

Defined-benefit Pension Plans: Are They as Good as They Seem?

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Abstract Defined-benefit pension plans were in a worse state than previously reported due to managements' ability to manage the assumptions, according to our study. This empirical paper examined whether managers would have used unreasonable discount rates and assumed rates of return for their pension obligation and assets in order to improve their financial position. We found companies were 4 times more likely to have used an unreasonable discount rate thereby reporting a better funding status than was warranted. We also found, companies were 34 times more likely to have used an unreasonable rate of return for calculating pension expense thereby increasing net income. This paper has implications for employees who have a defined-benefit pension plan; employers who want to be attractive to future employees; and governments that provide retirement supplements for their citizens.

Keywords Defined-benefit Pension Plans, Actuarial Assumptions, Discount Rate, Pension Asset Rate of Return

1. Defined-benefit Pension Plans: Are they as Good as they seem?

"Pension costs force end to home delivery" was the headline in a national newspaper in Canada regarding the Canadian postal service [1]. What did this suggest about the current state of the company pension plan? Would employees be able to receive their full pension when they retired? How bad was it? How would anyone know?

There were many reports about the poor financial shape of pension plans. Van Riesen [2], in his commentary "The pension tangle," remarked on the financial condition of retirement plans and the impact of the lack of market returns with emphasis on the financial cost created by the baby boom generation as they approach their senior years [3]. Facciani [4] listed numerous U.S. municipalities that had defaulted on their defined-benefit obligations leaving thousands of employees with empty promises. Facciani [4]

went so far as to blame some of the problem on unethical behavior.

"To a great extent, it is the lack of ethics on the part of all principal parties to these plans—employee unions, politicians, investment advisors, and plan design and actuarial consultants—which has created the underfunding that most public DBPs (defined-benefit plans) are now addressing" (p. 5).

However, some of the blame should have fallen on the health of the investment markets. In the last decade the S&P declined 20 percent [5]. World economies suffered a serious financial decline from the stock market crash in 2008 [6].

Company managers could choose to invest excess funds in new innovations, projects, or into the company's defined-benefit pension plan. Since no real return came to the company from a fully funded pension plan most plans tended to be underfunded. The real return was the fulfillment of a promise of money in the future to employees for services rendered in the past. Defined-benefit pension plans provided employees with the promise of a set amount of income from the day they retired to the day they died. This was a big promise and one all employees would have liked to have. However, there was a downside. What if the employer didn't have the funds set aside to fulfill this promise?

In Canada, pension legislation required companies to transfer funds to a trustee to cover the projected costs of paying employees their stipulated pension amounts when they retired. Once transferred the company could not retrieve the funds. Although there were minimum funding requirements they were not sufficient to achieve a fully funded pension plan.

How did an employee know the true state of their pension plan? They didn't.

How did an investor or creditor know the true financial burden of these future payouts? They didn't.

The problem stemmed from the accounting standards. International Financial Reporting Standards (IFRS) [7] governed disclosures in many countries in the world. The

standards for pension plans allowed for a “smoothing” effect as a result of the subjective nature of the assumptions that were made. There’s no doubt that assumptions needed to be made with respect to the future cost of a pension plan. How much would it cost to fulfill a promise of a set payment to each employee from the day they retired to the day they died? Actuaries tended to be the official calculators of this figure. However, assumptions about the discount rate used to calculate the present value of the total pension cost may have presented a better picture than was warranted. Gold [8] presented six results with respect to publicly sponsored defined-benefit pension plans. These were:

1. “The use of higher interest rate assumptions always leads to a reduction in the present value of future costs and almost always lowers this year’s actuarial cost.” (p.13)
2. “Adjusting the assumed interest rate to reflect a change in equity allocation upward is a windfall for the generation that does it.” (p. 13)
3. “Using an interest rate higher than the risk-free rate to compute the cost of any benefit increase constitutes a windfall for the generation that does it.” (p. 15)
4. “The windfalls enjoyed by initiating generations come at cost to subsequent generations, a cost that is not ameliorated by equity investments.” (p. 16)
5. “Spreading the economic component of actuarial gains and losses over n future periods does not alter the results above except that the first m generations may enjoy a diminishing windfall followed by n-m generations who suffer an increasing burden. All generations after the nth are identical but are heavily burdened.” (p. 18)
6. “The intergenerational wealth transfers detailed above do not result from the equity investment or lack thereof but arise instead from the actuarial use of an expected return in excess of the risk-free rate.” (p. 20)

Although all information had to be disclosed in the notes to the financial statements the average reader was not able to determine what the true financial burden to the company was.

The objective of this paper was to investigate Gold’s [8] suggested results that used different assumptions for reported pension plan status. This paper is important because it sheds light on the ability of management to manage the presented results. If company pension plans were being presented at a lower cost than they should have been there would be a significant financial burden on companies in the future that could result in insolvency and ultimately the transfer of this burden to government agencies.

The remainder of this paper is divided into the following sections: a review of the literature; theoretical background; empirical findings, and finally a discussion and conclusion.

2. Literature Review

Two types of post-retirement pension plans existed that were used to reward employees for their long service to an organization. Defined contribution plans had a set amount paid into a fund on a regular basis by employers, and often employees, and no promise was given with respect to an end amount the employee would have for retirement. Ideally, a trustee administers the plan and contributions were invested according to the contributors’ risk tolerance. This type of plan did not have an undue burden on the company and the payments formed part of the remuneration package. The second type, a defined-benefit plan, specified the amount an employee would be paid from the day they retired until death. Funds were paid to a trustee in accordance with actuarial projections based on factors such as mortality rates, employee turnover, average salary, etc. These plans were very expensive because the payout formula was typically based on years of service. The longer an employee stayed with the organization the higher the pension when they retired. Clark and Monk [9] found defined-benefit pension plans in the U.S. and the U.K. were either curtailed or significantly changed in the last 30 years. As recently as 2005, they found the existence of private sector defined-benefit pension plans restricted to a small percentage of unionized employees in certain industries. Gerrans and Clark [10] found Australian pension plan participants voluntarily switching from defined-benefit to defined contribution plans. Recently, pension plans offered to new employees tended to be defined contribution, if any.

Sweeting [11] argued that from an employer’s perspective defined-benefit pension plans were more expensive than defined contribution by roughly 1.07%. To ease the burden of growing defined-benefit pension obligations as well as a flat market for returns on pension plan assets, pension reform had occurred in many countries. The reform particularly focused on raising the minimum retirement age or increasing the number of years an employee contributed before qualifying for full benefits [3]. In Canada, the federal government failed in their attempt to increase the requirement age from 65 to 67 for eligibility for the national pension plan. However, an incentive was introduced if retired workers waited until age 70 to start claiming. As indicated by Gold [8] companies could manage the reporting of their pension obligation and pension expense through the use of a discount rate that was higher than the cost of capital the firm would otherwise incur. They could additionally assume a higher rate of return on plan assets than could reasonably be expected [8]. Legitimacy theory suggested managers would take advantage of these tactics in order to influence their disclosure practices [12]. Firms could increase their legitimacy in the eyes of other stakeholders or institutions, by structurally or procedurally adjusting to institutional influences [13-17]. In order to present their pension

funding status in the best light possible, companies would have been motivated to understate their obligation in times of financial deterioration by adjusting the discount rate used to calculate the present value of the future amount owed. As mentioned previously, if an assumed rate of return on pension plan assets that was higher than what could be obtained in current market conditions was used this would decrease pension expense and increase a firm's net income. Eaton and Nofsinger [18] found government sponsors tended to manage the actuarial assumptions when faced with fiscal constraints. Easterday and Eaton [19] studied the two key assumptions that could be affected by employers, the discount rate and the expected rate of return on plan assets. Although they focused on the differences between Government Accounting Standards Board (GASB) rules and Financial Accounting Standards Board (FASB) rules they did find that non-government companies' discount rates fluctuated far more than government ones. Easterday and Eaton commented that private sector companies may engage in opportunistic behaviour when it came to the expected rate of return on plan assets, but dismissed any real earnings management ability. They stated that auditors, regulators and the efficiency of the capital markets would adjust for expected rate of return changes.

Clark and Monk [9] found most plans were underfunded in the U.K. and U.S. Other research focused on government sponsored pension plans, which was not the focus of this paper (for example see: 18-21). However, Canada's federally funded national defined-benefit pension plan would be impacted by any shortfall in the private sector.

3. Background

Defined-benefit pension plans provided a payout to employees commencing the day they retired. To determine the level of payout, a formula combined years of service with the company and the employee's age. The responsibility for ensuring adequate funding lay with the employer. In Canada, pension plan assets had to be held in trust and therefore separate from the corporation [22]. The plan administrator had a fiduciary obligation to the pension plan members; however, they could not force the company to fully fund the plan [23]. There were three important components in defined-benefit pension plans that were disclosed in the annual audited financial statements: (1) the obligation, (2) the plan assets, and (3) the funding status. The challenge understood what a company's note to the financial statements revealed. Figure 1 (see Appendix A) provides an example of the disclosure from Canadian company, Agrium Inc.'s 2012 [24] publicly available audited annual financial statements. (Numbers have been added to represent the obligation, plan assets, and funding status).

From the note in Figure 2 (see Appendix A), we see that

Agrium owed their employees who are members of the defined-benefit pension plan \$302 U.S. million at the end of 2012 (indicated by (1)). They had \$195 U.S. million set aside to meet this obligation (2), leaving an underfunded position of \$107 U.S. million (3). If Agrium Inc. ceased business this underfunded amount would likely remain unpaid. The obligation and hence, the funding status could be affected by the assumptions used. Figure 2 shows Agrium Inc. used a 4% discount rate in 2012.

If the discount rate used to calculate the present value of the future obligation was higher than the company's cost of capital a lower obligation figure would be the result. [8, 9]. It was therefore important to investigate whether companies were appropriately calculating the total obligation owed to employees for defined-benefit pension plans [8]. An acceptable discount rate would be equal to, or lower than their cost of capital. Agrium Inc. reports interest rates charged on long-term debt of approximately 6.5%. Therefore, we concluded they used a reasonable discount rate (4%).

International Financial Reporting Standards [7] supported this approach. The rate used to discount post-employment benefit obligations (both funded and unfunded) shall be determined by reference to market yields at the end of the reporting period on high quality corporate bonds (IAS 19 para.83).

The amount of pension expense disclosed on company financial statements was affected by an assumed rate of return used for calculating the present value of the plan assets [8]. If an assumed rate that is not realistically achievable in the market was used the result would be a lower pension expense being reported. This allowed companies to increase net income [8]. As illustrated in Figure 2 above, Agrium Inc. stated no assumed rate of return on the pension plan assets. This was a conservative approach given current market fluctuations. Bergstresser, Desai, and Rauh [25] found managers were motivated to manipulate earnings by altering the assumed returns on pension schemes. Vameer et al. [21] found that local governments had a propensity to provide less than the required disclosures by the Government Accounting Standards Board.

The 2008 stock market crash was used as a lens. This paper investigated whether Canadian companies with defined-benefit pension plans were understating the obligation owed to the employees. This study also examined whether companies were using reasonable assumptions with respect to the assumed rate of return on the pension plan assets.

From an employee's point of view, being a member of a defined-benefit pension plan means the money would be available when they retired [26]. Companies in certain jurisdictions, however, had no plan assets set aside with a trustee to cover the future obligation (See 2, 27 for provincial jurisdictional differences). The likelihood of the employees actually receiving their full pension, as a result,

was very slim [8, 28]. TrentonWorks [29], a former subsidiary of U.S. based Greenbrier, for example, had an underfunded pension plan when it was closed due to corporate downsizing. TrentonWorks employees lived in a very small and isolated community in Eastern Canada would receive less than their full pensions, despite there being a properly legislated pension plan [29-31]. Although the federal Pension Benefits Standards Act [22] stated terminated defined-benefit pension plans needed to be fully funded, the logistics of forcing a company into paying the unfunded amount was near impossible. A protest by the TrentonWorks employees resulted in a change to provincial pension legislation. Employees in Nova Scotia whose combination of age plus years of employment or age plus years of membership in the pension plan exceeded 55 were guaranteed a fully funded plan. The employees who did not meet the combination of age and service, in contrast, suffer reductions from their pension payout [32]. The province of Ontario established the Pension Benefits Guarantee Fund to protect beneficiaries of privately sponsored single-employer defined-benefit pension plans against employer failure [33]. Premiums paid by the employers were based on the funding status of the plan [33]. The more funded the pension plan, the lower the premium.

It had been suggested the general market did not react to the funding status of company pension plans. This lack of reaction indicated they might not be well understood [34,35]. Employees needed to understand the implications of a less than fully funded pension plan. In jurisdictions other than Ontario, employees could find their retirement funds insufficient.

Although many companies offered defined-benefit plans only to their executives, this study focused on the general employees. Over the past few decades companies have moved away from defined-benefit pension plans and were more likely to offer defined-contribution plans to their general employees [36]. Under a defined-contribution pension plan, employee and employer contributions were held with a trustee. They were then left to grow, depending on market conditions. The risk was born by the employee with respect to the payout upon retirement unlike defined-benefit pension plans, where the risk lies with the employer.

4. Hypotheses

Stemming from the above discussion, we present the following hypotheses:

H1: The effects of the 2008 stock market crash would result in companies using a higher discount rate than their cost of capital in order to reduce the reported pension plan obligation.

H2: In 2008, companies would assume a higher rate of return than was supported by the market in order to understate pension expense.

5. Methodology

Data on Canadian private sector pension plans was initially gathered from 2004 through

2009. All data came from each company's annual audited financial statements posted on the System for Electronic Document Analysis and Retrieval (SEDAR.com), supported by the Canadian securities regulatory authorities. Once collected, it was verified on two separate occasions. A final sample of 923 companies was used for analysis.

6. Variables

Defined-benefit pension plans had the greatest financial impact on a company our variables are therefore stipulated for these plans.

Funding Status: The funding status represented the difference between the total pension obligation and the fair value of the plan assets set aside to pay for the obligation. A ratio was calculated representing the funding status and presented as a decimal to \$1. For example, a company that has a pension plan with assets of \$50,000 and an obligation of \$70,000, would have a ratio of 0.70 to 1, indicating it was 70% funded. The ratios were then used to group plans as underfunded (0) or overfunded (1). A result of 70% would receive a (0).

Year: It was anticipated that all pension plans would be affected by the stock market crash in 2008. Therefore, our analysis includes pre-, 2008, and post-2008 data. There were 69 companies in pre-2008, 122 companies in 2008, and 52 in post-2008.

Discount Rate: In order to report the defined-benefit pension plan obligation, employers used a discount rate to calculate the present value obligation. This rate was disclosed in the notes to the financial statements. The reported discount rate, per generally accepted accounting principles for private sector companies, should have been equal to high-value fixed income investments. To be conservative, this rate was compared to the average or most recent, interest rate charged on the company's long-term debt. The discount rate was considered reasonable (1) if it was equal to or less than the long-term debt interest rate, otherwise it was assigned a zero. A higher interest rate would result in a lower present value of the pension obligation. This essentially indicated company had less to pay in future pensions.

Rate of Return: Companies reported, in the notes to the financial statements, the assumed rate of return they used to calculate the fair value of the defined-benefit pension plan assets. The dollar amount representing the actual realized rate of return on plan assets was also reported in the notes to the financial statements. The percentage rate of return was calculated by taking the actual dollar amount of the return, reported in the note, divided by the opening and closing values for the pension plan assets. This percentage

was then compared to the assumed rate of return the company reported they had used to calculate the pension expense in the income statement. Companies were considered to have a reasonable rate of return (1) if the actual percentage return was equal to, or greater than the assumed rate of return. If their actual return was lower, companies received a zero. Companies that used an assumed rate of return that was higher than the actual return earned by the plan assets would have understated their pension expense in their statement of earnings.

Long-Term Debt: To allow for a more liberal analysis than the weighted average cost of capital, an interest rate was calculated for each company. One of two methods was used to capture the interest rate. If a company had entered into a long-term debt agreement very recently, the interest rate charged on that loan was used as a proxy for their cost of capital. If a recent debt rate was unavailable, the amount of interest expense reported in the statement of earnings, or statement of cash flows, was used to manually calculate an interest rate for each company based on their reported loans outstanding.

Net Income: Net income was a measure of a company's profitability. Each company's audited annual income statement was obtained and income from operations was recorded.

Profitability: Profitability relates to the return generated in the market from the defined-benefit pension plan assets. This was derived from the following formula: actual return on plan assets divided by average plan assets.

7. Results

Descriptives. This study comprised 923 companies. Of those, 593 or 64% had no pension plan for their employees. Companies with a defined-contribution plan represent 279 or 30% and 243 or 26% have a defined-benefit plan. This exceeds 100% of the sample because 193 of the companies with a defined-benefit plan also offer a defined contribution plan to their general employees. There was a positive skewness for total assets which is typical for large Canadian companies. The majority of companies in our sample have over one billion in assets. Since the standard deviation was no longer useful as a measure of the distance between data values we report the skewness, kurtosis, mean and median. (See Appendix B, Table 1)

Hypothesis Testing. To investigate whether companies are likely to change their discount rate, depending on market conditions, the defined-benefit pension plans were grouped to represent pre-2008, 2008, and post-2008 data. To test whether companies are using a reasonable discount rate, a binary LOGISTIC REGRESSION analysis was conducted. Table 2 presents the results (see Appendix B, Table 2). As predicted, companies whose data was collected in 2008 were 4.12 times more likely to use an

unreasonable discount rate than those collected in either pre-2008 or post 2008.

To test whether companies are using a reasonable assumed rate of return on pension plan assets, a binary logistic regression showed significant results. Table 3 (see Appendix B, Table 3) indicates that when compared to pre-2008 companies, 2008 companies were 34.09 times more likely to use an unreasonable rate of return on pension plan assets. Companies in 2008, in addition, were 12.23 times more likely to use an unreasonable assumed rate of return on pension plan assets than after 2008.

Lower rates of return were significantly related to unreasonable discount rates, Table 4 (see Appendix B, Table 4) shows that the odds of a company applying an unreasonable discount rate was 1.03 times higher for every 1% lower rate of return.

Other Findings. Net income had no significant effect on the funding status, odds ratio = 0.94 (CI95% = 0.75, 1.17), Wald criterion $\chi^2(1, N = 242) = 0.34, p = .56$. Previous research suggested higher interest rates on long term debt would result in underfunded defined-benefit pension plans, however, this was also not supported, odds ratio = 0.86 (CI95% = 0.71, 1.04), Wald criterion $\chi^2(1, N = 225) = 2.40, p = .12$.

8. Discussion

Although widely suspected, this study found 64 percent of the companies had no pension plan, empirically supporting Van Riesen [2]. This indicated serious concerns for the federal government and the national pension plan as the baby boomer generation increases the strain on the Canada Pension Plan. It also meant the future burden of providing for one's retirement rested solely on the employee. The lack of market reaction to underfunded pension plans indicated a potential deficiency in education with respect to understanding these retirement benefits. Employees who currently had no pension plan provided by the private sector and are not setting aside part of their earnings for their retirement are relying on the Canada Pension Plan. Their dependence places a burden on the federal government that may be crippling.

Of the 243 companies with a defined-benefit pension plan, 81 percent are underfunded. Eight companies, in fact, had zero assets set aside to pay for the pension obligation. It could be argued the 2008 stock market crash caused most plans to become underfunded. That claim, however, was not supported by our data. For company data collected prior to 2008, 85.5 percent of the plans were underfunded. Therefore, it seemed defined-benefit pension plans were chronically underfunded despite the ability of management to positively influence the funding status.

The 2008 stock market crash provided a unique opportunity to investigate characteristics of defined-benefit pension plans that had not been previously researched. The

profitability of pension plan assets was adversely affected by the stock market crash, which provided evidence of the impact. Legitimacy theory would suggest company pension plan managers would deliberately choose assumptions that boosted the funding status of the plan.

The choice of discount rate to calculate the present value of the pension plan obligation directly affected the amount of total obligation reported in the notes to the financial statements. Companies could make themselves look better if they used a higher discount rate, which would result in a lower calculated pension obligation, in times of poor market returns. The amount owed to employees continues to grow year-after-year unless the pension plan was curtailed or there was corporate restructuring that resulted in a decline in the number of employees still eligible to receive retirement benefits. This study found companies used the discount rate to lessen the effects of the 2008 stock market crash, and presented their funding status in a better light than was warranted as a result. Although the true pension obligation owed to employees at some point in the future was difficult to measure, companies should have used a discount rate reflecting their cost of capital for reporting the current balance in their notes to the financial statements. The results were actually understated because of the liberal definitions used for some variables. Generally accepted accounting principles suggested very low-risk instruments should be used for the discount rate when calculating the present value of the pension obligation. Use of a lower risk would result in a higher obligation. Clearly, companies did not want a higher obligation reported to readers of the financial statements.

Company managers had motivation to influence the financial statements by adjusting the assumed rate of return used to calculate a company's current pension expense. If they used a high assumed rate of return this would result in a lower pension expense on the income statement and therefore improve net income. The actual rate of return generated by the pension plan assets was reported in the notes to the financial statements and did not affect net income. This study found companies were using a higher assumed rate of return than was reasonable in order to increase net income.

The result has been taken as a whole paint a dismal picture for retirees in the future. Since the true obligation was being understated, there was uncertainty whether companies would be able to meet the future pension obligation.

9. Conclusions

This study's findings have implications for the federal

government, employees and employers. As Gold [8] stated with respect to government funded defined-benefit pension plans, the burden will be on future taxpayers for the pension obligations owed to the previous generation. Although this study focused on non-public pension plans the implications remain unchanged. Employees need to understand that if they are fortunate enough to have an employer sponsored defined-benefit pension plan, it does not mean they will actually receive the funds. Employees need to understand the consequences of an underfunded pension plan and lobby their employers to improve the funding status. Employers, who offer retirement plans, either defined-benefit or defined contribution, may have an advantage in attracting employees who will remain with the organization long term. Employers also have a responsibility to ensure adequate funding if they offer a defined-benefit pension plan. They are caught, however, between rewarding their employees for past service and rewarding shareholders, through dividends, for supporting the organization.

10. Limitations and Future Research

The results of this study are limited to Canadian private sector companies and do not include government sponsored pension plans. However, countries that use IFRS may see the same results. This study should be replicated in other IFRS countries.

Cowling, Gordon and Speed [37] commented on the role of actuaries as experts and advisors on defined-benefit pension plans. Their U.K. study suggested actuaries were partly responsible for low public confidence and called on the actuarial profession to be more transparent. It is interesting to note that under International Financial Reporting Standards (IFRS) the use of actuaries in measuring the defined pension plan obligation is encouraged but not required [38].

As the baby boom generation ages and places a heavier burden on pension plans, future research should look at how the defined-benefit pension plan landscape changes. Are there fewer defined-benefit pension plans? Are the existing plans fully funded?

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Appendix A

19. POST-EMPLOYMENT BENEFITS

► OBLIGATIONS AND ASSETS

	Defined benefit pension plans
	2012
Change in defined benefit obligations	
Balance, beginning of year	272
Foreign currency translation on Canadian obligations	3
Employee contributions	–
Interest cost	12
Service cost	8
Past service cost	1
Actuarial loss (gain) recognized in equity	18
Benefits paid	(12)
Balance, end of year	302
Arising from:	
Funded plans	256
Unfunded plans	46
	302
Change in plan assets	
Fair value, beginning of year	159
Foreign currency translation on Canadian assets	3
Expected return on plan assets	10
Actuarial gain (loss) recognized in equity	4
Employer contributions	31
Employee contributions	–
Benefits paid	(12)
Fair value, end of year	195
Unfunded status and provision for post-employment benefits	107

Source: Agrium (2012), p. 115.

Figure 1. Defined Pension Plan Note for Agrium Inc.

▶ **ACTUARIAL ASSUMPTIONS** (percent) (expressed as weighted averages)

	Future benefits obligation
	2012
Defined benefit pension plans	
Discount rate	4
Expected long-term rate of return on assets	N/A
Rate of increase in compensation levels	4
Post-retirement benefit plans	
Discount rate	4

Source: Agrium (2012), p. 116.

Figure 2. Pension Plan Assumptions for Agrium Inc.

Appendix B

Table 1. Descriptive Statistics for Assets and Income.

Variables	Assets	Income
<i>M</i>	7159510.79 ^a	318194.57 ^a
<i>Mdn</i>	1533450 ^a	49000 ^a
Skewness	5.45	1.166
Kurtosis	39.164	20.99

Source: Authors' calculations.

Note. n = 243.

a In '000s.

Table 2. Logistic Regression Analysis Results of Using a Reasonable Discount Rate.

Variables	<i>B</i>	Wald Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio	
				<i>Lower</i>	<i>Upper</i>
2008	1.416	18.56	4.12*	2.16	7.84
Post-2008	0.623	3.30	1.86	0.95	3.66
Constant	0.097	0.45	1.10		

Source: Authors' calculations.

n=235; *p <.001

Table 3. Logistic Regression Analysis Results of Using a Reasonable Rate of Return

Variables	<i>B</i>	Wald Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio	
				<i>Lower</i>	<i>Upper</i>
2008	3.529	51.27	34.09*	12.97	89.55
Post-2008	2.504	23.86	12.23*	4.48	33.40
Constant	-.916	22.874	0.400		

Source: Authors' calculations.

n=231; *p <.001

Table 4. Logistic Regression Analysis of Lower Rates of Return Compared to Using an Unreasonable Discount Rate. Source: Authors' calculations.

Variables	<i>B</i>	Wald Chi-Square	Odds Ratio	95% Confidence Interval for Odds Ratio	
				<i>Lower</i>	<i>Upper</i>
Rate of Return	0.03	7.35	1.03**	1.01	1.05
Constant	0.11	0.69	1.12		

n=227; **p <.01

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