52] For a good discussion on optimal capital structure, see: Barclay, Michael J. and Smith, Clifford W. "The Capital Structure Puzzle: Another Look at the Evidence" The New Corporate Finance: Where Theory Meets Practice. *McGraw-Hill Irwin* 3rd Edition, Ed: Donald H. Chew, Jr. (2001): 197-209.
[53] ibid
[54] Bodie, Zvi; Kane, Alex and Marcus, Alan J. Investments. McGraw Hill 6th Edition (2005).

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APPENDICES

APPENDIX 1: CUSTOMER SURVEY

1) **Have you heard of the rating agencies Standard and Poor's and Moody's Investors Service?**

2) If yes, are you aware of their function?

3) **Were you aware that Standard and Poor's downgraded McDonald's senior credit rating in May of 2003 from A+ to A?**

4) If yes, did this awareness affect your McDonald's consumption patterns in any way?

5) If yes, did awareness of this downgrade affect your opinion about McDonald's?

6) If no, would awareness of this downgrade have changed your consumption patterns?

Thank you for your time!

APPENDIX 2A: REGRESSION ANALYSIS

In an attempt to understand and quantify as far as possible the rating agencies' financial criteria for rating companies, we pursued an ordered logit maximum likelihood regression analysis.

Logit

We chose ordered logit because the dependent variable, credit rating (simply "rating" in the regression output), is categorical in nature, non-continuous, and can take on a variety of results. The coefficients estimated from a logit analysis cannot be interpreted like typical OLS coefficients. The sign of the coefficients and z-values still indicate direction and significance of effect, but the coefficients cannot be interpreted as having linear impacts. Rather, we must use a derivative technique to estimate the impact of the coefficients.[55]

Explanatory Variables

We derived the explanatory variables for our regressions from two primary sources: Standard and Poor's published materials and our own intuition based on trends we observed in the data. For instance, while Standard and Poor's does not mention market capitalization as a factor in its credit rating analysis, we note a very strong correlation between companies with larger market capitalizations and higher credit scores. On the other hand, book value long-term debt to assets seems like a sub-optimal variable to us, yet Standard & Poor's explicitly references it. Because of the time required to gather data and the limited timeframe of this project, we chose only variables of clear interest to

[55] Here is the "derivative" technique: 1) Choose a change in X that is of interest. Call this ΔX. 2) $\Delta Y = \Delta X \cdot (\partial Y/\partial X)$. We need to compute $\partial Y/\partial X$, or, in this case, $\partial f(\rho)/\partial X$, because $Y = f(\rho)$. 3) Since we have no interactions or exponential terms, we differentiate $f(\rho)$ with respect to X to get: $\partial f(\rho)/\partial X = Bx \times f(\rho) \times (1-f(\rho))$, or $\partial f(\rho)/\partial X$ = (regression coefficient) · (prob. of scoring a 1) · (prob. of scoring a 0). Thus, $\Delta Y = \Delta X \cdot Bx \times f(\rho) \times (1-f(\rho))$. 4) Note that value of the derivative $\partial f(\rho)/\partial X$ depends on the value of $f(\rho)$. This generates the S-shape of the $f(\rho)$ curve – the derivative is not constant. Thus, to compute the derivative, we must specify a baseline value of $f(\rho)$. 5) We choose baselines to be values of interest. Call this $f(\rho)^*$. We then pose the following thought experiment: Suppose the baseline probability of scoring a 1 is $f(\rho)^*$. How does this change if X changes?

us based on the two selection criteria above. Explanatory variables include: market capitalization, operating cash flows, total debt outstanding, total debt to market capitalization, pre-tax interest coverage (EBITDA / interest expense), return on assets (net income / assets), operating margins (operating income / gross sales), long-term debt to assets, and cash flow to total debt. With the exception of market capitalization, these variables are calculated as 2002-2004 averages. As has been discussed, credit agencies do not base ratings on snapshots of the present; thus, we believed variables capturing the most recent few years of a firm's performance (through any cycle) offered the most value. Again, were we not so time-constrained, we would have also used a number of lagged variables. Nevertheless, we feel that our regressions, such as they are, yield valuable results.

Data and Observations

The data used in our regression have several important issues. Firstly, to control for industry, we would like to have used only restaurant companies. However, given the dearth of investment grade restaurant chains, this proved impossible. Furthermore, McDonald's status as the highest rated restaurant company would have clouded upward interpretation of our logit regression results had we not considered higher rated companies. Thus, to broaden our sample, we considered companies rated between BB and AAA that we felt had similarities to McDonald's. For instance, we included no financial companies. In general, we tried to include only companies that have various store locations and significant capital expenditure requirements. We imposed various other limitations, balancing them with the need to have sufficient data points, and ultimately arrived at 68 observations. We would have liked a larger sample size, but relaxing our selection limitation would have skewed our results, seeing as companies such as Goldman Sachs or Microsoft are evaluated on such different criteria than McDonald's by the rating agencies.

APPENDIX 2A: REGRESSION ANALYSIS INPUTS (FULL DATA-SET)

Obs	Rating	Company	Ticker	Rating	Mkt Cap ($B)	Op. Cash Flow (3Y average) ($B)	Total Debt ($B)	Total Debt to Market Cap	Pre-tax Interest Coverage	ROA	Operating Margins	LT Debt to Assets	Cash Flow to Total Debt
1	Aaa (1-3)	Automatic Data Processing	ADP	2	25.7	1.50	0.08	0.003	85.4	5.2%	21.23%	0.00	19.76
2	Aaa	Exxon Mobil Corporation	XOM	2	363.0	30.00	8.32	0.02	90.4	10.7%	10.94%	0.03	3.60
3	Aaa	General Electric Company	GE	2	380.5	32.00	369.70	0.97	2.8	2.4%	14.48%	0.26	0.09
4	Aaa	Johnson & Johnson	JNJ	2	204.1	10.00	2.85	0.01	59.8	15.7%	25.68%	0.05	3.51
5	Aaa	Pfizer Inc.	PFE	2	203.8	12.67	19.83	0.09	34.2	9.2%	26.46%	0.06	0.64
6	Aaa	Toyota Motor Corporation	TM	2	118.7	17.00	80.60	0.60	52.8	4.3%	8.52%	0.19	0.21
7	Aa (4-6)	3M Co.	COMS	5	1.2	-0.08	0.00	0.00	50.0	13.7%	20.63%	0.00	0.00
8	Aa	Kimberly-Clark Corporation	KMB	5	29.9	2.67	3.71	0.12	14.0	10.4%	17.20%	0.16	0.72
9	Aa	The Coca-Cola Company	KO	5	105.3	5.40	7.00	0.07	31.1	15.9%	26.22%	0.08	0.77
10	Aa	Colgate-Palmolive	CL	5	26.1	1.73	3.68	0.14	15.8	17.5%	21.19%	0.39	0.47
11	Aa	Gillette Company	G	5	51.8	2.27	3.39	0.07	34.8	13.9%	22.19%	0.23	0.67
12	Aa	PepsiCo	PEP	5	93.6	4.67	4.19	0.04	31.4	14.4%	18.18%	0.08	1.11
13	Aa	Pitney Bowes Inc.	PBI	5	10.5	0.77	4.39	0.42	4.9	5.2%	18.46%	0.29	0.17
14	Aa	Procter & Gamble Company	PG	5	138.3	8.60	20.84	0.15	14.0	11.3%	17.94%	0.25	0.41
15	A1	Hershey Foods Corporation	HSY	7	15.8	0.67	1.31	0.08	12.1	13.4%	18.80%	0.23	0.51
16	A1	Abbott Laboratories	ABT	7	76.8	4.10	6.80	0.09	19.6	11.0%	18.88%	0.16	0.60
17	A1	Anheuser-Busch Companies	BUD	7	37.3	2.90	8.28	0.22	8.5	13.9%	22.36%	0.49	0.35
18	A1	Dover Corporation	DOV	7	7.5	0.54	1.09	0.15	4.9	5.8%	9.80%	0.19	0.49
19	A1	IBM	IBM	7	123.5	14.28	22.93	0.19	72.1	6.9%	10.36%	0.17	0.62
20	A2	Archer-Daniels-Midland	ADM	8	12.4	0.88	5.67	0.46	3.0	2.8%	2.75%	0.21	0.15
21	A2	Coca-Cola Enterprises	CCE	8	9.5	1.62	11.13	1.17	2.3	2.3%	8.36%	0.42	0.15
22	A2	Ecolab	ECL	8	8.4	0.51	0.70	0.08	11.8	8.0%	12.23%	0.19	0.73
23	A2	Fortune Brands	FO	8	12.2	0.79	1.91	0.16	12.5	8.9%	14.65%	0.16	0.41
24	A2	Lowe's Companies	LOW	8	40.8	2.96	3.69	0.09	16.1	9.7%	10.03%	0.19	0.80
25	A2	McDonald's	MCD	8	38.0	3.35	9.22	0.24	7.5	6.1%	16.27%	0.36	0.36
26	A2	NIKE, Inc.	NKE	8	20.4	1.17	0.84	0.04	36.2	11.1%	11.70%	0.09	1.40
27	A2	Sherwin-Williams	SHW	8	6.2	0.55	0.74	0.12	14.4	9.1%	10.55%	0.13	0.75
28	A3	Campbell Soup Company	CPB	9	12.4	0.88	3.35	0.27	5.9	9.7%	16.09%	0.39	0.26
29	A3	The Clorox Company	CLX	9	9.8	0.86	0.77	0.08	24.1	12.4%	17.44%	0.15	1.12
30	A3	CVS Corp.	CVS	9	21.4	1.03	2.85	0.13	23.9	7.3%	5.03%	0.10	0.36
31	A3	H.J. Heinz Company	HNZ	9	12.9	1.05	4.98	0.38	5.6	7.3%	15.83%	0.48	0.21
32	A3	Kohl's Corp.	KSS	9	16.5	0.79	1.11	0.07	17.1	9.4%	10.83%	0.16	0.71
33	A3	Pepsi Bottling Group	PBG	9	6.9	1.12	4.70	0.68	4.1	4.1%	9.33%	0.42	0.24
34	A3	The TJX Companies	TJX	9	10.9	0.92	0.70	0.06	35.1	14.9%	8.00%	0.18	1.31
35	A3	The Tribune Company	TRB	9	12.0	1.04	2.59	0.22	6.9	4.9%	22.93%	0.18	0.40

APPENDIX 2A CONT.

36	Baa	7-Eleven Inc.	SE	11	2.8	0.53	1.33	0.48	3.0	2.5%	1.79%	0.52	0.40
37	Baa	Albertson's Inc.	ABS	11	7.3	1.90	6.89	0.94	3.4	4.0%	3.97%	0.45	0.28
38	Baa	AutoZone Inc.	AZO	11	6.7	0.69	1.87	0.28	10.4	13.6%	16.34%	0.41	0.37
39	Baa	*Best Buy*	*BBY*	11	*16.6*	*1.29*	*0.60*	0.04	*48.6*	*8.4%*	*4.97%*	*0.09*	2.15
40	Baa	Cendant Corp.	CD	11	21.7	4.65	20.15	0.93	10.5	3.7%	12.32%	0.49	0.23
41	Baa	Corn Products International	CPO	11	1.6	0.20	0.57	0.35	4.7	3.5%	8.10%	0.22	0.36
42	Baa	Darden Restaurants Inc.	DRI	11	4.7	0.51	0.67	0.14	9.4	8.8%	8.40%	0.25	0.77
43	Baa	Federated Department Stores	FD	11	10.0	0.49	3.88	0.39	4.7	4.6%	8.82%	0.21	0.13
44	Baa	General Mills	GIS	11	18.4	4.01	8.23	0.45	3.2	4.5%	16.52%	0.38	0.49
45	Baa	Hasbro	HAS	11	3.4	0.43	0.64	0.19	5.7	4.7%	9.52%	0.19	0.66
46	Baa	Hilton Hotels Corp.	HLT	11	8.4	0.57	3.75	0.45	1.9	2.4%	15.01%	0.48	0.15
47	Baa	Kroger	KR	11	11.6	2.58	7.97	0.69	3.4	4.4%	4.08%	0.42	0.32
48	Baa	Marriott	MAR	11	13.8	0.61	1.33	0.10	6.5	6.0%	4.73%	0.15	0.46
49	Baa	Mattel	MAT	11	7.5	0.79	0.62	0.08	8.9	11.4%	15.06%	0.12	1.28
50	Baa	May Department Stores	MAY	11	10.5	1.50	6.18	0.59	3.1	3.9%	8.01%	0.34	0.24
51	Baa	Nordstrom	JWN	11	7.0	0.49	1.03	0.15	5.7	5.5%	5.36%	0.26	0.47
52	Baa	Office Depot	ODP	11	6.3	0.67	0.60	0.10	9.7	5.5%	4.04%	0.10	1.11
53	Baa	Reebok	RBK	11	2.5	0.18	0.52	0.21	10.2	7.6%	7.30%	0.17	0.34
54	Baa	Staples	SPLS	11	14.5	1.04	0.56	0.04	33.9	8.5%	6.58%	0.08	1.86
55	Baa	Wendy's	WEN	11	4.9	0.46	0.72	0.15	7.1	5.8%	10.73%	0.22	0.63
56	Baa	Yum! Brands	YUM	11	13.9	1.09	1.74	0.13	7.4	11.6%	12.91%	0.37	0.63
57	Ba	Church & Dwight Company	CHD	14	2.3	0.14	0.86	0.38	5.0	6.2%	10.77%	0.35	0.17
58	Ba	Cott Corporation	COT	14	1.6	0.11	0.35	0.22	5.3	7.9%	9.84%	0.33	0.32
59	Ba	Foot Locker, Inc.	FL	14	4.2	0.30	0.37	0.09	11.0	6.4%	5.88%	0.14	0.82
60	Ba	Jack in the Box Inc.	JBX	14	1.4	0.17	0.31	0.22	5.8	6.6%	6.87%	0.20	0.56
61	Ba	Michaels Stores, Inc.	MIK	14	4.6	0.28	0.20	0.04	14.9	9.6%	9.75%	0.11	1.38
62	Ba	O'Charleys, Inc.	CHUX	14	0.5	0.07	0.19	0.42	5.0	4.4%	6.92%	0.29	0.35
63	Ba	Penney (J.C.) Company, Inc.	JCP	14	12.9	0.70	3.94	0.31	3.8	2.9%	4.46%	0.27	0.18
64	Ba	Pilgrim's Pride Corporation	PPC	14	2.5	0.16	0.55	0.22	2.9	3.8%	2.85%	0.31	0.29
65	Ba	Starwood Hotels & Resorts	HOT	14	11.5	0.69	4.44	0.39	1.8	2.0%	11.33%	0.35	0.15
66	Ba	Steelcase Inc.	SCS	14	1.9	0.08	0.33	0.17	-1.6	-1.1%	-1.52%	0.14	0.25
67	Ba	Toys 'R' US, Inc.	TOY	14	5.5	0.70	2.31	0.42	2.6	1.4%	2.75%	0.23	0.30
68	Ba	Xerox Corporation	XRX	14	12.7	1.84	10.12	0.80	2.4	1.7%	5.79%	0.31	0.18

APPENDIX 2B: SUMMARY STATISTICS OF DATA

Summary	Mkt Cap ($B)	Op. Cash Flow (3Y average) ($B)	Total Debt ($B)	Total Debt to Market Cap	Pre-tax Int. Coverage	ROA	Operating Margins	LTD to Assets	Cash Flow to Total Debt
Aaa									***Aaa***
Average	216.0	17.19	80.2	0.28	54.2	7.9%	17.9%	0.10	4.64
High	380.5	32.00	369.7	0.97	90.4	15.7%	26.5%	0.26	19.76
Low	25.7	1.50	0.1	0.00	2.8	2.4%	8.5%	0.00	0.09
Aa									***Aa***
Average	57.1	3.25	5.9	0.13	24.5	12.8%	20.3%	0.19	0.54
High	138.3	8.60	20.8	0.42	50.0	17.5%	26.2%	0.39	1.11
Low	1.2	-0.08	0.0	0.00	4.9	5.2%	17.2%	0.00	0.00
A1									***A1***
Average	52.2	4.50	8.1	0.15	23.4	10.2%	16.0%	0.25	0.52
High	123.5	14.28	22.9	0.22	72.1	13.9%	22.4%	0.49	0.62
Low	7.5	0.54	1.1	0.08	4.9	5.8%	9.8%	0.16	0.35
A2									***A2***
Average	18.5	1.48	4.2	0.30	13.0	7.3%	10.8%	0.22	0.60
High	40.8	3.35	11.1	1.17	36.2	11.1%	16.3%	0.42	1.40
Low	6.2	0.51	0.7	0.04	2.3	2.3%	2.8%	0.09	0.15
A3									***A3***
Average	12.8	0.96	2.6	0.24	15.3	8.7%	13.2%	0.26	0.58
High	21.4	1.12	5.0	0.68	35.1	14.9%	22.9%	0.48	1.31
Low	6.9	0.79	0.7	0.06	4.1	4.1%	5.0%	0.10	0.21
Baa									***Baa***
Average	9.3	1.17	3.3	0.33	9.6	6.2%	8.8%	0.28	0.63
High	21.7	4.65	20.2	0.94	48.6	13.6%	16.5%	0.52	2.15
Low	1.6	0.18	0.5	0.04	1.9	2.4%	1.8%	0.08	0.13
Ba									***Ba***
Average	5.1	0.44	2.0	0.31	4.9	4.3%	6.3%	0.25	0.41
High	12.9	1.84	10.1	0.80	14.9	9.6%	11.3%	0.35	1.38
Low	0.5	0.07	0.2	0.04	-1.6	-1.1%	-1.5%	0.11	0.15

APPENDIX 2C: PRELIMINARY MAXIMUM-LIKELIHOOD ORDERED LOGIT ESTIMATION REGRESSION ANALYSIS USING ALL EXPLANATORY VARIABLES

```
. ologit rating mktcap opcflow totdebt debt_to_mktcap intcov roa opmarg ltd_to_
> assets cflow_to_totdebt

Iteration 0:   log likelihood = -124.46833
Iteration 1:   log likelihood =  -86.92775
Iteration 2:   log likelihood = -84.161293
Iteration 3:   log likelihood = -81.932749
Iteration 4:   log likelihood = -77.361681
Iteration 5:   log likelihood = -75.491572
Iteration 6:   log likelihood = -75.251565
Iteration 7:   log likelihood = -75.241253
Iteration 8:   log likelihood = -75.241233

Ordered logit estimates                           Number of obs   =         68
                                                  LR chi2(9)      =      98.45
                                                  Prob > chi2     =     0.0000
Log likelihood = -75.241233                       Pseudo R2       =     0.3955

------------------------------------------------------------------------------
      rating |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mktcap |  -.0759631   .0342149    -2.22   0.026    -.1430231   -.0089032
     opcflow |   .6725566   .4018142     1.67   0.094    -.1149847    1.460098
     totdebt |  -.1750693   .0634702    -2.76   0.006    -.2994685   -.0506701
debt_to_mk~p |  -3.353182   1.840995    -1.82   0.069    -6.961465    .2551019
      intcov |  -.0253772   .0350943    -0.72   0.470    -.0941608    .0434063
         roa |   -19.7285   11.45578    -1.72   0.085    -42.18143    2.724424
      opmarg |  -20.58907   6.194487    -3.32   0.001    -32.73005   -8.448103
ltd_to_ass~s |   4.983669   3.539415     1.41   0.159    -1.953457    11.92079
cflow_to_t~t |  -.4646087   .2554472    -1.82   0.069    -.9652759    .0360586
-------------+----------------------------------------------------------------
       _cut1 |  -15.65389   3.150072          (Ancillary parameters)
       _cut2 |  -8.980142   1.597687
       _cut3 |  -7.484451   1.403438
       _cut4 |  -6.010599   1.257153
       _cut5 |  -4.973952    1.19594
       _cut6 |   -2.34706   1.047922
------------------------------------------------------------------------------
note: 1 observation completely determined.  Standard errors questionable
```

APPENDIX 2D: REFINED ORDERED LOGIT ANALYSIS USING SENSIBLE EXPLANATORY VARIABLES

```
. ologit rating mktcap debt_to_mktcap intcov roa opmarg ltd_to_assets cflow_to_totdebt

Iteration 0:   log likelihood = -124.46833
Iteration 1:   log likelihood = -87.213924
Iteration 2:   log likelihood = -84.433284
Iteration 3:   log likelihood = -80.087183
Iteration 4:   log likelihood = -79.528613
Iteration 5:   log likelihood = -79.488714
Iteration 6:   log likelihood = -79.488323
Iteration 7:   log likelihood = -79.488323

Ordered logit estimates                           Number of obs   =         68
                                                  LR chi2(7)      =      89.96
                                                  Prob > chi2     =     0.0000
Log likelihood = -79.488323                       Pseudo R2       =     0.3614

------------------------------------------------------------------------------
      rating |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mktcap |  -.0348877   .0127607    -2.73   0.006    -.0598981   -.0098773
debt_to_mk~p |  -4.015865   1.751093    -2.29   0.022    -7.447945   -.5837845
      intcov |  -.0278559   .0291343    -0.96   0.339    -.0849581    .0292462
         roa |   -17.656    10.7493    -1.64   0.100    -38.72425    3.412253
      opmarg |   -21.1014   6.174486    -3.42   0.001    -33.20317   -8.999632
ltd_to_ass~s |   4.740247   3.176892     1.49   0.136    -1.486347    10.96684
cflow_to_t~t |  -.2744129   .2022181    -1.36   0.175     -.670753    .1219272
-------------+----------------------------------------------------------------
       _cut1 |  -12.39978   2.156149          (Ancillary parameters)
       _cut2 |  -8.382252   1.486924
       _cut3 |  -7.029466   1.318655
       _cut4 |  -5.683816   1.194728
       _cut5 |  -4.727598   1.143635
       _cut6 |  -2.232185   1.008708
------------------------------------------------------------------------------
```

APPENDIX 2E: EFFICIENT LOGIT ANALYSIS USING SIGNIFICANT EXPLANATORY VARIABLES AND MORE COMPARABLE DATASET (GE, PBI, DOV, BUD, ADM, CCE, AND PBG REMOVED)

```
. ologit rating mktcap intcov roa opmarg cflow_to_totdebt

Iteration 0:   log likelihood = -87.154526
Iteration 1:   log likelihood = -52.206284
Iteration 2:   log likelihood = -49.519232
Iteration 3:   log likelihood = -49.152197
Iteration 4:   log likelihood = -44.849715
Iteration 5:   log likelihood = -43.851962
Iteration 6:   log likelihood = -43.806797
Iteration 7:   log likelihood = -43.697789
Iteration 8:   log likelihood = -43.684071
Iteration 9:   log likelihood = -43.683091
Iteration 10:  log likelihood = -43.683083

Ordered logit estimates                           Number of obs   =         58
                                                  LR chi2(5)      =      86.94
                                                  Prob > chi2     =     0.0000
Log likelihood = -43.683083                       Pseudo R2       =     0.4988

------------------------------------------------------------------------------
      rating |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mktcap |  -.0332368   .013656    -2.43   0.015    -.0600021   -.0064714
      intcov |  -.0981897   .0426597   -2.30   0.021    -.1818011   -.0145783
         roa |  -15.66269   11.3836    -1.38   0.169    -37.97413    6.648759
      opmarg |  -19.59514   7.207653   -2.72   0.007    -33.72188   -5.468399
cflow_to_t~t |  -.1672591   .3237783   -0.52   0.605    -.8018529    .4673348
-------------+----------------------------------------------------------------
        _cut1 |  -14.07606   2.548932          (Ancillary parameters)
        _cut2 |  -9.973274    1.84735
        _cut3 |    -5.4842   1.080823
        _cut4 |   -2.31064   .7593559
------------------------------------------------------------------------------
```

APPENDIX 2F: EFFICIENT LOGIT ANALYSIS USING FULL DATASET, RATING CATEGORIES: AAA, AA, A(ALL), BAA, BA

```
. ologit rating mktcap debt_to_mktcap intcov opmarg ltd_to_assets

Iteration 0:   log likelihood = -101.85161
Iteration 1:   log likelihood = -67.688109
Iteration 2:   log likelihood = -61.576837
Iteration 3:   log likelihood = -60.653771
Iteration 4:   log likelihood = -60.584705
Iteration 5:   log likelihood = -60.584064

Ordered logit estimates                           Number of obs   =         68
                                                  LR chi2(5)      =      82.54
                                                  Prob > chi2     =     0.0000
Log likelihood = -60.584064                       Pseudo R2       =     0.4052

------------------------------------------------------------------------------
      rating |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mktcap |  -.0250791   .0101339    -2.47   0.013    -.0449411   -.0052171
debt_to_mk~p |  -2.683575    1.54124    -1.74   0.082    -5.704349    .3371989
      intcov |  -.0648662   .0243276    -2.67   0.008    -.1125474   -.0171849
      opmarg |  -26.39435   6.194747    -4.26   0.000    -38.53583   -14.25287
ltd_to_ass~s |   3.627838   3.263202     1.11   0.266    -2.767921     10.0236
-------------+----------------------------------------------------------------
        _cut1 |  -11.07675   1.954555          (Ancillary parameters)
        _cut2 |  -7.506565   1.374596
        _cut3 |  -4.015867   1.016685
        _cut4 |  -1.582724   .9131372
------------------------------------------------------------------------------
```

APPENDIX 2G: EFFICIENT LOGIT ANALYSIS EXCLUDING AAA

```
. ologit rating mktcap debt_to_mktcap roa opmarg ltd_to_assets

Iteration 0:   log likelihood = -104.17469
Iteration 1:   log likelihood = -76.825464
Iteration 2:   log likelihood = -73.867831
Iteration 3:   log likelihood =  -73.38852
Iteration 4:   log likelihood = -73.381031
Iteration 5:   log likelihood = -73.381028

Ordered logit estimates                           Number of obs   =         62
                                                  LR chi2(5)      =      61.59
                                                  Prob > chi2     =     0.0000
Log likelihood = -73.381028                       Pseudo R2       =     0.2956

------------------------------------------------------------------------------
      rating |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mktcap |  -.0396978   .0125837    -3.15   0.002    -.0643614   -.0150343
debt_to_mk~p |   -4.28921   1.821652    -2.35   0.019    -7.859582   -.7188382
         roa |  -28.50153   10.47406    -2.72   0.007     -49.0303   -7.972754
      opmarg |  -21.58819   6.471065    -3.34   0.001    -34.27124   -8.905136
ltd_to_ass~s |   6.721239   3.065665     2.19   0.028     .7126471    12.72983
-------------+----------------------------------------------------------------
       _cut1 |  -8.660873   1.520258          (Ancillary parameters)
       _cut2 |  -7.171919   1.322421
       _cut3 |  -5.719445   1.170838
       _cut4 |  -4.701731   1.107983
       _cut5 |  -2.116038   .9669853
------------------------------------------------------------------------------
```